

Draft Environmental Assessment

# US 60 (Grand Avenue)/ 35th Avenue/Indian School Road Traffic Intersection Improvements

Maricopa County, Arizona

Federal Aid No. 060-B(227)T  
ADOT Project No. F0272 01L

October 2023

**ADOT**



**Draft**  
**Environmental Assessment**  
for  
**US 60 (Grand Avenue)/35th Avenue/Indian School Road**  
**Traffic Intersection Improvements**  
Maricopa County, Arizona

ADOT Project No. F0272 01L  
Federal Aid No. 060-B(227)T  
Lead Agency: Arizona Department of Transportation

October 2023

Comments on this Draft Environmental Assessment are due by November 27, 2023.  
Provide comments by:

Study Website: <https://azdot.gov/planning/transportation-studies/grand-35-study>

Email: [ADOTGrand35Study@hdrinc.com](mailto:ADOTGrand35Study@hdrinc.com)

U.S. Mail: ADOT Grand-35 Study  
c/o HDR, Inc.  
20 E. Thomas Rd., Suite 2500  
Phoenix, AZ 85012

Telephone: (602) 474-3952

Approved by: \_\_\_\_\_ DocuSigned by:  
*Paul O'Brien* 69D3A817999345F... Date: 10/5/2023  
Paul O'Brien, P.E.  
Environmental Planning Administrator  
Arizona Department of Transportation

This Environmental Assessment has been prepared in accordance with provisions and requirements of Title 23 Code of Federal Regulations Parts 771 and 774, relating to the implementation of the National Environmental Policy Act of 1969 [42 United States Code 4332(2)(c)].

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Arizona Department of Transportation pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated April 16, 2019, and executed by the Federal Highway Administration and the Arizona Department of Transportation.

Pursuant to Title VI of the Civil Rights Act of 1964, the Americans with Disabilities Act (ADA), and other nondiscrimination laws and authorities, ADOT does not discriminate on the basis of race, color, national origin, age, sex, or disability. Persons who require a reasonable accommodation based on language or disability should contact Nancy Becerra at 623.695.7411 or [ngbecerra@azdot.gov](mailto:ngbecerra@azdot.gov).

Requests should be made as early as possible to ensure the State has an opportunity to address the accommodation.

De acuerdo al Título VI de la Ley de Derechos Civiles de 1964, la Ley para Estadounidenses con Discapacidades (ADA por sus siglas en inglés), y otras leyes y autoridades contra la discriminación, ADOT no discrimina por raza, color, origen nacional, edad, género, o discapacidad. Las personas que requieran una adaptación razonable basada en el idioma o la discapacidad deben comunicarse con Nancy Becerra al [ngbecerra@azdot.gov](mailto:ngbecerra@azdot.gov) o al 623.695.7411. Las solicitudes deben hacerse lo más pronto para asegurar que ADOT tenga oportunidad de hacer los arreglos necesarios.

Theo Tiêu đề VI của Đạo luật Dân quyền năm 1964, Đạo luật Người Mỹ Khuyết tật (ADA) và các đạo luật về không phân biệt đối xử và căn cứ khác, ADOT không phân biệt đối xử trên cơ sở chủng tộc, màu da, nguồn gốc quốc gia, giới tính, tuổi tác hoặc tình trạng khuyết tật. Những người cần sự điều chỉnh hợp lý vì các lý do ngôn ngữ hoặc tình trạng khuyết tật nên liên hệ với Nancy Becerra theo số 602.474.3952 hoặc địa chỉ [ngbecerra@azdot.gov](mailto:ngbecerra@azdot.gov) Nên thực hiện các yêu cầu càng sớm càng tốt để đảm bảo Tiểu bang có cơ hội thực hiện sự điều chỉnh.



# Contents

- Appendices..... v**
- Figures ..... vii**
- Tables..... viii**
- Acronyms and Abbreviations ..... ix**
- Environmental Commitments ..... 1**
- Environmental Mitigation Measures ..... 1**
- 1. INTRODUCTION ..... 1**
  - 1.1 Explanation of an Environmental Assessment..... 1
  - 1.2 Project Location ..... 1
  - 1.3 Project Background and Overview..... 4
- 2. PURPOSE AND NEED ..... 7**
  - 2.1 Project Purpose ..... 7
  - 2.2 Project Need ..... 7
    - 2.2.1 Need Based on Regional Mobility..... 7
    - 2.2.2 Need Based on Traffic Operations ..... 9
    - 2.2.3 Need Based on Safety..... 12
    - 2.2.4 Need Based on System Linkages..... 12
    - 2.2.5 Summary of Project Need..... 13
  - 2.3 Conformance with Regulations, Land Use Plans, and Other Plans ..... 14
- 3. ALTERNATIVES ANALYSIS ..... 15**
  - 3.1 Prior Studies and Alternatives..... 15
  - 3.2 Alternatives Screening Process ..... 18
    - 3.2.1 Tier 1 Alternative Evaluation..... 19
    - 3.2.2 Tier 2 Alternative Evaluation..... 19
    - 3.2.3 Tier 3 Alternative Evaluation..... 21
  - 3.3 Alternatives Under Consideration ..... 22
    - 3.3.1 Build Alternative..... 22
    - 3.3.2 No-Build Alternative..... 25
    - 3.3.3 Preferred Alternative..... 26
  - 3.4 General Project Schedule ..... 26
- 4. AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES ..... 27**
  - 4.1 Environmental Issues Eliminated from Detailed Study ..... 27
  - 4.2 Land Ownership, Jurisdiction, and Land Use..... 29
    - 4.2.1 Existing Conditions ..... 29
    - 4.2.2 Environmental Consequences..... 31
    - 4.2.3 Environmental Commitments and/or Mitigation Measures..... 33
    - 4.2.4 Conclusion..... 33
  - 4.3 Social and Economic Considerations ..... 34
    - 4.3.1 Existing Conditions ..... 34
    - 4.3.2 Environmental Consequences..... 40
    - 4.3.3 No-Build Alternative..... 45
    - 4.3.4 Environmental Commitments and Mitigation Measures..... 46
    - 4.3.5 Conclusion..... 47
  - 4.4 Environmental Justice..... 49
    - 4.4.1 Existing Conditions ..... 49



- 4.4.2 Environmental Consequences..... 52
- 4.4.3 Environmental Commitments and Mitigation Measures..... 54
- 4.4.4 Conclusion..... 55
- 4.5 Cultural Resources ..... 56
  - 4.5.1 Existing Conditions ..... 59
  - 4.5.2 Environmental Consequences..... 60
  - 4.5.3 Environmental Commitments and/or Mitigation Measures..... 63
  - 4.5.4 Conclusion..... 63
- 4.6 Section 4(f) Resources ..... 64
  - 4.6.1 Coordination and Consultation ..... 65
  - 4.6.2 Existing Conditions ..... 65
  - 4.6.3 Environmental Consequences..... 67
  - 4.6.4 Environmental Commitments and/or Mitigation Measures..... 69
  - 4.6.5 Conclusion..... 70
- 4.7 Traffic and Transportation..... 71
  - 4.7.1 Traffic Volumes..... 71
  - 4.7.2 Operational Analysis..... 71
  - 4.7.3 Environmental Consequences..... 72
  - 4.7.4 Environmental Commitments and/or Mitigation Measures..... 73
  - 4.7.5 Conclusion..... 73
- 4.8 Air Quality ..... 74
  - 4.8.2 Transportation Conformity ..... 75
  - 4.8.3 Existing Conditions ..... 77
  - 4.8.4 Environmental Consequences..... 81
  - 4.8.5 Environmental Commitments and/or Mitigation Measures..... 85
  - 4.8.6 Conclusion..... 85
- 4.9 Noise Analysis ..... 86
  - 4.9.1 Existing Conditions ..... 86
  - 4.9.2 Environmental Consequences..... 87
  - 4.9.3 Environmental Commitments and/or Mitigation Measures..... 89
  - 4.9.4 Conclusion..... 89
- 4.10 Utilities and Railroads ..... 90
  - 4.10.1 Existing Conditions ..... 90
  - 4.10.2 Environmental Consequences..... 93
  - 4.10.3 Environmental Commitments and/or Mitigation Measures..... 94
  - 4.10.4 Conclusion..... 94
- 4.11 Visual Resources..... 95
  - 4.11.1 Existing Conditions ..... 95
  - 4.11.2 Environmental Consequences..... 98
  - 4.11.3 Environmental Commitments and Mitigation Measures..... 98
  - 4.11.4 Conclusion..... 98
- 4.12 Drainage and Floodplain Considerations ..... 99
  - 4.12.1 Existing Conditions ..... 99
  - 4.12.2 Environmental Consequences..... 101
  - 4.12.3 Environmental Commitments and/or Mitigation Measures..... 101
  - 4.12.4 Conclusion..... 101
- 4.13 Section 404, 401 of the Clean Water Act and National Pollutant Discharge Elimination System ..... 103
  - 4.13.1 Existing Conditions ..... 103
  - 4.13.2 Environmental Consequences..... 104
  - 4.13.3 Environmental Commitments and/or Mitigation Measures..... 104
  - 4.13.4 Conclusion..... 104

- 4.14 Biological Resources ..... 105
  - 4.14.1 Existing Conditions ..... 105
  - 4.14.2 Environmental Consequences ..... 107
  - 4.14.3 Environmental Commitments and/or Mitigation Measures ..... 108
  - 4.14.4 Conclusion ..... 108
- 4.15 Hazardous Materials ..... 109
  - 4.15.1 Existing Conditions ..... 109
  - 4.15.2 Environmental Consequences ..... 109
  - 4.15.3 Environmental Commitments and/or Mitigation Measures ..... 110
  - 4.15.4 Conclusion ..... 110
- 4.16 Secondary Impacts ..... 111
  - 4.16.1 Environmental Consequences ..... 112
  - 4.16.2 Conclusion ..... 113
- 4.17 Cumulative Impacts ..... 114
  - 4.17.1 Environmental Consequences ..... 116
  - 4.17.2 Conclusion ..... 117
- 4.18 Conclusion ..... 118
- 5. PUBLIC INVOLVEMENT AND AGENCY COORDINATION ..... 123**
  - 5.1 Key Outreach and Coordination Milestones ..... 123
    - 5.1.1 Public Information Meetings ..... 123
    - 5.1.2 Agency Coordination ..... 126
  - 5.2 Public Engagement Methods ..... 128
  - 5.3 Draft EA Comment Period and Public Hearing ..... 129
- 6. BIBLIOGRAPHY ..... 131**

## Appendices

- Appendix A Right-of-Way Acquisition Table
- Appendix B Socioeconomic and Environmental Justice Technical Report
- Appendix C Air Quality Questionnaires
- Appendix D Noise Analysis Technical Report
- Appendix E Visual Viewpoints
- Appendix F Hazardous Materials Supporting Documentation
- Appendix G Public Involvement Supporting Documentation
- Appendix H Agency Coordination Supporting Documentation

This page intentionally left blank.



# Figures

Figure 1. Project Location ..... 2

Figure 2. Project Vicinity..... 3

Figure 3. Regional Map with Population and Employment Growth ..... 8

Figure 4. Existing (2020) and Future (2050) Traffic Conditions ..... 11

Figure 5. Recommended Improvements from the 2014 MAG COMPASS Study ..... 16

Figure 6. Recommended Alternative from the 2018 MAG Intersection Concept Design Review ..... 16

Figure 7. Phoenix Bus Rapid Transit Potential Corridors ..... 17

Figure 8. Valley Metro West Phoenix High-Capacity Transit Study..... 18

Figure 9. Preferred Alternative ..... 23

Figure 10. Environmental Study Area and Project Area ..... 28

Figure 11. MAG Existing and Future Land Use in the Study Area ..... 30

Figure 12. Right-of-way Acquisitions Required for Preferred Alternative ..... 32

Figure 13. Community Resources, Recreation, and Schools ..... 35

Figure 14. Phoenix Village Planning Committees ..... 36

Figure 15. Industrial Development, Commercial Businesses, and Residential Areas ..... 37

Figure 16. Business and Residential Displacements Resulting from the Preferred Alternative..... 41

Figure 17. Residential Displacements on West Monterosa Street ..... 44

Figure 18. Block Groups with Minority and Low-Income Populations..... 51

Figure 19. Cultural Resources Area of Potential Effects ..... 58

Figure 20. Section 4(f) Properties in the Study Area ..... 66

Figure 21. West Phoenix Air Quality Monitor Location ..... 79

Figure 22. FHWA Projected National MSAT Emission Trends 2020-2060 for Vehicles Operating  
on Roadways ..... 84

Figure 23. Utilities in the Project Area ..... 92

Figure 24. Visual Resource Viewpoints..... 97

Figure 25. FEMA Special Flood Hazard Areas in the Study Area ..... 100

Figure 26. Preferred Alternative with Proposed Drainage Features ..... 102

# Tables

Table 1. Prior Studies..... 4

Table 2. Intersection Delay and Corresponding Levels of Service ..... 9

Table 3. Existing (2020) and Future (2050) Traffic Conditions ..... 10

Table 4. Tier 1 Concepts and Recommendations ..... 19

Table 5. Projects included in the No-Build Alternative..... 26

Table 6. MAG 2020 Existing Land Use Types for Project Area..... 29

Table 7. Parcels Affected by Right-of-Way Acquisitions Based on 15% Design Plans ..... 31

Table 8. Employment Projections..... 37

Table 9. Population Projections..... 39

Table 10. Summary of Low-Income and Minority Demographic Data by Census Tract ..... 50

Table 11. Cultural Resources in the Area of Potential Effects..... 59

Table 12. Summary of Potential Effects on NRHP-Eligible Cultural Resources ..... 62

Table 13. Section 4(f) Properties in the Study Area ..... 67

Table 14. Project Impacts and Section 4(f) Determinations of Use: Historic Properties ..... 68

Table 15. Project Impacts and Section 4(f) Determinations of Use: Parks and Trails ..... 69

Table 16. Existing and Future Traffic Volumes..... 72

Table 17. Operational Analysis Results ..... 72

Table 18. National Ambient Air Quality Standards ..... 74

Table 19. Climate Data for Phoenix, Arizona (2000-2023)..... 77

Table 20. West Phoenix and Central Phoenix Air Quality Data..... 80

Table 21. Total Predicted 1- Hour (8-Hour) Carbon Monoxide Concentrations..... 83

Table 22. FHWA Noise Abatement Criteria..... 87

Table 23. Summary of Noise Analysis ..... 88

Table 24. Utilities in the Project Area ..... 90

Table 25. Utility Agency Coordination ..... 93

Table 26. Visual Character Level of Impact..... 95

Table 27. Federally Protected Species in the Study Area ..... 106

Table 28. Secondary Impact Classification ..... 111

Table 29. Resources Considered for Secondary Impacts ..... 111

Table 30. Potential Secondary Impacts from Preferred Alternative ..... 112

Table 31. Past, Present, and Reasonably Foreseeable Actions in the Study Area ..... 114

Table 32. Potential Cumulative Impacts from Preferred Alternative ..... 116

Table 33. Summary of Environmental Impacts..... 118

Table 34. In-Person Public Meeting Agenda ..... 125

Table 35. Agency Scoping and Coordination Activities ..... 127

# Acronyms and Abbreviations

|                   |  |
|-------------------|--|
| °F                | degrees Fahrenheit   |
| µg/m <sup>3</sup> | micrograms per cubic meter                                     |
| AADT              | Average Annual Daily Traffic                                   |
| ACC               | Arizona Corporation Commission                                 |
| ADA               | American with Disabilities Act                                 |
| ADEQ              | Arizona Department of Environmental Quality                    |
| ADOT              | Arizona Department of Administration                           |
| APE               | Area of Potential Effect                                       |
| APS               | Arizona Public Service   |
| AZDA              | Arizona Department of Agriculture                              |
| AZGFD             | Arizona Game and Fish Department                               |
| AZPDES            | Arizona Pollutant Discharge Elimination System                 |
| BESF              | Biological Evaluation Short Form                               |
| BMP               | Best Management Practice                                       |
| BNSF              | Burlington Northern Santa Fe                                   |
| BRT               | Bus Rapid Transit  |
| CAA               | Clean Air Act of 1970  |
| CEQ               | Council on Environmental Quality                               |
| CFR               | Code of Federal Regulations                                    |
| CO                | Carbon Monoxide  |
| COMPASS           | Corridor Optimization, Access Management Plan and System Study |
| CWA               | Clean Water Act  |
| dB                | decibel  |
| EA                | Environmental Assessment                                       |
| EJ                | Environmental Justice  |
| EPA               | U.S. Environmental Protection Agency                           |
| ERT               | Environmental Review Tool                                      |
| ESA               | Phase I Environmental Site Assessment                          |
| FEMA              | Federal Emergency Management Agency                            |
| FHWA              | Federal Highway Administration                                 |
| FIRM              | Flood Insurance Rate Map                                       |
| FONSI             | Finding of No Significant Impacts                              |
| FRA               | Federal Railroad Administration                                |
| GHG               | Greenhouse Gas   |
| IPaC              | Information for Planning and Consultation                      |
| IPCC              | Intergovernmental Panel on Climate Change                      |
| kV                | Kilovolt   |
| LEP               | Limited English Proficiency                                    |
| LOS               | Level of Service   |
| MAG               | Maricopa Association of Governments                            |
| MCAQD             | Maricopa County Air Quality Department                         |
| MS4               | Municipal Separate Storm Sewer System                          |
| MSAT              | Mobile Source Air Toxics                                       |
| NAAQS             | National Ambient Air Quality Standards                         |
| NAC               | Noise Abatement Criteria                                       |
| NAR               | Noise Abatement Requirements                                   |
| NEPA              | National Environmental Policy Act                              |
| NHPA              | National Historic Preservation Act                             |
| NO <sub>2</sub>   | Nitrogen Dioxide   |
| NPDES             | National Pollutant Discharge Elimination System                |



---

|                   |   |
|-------------------|---|
| NRHP              | National Register of Historic Places                      |
| O <sub>3</sub>    | Ozone   |
| PISA              | Preliminary Initial Site Assessment                       |
| PM <sub>10</sub>  | Particulate matter with a diameter of 10 microns or less  |
| PM <sub>2.5</sub> | Particulate matter with a diameter of 2.5 microns or less |
| ppm               | parts per million   |
| ROW               | Right-of-Way  |
| RTP               | Regional Transportation Plan                              |
| SFHA              | Special Flood Hazard Area                                 |
| SHPO              | State Historic Preservation Office                        |
| SIP               | State Implementation Plan                                 |
| SO <sub>2</sub>   | Sulfur Dioxide  |
| SR                | State Route   |
| SRP               | Salt River Project  |
| SWMP              | Stormwater Management Plan                                |
| SWPPP             | Storm Water Pollution Prevention Plan                     |
| T2050             | Transportation 2050                                       |
| TCE               | Temporary Construction Easement                           |
| TIP               | Transportation Improvement Plan                           |
| TRB               | Transportation Research Board                             |
| U.S.C.            | United States Code  |
| US                | United States   |
| USACE             | United States Army Corps of Engineers                     |
| USFWS             | United States Fish and Wildlife Service                   |
| VOC               | Volatile Organic Compound                                 |
| VPD               | Vehicles per Day  |
| WBAPS             | Web Accident Prediction System                            |

## Environmental Commitments

ADOT and the contractor shall follow the federal laws, regulations, and guidelines and the ADOT standards and specifications listed below to avoid, minimize, and mitigate impacts for all relevant environmental resources:

- Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970
- Uniform Relocation Act Amendments of 1987
- Title VI of the Civil Rights Act of 1964
- ADOT's Public Involvement Plan
- ADOT's NEPA EA and EIS Guidance
- ADOT's Right of Way Procedures Manual
- ADOT's Clean Water Act Section 404/401 Guidance Manual
- ADOT's Temporary Traffic Control Design Guidelines
- ADOT's Erosion and Pollution Control Manual
- ADOT's 2017 Noise Abatement Requirements
- ADOT's Standard Specifications for Road and Bridge Construction
- SAF-6.01 Asbestos Management Policy
- ADOT's Roadside Vegetation Management Guideline

## Environmental Mitigation Measures

Environmental mitigation measures are intended to avoid, minimize, or mitigate impacts on environmental resources. The mitigation measures discussed in this document do not obligate ADOT to their implementation. ADOT may choose to modify, delete, or add to these measures. These mitigation measures would be updated, as required, in the Final Environmental Assessment, at which time they would no longer be subject to change without prior written approval from ADOT.

### Arizona Department of Transportation Design Responsibility

- The Arizona Department of Transportation would continue to facilitate opportunities for public engagement to identify community priorities and concerns as well as to develop and refine strategies for business and residential displacements throughout the project planning process and final design. (pages 46 and 54)
- During final design, ADOT would develop a traffic control plan that details traffic control measures and construction sequencing in coordination with the City of Phoenix. ADOT would coordinate with the City of Phoenix to keep transit stops open and accessible during construction. The traffic control plan would govern unless an alternate plan is approved by ADOT. (pages 46 and 54)
- During final design, ADOT would conduct public engagement activities with the business and property owners in the vicinity of the intersection to share the traffic control plan. (pages 46 and 54)
- At the initiation of final design, ADOT would develop a project-specific business relocation plan based on engagement with the owners of the affected businesses and in line with the requirements of Uniform Relocation and Real Property Acquisition Policies Act of 1970, as

amended; 49 CFR Part 24, Subparts C through F; and, ADOT policies and procedures. The business relocation plan will identify strategies that address community-specific concerns, outline specific steps that will be taken to assist businesses, and connect the business owners with available resources through the City of Phoenix and local small business support organizations. (pages 46 and 54)

- During final design the Arizona Department of Transportation would continue coordination with BNSF Railway Company and the Arizona Corporation Commission regarding final crossing design requirements, permitting, and approval processes. (page 94)
- The Maricopa County Floodplain Manager would be provided an opportunity to review and comment on the design plans (page 101).
- The Department project manager would contact the Arizona Department of Transportation, Environmental Planning, Hazardous Materials Coordinator (602.920.3882 or 602.712.7767) during final design to determine the need for additional site assessment or asbestos sampling. (page 110)

#### Arizona Department of Transportation Central District Responsibilities

- During final design, ADOT would develop a traffic control plan that details traffic control measures and construction sequencing in coordination with the City of Phoenix. ADOT would coordinate with the City of Phoenix to keep transit stops open and accessible during construction. (pages 46 and 54)

#### Arizona Department of Transportation Right-of-Way Responsibilities

- At the initiation of final design, ADOT would develop a project-specific business relocation plan based on engagement with the owners of the affected businesses and accordance with the requirements of Uniform Relocation and Real Property Acquisition Policies Act of 1970, as amended; 49 CFR Part 24, Subparts C through F; and, ADOT policies and procedures. The business relocation plan will identify strategies that address community-specific concerns, outline specific steps that will be taken to assist businesses, and connect the business owners with available resources through the City of Phoenix and local small business support organizations. (pages 47 and 54)

#### Contractor Responsibilities

- With the exception of temporary, short-term closures (less than 3 hours), the contractor would maintain driveway access to all businesses and residences throughout the construction. If a property has multiple driveways, at least one would remain open at all times. (pages 46 and 55)
- The contractor, after coordination with the engineer, would communicate traffic control measures with the public, local officials, and the media prior to and during construction activities. Communication may include, but is not limited to, media alerts, social media, a project-specific mobile application, direct mailings to area businesses and property owners, information on variable message signs, and paid newspaper notices. (pages 46 and 55)
- The contractor shall follow the traffic control plan provided by the engineer. (pages 46 and 55)



# 1. INTRODUCTION

The Arizona Department of Transportation (ADOT), in coordination with the City of Phoenix and Maricopa Association of Governments (MAG), initiated the Grand-35 Study (Study) to evaluate potential transportation improvements at the intersection of United States (US) Route 60 (US 60) (Grand Avenue), 35th Avenue, and Indian School Road to improve traffic operations, reduce congestion, address safety concerns, and maintain regional mobility.

## 1.1 Explanation of an Environmental Assessment

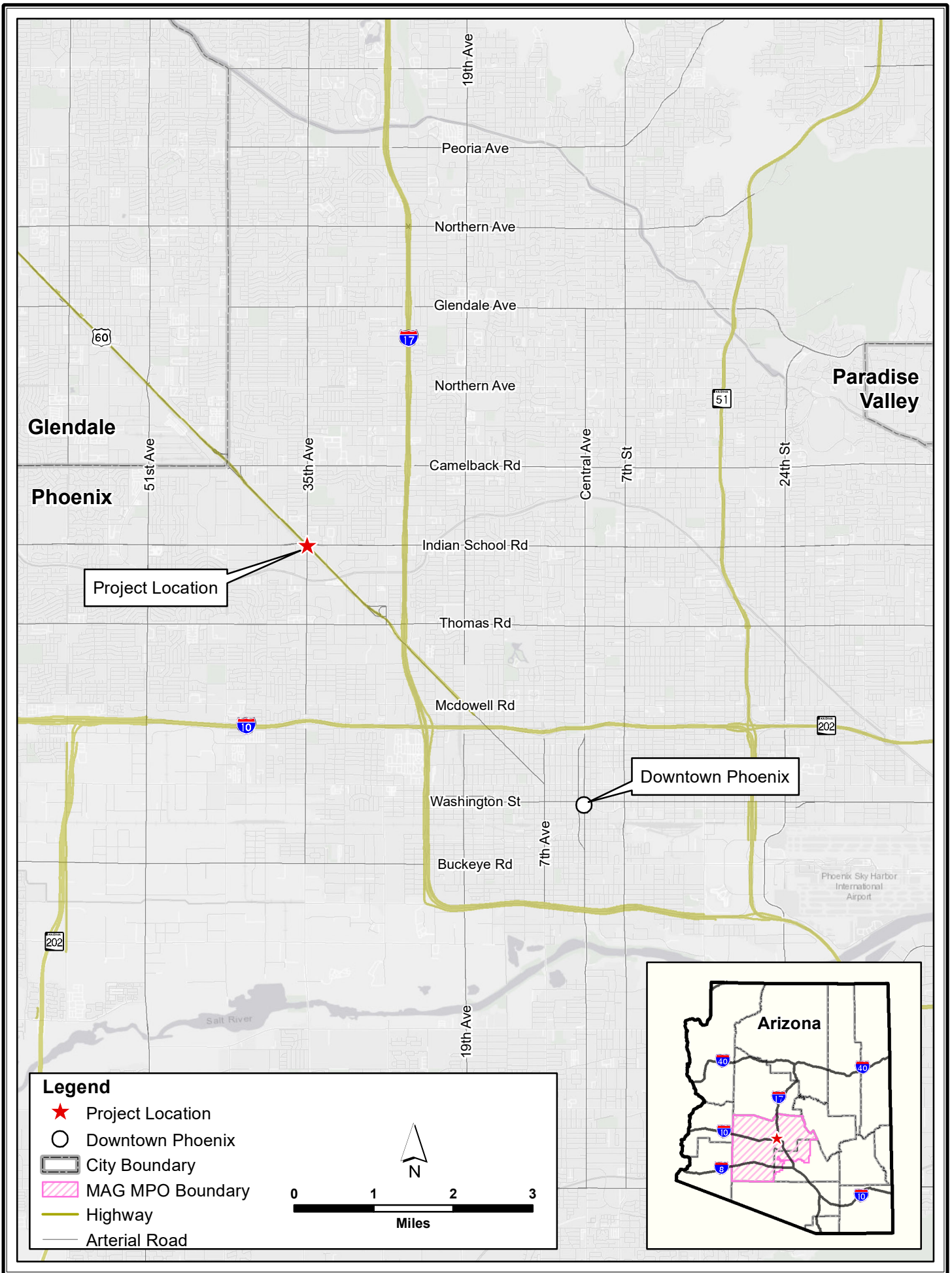
This environmental assessment (EA) for the reconstruction of the traffic interchange at the intersection of US 60 (Grand Avenue), 35th Avenue, and Indian School Road was prepared in accordance with the National Environmental Policy Act (NEPA), as amended (42 United States Code [U.S.C.] 4321 et seq.) and Council on Environmental Quality (CEQ) regulations that implement NEPA (40 Code of Regulations [CFR] 1500 to 1508). The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by ADOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated April 16, 2019, and executed by the Federal Highway Administration (FHWA) and ADOT (FHWA/ADOT 2019).

According to CEQ regulations (40 CFR 1508.9), the basic function of an EA is to describe the need for a proposed action, alternatives for implementing or constructing a proposed action, and the environmental impacts of a proposed action and alternatives. The EA also provides a list of agencies and persons consulted. Based on the impacts identified, the EA provides the basis for ADOT to determine whether an environmental impact statement should be prepared for the Preferred Alternative. This document serves as a tool for ADOT to identify potentially significant impacts on social, economic, natural, and cultural resources and measures to avoid, minimize, and mitigate such impacts.

## 1.2 Project Location

ADOT proposes to reconstruct the six-legged intersection of three major roads northeast of the downtown Phoenix area, within the City of Phoenix, Maricopa County, Arizona (**Figure 1**). The three major roads are US 60 (Grand Avenue), 35th Avenue, and Indian School Road, and the project limits extend roughly 0.5 mile from the intersection (**Figure 2**). The Burlington Northern Santa Fe (BNSF) freight rail corridor is parallel to US 60 (Grand Avenue) and extends along the south side of the road. The area surrounding the intersection is urbanized, and includes industrial, commercial, and residential development.

The project lies within the planning area for MAG, a regional agency that conducts planning and makes policy decisions in a number of core areas, including transportation planning. MAG is the designated metropolitan planning organization for transportation planning in the greater Phoenix region, which includes the Phoenix urbanized area.



**Figure 1. Project Location**

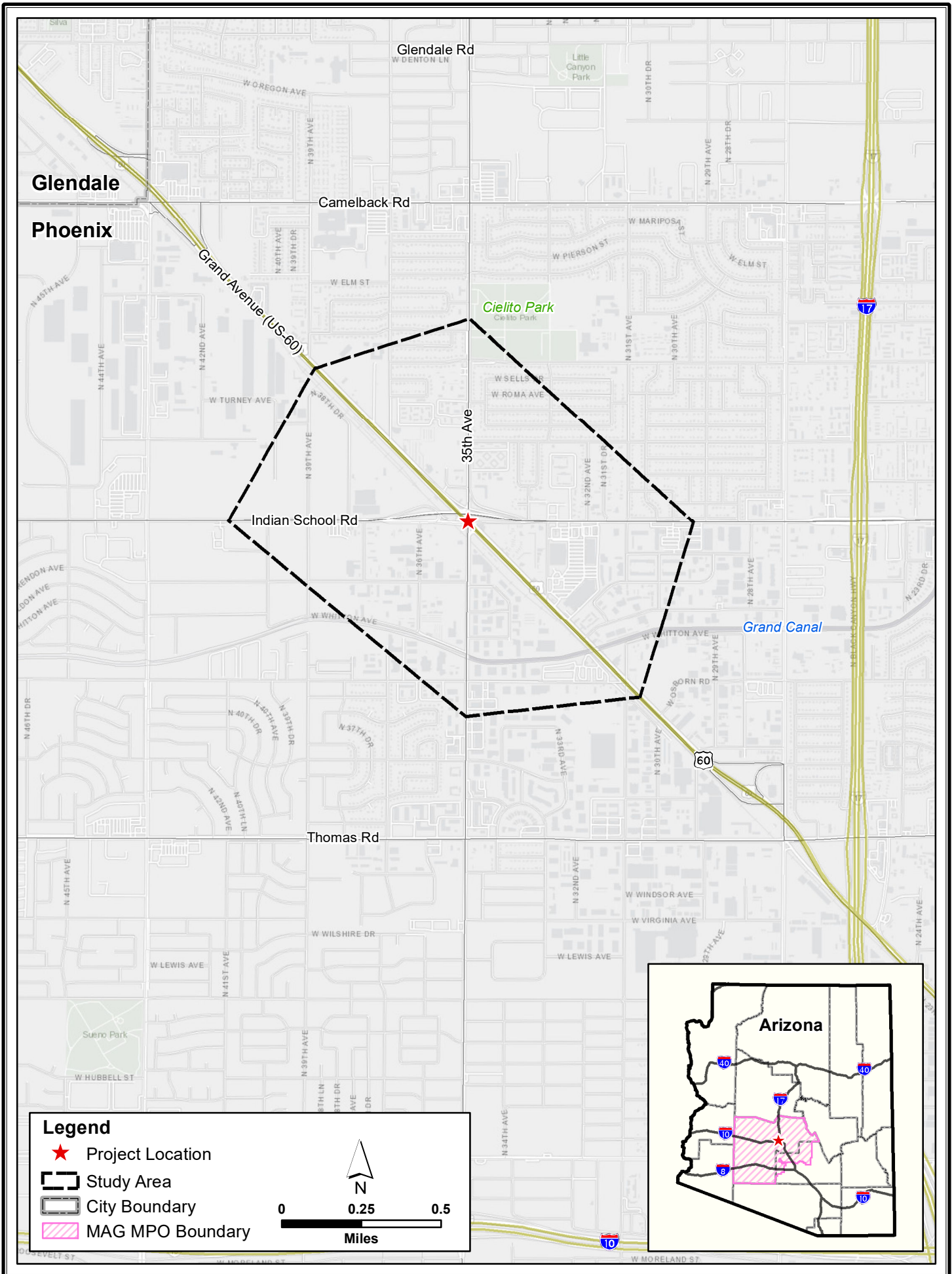


Figure 2. Project Vicinity



### 1.3 Project Background and Overview

ADOT, MAG, and the City of Phoenix have extensively studied the area of US 60 (Grand Avenue), 35th Avenue, and Indian School Road for many years (**Table 1**). At least as far back as 2006, ADOT identified the need for grade-separation at 35th Avenue and Indian School Road in the *Grand Avenue Major Investment Study* (ADOT 2006). The *Corridor Optimization, Access Management Plan and System Study* (COMPASS) (MAG 2014) and *Design Concept Review and Cost Estimate* (MAG 2018a) provided recommended Build Alternatives that would create a grade-separated intersection for 35th Avenue and Indian School Road, traveling over both US 60 (Grand Avenue) and the BNSF Railroad. The *Arizona State Rail Plan Update* (ADOT 2022a) continued to identify the elimination of at-grade crossings as a high-priority item.

**Table 1. Prior Studies**

| Study  | Summary   |
|--|---|
| Grand Avenue Major Investment Study Phase II (ADOT 2006)   | This investment study provided recommendations for improvement projects along the Grand Avenue Corridor. The Study recommended grade separation for the 35th Avenue and Indian School Road intersection to improve continuity and level of service.   |
| US-60/Grand Avenue Corridor Optimization, Access Management Plan and System Study (COMPASS) (MAG 2014)       | The COMPASS study developed design concepts for the 35th Avenue and Indian School Road intersection as well as a detailed description of adjacent property access. The study recommended a grade separation for 35th Avenue and Indian School Road above US 60 (Grand Avenue) and the BNSF railroad.            |
| Grand Avenue/35th Avenue/Indian School Road Intersection Concept Design Review and Cost Estimate (MAG 2018a) | The Concept Design Review built upon the recommendations from the COMPASS study and refined the design to simplify structural supports and impacts from construction and reduce turning movements.  |
| 35th Avenue S/O Indian School Road Railroad Crossing Final Project Assessment (City of Phoenix 2019)         | The Final Project Assessment evaluated the impacts from widening 35th Avenue without grade-separation improvements.   |
| Arizona State Rail Plan Update (ADOT 2022a)  | Building on the previous 2011 Arizona Rail Plan, the state's rail needs were assessed, and infrastructure needs were identified. The plan lists elimination of at-grade railroad crossings as a high-priority action. The Grand Avenue Corridor is listed as having a high concentration of at-grade crossings. |

The Recommended Alternative in the *Concept Design Review and Cost Estimate* (MAG 2018a) is a refined version of the Preferred Alternative presented in the COMPASS (MAG 2014). The Recommended Alternative includes updated local side roads that would maintain or improve access to adjacent properties.

In accordance with CEQ regulations implementing NEPA, potential environmental impacts of the Preferred Alternative are compared to a No-Build Alternative in which proposed capacity and operation improvements in the study area would not occur. The No-Build Alternative includes existing transportation services and facilities in addition to improvements currently under construction or committed for funding in the Regional Transportation Plan (RTP) through the design year 2050 (MAG 2021c).

If the Preferred Alternative would not result in significant adverse impacts on the natural, built, socioeconomic, or cultural environments that could not be avoided, minimized, or otherwise mitigated, a Finding of No Significant Impacts (FONSI) would be issued and approved by ADOT, allowing the project to proceed to final design.

This page intentionally left blank.

## 2. PURPOSE AND NEED

This purpose and need chapter was prepared based on CEQ NEPA regulation (40 CFR 1502.13), FHWA NEPA regulations (23 CFR 771), and CEQ and FHWA guidance, including FHWA Technical Advisory T 6640.8A (FHWA 1987). The purpose and need statements identify specific measurable transportation problems (needs) that the project would address (purpose).

Current conditions are characterized for the year 2020, which was the analysis year for traffic data collected and used in the travel demand model. Future conditions are projected out to 2050.

### 2.1 Project Purpose

The purpose of this project is to improve traffic operations, reduce congestion, and address safety concerns with the at-grade railway crossing at the intersection of US 60 (Grand Avenue), 35th Avenue, and Indian School Road while maintaining regional mobility, systems linkages, and access to economic centers.

### 2.2 Project Need

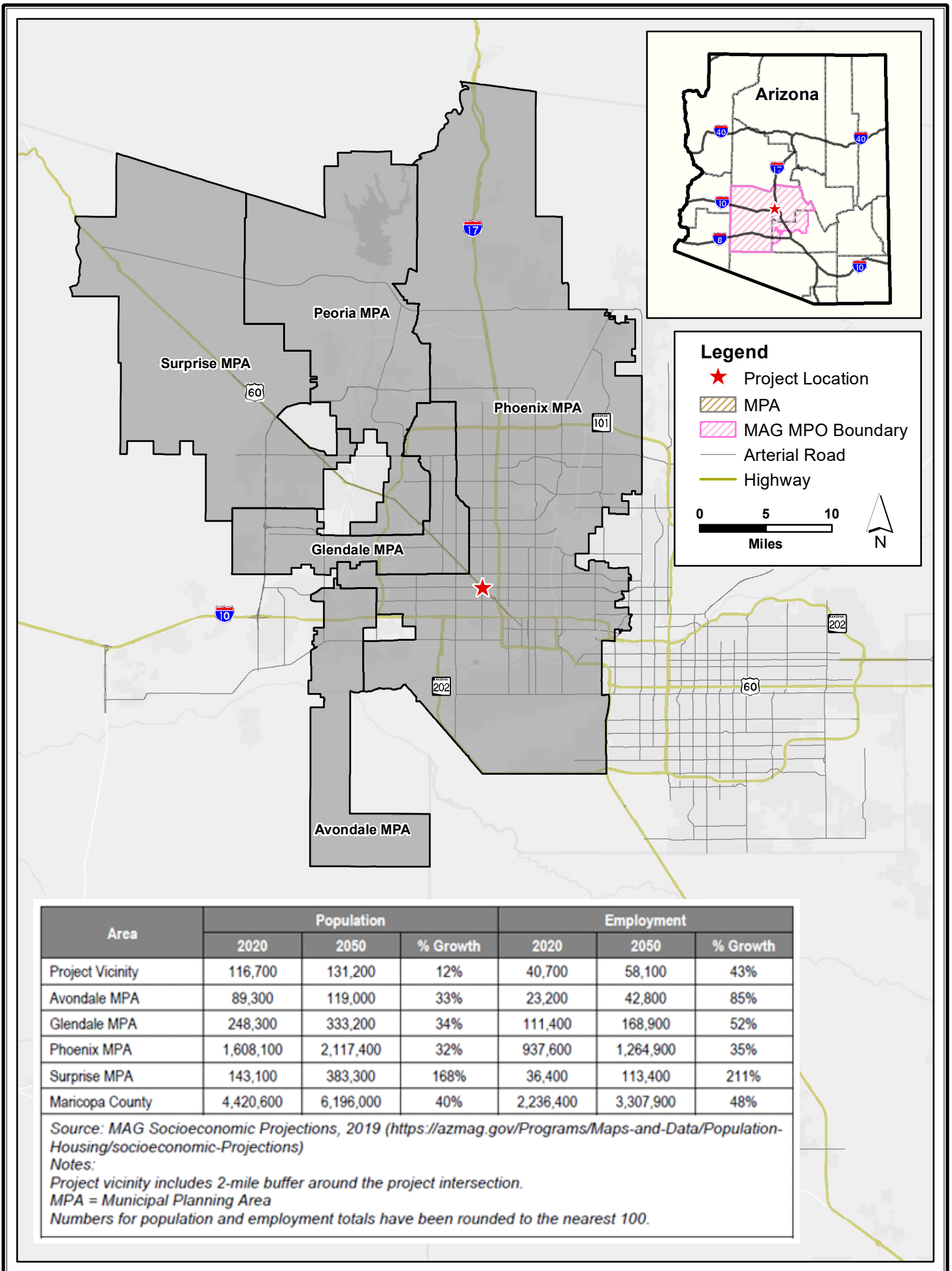
The specific problems in the project area stem from the intricate intersection configuration created when three major roadways intersect. While Indian School Road and 35th Avenue are oriented according to the grid network that comprises the arterial street system in the Phoenix metropolitan area, US 60 (Grand Avenue) runs at a diagonal to the grid network. All three roadways are important, heavily-traveled corridors. The intersection is made more complex by the BNSF Railway corridor paralleling US 60 (Grand Avenue) to the south. The intricate configuration of the three intersecting roadways and BNSF Railway creates problems with traffic operations, and the at-grade railway crossing presents safety concerns.

#### 2.2.1 Need Based on Regional Mobility

Projected growth in population and employment will result in increased travel demand in the region and in the study area. As shown on **Figure 3**, Maricopa County's population is expected to increase by nearly 29 percent between the years 2020 and 2050. Much like the County's population, employment is projected to increase from nearly 2.2 million jobs in 2020 to 3.3 million in 2040, a 35 percent increase (MAG 2019). Similar population and employment growth is expected in Phoenix. US 60 (Grand Avenue) is a likely route for residents of Glendale and Surprise to commute to and from downtown Phoenix, while Indian School Road is a likely route for residents of Glendale and Avondale to commute to and from downtown Phoenix.

US 60 (Grand Avenue) is a major element of the adopted MAG Regional Transportation Plan Freeway Program (MAG 2022). The segment of US 60 (Grand Avenue) between I-17 and State Route (SR) 101L is one of the major roadways serving regional commuter and freight traffic supporting the Cities of Phoenix, Glendale, and Peoria. To the northwest, it is also a vital link in the Statewide Highway System serving as the continuation of US 93 linking the Phoenix metropolitan area to Las Vegas, Nevada.

Indian School Road is an east-west arterial street that passes through the central portion of the Phoenix metropolitan area and is located approximately 2 miles north of I-10. It is one of the few arterial streets that provides a continuous east-west connection from SR 101 in Scottsdale to SR 303 in Goodyear, and it provides one of the few arterial street bridge crossings of the Agua Fria River, resulting in substantial travel demand for commuting traffic.



**Figure 3. Regional Map with Population and Employment Growth**

35th Avenue is a north-south arterial street that passes through the central portion of the Phoenix metropolitan area spanning a length of 23 miles connecting south Phoenix to north Phoenix. It is located approximately 1 mile west of I-17 and is one of the few arterial streets that provides a bridge crossing of the Salt River.

All three roadways serve regional or sub-regional mobility with US 60 (Grand Avenue) being one of the primary urban arterial streets in the west valley. Increased travel demand from the projected growth in population, housing, and employment would continue to outpace available roadway capacity. Improvements to the US 60 (Grand Avenue), 35th Avenue, and Indian School Road intersection are necessary to maintain the functionality and mobility along US 60 (Grand Avenue) to serve regional commuter and freight traffic supporting the west valley.

**2.2.2 Need Based on Traffic Operations**

The concept of level of service (LOS) uses six letter designations to characterize operational conditions within a stream of traffic. The letter designations range from A to F, with LOS A representing the best operational conditions and LOS F representing an over-capacity condition with a high degree of congestion. Each level of service represents a range of operating conditions.

**Table 2** shows the traffic delays and corresponding levels of service for signalized intersections (Transportation Research Board [TRB] 2010).

**Table 2. Intersection Delay and Corresponding Levels of Service**

| Level-of-Service | Traffic Delay (seconds/vehicle) | Description               |
|------------------|---------------------------------|---------------------------|
| A                | < 10                            | Free Flow                 |
| B                | 10 – 20                         | Reasonably free flow      |
| C                | 20 – 35                         | Stable flow               |
| D                | 35 – 55                         | Approaching unstable flow |
| E                | 55 – 80                         | Unstable flow             |
| F                | > 80                            | Forced or breakdown       |

Source: Highway Capacity Manual 2010, Volume 3: pg. 18-6

According to the goals established by ADOT for the state highway system and the City of Phoenix, each intersection should provide LOS D or better for the overall intersection and for each intersection approach during the peak hours.

**Table 3** and **Figure 4** present the results of the analysis for the existing conditions (2020) A.M. and P.M. peak hours and future No Build conditions (2050) A.M. and P.M. peak hours at the US 60 (Grand Avenue), 35th Avenue, and Indian School Road intersection.

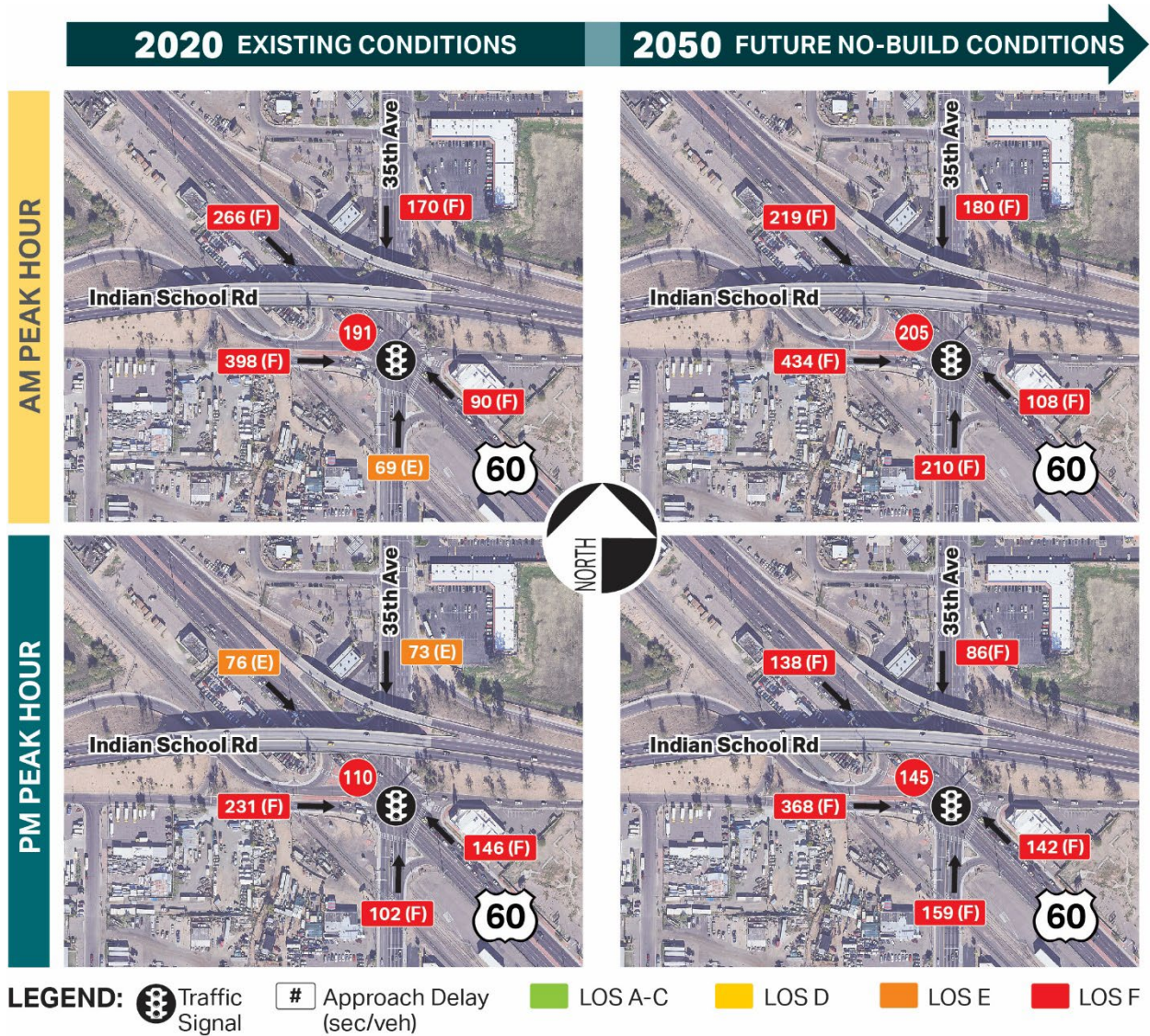


**Table 3. Existing (2020) and Future (2050) Traffic Conditions**

| Intersection Approach        | Peak Hour | Existing (2020) |                           |             | Future No Build (2050) |                           |             |
|------------------------------|-----------|-----------------|---------------------------|-------------|------------------------|---------------------------|-------------|
|                              |           | Delay (sec/veh) | Intersection Approach LOS | Overall LOS | Delay (sec/veh)        | Intersection Approach LOS | Overall LOS |
| Eastbound Indian School Road | A.M.      | 398             | F                         | F           | 434                    | F                         | F           |
| North-Westbound US 60        |           | 90              | F                         |             | 108                    | F                         |             |
| South-Eastbound US 60        |           | 266             | F                         |             | 219                    | F                         |             |
| Northbound 35th Avenue       |           | 69              | E                         |             | 210                    | F                         |             |
| Southbound 35th Avenue       |           | 170             | F                         |             | 180                    | F                         |             |
| Eastbound Indian School Road | P.M.      | 231             | F                         | F           | 368                    | F                         | F           |
| North-Westbound US 60        |           | 146             | F                         |             | 142                    | F                         |             |
| South-Eastbound US 60        |           | 76              | E                         |             | 138                    | F                         |             |
| Northbound 35th Avenue       |           | 102             | F                         |             | 159                    | F                         |             |
| Southbound 35th Avenue       |           | 73              | E                         |             | 86                     | F                         |             |

Source: AECOM ADOT 2023a

Note: Colored (red) LOS letters indicate intersections or approaches that would not meet the operational goals.



**Figure 4. Existing (2020) and Future (2050) Traffic Conditions**

The results indicate that the overall intersection currently operates at a LOS F during the A.M. and P.M. peak hours. During the A.M. and the P.M. peak hours, congestion (LOS E or F) is occurring on all intersection approaches.

The future (2050) results indicate that the US 60 (Grand Avenue), 35th Avenue, and Indian School Road intersection would operate at an overall intersection LOS F during the 2050 A.M. and P.M. peak hours. During both the A.M. and P.M. peak hours, congestion is anticipated to occur on all intersection approaches.

The projected growth in travel demand between 2020 and 2050 would result in increased congestion in both the A.M. and P.M. peak hours at the US 60 (Grand Avenue), 35th Avenue, and Indian School Road intersection if no improvements were implemented. Therefore, improvements are needed to maintain functionality and mobility through the intersection.

## 2.2.3 Need Based on Safety

### 2.2.3.1 Motor Vehicle Crashes

The ADOT Traffic Section provided crash data for the study area along US 60 (Grand Avenue), 35th Avenue, and Indian School Road. A total of 682 reported crashes occurred in the study area between September 1, 2014, and August 31, 2019; 6 of these crashes included pedestrians (ADOT 2023a).

Based on the City of Phoenix *2014-2016 Collision Rate Study*, the average crash frequency for an intersection of two arterial streets is 25.7 crashes per year and the average occurrence of a crash involving a fatality is 0.2 crashes per year (based on sample of 167 intersections) (City of Phoenix 2018a). At the US 60 (Grand Avenue), 35th Avenue, and Indian School Road intersection, the average crash frequency is 31.4 crashes per year, and the average occurrence of a crash involving a fatality is 0.4 crashes per year, both of which are above the citywide average.

### 2.2.3.2 BNSF Railway Crossing

The Federal Railroad Administration (FRA) tracks safety data at the nation's more than 200,000 railroad crossings, and records incidents in which there has been an impact between rail and motor vehicles or other users of designated crossing sites, including walkways and sidewalks. In 2016, the FRA released a list of railroad crossings where multiple incidents occurred during the previous 10 years (FRA 2016). The BNSF Railway crossing at 35th Avenue ranked second in the nation, having 21 total incidents reported between 2005 and 2015.

The FRA also uses the Web Accident Prediction System (WBAPS), which is a computer model to predict the potential for future crashes/incidents. The WBAPS accident prediction formula is based upon two independent factors, which include (1) basic data about a crossing's physical and operating characteristics and (2) 5 years of accident history data at the crossing. According to this system, the 35th Avenue crossing is predicted to have 0.35 collisions per year, which is the fifth highest predicted rate in the state (FRA 2023).

At-grade railroad crossings present a risk for highway agencies and rail companies. Conflict points with trains can interrupt vehicle, pedestrian, and bicycle traffic, resulting in delays for roadway users. Traffic stoppages due to passing trains or incidents can also lead to an increase in emergency response time, as first responders may need to take detour routes due to blocked crossings. Removing the conflict point between trains, vehicles, and pedestrians would eliminate the risk of collision incidents with the train and improve safety for the traveling public.

## 2.2.4 Need Based on System Linkages

Bus transit service uses all three roadways that feed into the US 60 (Grand Avenue), 35th Avenue, and Indian School Road intersection. Based on ridership info, these are some of the most heavily traveled transit corridors in the region. Intersection congestion and delay affecting buses passing through the intersection degrades bus service and affects transit system performance.

- **Commuter express buses along US 60 (Grand Avenue):** The Valley Metro Grand Avenue Limited commuter-orientated express bus routes operate along US 60 (Grand Avenue). There are inbound buses (total of two buses) from the City of Peoria to downtown Phoenix during the A.M. peak period and outbound (northwest) buses in the opposite direction in the P.M. peak period (total of two buses).
- **Local buses along Indian School Road:** Indian School Road is an important linkage for transit riders in the region. Local Route 41 operates along Indian School Road between 107th Avenue in the west valley and Hayden Road in the east valley. This route operates in



both directions (eastbound and westbound) for a majority of the day. Local Route 41 has eastbound bus stops located just east of 38th Avenue and just east of 33rd Avenue. In the westbound direction, Local Route 41 has bus stops just east of 33rd Drive and west of 39th Avenue. According to the Valley Metro *Fiscal Year 2022 Annual Ridership Report*, Local Route 41 had approximately 908,000 boardings, which ranked third within the city for total boardings (Valley Metro 2023), and second for boardings of passengers with a bike (City of Phoenix 2014).

- **Local buses along 35th Avenue:** Local Route 35 operates along 35th Avenue between Baseline Road in south Phoenix and Happy Valley Road in north Phoenix. Routes operate in both directions (northbound and southbound) for a majority of the day. Local Route 35 has northbound bus stops located just north of West Clarendon Avenue, just north of Monterosa Street, and just north of West Glenrosa Avenue. In the southbound direction, Local Route 35 has bus stops just south of West Glenrosa Avenue just south of Monterosa Street, and just south of West Clarendon Avenue. According to the Valley Metro *Fiscal Year 2022 Annual Ridership Report*, Local Route 35 had approximately 865,000 boardings, which ranked fourth within the city (Valley Metro 2023).

The rail corridor along US 60 (Grand Avenue) is envisioned to be an important linkage in regional passenger rail transit, and multiple planning studies have identified commuter rail service along US 60 (Grand Avenue) (MAG 2008, 2010, 2018b).

Reducing congestion and delay at the US 60 (Grand Avenue), 35th Avenue, and Indian School Road intersection would also benefit transit service, improving performance of the intermodal system.

### 2.2.5 Summary of Project Need

Future traffic volume projections indicate that congestion will continue to worsen, causing further travel delays and increased travel times for those using the US 60 (Grand Avenue) and 35th Avenue corridors. Reducing congestion and delay at the US 60 (Grand Avenue), 35th Avenue, and Indian School Road intersection would also benefit transit service, improving performance of the intermodal system. The increased congestion would likely lead to an increasing crash rate along US 60 (Grand Avenue) and 35th Avenue. The US 60 (Grand Avenue), 35th Avenue, and Indian School Road intersection experiences a total crash frequency and fatal crash frequency that is above the citywide average. Improvements to the US 60 (Grand Avenue), 35th Avenue, and Indian School Road intersection are necessary to alleviate existing and future levels of traffic congestion and to reduce crash frequency.

Historical crash data at the BNSF Railway crossing at 35th Avenue shows a high frequency of incidents. At-grade vehicle conflicts increase liability exposure for railroads and the public, and these conflicts interrupt vehicle, pedestrian, and bicycle traffic and can increase emergency response times.

The Preferred Alternative would address the need in the study area by the following:

- Enhancing traffic operations at the US 60 (Grand Avenue), 35th Avenue, and Indian School Road intersection
- Reducing the number of conflict points between the train and the public
- Mitigating the high crash frequency at the US 60 (Grand Avenue), 35th Avenue, and Indian School Road intersection
- Maintaining regional mobility and access

- Accommodating current and planned system linkages for bus service using US 60 (Grand Avenue), 35th Avenue, and Indian School Road

### **2.3 Conformance with Regulations, Land Use Plans, and Other Plans**

The Preferred Alternative would be consistent with the following relevant plans and studies.

- City of Phoenix 2015 General Plan (City of Phoenix 2018b)
- *City of Phoenix* 35th Avenue Safety Corridor Project (City of Phoenix 2021)
- MAG Commuter Rail Strategic Plan (MAG 2008)
- MAG Grand Avenue Commuter Rail Development Plan (MAG 2010)
- MAG Regional Commuter Rail System Study Update (MAG 2018b)
- MAG US 60/Grand Avenue Corridor Optimization, Access Management Plan, and System Study (COMPASS) (MAG 2014)
- Grand Avenue/35th Avenue/Indian School Road Intersection Concept Design Review and Cost Estimate Final Report (MAG 2018a)
- ADOT 5-Year Transportation Facilities Construction Program (2020-2024) (ADOT 2019a)
- MAG Transportation Improvement Program (2022-2025) (MAG 2023)

### 3. ALTERNATIVES ANALYSIS

This chapter discusses the development of design alternatives that led to the identification of the Preferred Alternative. This study and previous studies (summarized below) objectively explored numerous alternatives utilizing a multi-discipline approach. The alternatives were presented to the stakeholders and the public for consideration and evaluated through the process are described in **Section 3.2** and in **Chapter 5**.

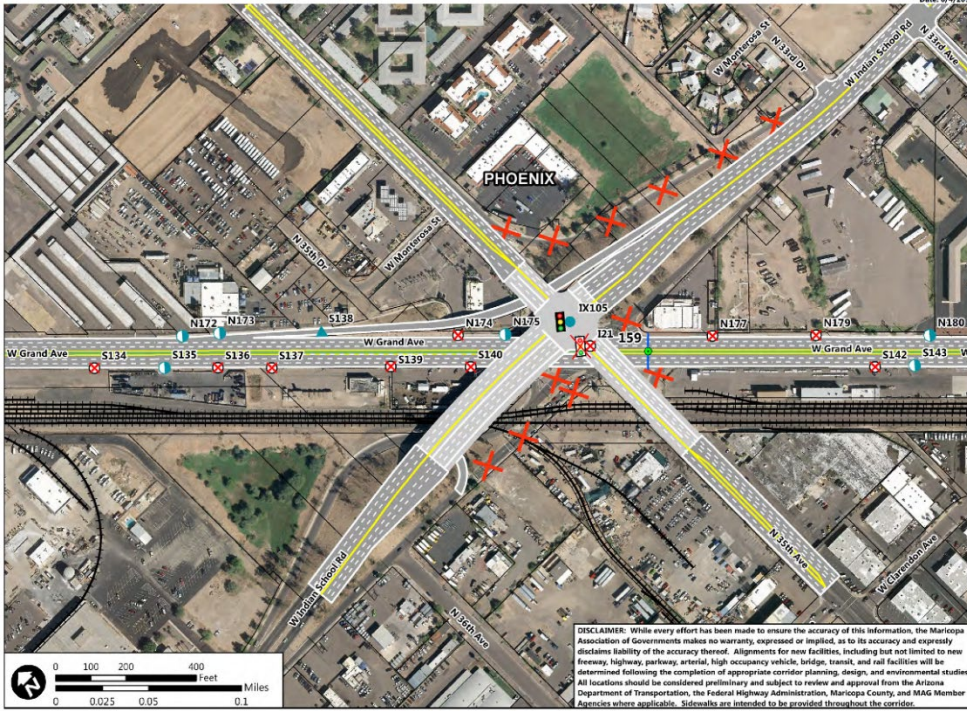
#### 3.1 Prior Studies and Alternatives

As introduced in **Section 1.3** of this EA, a number of prior studies have evaluated the needs and recommended alternatives for grade separating the six-legged intersection of US 60 (Grand Avenue), 35th Avenue, and Indian School Road.

- **ADOT Grand Avenue Major Investment Study Phase II (ADOT 2006):** In 1998, ADOT completed the original *Grand Avenue Major Investment Study (MIS)*, which recommended eight grade separation projects with the BNSF Railway along the US 60 (Grand Avenue) corridor, all of which have been constructed. In 2004, voters in Maricopa County passed Proposition 400, which extended the one-half cent sales tax for another 20 years, through 2025. The MAG RTP included funding for additional improvements to the US 60 (Grand Avenue) corridor, and identified a grade separation at the 35<sup>th</sup> Avenue/Indian School Road intersection during Phase 4 of the RTP (2021-2025). A second phase of the MIS was completed in 2006 to provide recommendations for improvement projects along the corridor. The four most important recommendations identified along the US 60 (Grand Avenue) corridor included grade separations, intersection improvements, access management, and community mitigation. Recommendations from this study supported full funding for the 35<sup>th</sup> Avenue/Indian School Road grade separation, and recognized the need to eliminate a six-legged intersection, provide greater LOS, and enhance regional mobility by removing traffic signals along Grand Avenue. The study recommended a configuration that put Grand Avenue in an underpass below 35<sup>th</sup> Avenue and Indian School Road (ADOT 2006).
- **MAG US-60/Grand Avenue Corridor Optimization, Access Management Plan and System Study (COMPASS) (MAG 2014):** In 2012, agencies along the US 60 (Grand Avenue) corridor (including ADOT and the City of Phoenix) signed a Partnering Charter of the COMPASS study to provide a framework for the planned RTP improvements, establish a corridor-wide access management plan, address remaining bottlenecks and congestion points, and plan for commuter rail with operational improvements. Shown in **Figure 5**, recommendations included a grade-separated intersection at the US 60 (Grand Avenue), 35th Avenue, and Indian School Road intersection, elevating 35<sup>th</sup> Avenue and Indian School Road over Grand Avenue and the BNSF Railway. While the study established an access management plan for the US 60 (Grand Avenue) corridor, it did not address access impacts to properties along Indian School Road and 35<sup>th</sup> Avenue that would result from the new elevated intersection (MAG 2014).
- **MAG Grand Avenue/35th Avenue/Indian School Road Intersection Concept Design Review and Cost Estimate (MAG 2018a):** Building on the recommendations of the COMPASS study, MAG's 2018 *Concept Design Review and Cost Estimate* further explored issues related to access to adjacent properties, safety, and construction. This study also recommended elevating 35th Avenue and Indian School Road (shown in **Figure 6**), but recommended shifting the alignment of the new intersection northwest to simplify design of structure supports and improve options to maintain traffic through the intersection during construction (MAG 2018a). Indian School Road was recommended to be shifted to the north to allow traffic to continue to use the existing road and bridge during construction. 35<sup>th</sup>

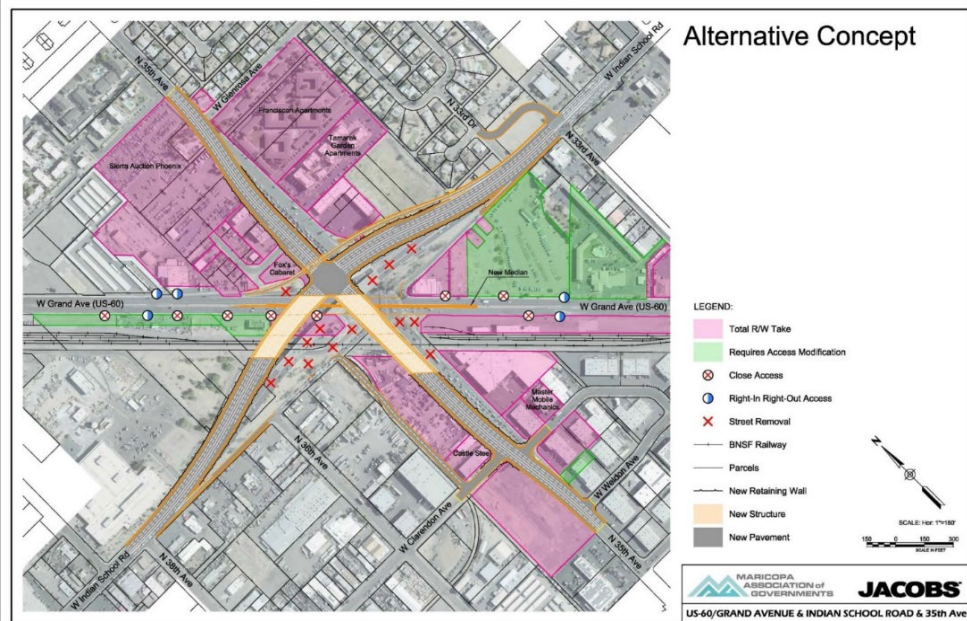


Avenue was recommended to be shifted to the west onto parcels that would be acquired anyway due to loss of access via the new vertical profile of 35th Avenue, which would allow existing 35th Avenue traffic to continue during construction of the new bridge and intersection. This study included coordination with ADOT, the City of Phoenix, and the BNSF Railway.



Source: MAG 2015

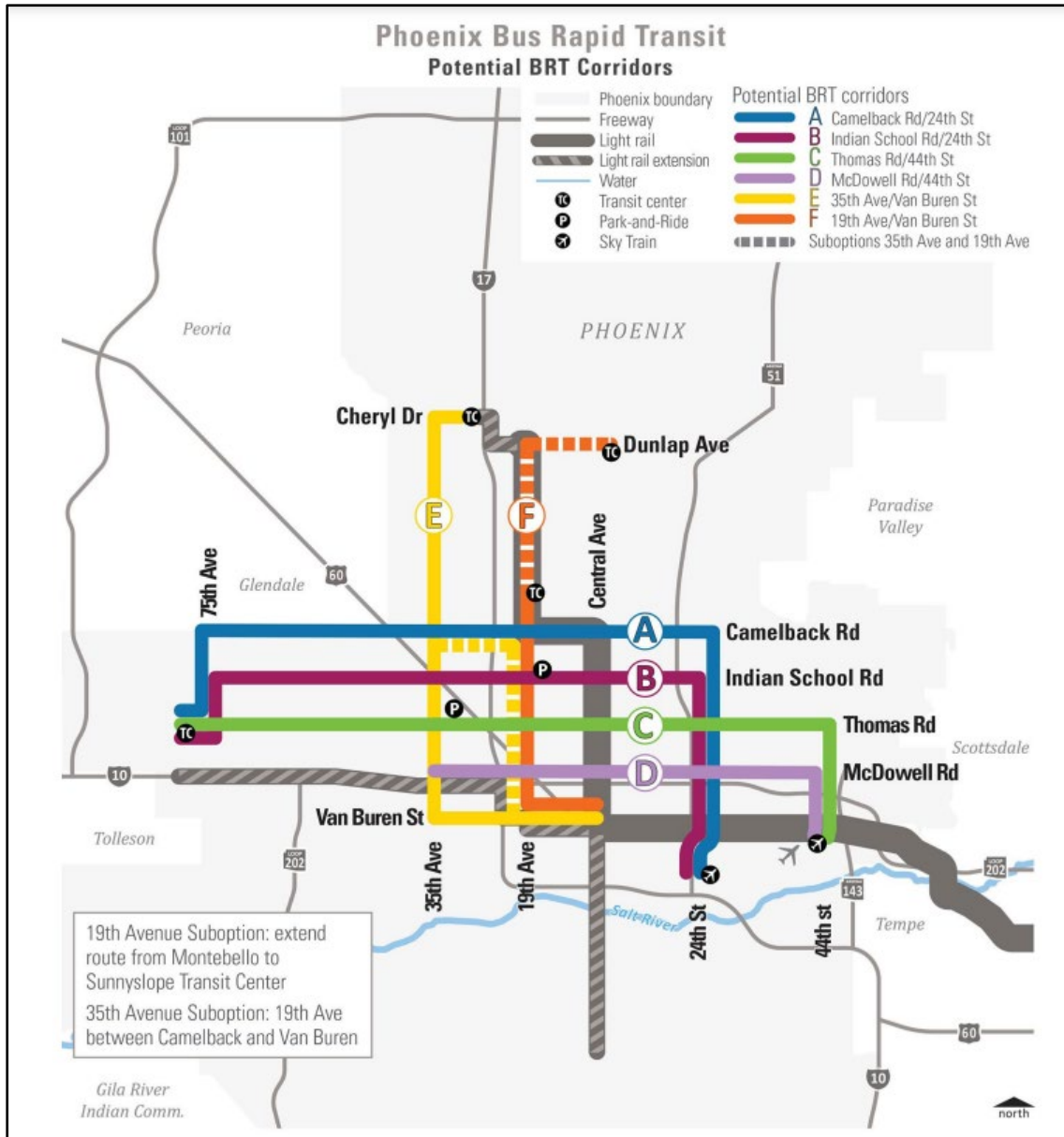
**Figure 5. Recommended Improvements from the 2014 MAG COMPASS Study**



Source: MAG 2018

**Figure 6. Recommended Alternative from the 2018 MAG Intersection Concept Design Review**

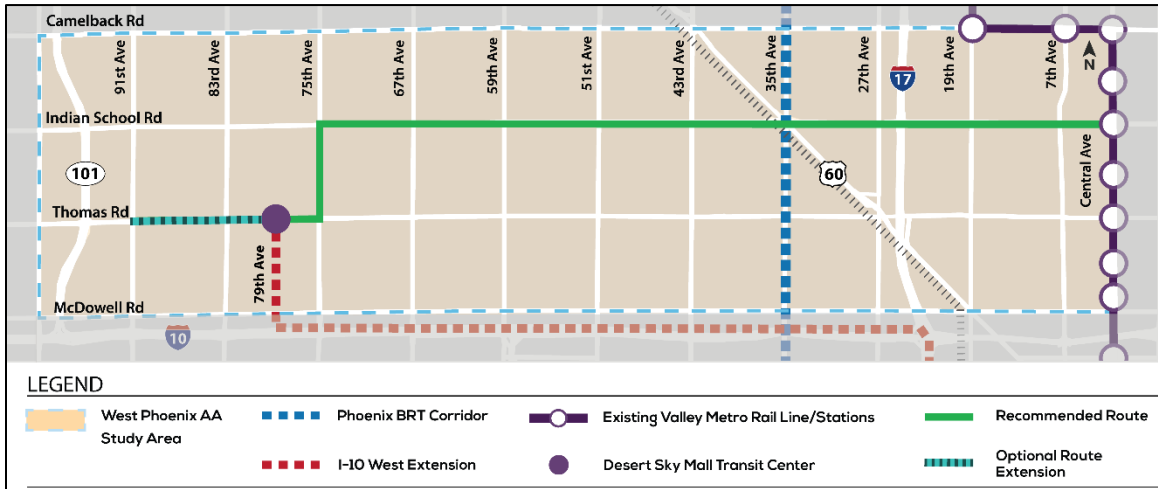
- City of Phoenix Bus Rapid Transit Program (BRT) (City of Phoenix 2019):** In 2019, at the direction of Phoenix’s Citizen Transportation Commission and City Council, the project team reevaluated the BRT corridors in the T2050 plan. Following the technical analysis, the team completed 11 months of community outreach to solicit input on six potential BRT corridors (shown in **Figure 7**). Based on community input and the results of the technical analysis, the 35th Avenue/Van Buren Street corridor has been approved by City Council to move forward into the next phase of development and analysis. The project team will develop detailed corridor plans including corridor alignment, station planning, right-of-way impacts, BRT element identification and funding options. As design plans are developed, the project team will engage the community to gather input and preferences. Ultimately, the goal is to create a BRT system that best meets the needs and lifestyles of the community.



Source: City of Phoenix 2023b

**Figure 7. Phoenix Bus Rapid Transit Potential Corridors**

- Valley Metro High-Capacity Transit (Valley Metro 2022 and 2023):** Future expansions of the regional high-capacity transit to the west are currently being studied, which recommends light rail transit. The study area for this alternatives analysis overlaps with the Grand-35 project area and is shown in **Figure 8**. Indian School Road is the recommended route for this study, which intersects with the US 60 (Grand Avenue), 35th Avenue, and Indian School Road intersection.



Source: Valley Metro 2023

**Figure 8. Valley Metro West Phoenix High-Capacity Transit Study**

The studies described above evaluated and recommended several potential configurations for grade separating the US 60 (Grand Avenue), 35th Avenue, and Indian School Road intersection. The current Grand-35 study evaluated a wide range of concepts not limited to the recommendations from previous studies.

### 3.2 Alternatives Screening Process

The Grand-35 study used a multi-tiered approach to develop and evaluate new alternatives for the intersection design. An initial screening (Tier 1) began with a review of high-level concepts such as raising or lowering the railroad, raising or lowering 35th Avenue and/or US 60 (Grand Avenue), or constructing only operational improvements. Public meetings held in October 2020 presented these concepts for public input. Two high-level concepts were carried forward from the Tier 1 evaluation: elevate 35th Avenue or lower 35th Avenue. For the second tier of evaluation, 18 different concepts for raising or lowering 35th Avenue were developed and then evaluated based on criteria such as the purpose and need for the project, potential impacts, and public and agency input. Two different concepts to raise 35th Avenue and Indian School Road on an elevated intersection over US 60 (Grand Avenue) were combined with a concept for connector roads to address access impacts. A public meeting was held in January 2023 to present these two alternatives for public input. During Tier 3 screening process, the two alternatives were evaluated based on technical considerations, agency input, and public comment to identify a single Build Alternative for detailed evaluation in this Draft EA. The alternatives development and evaluation process is described in more detail below. More information on the engineering technical considerations in the alternative development process is provided in the Initial Design Concept Report for the Grand-35 project (ADOT 2023a), which is available on the project website at <https://azdot.gov/planning/transportation-studies/grand-35-study>.



A summary of public meetings can be found on the project website. For more information regarding public and agency engagement and the opportunities provided for feedback on alternatives, see **Chapter 5**.

### 3.2.1 Tier 1 Alternative Evaluation

The intent of the Tier 1 evaluation was to review high-level options and compare them to the project goals of reducing traffic congestion, enhancing safety, reducing vehicle/train conflicts, and enhancing multi-modal accommodations. Concepts that best aligned with the project goals were carried forward for further evaluation. The high-level concepts evaluated in Tier 1 are listed in **Table 4**.

**Table 4. Tier 1 Concepts and Recommendations**

| Concept | Description                     | Recommendation/Reason for Elimination   |
|---------|---------------------------------|---|
| 1       | Elevate BNSF Railway            | Concepts 1 and 2 would both reduce vehicle and train conflicts but would not alleviate the traffic congestion, enhance safety, or enhance multimodal accommodations. Raising or lowering the railway would also have severe effects on project scope and cost. Therefore, Concepts 1 and 2 were eliminated from future consideration. |
| 2       | Lower BNSF Railway              |   |
| 3A      | Elevate 35 <sup>th</sup> Avenue | Concepts 3A and Concept 3B had the potential to reduce congestion, enhance safety, and enhance multimodal use, but Concept 3B would not reduce vehicle and train conflicts. Therefore, Concept 3B was eliminated and Concept 3A was carried forward.  |
| 3B      | Elevate Grand Avenue            |   |
| 4A      | Lower 35 <sup>th</sup> Avenue   | Concepts 4A and 4B both also had potential to meet project goals but only Concept 4A would reduce vehicle and train conflicts. Therefore, Concept 4B was eliminated and Concept 4A was carried forward.   |
| 4B      | Lowering Grand Avenue           |   |
| 5       | Operational Improvements        | Concept 5 had the least potential for impacts but otherwise did not help meet project goals and was eliminated.   |

At the conclusion of the Tier 1 evaluation, the concept to elevate 35<sup>th</sup> Avenue (Concept 3A) and the concept to lower 35<sup>th</sup> Avenue (Concept 4A) were carried forward for further evaluation and analysis.

### 3.2.2 Tier 2 Alternative Evaluation

The Tier 2 evaluation was conducted in two phases, A and B. Tier 2A evaluated different intersection configurations and roadway elevations based on the results of the Tier 1 process. Tier 2B evaluated design options for maintaining access to adjacent properties through small local roads at major intersections.

#### 3.2.2.1 Tier 2A

The Tier 2A evaluation explored the six basic concepts below:

- Raise 35th Avenue one level to create new intersection with Indian School Road
- Raise 35th Avenue one level and depress Indian School Road one level below ground to create a three-level intersection
- Raise 35th Avenue two levels to create a three-level intersection
- Lower 35th Avenue one level to create a three-level intersection

- Lower 35th Avenue one level and lower Indian School Road one level below ground to create a new depressed intersection
- Lower 35th Avenue one level and lower US 60 (Grand Avenue) one level below ground to create a new depressed intersection

Three different versions of each of the 6 concepts were considered, which included shifting 35<sup>th</sup> Avenue to the east, shifting 35th Avenue to the west, or keeping 35<sup>th</sup> Avenue on its existing alignment for a total of 18 concepts considered. The screening of Tier 2 concepts utilized evaluation criteria consisting of engineering and environmental considerations, cost, and agency input.

The six concepts that shifted 35th Avenue to the east were not favored as they would result in more impacts to multi-family residential land use east of 35th Avenue, compared to commercial/industrial land use west of 35th Avenue. BNSF indicated shifting 35th Avenue east would be more impactful to railroad tracks and infrastructure located east of 35th Avenue. Therefore, the six concepts that shifted 35th Avenue to the east were eliminated from consideration.

The six remaining concepts that created a three-level intersection and shifted 35<sup>th</sup> Avenue to the west or kept 35th Avenue on its existing alignment would inhibit pedestrian and bicycle movement due to the multiple levels at the intersection, and a three-level intersection would inhibit pedestrian, bicycle, and transit connectivity between the roadways. Input from the City of Phoenix indicated the impacts to the connectivity resulting from concepts with a three-level intersection should be considered a fatal flaw. Therefore, these six concepts that created a three-level intersection were eliminated from consideration.

The four remaining concepts that lowered 35th Avenue to create a new depressed intersection with either Indian School Road or US 60 (Grand Avenue) were not favored due to the increase in utility impacts, additional constructability issues, and the potential increase in long-term maintenance and operation of sump pumps to remove stormwater. In addition, concepts that created a depressed intersection with 35<sup>th</sup> Avenue and US 60 (Grand Avenue) would keep a major signalized intersection along US 60 (Grand Avenue), which would affect traffic operations along the US 60 (Grand Avenue) and hinder regional mobility. For these reasons, these four concepts were eliminated from consideration.

The Tier 2A evaluation recommended moving forward with two concepts. These two concepts would both create a raised intersection between 35th Avenue and Indian School Road. One concept would utilize the existing 35<sup>th</sup> Avenue alignment, while the other would shift 35th Avenue to the west. Raising the intersection would alleviate traffic congestion, remove the at-grade railroad crossings, and maintain pedestrian and bicycle traffic.

### **3.2.2.2 Tier 2B**

35th Avenue and Indian School Road were evaluated for connector roads to maintain access, connectivity, and circulation between the three major roadways (US 60 [Grand Avenue], 35<sup>th</sup> Avenue, and Indian School Road). Concepts for connector roads were explored for the two remaining concepts.

35th Avenue had six concepts for new connector roads or ramps, which included different concepts to connect 35<sup>th</sup> Avenue with US 60 (Grand Avenue). Two new connector roads both north and south of Indian School Road were considered. Four sets of ramp concepts were considered to connect northbound and southbound 35<sup>th</sup> Avenue to US 60 (Grand Avenue). The primary difference between ramp concepts was how far away the ramp was located from 35<sup>th</sup> Avenue.

Indian School Road had five concepts for connector roads or reconstructed ramps, which included different concepts to connect Indian School Road with US 60 (Grand Avenue). Two new connector

roads both east and west of 35<sup>th</sup> Avenue were considered, as well as a concept to improve existing 33<sup>rd</sup> Avenue between Indian School Road and US 60 (Grand Avenue). Two concepts were also considered to reconstruct existing ramps connecting eastbound and westbound Indian School Road with US 60 (Grand Avenue).

Key considerations in evaluating connector roads included whether the concept would introduce a new railroad crossing, potential adverse effects on traffic operations, and the ability to maintain traffic movements between the roadways. The technical evaluation resulted in many of the concepts being eliminated from further review. Concepts that introduced new railroad crossings were eliminated because they were not consistent with project goals to reduce vehicle/train conflicts. Concepts that included a ramp or road connection that could potentially adversely impact traffic operations (such as closely spaced intersections) were eliminated. Concepts that did not restore or maintain traffic movements between roadways were eliminated.

Based on the Tier 2B evaluation, the following concepts were recommended to be carried forward:

- Utilizing 33<sup>rd</sup> Avenue for connectivity between Indian School Road and US 60 (Grand Avenue)
- Retaining the westbound Indian School Road to northwest-bound US 60 (Grand Avenue) ramp and the US 60 (Grand Avenue) to eastbound Indian School Road ramp due to high traffic volumes
- Constructing a new connector road in the northwest corner of the 35<sup>th</sup> Avenue/Indian School Road intersection to restore connectivity between 35<sup>th</sup> Avenue and US 60 (Grand Avenue)
- The two remaining concepts from Tier 2A were combined with the recommended connector road/ramp configuration from Tier 2B and were carried forward to the Tier 3 evaluation process.

### 3.2.3 Tier 3 Alternative Evaluation

Following the Tier 2 evaluation, two alternatives were developed for further evaluation. Alternative 1 and Alternative 2 proposed reconstructing 35<sup>th</sup> Avenue and Indian School Road into an elevated four-way signalized intersection. The primary difference between Alternatives 1 and 2 are the alignment of 35<sup>th</sup> Avenue. Alternative 1 proposed rebuilding 35<sup>th</sup> Avenue in its existing alignment. Alternative 2 proposed shifting the alignment of 35<sup>th</sup> Avenue to the west. Both alternatives included extending 33<sup>rd</sup> Avenue to the north with a new east-west connector to maintain access to the adjacent multi-family residential complexes. The east-west connector stops just east of 35<sup>th</sup> Avenue and differs slightly between the two alternatives.

In both alternatives Indian School Road would be shifted to the north. The existing eastbound Indian School Road connector road would be reconstructed to provide business access on 36<sup>th</sup> Avenue. Glenrosa Avenue would be extended west of 35<sup>th</sup> Avenue to maintain access between 35<sup>th</sup> Avenue and US 60 (Grand Avenue). Clarendon Avenue would be shifted south to improve traffic operations and access. US 60 (Grand Avenue) would remain at-grade and would receive improvements to reconfigure the median and provide turn lanes at intersection.

Both alternatives would eliminate the existing vehicle and pedestrian crossings of the railroad. They would enhance the traffic operation along US 60 (Grand Avenue) as the existing six-legged intersection would be removed. They would allow for future bus and/or rail lanes on both 35<sup>th</sup> Avenue and Indian School Road. Both alternatives would result in residential, commercial, and industrial property impacts along both sides of 35<sup>th</sup> Avenue due to loss of access because 35<sup>th</sup> Avenue would be elevated. Both alternatives have potential environmental impacts related to noise,



visual, and historic properties. Key differences between the alternatives and reasons that favored Alternative 2 include:

- Alternative 1 would provide limited opportunities to restore access to adjacent properties, which could result in numerous right-of-way (ROW) acquisitions on both sides of 35th Avenue. Alternative 2 would reduce the direct ROW footprint on the east side of 35th Avenue and provide more flexibility to restore access using the additional space on the east side of 35th Avenue.
- Alternative 1 would likely require long-term closures of 35th Avenue during construction because it keeps 35th Avenue on its existing alignment. Alternative 2 would reduce some of the constructability challenges and result in less disruption to traffic during construction. Alternative 2 would impact fewer utilities along 35th Avenue compared to Alternative 1.
- Alternative 1 would have a slightly higher project cost than Alternative 2 due to utility impacts and ROW needs.
- Alternative 1 would potentially impact the railroad storage tracks east of 35th Avenue, while Alternative 2 would not impact those tracks.

These two alternatives were presented at a January 2023 public meeting. Further detail on public comments received can be found in **Chapter 5**.

### **3.3 Alternatives Under Consideration**

Based on the Tier 3 evaluation described in **Section 3.2.3**, Alternative 1 was eliminated from further consideration and Alternative 2 was carried forward for further study as the “Build Alternative” in this EA. It is the basis for evaluating and assessing potential impacts in this EA, along with the No-Build Alternative.

#### **3.3.1 Build Alternative**

The Build Alternative would raise 35th Avenue and Indian School Road to create a new raised intersection over Grand Avenue and the BNSF railroad, eliminating the existing at-grade railroad crossings, and is shown on **Figure 9**. Access for some properties along 35th Avenue closest to the intersection would change as a result of new elevated roadways and bridges. New connecting roadways would be needed to restore access to some of these properties.



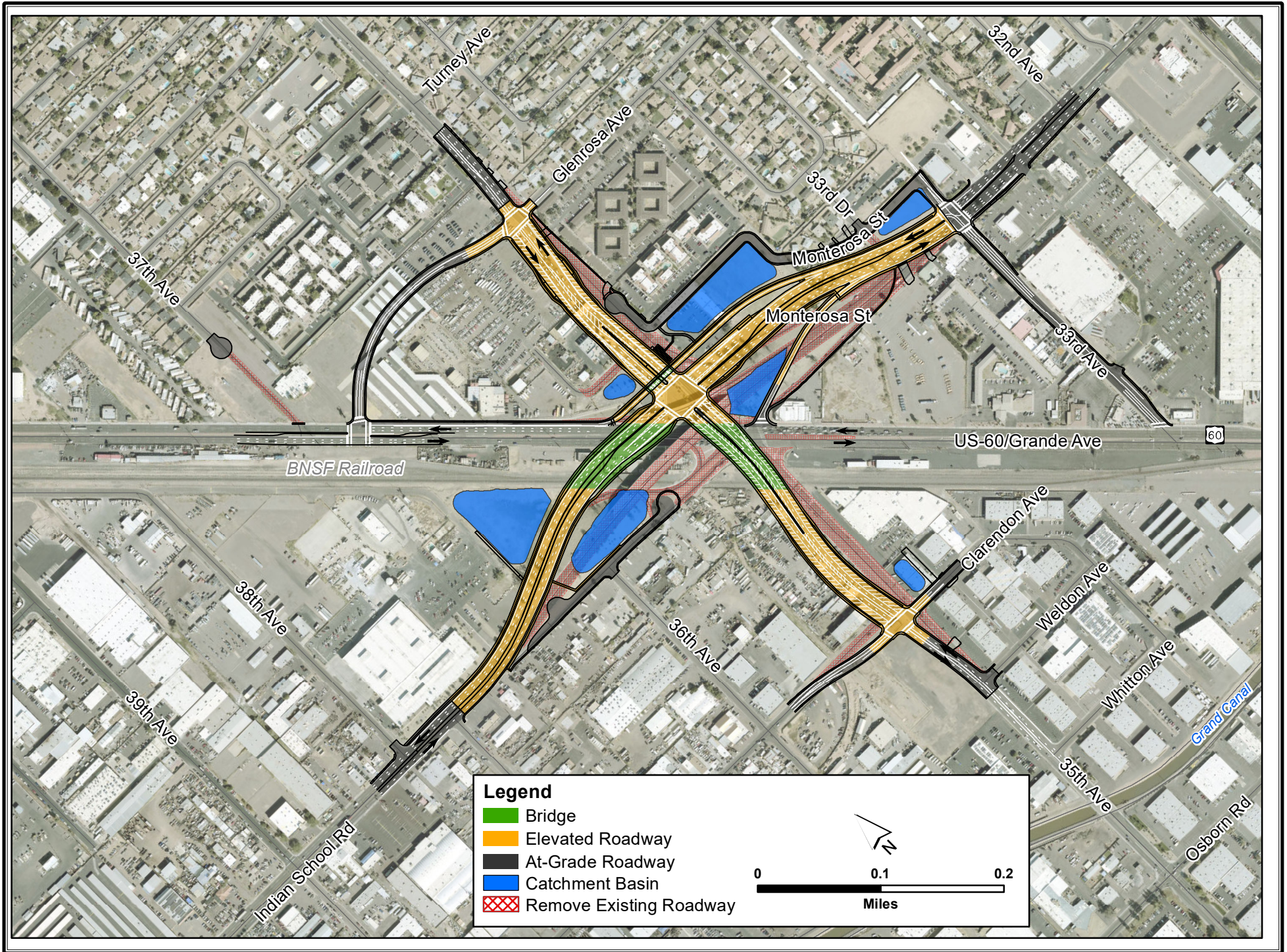


Figure 9. Preferred Alternative



The Build Alternative consists of the following major elements:

- Removing the existing Indian School Road bridge structure over Grand Avenue and BNSF Railway
- Constructing new bridges for 35th Avenue and Indian School Road to pass over the railroad and Grand Avenue, shifting 35th Avenue to the west and Indian School Road to the north
- Along both Indian School Road and 35th Avenue:
  - Removing portions of the existing 35th Avenue and Indian School Road roadways
  - Constructing a new ramp connecting westbound Indian School Road and northwest-bound US 60 (Grand Avenue), and a ramp connecting US 60 (Grand Avenue) to eastbound Indian School Road
  - Reconstructing intersecting public roadways and driveways along 35th Avenue and Indian School Road to match the new alignment and roadway elevation
  - Widening shoulders on 35th Avenue and Indian School Road to better accommodate bicycles
  - Reconstructing widened sidewalks along 35th Avenue and Indian School Road to maintain pedestrian connectivity
- Along Indian School Road:
  - Widening Indian School Road along its new alignment to meet current City of Phoenix standards and accommodate potential future transit projects
  - Extending 33rd Avenue north of Indian School Road to restore access to properties north of Indian School Road
  - Adding turn lanes at the 33rd Avenue intersection to address re-routing of traffic between US 60 (Grand Avenue) and Indian School Road
- Along 35th Avenue:
  - Realigning portions of Clarendon Avenue and reconstructing the 35th Avenue/Clarendon Avenue intersection to create a single, signalized intersection that serves areas located east and west of 35th Avenue by eliminating the offset intersections
- Along Grand Avenue:
  - Restriping Grand Avenue to provide three through lanes in each direction and only one turn-only lane in the southbound direction to improve traffic flow at the new intersection
  - Adding turn lanes at 33rd Avenue to address re-routing of traffic between US 60 (Grand Avenue) and Indian School Road
- Extending Glenrosa Avenue to the west to connect 35th Avenue and US 60 (Grand Avenue), creating a new intersection on US 60 (Grand Avenue) to restore traffic movements between 35th Avenue and US 60 (Grand Avenue)
- Constructing a cul-de-sac on 37th Avenue north of US 60 (Grand Avenue), eliminating the intersection of 37th Avenue and US 60 (Grand Avenue), which has been identified by ADOT as a high crash location
- Relocating utilities, as needed
- Regrading two existing drainage detention basins where new roadway fill encroaches into the basin

- Constructing six new drainage detention basins to provide lost storage volume at the existing basins and capture increased onsite runoff
- Conducting the following field investigations prior to construction to inform detailed design:
  - Drilling geotechnical test drilling to inform design of new bridge structural elements
  - Excavating small potholes to locate utilities within the existing roadway

The Build Alternative would require new ROW from properties along both sides of 35th Avenue due to the new elevated roadway. Right-of-way acquisitions would include both full and partial acquisitions, with an anticipated 21.2 acres acquired affecting 78 parcels, which are listed in **Appendix A**.

Temporary construction easements (TCEs) would be needed at various locations during construction. The specific location and dimension of TCEs will be determined during final design.

Temporary lane reductions and restrictions may be considered along with night construction operations. Because the new 35th Avenue bridge is close to the existing roadway alignment, full closures of 35th Avenue would likely be required during construction of the new roadway, roadway embankment, and bridges. Closures would likely be limited to a small segment of 35<sup>th</sup> Avenue between roughly West Clarendon Avenue and West Glenrosa Avenue, and could last up to 6 months in duration. During the closure, travel north and south of US 60/Grand Avenue and the BNSF tracks would need to use 27th Avenue, 31st Avenue, and 43rd Avenue, which are the nearest railroad crossings. Lane restrictions and closures on US 60 (Grand Avenue) would be minimized to the extent possible. Short-term closures of US 60 (Grand Avenue) would likely be required when the segment of the existing Indian School Road bridge over US 60 (Grand Avenue) is removed, and when the segment of the new bridges over US 60 (Grand Avenue) are constructed.

### 3.3.2 No-Build Alternative

The No-Build Alternative includes all existing transportation facilities and any projects funded in the RTP through design year 2050 in the Study Area. It is used for comparison when evaluating the Build Alternative in accordance with the NEPA process. Projects included in the No-Build Alternative are listed in **Table 5**. Under the No Build Alternative, the existing at-grade railroad crossing would remain in place.

The No Build Alternative would only include project planned by other agencies and no improvements would be implemented at this intersection or for the existing at-grade railroad crossing. The congestion at the US 60 (Grand Avenue), 35<sup>th</sup> Avenue, and Indian School Road intersection would continue to worsen as traffic volumes continue to grow in the future. The No-Build Alternative includes the existing at-grade railroad crossing and retains all existing vehicle/train conflict points, perpetuating the effects the railroad crossing has on traffic operations, congestion and delay, as well as emergency service response times.

The No-Build Alternative serves as a baseline and provides a means to compare the impacts of the Build Alternative with the impacts of not undertaking any action. Throughout the analysis of impacts, a comparison of the Build Alternative to the No-Build Alternative is made.

**Table 5. Projects included in the No-Build Alternative**

| Agency          | Project Name  | Description   |
|-----------------|---|---|
| City of Phoenix | 35 <sup>th</sup> Avenue Safety Corridor Project                             | The City of Phoenix received a Better Utilizing Investments to Leverage Development (BUILD) grant to study and construct safety improvements along 35th Avenue from I-10 to Camelback Road. Safety improvements would likely include installation of pedestrian-activated signals, installing raised medians, rebuilding signalized intersections to reflect current standards and modern technology, adding LED street lighting, milling and overlaying pavement, and updating traffic signal programming. Construction is anticipated to begin in 2025 and be complete in 2027. |
| City of Phoenix | 35 <sup>th</sup> Avenue Bus Rapid Transit                                   | The Bus Rapid Transit (BRT) program is a key component in Phoenix’s voter-approved long-range transportation plan, Transportation 2050 (T2050). The 35th Avenue/Van Buren corridor was identified through a transit analysis process in 2020 that included city-wide public outreach. Construction is anticipated to begin in 2026.   |
| City of Phoenix | 35 <sup>th</sup> Avenue from Camelback Road to Glendale Avenue Improvements | This T2050 project includes modifications of the intersections at 35th Avenue/Camelback Road and 35th Avenue/ Bethany Home Road, as well as installing streetlights along the west side of 35th Avenue between Camelback Road and Bethany Home Road. The intersection modifications include installing a flashing yellow arrow and striping to improve safety. The design of this project was originally anticipated to be complete in 2023; however, the project has been placed on hold. Continuation of the project will depend upon the Phoenix BRT project on 35th Avenue.   |
| ADOT            | US 60, 85th Avenue to I-17  | This ADOT pavement rehabilitation project would extend approximately 10 miles from 8th Avenue to Interstate 17 (I-17). The project is currently in the design phase and is programmed for construction in 2027.   |

### 3.3.3 Preferred Alternative

After comparing and weighing the benefits and impacts of the Build Alternative, ADOT has identified the Build Alternative as the Preferred Alternative, subject to public review, comment, and input. The Preferred Alternative would eliminate the existing vehicle and pedestrian crossings of the railroad and support regional transportation planning goals of providing a safe and efficient system for all modes of transportation. Traffic operation along US 60 (Grand Avenue) would be improved by removing the existing six-legged intersection. While it would result in ROW impacts along both sides of 35th Avenue due to the loss of access resulting from the elevated roadway, impacts on the east side of the road would be minimized through the inclusion of new connector roads to restore access.

Final selection of the Preferred Alternative would occur after the public review and comment period when the final EA is prepared.

### 3.4 General Project Schedule

On June 16, 2023, the State Transportation Board adopted the 2024-2028 Five-Year Transportation Facilities Construction Program (ADOT 2023a). The project is currently identified in the ADOT Five-Year Transportation Facilities Construction Program for right-of-way acquisition in fiscal year 2024, and construction in fiscal year 2025. The proposed action is considered fiscally constrained.

If a Build Alternative is selected, final design and ROW acquisition are anticipated to begin in early 2024. Project construction is planned to begin in 2025 with a duration of approximately 2 years.

## 4. AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES

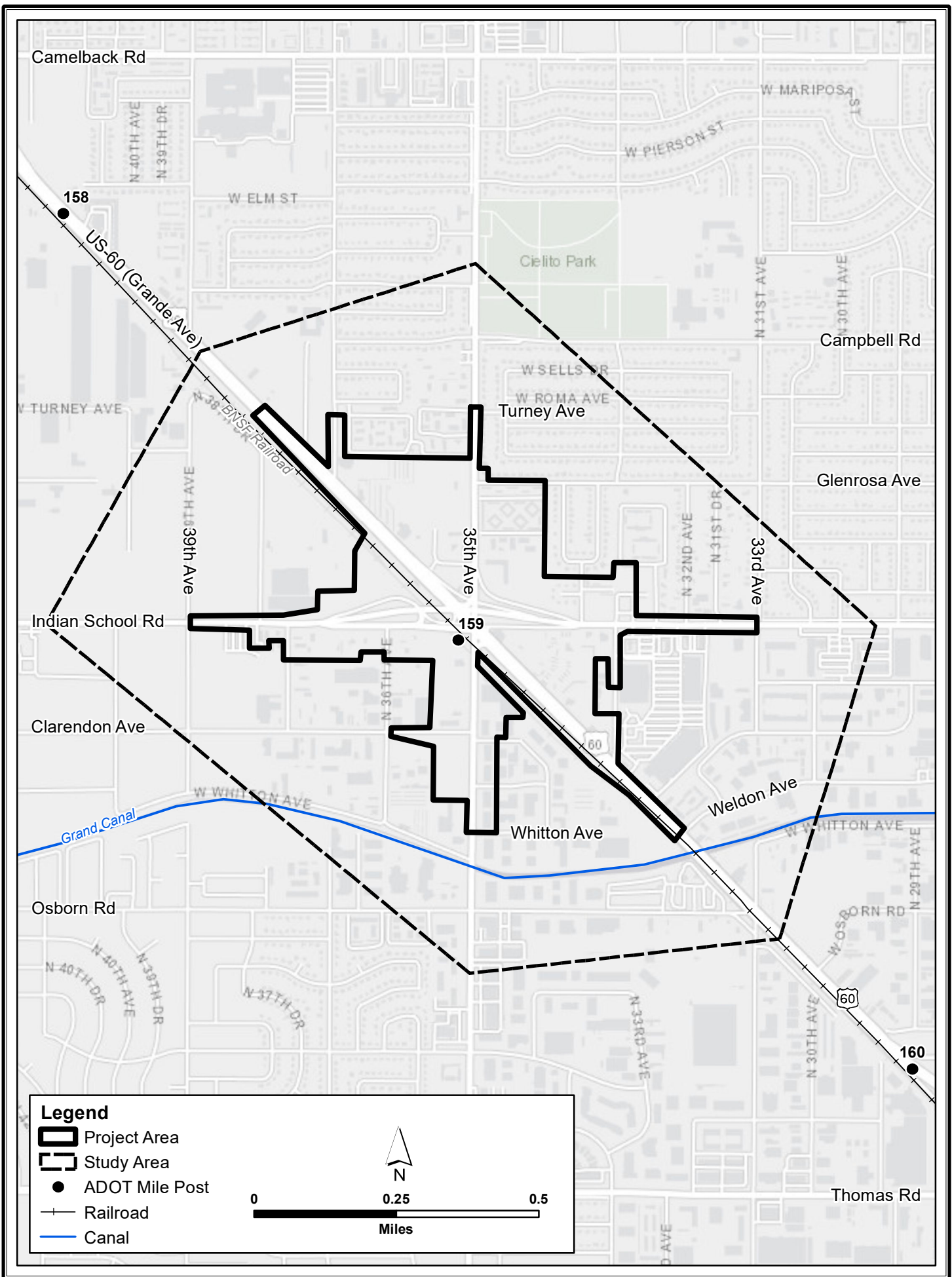
This section discusses the environmental, social, economic, and regulatory conditions from the Preferred Alternative discussed in **Chapter 3**. The conditions were analyzed using two geographic areas, the Study Area and the Project Area, as seen on **Figure 10**. The Project Area contains the ground-disturbance and right-of-way footprint of the Preferred Alternative. The Study Area encompasses a large area surrounding the Project Area, and extends out 1/4-mile in each direction from the intersection.

### 4.1 Environmental Issues Eliminated from Detailed Study






Based on early coordination and a review of the study area, the following resources are not evaluated in this document because they are not present in the study area and/or the Preferred Alternative would not have any impact to them:


- Section 6(f) Resources
- Energy
- Sole Source Aquifers
- Prime and Unique Farmlands
- Wild and Scenic Rivers
- National Natural Landmarks
- Material Sources and Waste Materials



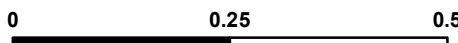


**Legend**

-  Project Area
-  Study Area
-  ADOT Mile Post
-  Railroad
-  Canal



N



0 0.25 0.5

Miles

**Figure 10. Environmental Study Area and Project Area**

## 4.2 Land Ownership, Jurisdiction, and Land Use

Land ownership and land use policies influence the rate and form of transportation and infrastructure development for a given area. Understanding land use types and jurisdiction are paramount in analyzing compatibility of the project to current and future land use plans. Transportation projects may require the partial or full conversion of previously owned lands to transportation use. Land ownership is discussed to quantify the parcels required to accommodate the construction of the project.

### 4.2.1 Existing Conditions

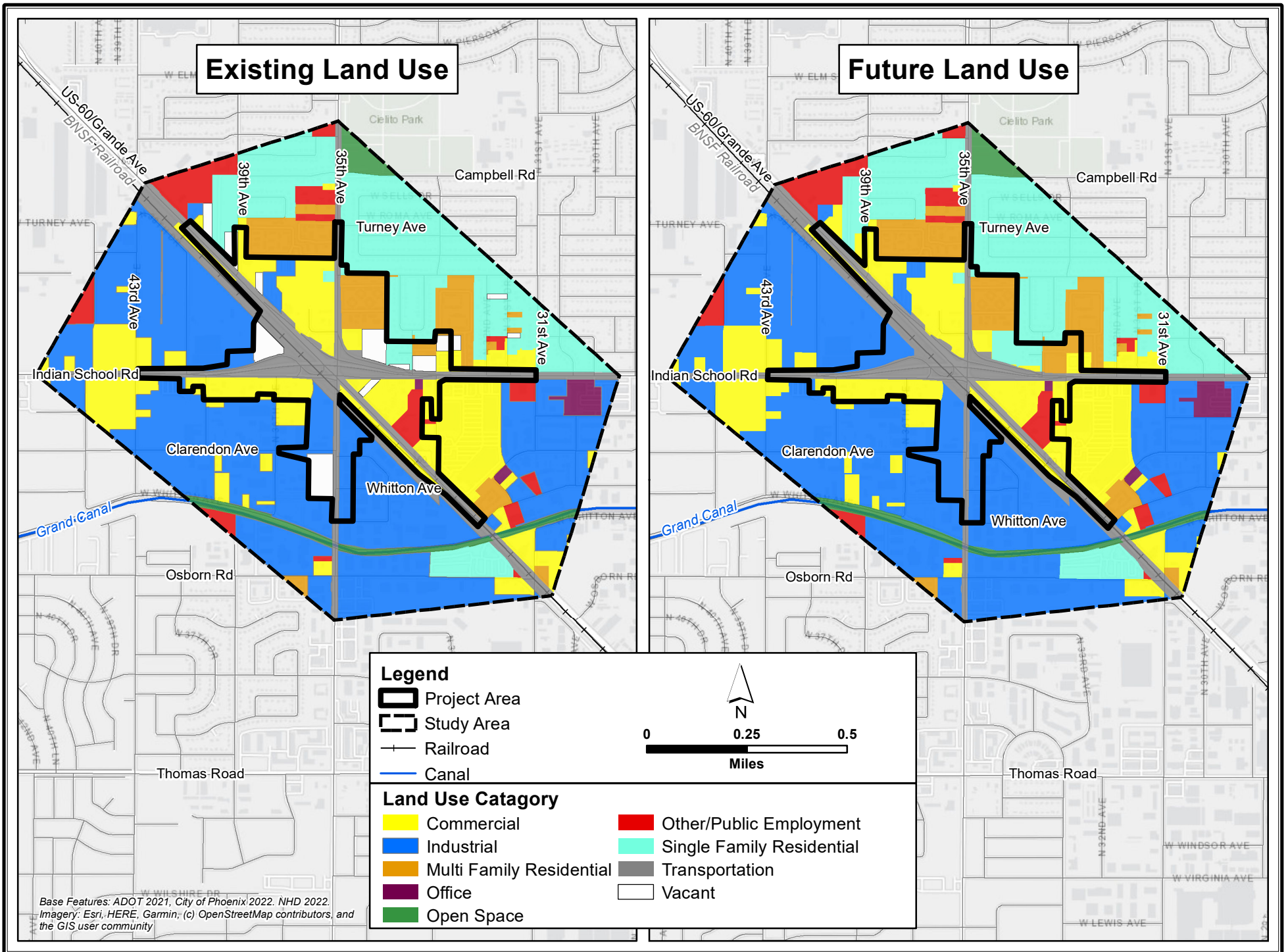
The Study Area is completely within City of Phoenix jurisdiction. Land use information was obtained from MAG, which compiles a land use inventory together with member agencies such as the City of Phoenix (MAG 2023). Existing and future land uses in the Study Area are shown on **Figure 11**. The existing land use is predominantly commercial as well as industrial, multi-family residential, and single family residential. Future land use was based on the City of Phoenix *2015 General Plan* for horizon year 2030 (City of Phoenix 2018b). The future land use data indicated that planned uses would remain predominantly the same with only existing vacant land becoming developed. This development is expected to be split between commercial, industrial, and residential uses.

**Table 6** compares the MAG existing and future land use in the Project Area. It is expected that all vacant land use would be developed into commercial, industrial, and residential land uses.

**Table 6. MAG 2020 Existing Land Use Types for Project Area**

| Land Use Type             | Existing Land Use |             | Future Land Use |             |
|---------------------------|-------------------|-------------|-----------------|-------------|
|                           | Area (acres)      | Percent     | Area (acres)    | Percent     |
| Commercial                | 48.6              | 32%         | 51.0            | 34%         |
| Industrial                | 21.4              | 14%         | 28.8            | 19%         |
| Multi-Family Residential  | 11.7              | 8%          | 14.3            | 9%          |
| Office                    | 0.3               | <0.5%       | 0.3             | <0.5%       |
| Other/Public Employment   | 4.4               | 3%          | 4.4             | 3%          |
| Single Family Residential | 4.0               | 3%          | 7.2             | 5%          |
| Transportation            | 45.3              | 30%         | 45.3            | 30%         |
| Vacant                    | 15.6              | 10%         | 0               | 0%          |
| <b>TOTAL</b>              | <b>151.3</b>      | <b>100%</b> | <b>151.3</b>    | <b>100%</b> |

Source: MAG Existing and Future Land Use Dataset (2020)



**Figure 11. MAG Existing and Future Land Use in the Study Area**

## 4.2.2 Environmental Consequences

### 4.2.2.1 Preferred Alternative

The Preferred Alternative would require approximately 21 acres of new permanent ROW, affecting 78 parcels in the Study Area. Temporary construction easements (TCE) are also anticipated and would be evaluated and confirmed during final design. Properties may be needed for permanent new ROW or loss of access from the elevated roadways. TCEs may be required and would be identified during final design. Some properties would only be partially impacted by a narrow sliver of acquisition along the reconstructed roadways and interchange. Property impacts are a combination of full and partial acquisitions. Impacts described in this EA are based upon 15 percent design information available in the Initial Design Concept Report (ADOT 2023a) and are subject to change as final design progresses.

A summary of the land use of the affected parcels is provided in **Table 7**, and parcels that would be affected by ROW impacts is shown on **Figure 12**. Impacts from new ROW would result in approximately 60 business displacements and five residential displacements. A more detailed list and figure of ROW acquisitions can be found in **Appendix A**.

Approximately one-half of land to be acquired is in business land use. There are approximately 60 businesses located within the affected parcels that would need to be relocated. Over 30 percent of the land that would be acquired is used as a stormwater basin or vacant land (including vacant land owned the by the railroad). The five single-family residential parcels that would be impacted comprise approximately 1 acre, or 4 percent, of the new ROW required for the project. Consequences of business displacements and impacts are further discussed in the *Socioeconomic Considerations Memorandum* found in **Appendix B**.

**Table 7. Parcels Affected by Right-of-Way Acquisitions Based on 15% Design Plans**

| Land Use  | Parcels   | Acreage     |
|---|-----------|-------------|
| Business  | 24        | 9.5         |
| Business, Parking Lot (sliver acquisition only)                         | 18        | 1.5         |
| Multifamily Residential, Roadside landscaping (sliver acquisition only) | 3         | 0.1         |
| Residential   | 5         | 1.0         |
| Railroad  | 7         | 1.2         |
| Advertising / Billboard   | 3         | <0.1        |
| Stormwater Basin  | 7         | 5.0         |
| Vacant  | 11        | 2.9         |
| <b>Total Parcels Affected</b>   | <b>78</b> | <b>21.2</b> |

Source: ADOT 2023a, see detail in Appendix A.



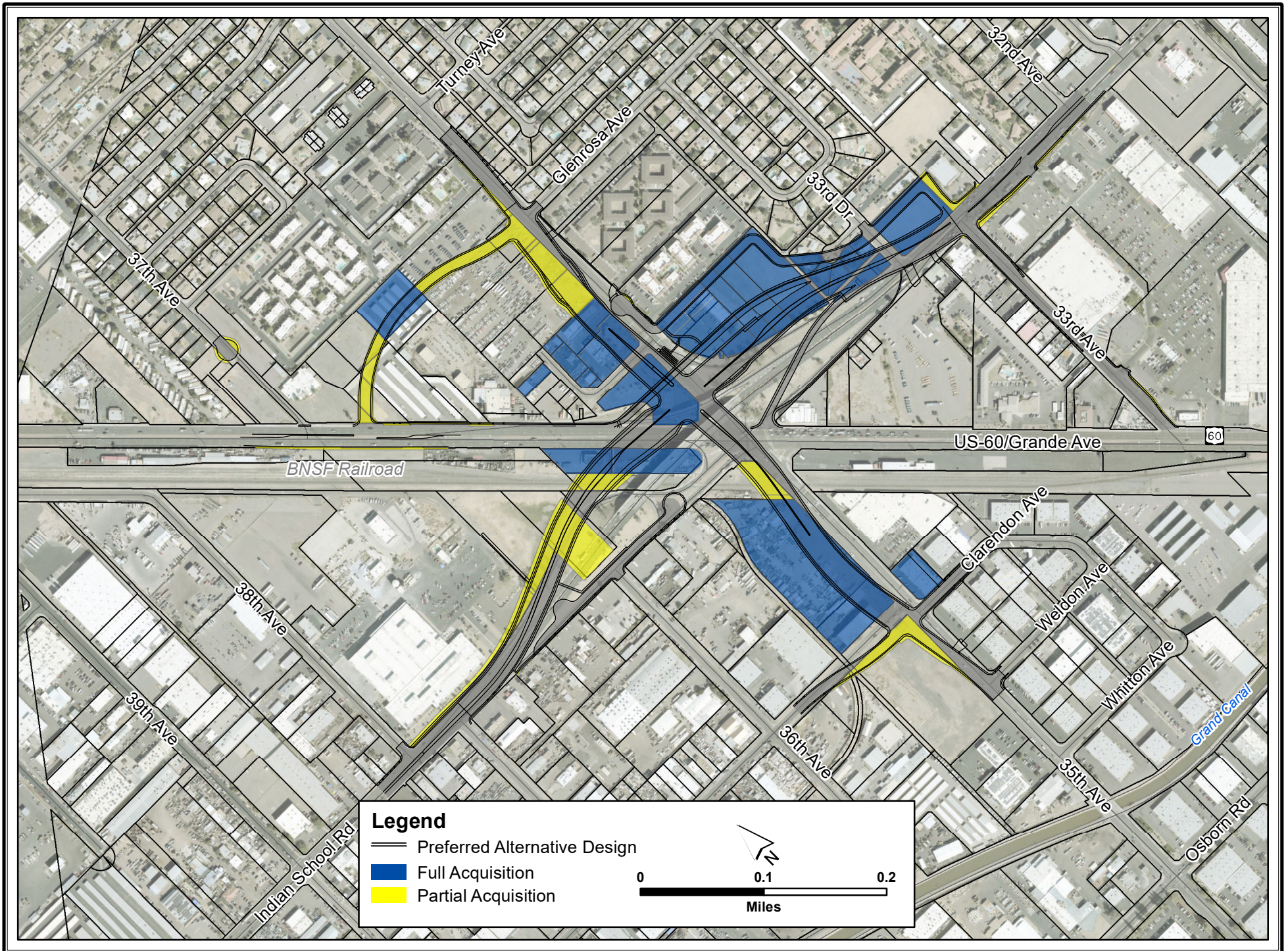


Figure 12. Right-of-way Acquisitions Required for Preferred Alternative



ADOT is in the process of using State funds to purchase right-of-way in advance of the completion of the environmental review. One parcel is being acquired, which contains one business. The acquisition will be carried out in compliance with 23 CFR 710.501(c)(1) through (6). The acquisition is considered minor in nature and does not involve residential displacements, no impactful access changes and/or impactful detours and no potential Environmental Justice impacts. The acquisitions involved no Section 4(f) properties and were acquired in accordance with provisions of the Uniform Act. The acquisitions will not influence the consideration of alternatives in this Draft EA, or decision to construct the project.

No changes to the City of Phoenix General Plan would be required. The Preferred Alternative would support the goals and objectives set by the General Plan of developing vacant land for commercial, industrial, and residential uses (City of Phoenix 2018b).

#### **4.2.2.2 No-Build Alternative**

The No-Build Alternative would not result in any changes to the existing land use, ownership, or jurisdiction of the study area. The No-Build Alternative would not address the increased development as planned by the City of Phoenix in the General Plan (City of Phoenix 2018b). As the area develops further and traffic volumes increase, the existing roadway network would see decreased level of service and congestion. Poor traffic conditions would impact residential, industrial, and commercial land users alike by greatly increasing commute and emergency response times.

#### **4.2.3 Environmental Commitments and/or Mitigation Measures**

ADOT and the contractor would follow the Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970, Uniform Relocation Act Amendments of 1987, ADOT's *Right of Way Procedures Manual* (ADOT 2023d), Title VI of the Civil Rights Act of 1964, and ADOT's *Public Involvement Plan* (ADOT 2023c).

#### **4.2.4 Conclusion**

The Preferred Alternative would permanently convert approximately 21 acres for transportation use, which includes approximately 9.2 acres of business land use and 1.0 acres of residential land use. The remaining 50 percent of the acquisitions (approximately 10.8 acres) are stormwater basins, vacant land, or partial acquisitions of parking lots or landscaping. Approximately 60 business acquisitions would be required. The acquisitions are focused primarily on properties immediately adjacent to the existing intersection. The five residential acquisitions are on the edge of the neighborhood in which they are located and are not expected to impact the neighborhood's viability. Some of the lands acquired due to loss of access provide an opportunity to use those areas to restore access to several apartment complexes also in close proximity to the intersection, avoiding the need to acquire or relocate those residential land uses. The remaining residential and business properties throughout the area would benefit from the proposed action through improved safety, regional mobility, traffic operations, and decreased congestion and delays. The Preferred Alternative is not expected to have a significant impact on land ownership, jurisdiction, or land use.

## 4.3 Social and Economic Considerations

Socioeconomics is a term that describes the economic and social characteristics of a specific population, such as income, education, demographics, and occupation. The socioeconomic analysis evaluates the social and economic impacts of the proposed project on the local and surrounding population. It examines how a proposed project could affect the area's overall social and economic character, the well-being of current and future residents of the affected community, and the future cohesion of the community once the project has been implemented. The displacement and relocation of residents and businesses is addressed in this section.

This section presents a summary of the socioeconomic impact analysis for the project. Further detail and the full analysis can be found in **Appendix B**.

The study area boundary for the socioeconomic analysis, called the Analysis Area, extends one mile in each direction from the US 60/Grand Ave, 35th Avenue, and Indian School Road intersection and is shown in **Figure 13**.

### 4.3.1 Existing Conditions

#### 4.3.1.1 Schools, Community Resources, and Recreational Facilities

**Figure 13** shows the location of schools, community resources, and recreational facilities in the Analysis Area. Cielito Park is an approximately 40-acre City of Phoenix park located at 35th Avenue and Campbell Avenue. The park has numerous amenities, including lighted basketball, softball, and soccer facilities; a pool (closed since the summer of 2021); shaded playground; and walking path and provides general community open space with picnic tables, grills, and a ramada. The park is accessed using Campbell Avenue from the south and 35th Avenue from the west. The *Alhambra Village Character Plan* identifies Cielito Park as an asset for community character (City of Phoenix 2021).

The Grand Canal intersects 35<sup>th</sup> Avenue and Grand Avenue south of the Project Area, and a multi-use path along the canal has an at-grade crossing at both roadways. The City of Phoenix is currently in Phase 3 of the Grand Canalscape project, which is constructing improvements to the path from 75th Avenue to 47th Avenue. There are no current plans to improve the segment within the Analysis Area (City of Phoenix 2023a).

Grand Veterans Village is run by US Vets, a nonprofit organization. They provide housing, workforce development, and case management services to veterans of the US Armed Forces. The facility is located north of US 60 (Grand Avenue) at 33<sup>rd</sup> Avenue. Currently there are 30 low-income units with residents transitioning out of homelessness (US VETS 2023).

There are numerous churches and places of worship throughout the Analysis Area. The Lynnhaven Community Church is located at 31<sup>st</sup> Avenue and Campbell; Hidden Treasures Pre-school is a pre-school and childcare facility run by the church.

There is a City of Phoenix fire station near Camelback Road and 43<sup>rd</sup> Avenue. There are no other emergency services such as hospitals or police stations within the Analysis Area. The nearest hospital is Valleywise Health Emergency Department approximately 2 miles west. The nearest police station is approximately 3 miles to the southeast.

The nearest post office is located in the commercial plaza at 27<sup>th</sup> Avenue and Camelback Road, in the northeast corner of the Analysis Area.

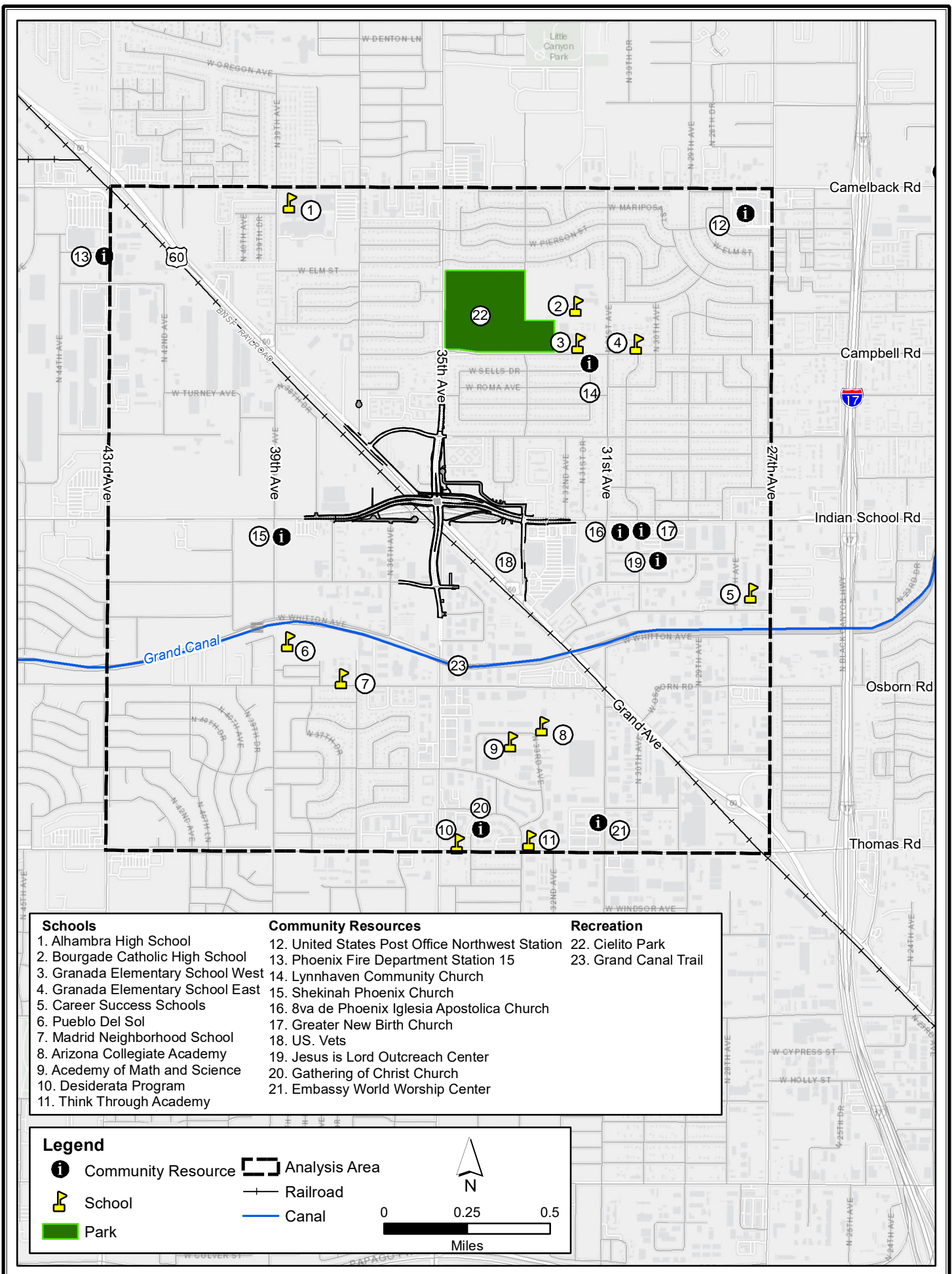
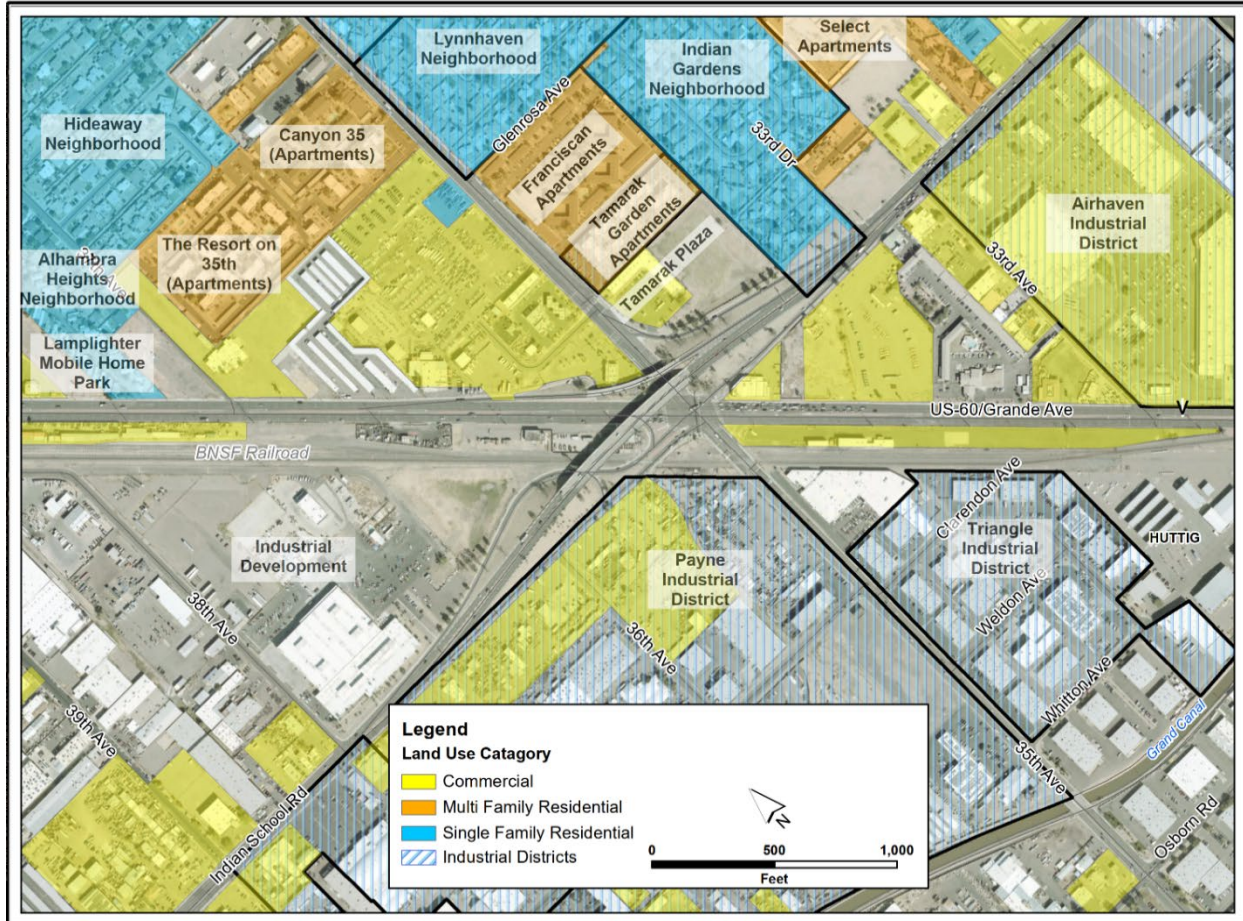


Figure 13. Community Resources, Recreation, and Schools







**Figure 15. Industrial Development, Commercial Businesses, and Residential Areas**

**4.3.1.3 Business and Employment Conditions**

The Analysis Area is heavily developed with commercial and industrial land uses. The largest employers in the Analysis Area include United Parcel Service (UPS), Kenyon Plastering Inc., Alhambra Elementary School District, Federal Express, and Alhambra High School.

The Maricopa Association of Governments (MAG) prepares socioeconomic projection data ending in year 2055 (MAG 2019). As shown in **Table 8**, the Analysis Area is projected to have a larger increase in job growth by the year 2030 compared to the City of Phoenix.

**Table 8. Employment Projections**

| Year | City of Phoenix |                | Analysis Area |                |
|------|-----------------|----------------|---------------|----------------|
|      | Employment      | Percent Growth | Employment    | Percent Growth |
| 2020 | 2,309,400       | -              | 14,636        | -              |
| 2030 | 2,759,300       | 19%            | 18,941        | 29%            |
| 2040 | 3,173,300       | 15%            | 20,504        | 8%             |
| 2050 | 3,562,000       | 12%            | 21,010        | 2%             |
| 2055 | 3,775,000       | 6%             | 21,113        | 0.5%           |

Source: MAG Socioeconomic Projections (2019)



There are three defined industrial districts in the Analysis Area (shown on **Figure 15**):

- **Airhaven Industrial District:** A large shopping complex at Indian School Road and 32<sup>nd</sup> Avenue contains Los Altos Ranch Market and Costco, two of the largest employers in the area. The shopping complex also includes several restaurants. The district contains numerous commercial and industrial properties with a mix of large manufacturing facilities, warehousing, and small individual businesses.
- **Payne Industrial District:** The district is primarily large industrial buildings with on-property storage of materials, as well as several smaller businesses along Indian School Road including an auto repair shop, a restaurant, and an entertainment club. Along 35<sup>th</sup> Avenue, there is a large industrial parcel that contains a Swapmeet with numerous tenant businesses, a large vacant lot, and a steel fabrication business are directly west of 35<sup>th</sup> Avenue.
- **Triangle Industrial District:** The Triangle industrial district is located east of 35<sup>th</sup> Avenue and south of US 60 (Grand Avenue) and can only be accessed by 35<sup>th</sup> Avenue. The district is the smallest of the industrial districts in the Analysis Area and contains primarily small manufacturing and warehouse facilities. Adjacent to 35<sup>th</sup> Avenue the buildings have storefronts that are accessible by the public. The majority of these businesses are commercial and industrial supply companies.

In the immediate vicinity of the intersection, there are several other industrial and heavy commercial businesses located outside the industrial districts, as well as several small commercial plazas. These include:

- **Tamarak Plaza:** Tamarak Plaza is a strip style commercial plaza with numerous suites rented by local businesses with a combined parking lot. The plaza is located directly northeast of 35<sup>th</sup> Avenue and Indian School Road. Ten local businesses would be displaced by the acquisition. Businesses include a liquor store that provides cash checking services, two restaurants, a halal specialty store, a Vietnamese coffee and billiards club, a tax and immigration business, a gift shop, a jewelry store, a hair salon, and a seafood market. There is also a drinking water stall located in the parking lot. During the field survey conducted in March 2023, the seafood market and the Vietnamese billiards club had several customers and appeared to serve as a community gathering place.
- **Commercial Plaza and Gas Station/Convenience Store:** A convenience store and gas station located on Monterosa Street and 35<sup>th</sup> Avenue would be acquired, which also provides storefronts for a U-Haul business. There is an unnamed strip style commercial plaza directly north of the mini mart with eight storefronts, including a cell phone store, exercise studio, ice cream shop, money transfer service, smoke shop, barber shop, yerbaria, and restaurant.
- **Industrial Development along 35<sup>th</sup> Avenue and Glenrosa Avenue:** There are several industrial and heavy commercial properties located northeast of 35<sup>th</sup> Avenue and Indian School Road that would be displaced, including a self-storage business, a heavy equipment rental and sales business, an auto repair business, and an auto auction. There are multiple self-storage facilities located off 35<sup>th</sup> Avenue and Indian School Road. A heavy equipment facility is located approximately 1 mile south.
- **Commercial Shopping Plaza at 3552 Grand Avenue:** There is a small unnamed commercial plaza with three businesses that would be displaced. The businesses include a meat processor, a flooring wholesaler, and a smoke shop. During canvassing efforts for public outreach in January 2023, signs at the meat processing business were posted stating this business is not open to the public. Numerous similar commercial plazas are in the area with similar services.

#### 4.3.1.4 Population and Housing Conditions

Residential development in the Analysis Area is primarily north of Indian School Road and south of the Grand Canal. There are numerous residential neighborhoods, including June Gardens, Indian Gardens, Lynnhaven, Northwest Village, Winton Heights, Grand Mission Homes, Mission Manor, and Verba Gardens. There are also several multi-family complexes, including Tamarak Apartments, The Franciscan Apartments, Canyon 35, The Resort on 35th, and Select Apartments.

MAG socioeconomic projection data were used to compare future population growth in the Analysis Area and the City of Phoenix. **Table 9** shows the population growth data. The Analysis Area is expected to grow slower than the City of Phoenix for all projected years. No population growth is projected from year 2050 to 2055.

**Table 9. Population Projections**

| Year | City of Phoenix |                | Analysis Area |                |
|------|-----------------|----------------|---------------|----------------|
|      | Population      | Percent Growth | Population    | Percent Growth |
| 2020 | 4,903,100       | -              | 18,472        | -              |
| 2030 | 5,723,900       | 17%            | 19,777        | 7%             |
| 2040 | 6,532,900       | 14%            | 20,113        | 2%             |
| 2050 | 7,252,200       | 11%            | 20,226        | 1%             |
| 2055 | 7,595,100       | 5%             | 20,228        | 0%             |

Source: MAG Socioeconomic Projections (2019)

#### 4.3.1.5 Demographic Information

Demographic characteristics for the Analysis Area were characterized based on the U.S. 2020 Decennial Census and 2020 American Community Survey (ACS) 5-Year Estimates was collected at the Census Tract (CT) and Block Group (BG) level. Detailed tables of demographic data and figures of Analysis Area CTs and BGs can be found in **Appendix B**.

- Disability:** Disabled persons include only civilian, non-institutionalized persons with sensory, physical, mental, self-care, employment-related, and/or going-outside-of-the-home disabilities. The estimated percentage of people with disabilities in the Analysis Area CTs ranges from 7.8 percent to 20.2 percent. When compared to the Phoenix disabled population percentage (10.8 percent), the disabled population percentage of CT 1092 is considerably higher than the surrounding area (20.2 percent), while the remaining CTs are within one percentage point of Phoenix's average.
- Elderly:** Elderly populations consist of people who are age 65 and older. The percentage of the population age 65 and older ranges from 2.5 percent to 9.9 percent. While elderly residents are present in all BGs, the percentages are less than the elderly population in Phoenix and Maricopa County.
- Female head-of-household:** Female head-of-household populations consist of households with children under 18 years of age headed by an unmarried female. The percentage of female head-of-household within the Analysis Area ranges from 0 percent to 40.5 percent. Ten of the 14 BGs for which there is female head-of-household data are higher than the average for the City of Phoenix (10.1 percent).

- **Limited English Proficiency:** All CTs in the Analysis Area had a high percentage of individuals that speak Spanish and speak English less than very well. Percentages range from 14.5 percent to 30 percent compared to the City of Phoenix average of 10.7 percent.

ADOT administers its programs and activities in accordance with Title VI of the Civil Rights Act of 1964. Early in the study process, demographic data on the study area were collected to inform the development of the project's public involvement plan. A review of the U.S. Census data described above determined the number of Spanish speaking Limited English Proficiency (LEP) persons exceeding the Safe Harbor Threshold of five percent or 1,000 persons. Therefore, it was determined public information materials would be translated into Spanish and interpretation would be provided at in-person public meetings and hearings.

Business canvassing efforts conducted by ADOT during the study included speaking directly to businesses and residents by telephone, email, in-person meetings, and public information meetings. These efforts identified several Vietnamese-speaking business owners in the northeast quadrant of the intersection who needed LEP services. Therefore, outreach and study materials to these individuals were provided in Vietnamese, and Vietnamese translators were provided at the 2020 and 2023 public meetings.

Public meeting and hearing locations were chosen based on criteria that considered convenience of location to attend, accessibility by transit, free public parking, American with Disabilities Act (ADA) compliance, ADOT's Public Involvement Plan (PIP), and other applicable public involvement regulations and guidance.

## **4.3.2 Environmental Consequences**

### **4.3.2.1 Preferred Build Alternative**

The Preferred Alternative would result in impacts for many of the properties in the immediate vicinity of the reconstructed intersection. Impacts include a number of full property acquisitions involving business and residential displacements, partial property acquisitions to accommodate new connector roads or narrow slivers of new right-of-way, and properties whose driveways and access from Indian School Road, 35th Avenue, or Grand Avenue would be altered. Approximately 78 parcels would be impacted through direct right-of-way property acquisition or loss of direct access to the main roadways by elevation change. Approximately 60 businesses and 5 single family homes would be displaced. In total, the Preferred Alternative would result in approximately 21 acres of acquisitions. The Preferred Alternative and the proposed right-of-way impacts are shown on **Figure 16**.

### **Impacts to Businesses and Employment**

The Preferred Alternative would result in the displacement of approximately 60 businesses. These displacements would not affect 60 individual parcels as many of the businesses are located within retail commercial plazas with multiple tenant businesses. Approximately 30 businesses are located on a single parcel, which acts as a swap meet style open-air market. However, there are several stand-alone businesses and heavy commercial/industrial businesses located on larger parcels of land. The inventory of businesses impacted by the project was supported by ongoing outreach and field efforts including canvassing, direct contact through phone and email, public meetings, and field reviews.



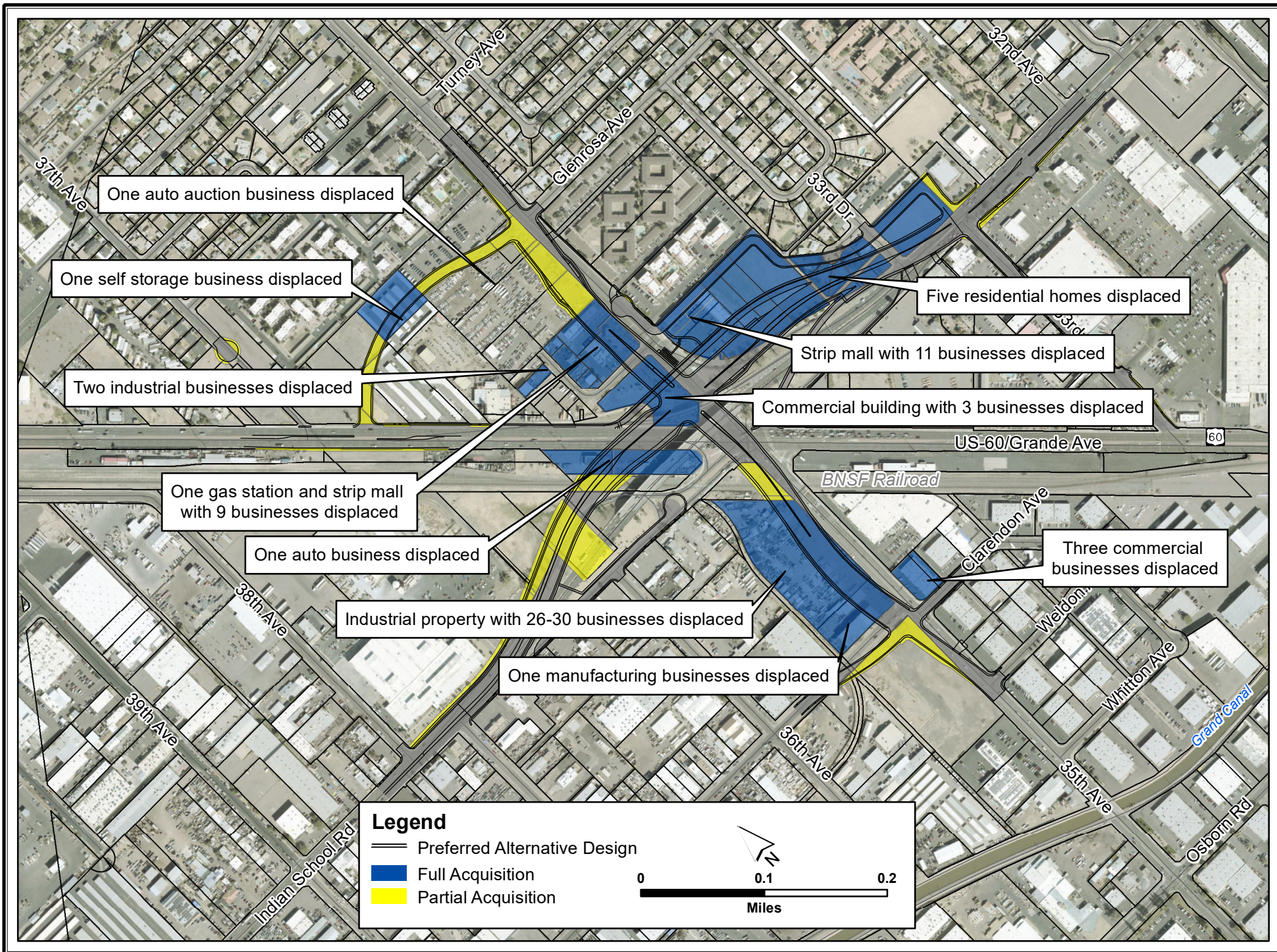


Figure 16. Business and Residential Displacements Resulting from the Preferred Alternative



Impacts to businesses within the industrial districts consist of:

- **Airhaven Industrial District:** The Preferred Alternative would require shifting Indian School Road slightly south in this area, resulting in narrow strips of partial right-of-way acquisition along Indian School Road in the shopping complex. 33rd Avenue would be widened to accommodate an additional turn lane, also requiring a narrow strip of partial right-of-way acquisition along 33rd Avenue. The narrow strip acquisitions would affect landscaped areas adjacent to the existing roadway, and no business displacements are anticipated in the Airhaven Industrial District.
- **Payne Industrial District:** There are two property acquisitions impacting businesses within this industrial district west of 35<sup>th</sup> Avenue. The first parcel contains a single business, a metal fabricator. The second property is a large commercial/industrial property containing small business tenants that rent space on a month-to-month basis. Small businesses present include a small commercial building with a mattress store, an auto repair shop, several food trucks with permanent open-air sitting areas, and multiple vehicle service businesses under open-air garages, and vendors that sell purses and toiletries in a swap-meet style. Input from the property owner is that there are approximately 26 to 30 small business tenants, and that up to 90 percent of those tenants are Spanish speakers. Signs and markings for the businesses are mostly in Spanish.
- **Triangle Industrial District:** The Preferred Alternative would require acquisition of one commercial warehouse building on the northeast corner of Clarendon Avenue and 35<sup>th</sup> Avenue. The commercial warehousing building contains two suites occupied by an auto parts store and an ignition interlock installation facility. There are several auto parts stores and interlock installation facilities located within 1 mile of the property.

Impacts to other industrial and commercial businesses outside the Industrial Districts consist of:

- **Tamarak Plaza:** The Preferred Alternative would result in the acquisition of the Tamarak Plaza commercial plaza, resulting in the displacement of ten local businesses. The businesses in this plaza include a convenience and liquor store that provides cash checking services, two restaurants, a halal specialty store, a Vietnamese coffee and billiards club, a tax and immigration business, a gift shop, a jewelry store, a hair salon, and a seafood market. There is also a drinking water stall located in the parking lot. During the field survey conducted in March 2023, the seafood market and the Vietnamese billiards club appeared to serve as a community gathering place.

Numerous similar small commercial plazas are in the Analysis Area. While there are other shops and businesses in the area that offer the same services as some of the displaced businesses, specialty businesses such as the halal store and billiards club are not easily accessible in the vicinity. Community members may need to travel farther to seek out replacement services for some of these businesses.

- **Gas Station/Convenience Store and Commercial Plaza:** The Preferred Alternative would require the acquisition of two parcels on the west side of 35<sup>th</sup> Avenue near Monterosa Street, resulting in the displacement of a convenience store and gas station, as well as an unnamed strip style commercial plaza. The gas station and convenience store also provides storefronts for a moving van rental business. The commercial plaza has eight tenant businesses, including a cell phone store, exercise studio, ice cream shop, money transfer service, smoke shop, barber shop, yerbaria, and restaurant.

There are numerous gas stations and convenience stores located within one mile of the intersection, and several other U-Haul providers. Similar small commercial plazas are found throughout the vicinity and offer similar services.



- **Industrial Properties along 35<sup>th</sup> Avenue and Glenrosa Avenue:** The Preferred Alternative would require the partial acquisition of several large properties northwest of 35<sup>th</sup> Avenue and Indian School Road. that would be displaced, including a self-storage business, a heavy equipment rental and sales business, an auto repair business, and an auto auction. There are multiple self-storage facilities located off 35<sup>th</sup> Avenue and Indian School Road. A heavy equipment facility is located approximately 1 mile south.
- **Commercial Shopping Plaza at 3552 Grand Avenue:** There is a small unnamed commercial plaza with three businesses that would be displaced. The businesses include a meat processor, a flooring wholesaler, and a smoke shop. During canvassing efforts for public outreach in January 2023, signs at the meat processing business were posted stating this business is not open to the public. Numerous similar commercial plazas are in the area with similar services. There are multiple flooring stores and smoke shops located in the vicinity.
- A total of eight advertising billboards affected by the project would be displaced and moved.

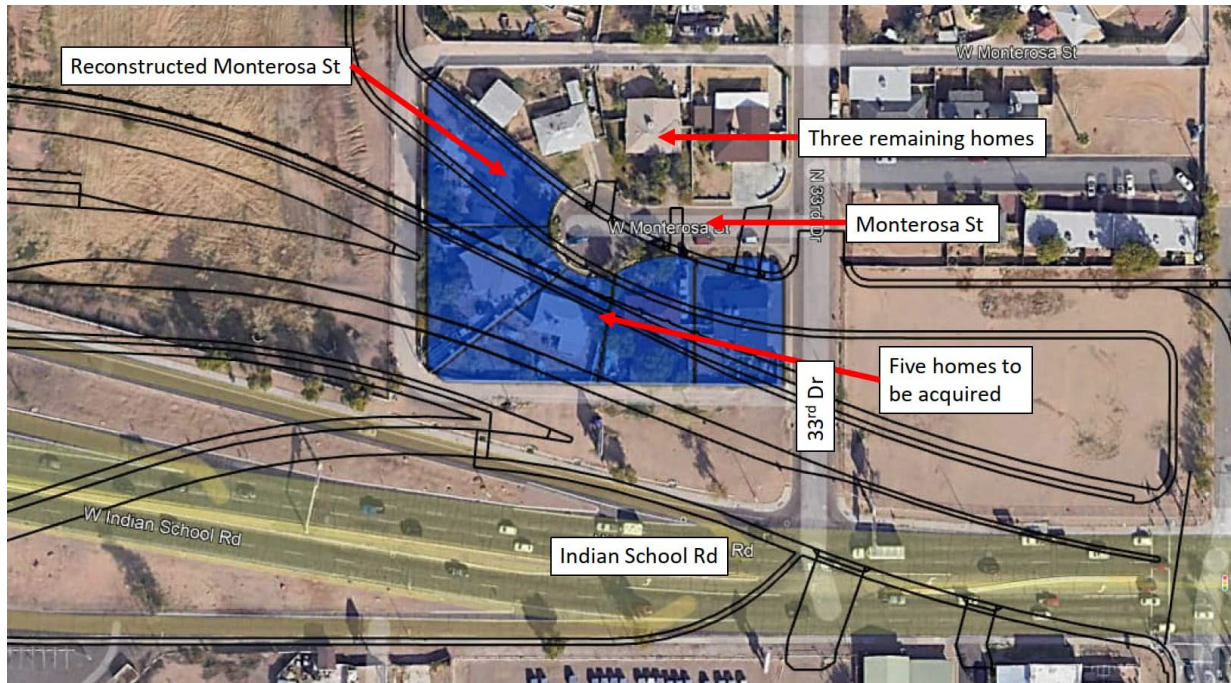
Property acquisitions and business displacements would generally involve small businesses. While the 60 businesses are not considered the top employers in the area, some of them likely provide neighborhood jobs proximate to residential areas. Jobs would be lost at the displaced businesses.

Acquisition of right-of-way would be undertaken by ADOT in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (49 CFR 24)(Uniform Act), as amended in 1987. Business owners are provided a relocation counselor to help and advise them through the process, which starts with an interview to identify the displaced person's needs, replacement site requirements, estimate the time needed to accomplish the move, among other assistance. If the expertise of trained personnel with social services provided by other public and private agencies in the community is needed, ADOT assists with securing the services of those agencies (FHWA 2014).

As the project progresses through final design, ADOT would continue to engage with affected business owners and the community to better understand the concerns and challenges specific to this community. Continued targeted outreach will inform the development of a business relocation plan by defining the community and business owners' specific concerns regarding the business relocation process and identifying specific steps that could be taken and support services that could be provided to address those concerns.

### **Impacts to Population and Housing Conditions, including Residential Displacements**

To maintain access to the Indian Gardens neighborhood, Select Apartments, Tamarak Gardens Apartments, and the Franciscan Apartments, West Monterosa Street would be reconstructed to the south as a large through street. The Preferred Alternative would require the displacement of five single-family homes along West Monterosa Street, in the Indian Gardens neighborhood (**Figure 17**). There are a total of eight homes on the existing West Monterosa Street cul-de-sac, and three single-family homes would remain following the proposed acquisition of the five southernmost homes. The Preferred Alternative would convert West Monterosa Street into a longer local road, ending in a cul-de-sac approximately 1,200 feet northwest of the homes and connecting to the Tamarak Garden Apartments. Driveways to the three remaining homes would be extended to the new Monterosa Street roadway. It is possible their property boundaries could be extended, although this would depend on communication with property owners as well as final design of the project.



**Figure 17. Residential Displacements on West Monterosa Street**

As a result of the Preferred Alternative, Monterosa Street would be reconstructed into a large street with more traffic and the three remaining homes would no longer be located at the end of the cul-de-sac. Based on the noise analysis for the project, predicted noise levels at the three remaining homes would not exceed the ADOT *Noise Abatement Requirements*. More detail on the noise analysis is available in the technical report contained in **Appendix D**.

The Preferred Alternative represents a change in setting for the three remaining homes on this segment of Monterosa Street, and further design, property appraisal information, and input from the tenants and/or homeowners is needed to determine if the proximity impacts constitute the need for a full acquisition of these homes. The evaluation would be conducted in close coordination with the tenants and/or homeowners. This coordination would include both homeowners and tenants, if the homes are not owner-occupied.

The eight homes on the cul-de-sac of West Monterosa Street are on the southern edge of the Indian Garden neighborhood, a neighborhood of approximately 58 existing homes. The proposed acquisition would reduce the total number of homes in the neighborhood, but would not affect its continuity.

The Analysis Area is known as a high activity area for homeless encampments, due to the open and vacant land in the vicinity. Recent activity and cases have been identified under the Indian School Road overpass as well as the drainage basins in the northern and northwest quadrant of the US 60/Indian School Road/35th Avenue intersection. As of August 2023, there were active homeless encampments in the study area (Ramirez 2023). Coordination for this project has included representatives from the City of Phoenix Community Action Response Engagement Services (CARES), a program that involves staff from different City departments to provide a coordinated response for neighborhoods and individuals experiencing homelessness. ADOT would continue to work with Phoenix CARES throughout final design and construction to respond to reports of individuals and families experiencing homelessness and encampments in the vicinity of construction.

If an area needed for construction is occupied by an encampment, ADOT would work with Phoenix CARES to open a case for the activity. Then, one of the departments involved with Phoenix CARES reaches out to the individuals experiencing homelessness to make observations, offer services to the individuals, and determine the next steps.

### **Impacts to Schools, Community Resources, and Recreational Facilities**

The Preferred Alternative would not require the acquisitions of any community or recreation facilities. Impacts to community facilities and recreations would be limited to traffic congestion and detours during construction. Cielito Park and Lynnhaven Church are the nearest facilities, and are located on 35<sup>th</sup> Avenue north of West Campbell Avenue, approximately 800 feet north of the project limits. No permanent changes to access to these properties would occur as a result of the project.

Construction on 35<sup>th</sup> Avenue and closures on 35<sup>th</sup> Avenue would affect access routes for people traveling to/from these facilities from areas south of Indian School Road. With the exception of temporary short-term closures, driveway access to all businesses and residences would be maintained throughout construction. If a property has multiple driveways, at least one would remain open at all times.

Granada Elementary and Bourgade Catholic High School are the closest schools and are located on 31st Avenue and Campbell Road, adjacent to Cielito Park. There would be similar temporary impacts related to construction congestion, detours, and delay as described above.

### **Project Benefits**

Project benefits include improved traffic operations, reduced congestion, and improved safety. The remaining business owners and residents travel through the intersection frequently, and would experience reduced travel times and delay as they navigate the area and travel through the intersection. Reduced travel time and delay would also benefit emergency services as they travel through the area or need to access people and properties adjacent to the intersection. Vehicles, pedestrians, and bicyclists would be able to cross the BNSF Railway using the new elevated Indian School Road and 35<sup>th</sup> Avenue bridges, eliminating the potential for collisions with the train as well as delays caused by train pass-bys.

The study area is known to have a high volumes of pedestrian and bicycle traffic. The Preferred Alternative includes 6-foot wide outside shoulders along 35<sup>th</sup> Avenue and Indian School Road that would be marked for exclusive bicycle use per the City of Phoenix criteria. Sidewalks would generally be provided along both sides of 35<sup>th</sup> Avenue and Indian School Road, and on the north side of US 60/Grand Avenue. A pedestrian ramp would be constructed northeast of Indian School Road and 35<sup>th</sup> Avenue to connect the elevated intersection with the surrounding lower elevation land. Two pedestrian activated crosswalks would be included; one along the entrance ramp from US 60/Grand Avenue to eastbound Indian School Road, and one along the exit ramp from westbound Indian School Road to US 60/Grand Avenue.

### **4.3.3 No-Build Alternative**

The No-Build Alternative provides a baseline scenario where the Preferred Alternative would not be constructed. The No-Build Alternative includes all existing transportation facilities and any projects funded in the MAG Regional Transportation Plan (RTP) through design year 2050 in the Analysis Area (MAG 2021c).

The planned City of Phoenix 35<sup>th</sup> Avenue Safety Corridor Improvements included in the No Build Alternative would install crosswalks, lighting, and repave the roadway, enhancing pedestrian safety and amenities along 35<sup>th</sup> Avenue. While the proposed City of Phoenix Bus Rapid Transit project is

still in early planning phases, the project would ultimately provide faster and more frequent transit service and reduced travel delays for transit riders. However, under the No Build Alternative the traffic operations issues at the existing 6-legged intersection would remain. As traffic volumes at the intersection steadily increase over time, the congestion and delay would make the intersection increasingly difficult and inconvenient to navigate for all users of the intersection, including transit vehicles and pedestrians. The existing at-grade railroad crossings would remain in place, as would the potential for train-vehicle and train-pedestrian conflicts.

#### **4.3.4 Environmental Commitments and Mitigation Measures**

ADOT and the contractor would follow the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Uniform Relocation Act Amendments of 1987, the ADOT *Right of Way Procedures Manual*, Title VI of the Civil Rights Act of 1964, the ADOT *Public Involvement Plan*, and the 2010 Federal Highway Administration *Manual on Uniform Traffic Control Devices for Streets and Highways*.

The Uniform Relocation Act seeks to provide fair and equitable treatment for persons whose real property would be acquired by a federally funded project. The act ensures that relocation assistance is provided to those that would be displaced and that decent, safe, and sanitary housing is available within the affected person's financial means. If a property would be acquired as part of the project an appraisal will be performed and the fair-market value of the property would be determined. Additional moving expenses such as title transfers, prepaid property taxes, or other expenses may also be eligible for reimbursement.

In accordance with the ADOT Right-of-Way procedures manual, business owners are provided a relocation counselor to help and advise them through the process, which starts with an interview to identify the displaced person's needs, replacement site requirements, estimate of the time needed to accomplish the move, among other assistance. If the expertise of trained personnel with social services provided by other public and private agencies in the community is needed, ADOT assists with securing the services of those agencies.

The above relocation procedures are standard for all ADOT projects. However, each project is unique, and circumstances may require additional measures be incorporated. ADOT will continue to work with property owners to mitigate impacts associated with relocations and acquisitions.

#### **Arizona Department of Transportation Design Responsibility**

- The Arizona Department of Transportation would continue to facilitate opportunities for public engagement to identify community priorities and concerns as well as to develop and refine strategies for business and residential displacements throughout the project planning process and final design.
- During final design, ADOT would develop a traffic control plan that details traffic control measures and construction sequencing in coordination with the City of Phoenix. ADOT would coordinate with the City of Phoenix to keep transit stops open and accessible during construction. The traffic control plan would govern unless an alternate plan is approved by ADOT.
- During final design, ADOT would conduct public engagement activities with the business and property owners in the vicinity of the intersection to share the traffic control plan.
- At the initiation of final design, ADOT would develop a project-specific business relocation plan based on engagement with the owners of the affected businesses and in line with the requirements of Uniform Relocation and Real Property Acquisition Policies Act of 1970, as



amended; 49 CFR Part 24, Subparts C through F; and ADOT policies and procedures. The business relocation plan will identify strategies that address community-specific concerns, outline specific steps that will be taken to assist businesses, and connect the business owners with available resources through the City of Phoenix and local small business support organizations.

#### Arizona Department of Transportation Central District Responsibilities

- During final design, ADOT would develop a traffic control plan that details traffic control measures and construction sequencing in coordination with the City of Phoenix. ADOT would coordinate with the City of Phoenix to keep transit stops open and accessible during construction. The traffic control plan would govern unless an alternate plan is approved by ADOT.

#### Arizona Department of Transportation Right-of-Way Responsibilities

- At the initiation of final design, ADOT would develop a project-specific business relocation plan based on engagement with the owners of the affected businesses and accordance with the requirements of Uniform Relocation and Real Property Acquisition Policies Act of 1970, as amended; 49 CFR Part 24, Subparts C through F; and ADOT policies and procedures. The business relocation plan will identify strategies that address community-specific concerns, outline specific steps that will be taken to assist businesses, and connect the business owners with available resources through the City of Phoenix and local small business support organizations.

#### Contractor Responsibility

- With the exception of temporary, short-term closures (less than 3 hours), the contractor would maintain driveway access to all businesses and residences throughout the construction. If a property has multiple driveways, at least one would remain open at all times.
- The contractor, after coordination with the engineer, would communicate traffic control measures with the public, local officials, and the media prior to and during construction activities. Communication may include, but is not limited to, media alerts, social media, a project-specific mobile application, direct mailings to area businesses and property owners, information on variable message signs, and paid newspaper notices.
- The contractor shall follow the traffic control plan provided by the engineer.

### **4.3.5 Conclusion**

The Preferred Alternative would require full or partial right-of-way acquisitions at 78 properties totaling approximately 21 acres. Right-of-way acquisitions would result in approximately 60 business and 5 residential displacements. ADOT would conduct continued engagement with affected business owners and the community to develop a project-specific business relocation plan.

The Preferred Alternative represents a change in setting for the remaining homes on Monterosa Street, and further design, property appraisal information, and input from the tenants and/or homeowners is needed to determine if the proximity impacts constitute the need for a full acquisition of these homes. The evaluation would be conducted in close coordination with the tenants and/or homeowners. This coordination would include both homeowners and tenants if the homes are not owner-occupied.

Although property impacts are anticipated from the Preferred Alternative, the social and economic impacts are not expected to be significant or adverse. Over 35% of the land to be acquired is used as stormwater basin or vacant land (including vacant land owned by the railroad). The approximately

60 business displacements are concentrated in several commercial plazas with multiple tenant businesses. Residential displacement would affect the homes on one cul-de-sac street on the edge of a neighborhood. A business relocation plan, based on continued coordination between ADOT and the affected business owners, would be developed to minimize and mitigate impacts from the business displacements. The public review of this Draft Environmental Assessment provides an opportunity for the public to review the proposed project. Comments received on this Draft EA will be evaluated to determine whether further mitigation measures are needed, or whether changes to the EA analysis, conclusions, or the project are warranted.

## 4.4 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice (EJ) in Minority Populations and Low-Income Populations, directs that federal programs, policies, and activities not have disproportionately high and adverse human health and environmental effects on minority and low-income populations.

An adverse effect is a significant individual or cumulative human health or environmental effects (e.g., the displacement of a household structure or business as a requirement to build a project). A disproportionately high and adverse effect on minority and low-income populations is an adverse effect that:

- Is predominantly borne by a minority population and/or a low-income population or
- Will be suffered by the minority populations and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the nonminority population and/or non-low-income population.

This section presents a summary of the environmental justice analysis for the project. Further detail and the full analysis can be found in **Appendix B**.

### 4.4.1 Existing Conditions

Demographic data on race, ethnicity, and income was collected from the U.S. 2020 Decennial Census and 2020 American Community Survey (ACS) 5-Year Estimates were collected for an Analysis Area comprised of the Project Area and a 1-mile buffer, shown in **Figure 18**. This section of the Draft EA provides a summary of demographic data at the Census Tract level; tables of more detailed Block Group level data are provided in **Appendix B** of this Draft EA. There is one Census-defined BG (CT 1092 BG 1) for which there is no recorded population. Because all data reported for this BG is zero, it is not included in the data tables and analysis summary.

For this EJ analysis, minority populations are composed of the following race and ethnicity categories from the Census: Black or African American, Hispanic, Asian American, American Indian/Alaskan Native, and Native Hawaiian or Pacific Islander descent. **Table 10** and **Figure 18** provide a summary of demographic data in the Analysis Area. The minority population in the Analysis Area ranges from 73 percent (CT 1091.01 BG1) to 97.9 percent (CT 1101 BG 1). As a whole, the population in the Analysis Area is a minority-majority (meaning one or more racial, ethnic, and/or religious minority make up a majority of the local population). At 89 percent minority, the population in this area is considerably higher than the minority percentages for Phoenix (57.5 percent) and Maricopa County (45 percent).

Low-income populations were defined using both an alternative criteria methodology in combination with additional threshold considerations. Populations whose median household income is at or below the Department of Health and Human Services poverty guidelines for a family of four (\$12,500 for 2021) were identified as low-income. One Block Group in the Analysis Area has a median income at or below the HHS poverty guidelines. Guidance from EPA acknowledges that even when threshold criteria are not applied, a reference community can be helpful to provide context. Compared to the median income for the Phoenix area (\$45,470), the median income in the Analysis Area (\$45,470) is relatively low. Based on this comparison, collection of additional data to better understand income level and poverty status in the community was warranted. After examining median income data alongside supplemental data from the Census Bureau poverty calculations and data from local public schools, nearly all the BGs in the analysis area were identified as low-income populations.

**Table 10. Summary of Low-Income and Minority Demographic Data by Census Tract**

| Demographic Characteristic                        | CT 1091.01 | CT 1091.02 | CT 1092  | CT 1101  | CT 1169  | Total Analysis Area CTs | Phoenix (City) | Maricopa County | Arizona (State) |
|---|------------|------------|----------|----------|----------|-------------------------|----------------|-----------------|-----------------|
| Total Population                                  | 3,910      | 6,073      | 4,474    | 7,035    | 2,599    | 24,091                  | 1,591,119      | 4,367,186       | 7,079,203       |
| Total Minority                                    | 80.9%      | 91.5       | 86.4%    | 94.6%    | 91.0%    | 89.7%                   | 58.6%          | 46.2%           | 46.6%           |
| Hispanic or Latino (%)                            | 75.8%      | 75.2%      | 62.7%    | 88.9%    | 87.1%    | 78.2%                   | 42.7%          | 31.5%           | 31.9%           |
| Black or African American alone (%)               | 3.0%       | 6.8%       | 9.6%     | 1.9%     | 1.7%     | 4.7%                    | 6.9%           | 5.3%            | 4.2%            |
| American Indian and Alaska Native alone (%)       | 0.4%       | 6.0%       | 5.6%     | 2.1%     | 0.9%     | 3.3%                    | 1.5%           | 1.4%            | 3.6%            |
| Asian alone (%)                                   | 0.7%       | 1.0%       | 0.3%     | 1.5%     | 1.3%     | 1.0%                    | 3.8%           | 4.1%            | 3.2%            |
| Native Hawaiian, Other Pacific Islander alone (%) | 0.0%       | 0.0%       | 0.0%     | 0.0%     | 0.0%     | 0.0%                    | 0.2%           | 0.2%            | 0.2%            |
| Two or More Races or Some Other Race (%)          | 0.9%       | 2.6%       | 8.2%     | 0.3%     | 0.0%     | 2.4%                    | 3.5%           | 3.6%            | 3.4%            |
| Median Income                                     | \$49,091   | \$53,068   | \$38,438 | \$49,819 | \$44,375 | \$45,470                | \$60,914       | \$72,944        | \$65,913        |
| Median Income Below Poverty Level <sup>1</sup>    | No         | No         | No       | No       | No       | No                      | No             | No              | No              |
| Low-income (%)                                    | 28.1%      | 29.8%      | 26.5%    | 27.3%    | 34.3%    | 28.6%                   | 15.4%          | 12.0%           | 13.5%           |

**Notes:**

1- Median household income compared to U.S. Department of Health and Human Services (HHS) poverty guidelines for a family of four. In 2021 the HHS guideline was \$26,500.

2 - The U.S. Census Bureau defines poverty using a set of money income thresholds that vary by family size and composition to determine who is in poverty. If a family's total income is less than the family's threshold, then that family and every individual in it is considered in poverty.

Sources: U.S. Census Bureau 2021 American Community Survey 5-Year Estimates Tables B03002, B19013, and B17021



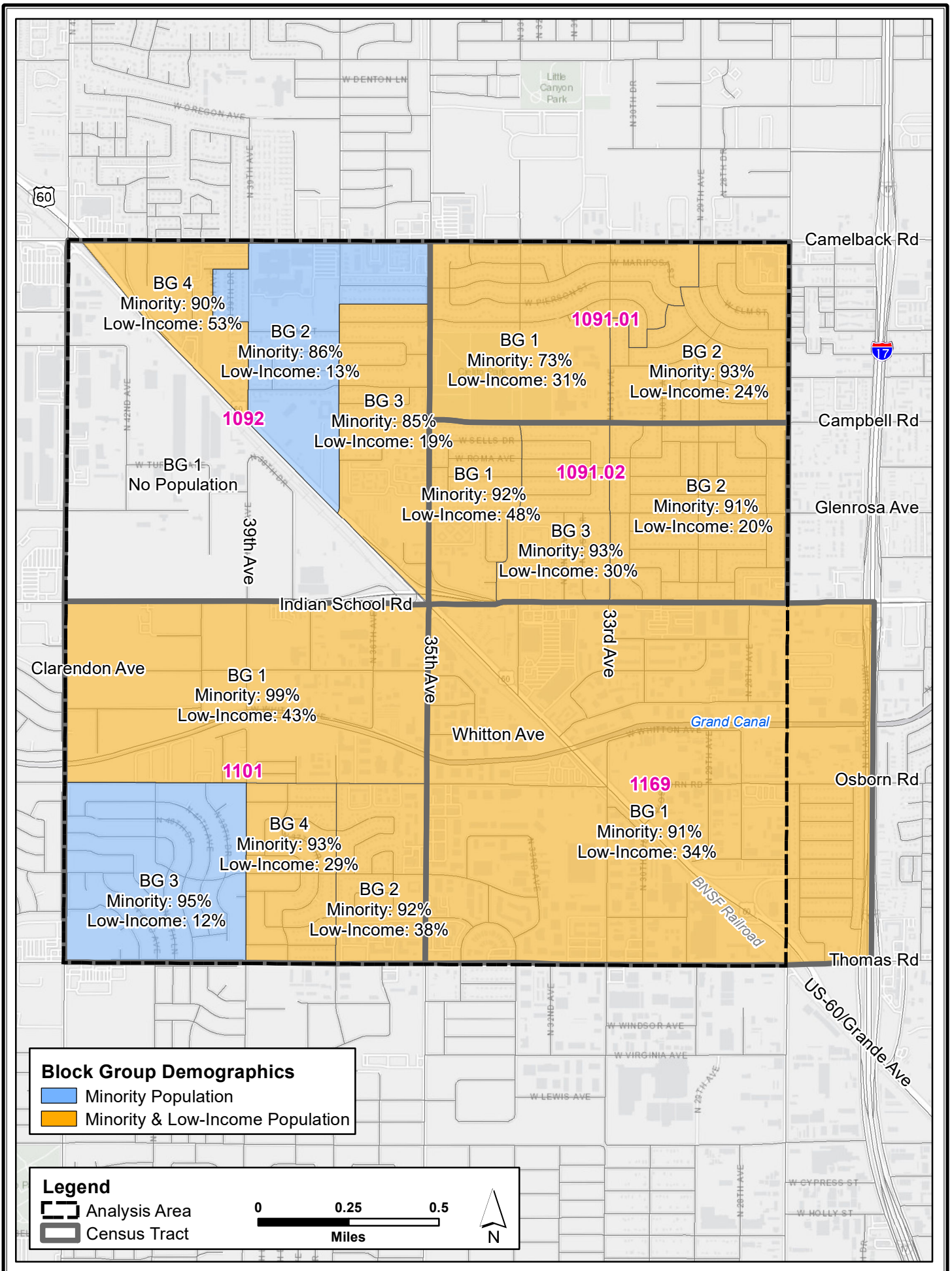


Figure 18. Block Groups with Minority and Low-Income Populations

This approach followed guidance from EPA that it may be reasonable to assess low-income thresholds in more than one way to be more inclusive, and that low-income status need not always be capped at poverty level.

With the exception of one Block Group for which there is zero population reported, there are minority and low-income EJ populations throughout the Analysis Area.

## **4.4.2 Environmental Consequences**

### **4.4.2.1 Preferred Build Alternative**

The Preferred Alternative would require the acquisition of 5 single-family homes and approximately 60 businesses. All the properties that would be displaced are considered as having low-income and minority EJ populations. To effectively address the traffic and safety issues of the intersection, the complete avoidance of protected populations would not be feasible.

The Analysis Area is primarily low-income and minority populations. Of the 14 Block Groups that were studied, 13 contained significantly higher percentages of these populations compared to the City of Phoenix, Maricopa County, and Arizona averages. However, potential impacts to the populations within the Analysis Area would not be considered disproportionately high and adverse once mitigation and benefits are considered. The Preferred Alternative was established in direct response to efforts by ADOT to improve the safety and traffic conditions of the intersection for the community. The primary benefactor from improvements would be the community surrounding the intersection, which is comprised of low-income and minority EJ populations. The redesigned roadway network, sidewalks, and future plans for public transit would significantly improve local mobility for the community.

Based on input from the City of Phoenix, providing enhanced accommodations for pedestrians, bicycles, and transit has been a priority for the project and a fatal flaw criteria throughout the development and consideration of alternatives. By eliminating the at-grade railroad crossing, the project would reduce the risk of pedestrian/train conflicts as well as reduce delays and interruptions caused by train pass-bys. Pedestrians would be able to use sidewalks along both sides of 35th Avenue and Indian School Road to cross US 60 (Grand Avenue) and the BNSF Railway. Activated crosswalk beacons would be provided on the eastbound Indian School Road entrance ramp from US 60 (Grand Avenue) and westbound Indian School Road exit ramp to US 60 (Grand Avenue), enhancing pedestrian connectivity across those roadways. The Preferred Alternative also includes 6-foot wide outside shoulders on both 35th Avenue and Indian School Road that would be marked for exclusive bicycle use. These shoulders/bike lanes would be carried through the project limits and would transition back to match existing conditions that do not contain shoulders/bike lanes. Local bus routes 35 and 41 would continue to operate and bus stops/pull-outs would be constructed in each direction of travel on 35th Avenue and Indian School Road. The Preferred Alternative includes adjustments to the project design that would accommodate the future BRT lanes and a station on 35th Avenue immediately north of Indian School Road, which are being planned by the City of Phoenix under a separate project. Coordination with the City of Phoenix BRT project will continue during final design of the Grand-35 project to match the BRT project design and to coordinate construction phasing, timing, and traffic control.

ADOT would develop a project-specific business relocation plan to reduce the severity of the adverse impacts resulting from business displacements. The business relocation plan would be developed based on engagement with the affected businesses to identify appropriate mitigation actions, assist with relocation efforts, and identify offsetting benefits. Further targeted outreach through community workshops and meetings with the tenants and/or homeowners of the affected

residences along Monterosa Avenue would occur. In addition, ADOT would conduct a public awareness campaign for the project as it continues through to final design and construction. Public outreach materials such as flyers, presentations, and websites would be available in Spanish and any other languages identified for LEP communities. Outreach would be conducted so that no person, based on race, color, or national origin, would be excluded from participation in the project. Targeted outreach would be completed to involve impacted business and residences to understand the potential impacts of the preferred alternative and inform the response to potential impacts.

Materials would be developed that include materials for LEP communities. All materials and outreach would also adhere to Title VI regulations so that no person, based on race, color or national origin, are excluded from participation in, or discrimination by this project. ADOT's Title VI: Nondiscrimination Program staff would be involved with this project through construction. ADOT also has materials available to the public regarding filing a complaint.

#### **4.4.2.2 Public Involvement**

ADOT has worked to engage a diverse population in its public participation efforts for this project. A key focus on the public outreach and agency coordination is to facilitate and understanding with the public regarding the study process, key milestones and decision points, and potential impacts.

Prior to the release of the Draft EA, there have been several outreach efforts including a project website, grassroots efforts by ADOT Community Relations, two public meetings, and a Village Planning Committee meeting. The first public meeting was held in October 2020 and conducted in English and Spanish. The meeting provided information on the project purpose and need, study timeline, and high-level information on the range of alternatives being considered. Specific information on potential right-of-way impacts had not yet been developed and was not presented. Notification for the public meeting was presented through newspaper advertisements, on the study website, GovDelivery press release, social media posts, direct mailers, television and radio interviews, direct canvassing, and email. During notification efforts several businesses on the northeast corner of the project intersection were identified as speaking Vietnamese and the language was added to ongoing translation services being provided for the project. The formal public comment period ran from October 7, 2020 to November 6, 2020 and a total of 72 comments were received. Comments received generally indicated that community members are supportive of the proposed improvements specifically supporting grade separation and improving traffic flow on US 60 (Grand Avenue).

A second public meeting was held in January 2023 and was conducted in English, Spanish, and Vietnamese. This second meeting provided information on the two alternatives being proposed with potential right-of-way impacts visible on project graphics. Specific information on potential right-of-way impacts had not been developed and was not presented. Notification for the second public meeting was presented through newspaper and radio advertisements, on the study website, GovDelivery press release, social media posts, direct mail, email, and direct poster delivery. Notifications were developed in English, Spanish, and Vietnamese. Several businesses identified as needing translation services in the previous efforts were directly notified. A second formal public comment period ended on February 21, 2023, and 92 comments were received which included 28 responses to a 14 question survey provided separately. Comments received generally were concerned about the potential displacement of businesses and homes by the project and inquiring for more information.

After evaluating the Analysis Area demographic data and implementing the methodology described above, ADOT incorporated a comprehensive list of techniques to reduce linguistic, cultural, institutional, geographic, and other barriers to meaningful participation into the public involvement

plan for the project. The techniques covered translation of project materials and oral interpretation into Spanish and Vietnamese; use of a bilingual hotline, study website, social media, and virtual meetings to share project information; distribution of direct mailers and letters to nearby and affected property owners; as well as in-person meetings with affected businesses and properties. A full description of the strategies used to identify and engage disadvantaged populations is provided in **Appendix B** and **Appendix G**.

#### 4.4.3 Environmental Commitments and Mitigation Measures

ADOT and the contractor would follow the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Uniform Relocation Act Amendments of 1987, the ADOT *Right of Way Procedures Manual*, Title VI of the Civil Rights Act of 1964, the ADOT *Public Involvement Plan*, and the 2010 Federal Highway Administration *Manual on Uniform Traffic Control Devices for Streets and Highways*.

##### Arizona Department of Transportation Design Responsibility

- The Arizona Department of Transportation would continue to facilitate opportunities for public engagement to identify community priorities and concerns as well as to develop and refine strategies for business and residential displacements throughout the project planning process and final design.
- During final design, ADOT would develop a traffic control plan that details traffic control measures and construction sequencing in coordination with the City of Phoenix. ADOT would coordinate with the City of Phoenix to keep transit stops open and accessible during construction. The traffic control plan would govern unless an alternate plan is approved by ADOT.
- During final design, ADOT would conduct public engagement activities with the business and property owners in the vicinity of the intersection to share the traffic control plan.
- At the initiation of final design, ADOT would develop a project-specific business relocation plan based on engagement with the owners of the affected businesses and in line with the requirements of Uniform Relocation and Real Property Acquisition Policies Act of 1970, as amended; 49 CFR Part 24, Subparts C through F; and ADOT policies and procedures. The business relocation plan will identify strategies that address community-specific concerns, outline specific steps that will be taken to assist businesses, and connect the business owners with available resources through the City of Phoenix and local small business support organizations.

##### Arizona Department of Transportation Central District Responsibilities

- During final design, ADOT would develop a traffic control plan that details traffic control measures and construction sequencing in coordination with the City of Phoenix. ADOT would coordinate with the City of Phoenix to keep transit stops open and accessible during construction. The traffic control plan would govern unless an alternate plan is approved by ADOT.

##### Arizona Department of Transportation Right-of-Way Responsibilities

- At the initiation of final design, ADOT would develop a project-specific business relocation plan based on engagement with the owners of the affected businesses and accordance with the requirements of Uniform Relocation and Real Property Acquisition Policies Act of 1970, as amended; 49 CFR Part 24, Subparts C through F; and ADOT policies and procedures. The business relocation plan will identify strategies that address community-specific concerns, outline specific steps that will be taken to assist businesses, and connect the



business owners with available resources through the City of Phoenix and local small business support organizations.

#### Contractor Responsibility

- With the exception of temporary, short-term closures (less than 3 hours), the contractor would maintain driveway access to all businesses and residences throughout the construction. If a property has multiple driveways, at least one would remain open at all times.
- The contractor, after coordination with the engineer, would communicate traffic control measures with the public, local officials, and the media prior to and during construction activities. Communication may include, but is not limited to, media alerts, social media, a project-specific mobile application, direct mailings to area businesses and property owners, information on variable message signs, and paid newspaper notices.
- The contractor shall follow the traffic control plan provided by the engineer.

#### **4.4.4 Conclusion**

While the project would result in adverse impacts to EJ populations, measures to avoid and minimize impacts have been identified and incorporated into the project to lower the adversity of the impacts. As committed to in the proposed mitigation measures, ADOT would continue to conduct targeted outreach to two groups: the tenants and/or homeowners of in the neighborhood affected by residential displacements, and the owners of the displaced businesses.

Based on the above discussion, analysis, and efforts to reduce adverse impacts, the Preferred Alternative would not cause disproportionately high and adverse effects on any minority or low-income populations in accordance with the provisions of E.O. 12898 and FHWA Order 6640.23A.

## 4.5 Cultural Resources

Cultural resources discussed in this section include archaeological sites and historic districts, buildings, and structures. Section 106 of the National Historic Preservation Act (NHPA) (54 U.S.C. 300101) and NEPA require federal agencies to consider the effects of their undertakings on historic properties and afford the State Historic Preservation Office (SHPO) and other interested parties opportunity to comment on such undertakings.

To be eligible for the National Register of Historic Places (NRHP), properties must have national, state, or local significance in American history, architecture, archaeology, engineering, or culture and be at least 50 years old, unless they are exceptionally significant (36 CFR Part 60). Properties also must retain enough integrity of location, design, setting, materials, workmanship, feeling, and association to convey their historic values, and meet at least one of four criteria:

- **Criterion A:** are associated with events that have made a significant contribution to the broad patterns of our history; or
- **Criterion B:** are associated with the lives of persons significant in our past; or
- **Criterion C:** embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- **Criterion D:** have yielded, or may be likely to yield, information important in prehistory or history.

Certain types of resources are not usually considered for listing in the NRHP, including religious properties, birthplaces and graves of historical figures, cemeteries, reconstructed historic buildings, commemorative properties, and resources achieving significance within the past 50 years. However, a resource that falls within one of those categories can be eligible for listing in the NRHP if it meets one of the following criteria considerations in conjunction with one or more of the four standard NRHP criteria listed above:

- A. A religious property deriving primary significance from architectural or artistic distinction or historical importance; or
- B. A building or structure removed from its original location, but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
- C. A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his or her productive life; or
- D. A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or
- E. A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or
- F. A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or
- G. A property achieving significance within the past 50 years if it is of exceptional importance.

Prior cultural resource studies and a survey that evaluated the NRHP eligibility of previously unrecorded historic-period buildings were the basis for the assessment (Johnson and Rogge 2023a,

2023b). The assessment was completed by individuals that meet the Secretary of the Interior's professional qualifications standards for history, architectural history, and archaeology.

ADOT delineated the cultural resources area of potential effects (APE) to include the project area that was being considered in October 2022, pursuant to 36 CFR Part 800.16(d) (**Figure 19**). The six-point intersection of US 60 (Grand Avenue), 35th Avenue, and Indian School Road at US 60 (Grand Avenue) milepost 159.0 anchored the irregularly shaped APE that extended:

- Northwest along US 60 (Grand Avenue) to milepost 158.3 at 39th Avenue and southeast to milepost 159.7 at Osborn Road
- South along 35th Avenue 0.4 mile to the Grand Canal and north 0.4 mile to just north of Turney Avenue
- West along Indian School Road 0.6 mile to 40th Avenue and east 0.5 mile to 31st Avenue

The APE was delineated to include the areas that could be directly disturbed by construction of the preliminarily designed alternatives under consideration as of October 2022, and all adjacent parcels as defined by the Maricopa County assessor, which might be affected by proximity impacts such as visual changes, increased noise, and altered access including possible property acquisitions for new ROW.

Adverse effects can occur when a project may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the historic integrity of the property's location, design, setting, materials, workmanship, feeling, or association [36 CFR 800.5(a)(2)(i) through (vii)]. The criteria of adverse effect were applied to address potential effects of the Build Alternative on the historic properties identified within the APE.







### 4.5.1 Existing Conditions

The records review determined that five prior cultural resources studies covered about 10 percent of the entire APE. The prior studies recorded four cultural resources in the APE, all of which are eligible for, or listed in, the NRHP. The recorded cultural resources include one dated to the prehistoric era—the buried remnant of a prehistoric Hohokam irrigation canal—that was documented and no further study was recommended. The other previously recorded historic resources include an in-use highway, railway, and irrigation canal (**Table 11, Figure 19**). SHPO previously agreed the segments of the railway and the highway within the APE have been substantially altered since the historic era and no longer possess character-defining elements.

**Table 11. Cultural Resources in the Area of Potential Effects**

| Site Name, Number                            | Site Type  | Affiliation, Age                                   | NRHP Status   | Reference  |
|--|--|--|---|--|
| <b>Previously Recorded</b>                   |  |  |   |  |
| AZ T:12:420(ASM)                             | buried remnant of irrigation canal                   | Hohokam  | eligible, Criterion D, data recovery completed, no further study recommended                        | Luhnow 2014  |
| Santa Fe, Prescott, & Phoenix Railway        | railway constructed 1890s                            | Euro-American, 1895, in use as BNSF Railway        | segment in APE eligible, Criterion A  | Indermill 1995   |
| U.S. Highway 60/70/89                        | highway (component of historic state highway system) | Euro-American, 1932, in use as Grand Avenue in APE | eligible, Criterion D, but segment in APE is not a character-defining element                       | Wright 1994; Lite and Cadiente 1997; Spalding and Lefthand 1995; FHWA 2002 |
| Grand Canal                                  | irrigation canal, component of Salt River Project    | Euro-American, 1878, in use                        | listed as contributor to Salt River Project Diversion and Conveyance Historic District, Criterion A | Stone 1998; Bailey 2010  |
| <b>Newly Recorded</b>                        |  |  |   |  |
| Mr. Lucky's, 3660 Grand Avenue               | former live music night club                         | 1966-2004  | eligible, Criteria A and C  | Johnson and Rogge 2023   |
| Phoenix Coliseum, 3839 W. Indian School Road | large, multi-purpose event facility                  | 1956-1958  | eligible, Criterion A   | Johnson and Rogge 2023   |

Source: Johnson and Rogge 2023a

ADOT also consulted 12 tribes with traditional cultural affiliations with the Salt River Valley to solicit information about traditional cultural resources significant to those tribes and their concerns about potential impacts on such resources. None of the consulted tribes identified traditional cultural resources in the project vicinity or expressed any concerns about impacts of the project on cultural resources.

A survey documented and evaluated 118 parcels, which included 150 previously unrecorded historic-period resources. (The historic period was defined as any resource constructed in 1982 or earlier to include properties that would meet the 50-year threshold for NRHP eligibility consideration at the anticipated completion of project construction in 2027, plus an additional 5-year buffer for any unexpected delays in project implementation.) ADOT concluded two of those properties—Mr. Lucky's and the Phoenix Coliseum—demonstrate sufficient historic significance and integrity to

qualify for listing in the NRHP (**Figure 19**). ADOT provided the cultural resource survey report to SHPO on March 1, 2023, and the SHPO agreed both properties are NRHP eligible on March 7 2023.

In 1966, two developers built Mr. Lucky's with an iconic 50-foot-tall sign featuring a grinning joker, anticipating that gambling would be legalized in Arizona and the building would be the state's first Las Vegas-style casino. Although Arizona did not legalize gaming, the facility thrived for almost four decades as a night club that became popular as a country western and rock and pop music venue that attracted many big name artists. The popularity of the night club waned with increasing urbanization and it closed in 2004, but many residents still remember it as Phoenix's most authentic western bar. The building, which is currently being remodeled as a restaurant, retains significant historical associations with the country music scene in Phoenix and as a social landmark in west Phoenix and the Salt River Valley between 1966 and 2004. The Mr. Lucky's sign is also significant as a unique and locally rare example of a large neon sign designed by local sign designer, Glen Guyette.

An industrial developer built the Phoenix Coliseum in 1956 under a lease-to-own agreement with a group of investors organized as the Phoenix Coliseum Corporation. The large, multi-purpose event space was designed to accommodate an ice skating rink, horse shows, sporting events, conventions, and concerts.

At the time of its construction, it was the largest building for special events between Dallas and Los Angeles. Bob Hope and Jane Russel headlined a successful grand opening, but within 6 months, the Phoenix Coliseum Corporation closed the venue and dropped its option to purchase the property due to the financial burden of operating costs and construction debt. After a year of failed attempts to operate the facility profitably, the owner leased the building to a members-only department store for 15 years. Several tenants occupied the building in the 1970s. Since 1981, the building has housed indoor soccer and continues to operate as the Phoenix Sports Centre. The property is significant for its associations with early efforts by local developers and businessmen to create a large, indoor event venue in Phoenix to host local events, as well as attract national conventions and top indoor sporting events and bring Phoenix closer to becoming a major metropolis. The property's location on the outskirts of the Phoenix city limits where zoning restrictions did not apply and its proximity to Maryvale, other new residential subdivisions, and the planned Black Canyon Freeway (Interstate 17), is indicative of the region's development patterns in the post-World War II era.

## **4.5.2 Environmental Consequences**

ADOT assessed impacts using criteria for adverse effects defined in regulations implementing Section 106 of the NHPA (36 CFR 800.5), which define an adverse effect as a direct or indirect alteration of characteristics of a historic property that qualify the property for the NRHP. The proposed project would not move any of the six NRHP-eligible properties in the APE, and is not expected to change their uses, restrict access, or result in transfer, lease, or sale of any of the properties. There also is no indication that the proposed project would result in neglect and deterioration, or inappropriate restoration or rehabilitation that would diminish the historical integrity of those six properties. Therefore, the assessment focused on potential physical disturbance or destruction and proximity impacts due to visual changes and increased noise and vibrations.

### **4.5.2.1 Preferred Alternative**

#### **Archaeological Site AZ T:12:420(ASM)**

Archaeological monitoring of prior upgrades of US 60 (Grand Avenue) discovered site AZ T:12:420(ASM) and recovered and preserved important information about the site (Luhnow

2014). The site is outside the areas that would be disturbed by the project and the assessment concluded the project would result in no effect to the archaeological site.

### **Santa Fe, Prescott & Phoenix Railway**

The segment of the historic Santa Fe, Prescott & Phoenix railway within the APE remains in use as the BNSF Railway. Upgrades to current standards transformed the railroad to a modern railroad, and the SHPO previously agreed that the segment of the railroad in the APE has been substantially altered since the historic era and is no longer a character-defining component of the historic railroad.

The project design includes components within parcels of land the BNSF Railway owns adjacent to the historic railroad corridor. However, no project components would be within the boundary of the historic railroad corridor, nor would the project need to acquire any ROW from the historic railroad corridor. The assessment concluded the project would not diminish the historic integrity of any character-defining features that make the Santa Fe, Phoenix & Phoenix Railway NRHP eligible and would result in no adverse effect.

### **US Highway 60/70/89**

US 60 (Grand Avenue) remains in use and prior widening and upgrades have given the historic highway the appearance of a major arterial street within the APE. The SHPO previously agreed the segment of the highway in the APE has been substantially altered since the historic era and is no longer a character-defining component of the historic highway.

To provide continued access to properties in the project vicinity, the project includes an extension of West Glenrosa Avenue that would create a new intersection with US 60 (Grand Avenue), modify the northwest bound ramp onto US 60 (Grand Avenue), and add a lane to the north side of the highway between the modified on-ramp and the new West Glenrosa Avenue intersection. The assessment concluded the project would not diminish the historic integrity of any character-defining features that make the highway NRHP eligible and would result in no adverse effect.

### **Grand Canal**

The Grand Canal remains in use as a major canal of the Salt River Project irrigation system. The canal crosses US 60 (Grand Avenue) outside the areas that would be disturbed by the project, and the project would not substantially alter the existing setting of the canal. The assessment concluded the project would not diminish the historic integrity of any character-defining features that qualify the canal as a contributor to the NRHP-listed Salt River Project Diversion and Conveyance System Historic District and would result in no effect.

### **Mr. Lucky's (3660 Grand Avenue)**

Initial project designs required demolition of the Mr. Lucky's building. After the property was determined to be NRHP eligible, project engineers revised the design to avoid direct physical impact to the building and the iconic historic sign on the property. The project would require acquisition of approximately 0.1 acre from the parking lot at the southern tip of the 1.5-acre Mr. Lucky's parcel. Although the extension of West Glenrosa Avenue would be close to the sign, it would be no closer than the current alignment of US 60 (Grand Avenue). In addition, the parking lot is not considered a character-defining feature of the resource and the small acquisition would not diminish the resource's historic integrity.

The project would not affect the use of the property. Construction of the upgraded overpass and the associated improvements would introduce new visual elements but they would be similar to the existing setting, which includes the existing overpass and modern city streets. Temporary increases

in noise and vibration during construction would be short term and would not affect the structural integrity of the building or sign. The assessment concluded the project would not diminish the historic integrity of any character-defining features that make the Mr. Lucky's property NRHP eligible and would result in no adverse effect.

### Phoenix Coliseum (3839 W. Indian School Road)

The Phoenix Coliseum remains in use as the Phoenix Sports Centre. The building is set back from the south side of Indian School Road approximately 250 feet, and a large parking lot separates the building and the street. Construction of the upgraded overpass and the associated improvements would introduce new visual elements but they would be similar to the existing setting, which includes the existing overpass and modern city streets. Temporary increases in noise and vibration during construction would be short term and not affect the structural integrity of the building. The assessment concluded the project would not diminish the historic integrity of any character-defining features that make the Phoenix Coliseum property NRHP eligible and would result in no adverse effect.

In summary, the proposed project is expected to have no effect on archaeological site AZ T:12:420(ASM) and the historic Grand Canal, and no adverse effect on four NRHP-eligible historic properties in the APE (**Table 12**).

**Table 12. Summary of Potential Effects on NRHP-Eligible Cultural Resources**

| Site Name, Number                     | Type   | Nature of Proposed Project Impacts <sup>a</sup>  | Determination of Effect |
|---------------------------------------|--|--|-------------------------|
| AZ T:12:420(ASM)                      | buried remnant of prehistoric Hohokam irrigation canal | A study of in conjunction with prior upgrades of US 60 (Grand Avenue) identified the site and recovered information. ADOT concluded no additional study was warranted and the SHPO concurred. The project has no potential to disturb the site because the project involves no improvements of US 60 (Grand Avenue) at the site location.  | no effect               |
| Santa Fe, Prescott, & Phoenix Railway | railway built in 1895                                  | The project would not alter the railroad and proximity impacts would not substantially alter the setting of the railroad, which remains in use. Because the upgraded segment of the railroad within the APE was previously determined to no longer be a character-defining element of the historic railroad, the changes would not adversely affect aspects of the railroad that make it NRHP eligible.  | no adverse effect       |
| U.S. Highway 60/70/89                 | highway (component of historic state highway system)   | Extension of West Glenrosa Avenue would create a new intersection, the northwest bound onramp would be modified, and a lane would be added to the north side of the highway between the modified onramp and the new West Glenrosa Avenue intersection. Grand Avenue would be re-stripped to improve traffic flow. Because the widened and upgraded segment of the highway in the APE was previously determined to no longer be a character-defining element of the historic highway, the changes would not adversely affect aspects of the highway that make it NRHP eligible. | no adverse effect       |



## AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES

| Site Name, Number | Type  | Nature of Proposed Project Impacts <sup>a</sup>  | Determination of Effect |
|-------------------|---|--|-------------------------|
| Grand Canal       | irrigation canal, component of Salt River Project | The proposed project would not modify US 60 (Grand Avenue) at the crossing of the canal.   | no effect               |
| Mr. Lucky's       | live music night club                             | Approximately 0.1 acre at the southern tip of the 1.5-acre property would be acquired from the parking lot for new ROW. The primary building and sign would not be altered, and proximity impacts and small ROW acquisition would not affect character-defining aspects of the historic property. ADOT concluded the project would result in no adverse effect and the SHPO concurred. | no adverse effect       |
| Phoenix Coliseum  | large, multi-purpose event facility               | The building would not be altered, and proximity impacts would not affect character-defining aspects of the historic property. ADOT concluded the project would result in no adverse effect and the SHPO concurred.  | no adverse effect       |

Source: Johnson and Rogge 2023b

<sup>a</sup> The No-Build Alternative would have no effect on any of the cultural resources.

#### 4.5.2.2 No-Build Alternative

The No-Build Alternative assumes no modifications would be made to the US 60 (Grand Avenue), 35th Avenue, and Indian School Road intersection, other than routine maintenance. The No-Build Alternative would not reduce traffic congestion, enhance safety, and improve pedestrian and bicycle facilities, but would have no adverse effect on historic properties.

#### 4.5.3 Environmental Commitments and/or Mitigation Measures

Because the assessment concluded the project would result in no adverse effect to historic properties, no mitigation measures are warranted. If unidentified historic properties are discovered during construction, or if the undertaking affects known historic properties in unanticipated ways, ADOT would follow regulatory procedures for discoveries (36 CFR 800.13(b)(1)) and ADOT Standard Specifications.

#### 4.5.4 Conclusion

The assessment concluded the Preferred Alternative and the No-Build Alternative would result in no adverse effect to NRHP-eligible properties. On July 27, 2023, the SHPO concurred with ADOT's Finding of No Adverse Effect. Five tribes with traditional cultural affiliations with the Salt River Valley (Hopi Tribe, Pascua-Yaqui Tribe, Salt River Pima Maricopa Indian Community, Tohono O'odham Nation, and White Mountain Apache Tribe) and two consulting agencies (BNSF and City of Phoenix Archaeology Office) also concurred with ADOT's finding.

## 4.6 Section 4(f) Resources

Section 4(f) applies to the use of public parks, recreation areas, wildlife and waterfowl refuges, and historic sites. This section discusses the Preferred Alternative's potential impacts on recreational and historic resources protected under Section 4(f) of the Department of Transportation Act of 1966, as amended. Descriptions of Section 4(f) resources are listed below:

- **Public Park:** An area of open space that is open to the public and maintained in its natural state and/or kept for recreation by the appropriate municipality
- **Recreation Area:** Land that is designed, constructed, designated, or used for recreational activities
- **Wildlife/Waterfowl Refuge:** Lands and water administered as areas for the protection and conservation of fish and wildlife that are threatened with extinction, wildlife management areas or waterfowl production areas
- **Historic Sites:** Any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the National register of Historic Places.

The evaluation was prepared to comply with:

- Section 4(f) of the US Department of Transportation Act of 1966 (49 U.S.C. 303), hereinafter referred to as "Section 4(f)"
- Its implementing regulations codified at 23 CFR Part 774

Additional guidance was obtained from:

- ADOT's Section 4(f) Manual (ADOT 2019c)
- FHWA Section 4(f) Policy Paper (FHWA 2012)

Section 4(f) of the Department of Transportation Act of 1966, as amended, states that ADOT or FHWA [ADOT under NEPA Assignment] "... may approve a transportation program or project ... requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance (as determined by the Federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if

- (1) there is no prudent and feasible alternative to using that land; and
  - (2) the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use
- or*
- (3) the use of the property will have a *de minimis* impact (49 USC 303[c])."

A "use" of a Section 4(f) property, as defined in 23 CFR 774, occurs:

- (1) when land is permanently incorporated into a transportation facility;
- (2) when there is a temporary occupancy of land that is adverse in terms of the statute's preservationist purposes; or
- (3) when there is a constructive use of the Section 4(f) property.

A constructive use of a Section 4(f) property occurs when the transportation project does not incorporate land from a Section 4(f) property, but the project's proximity impacts are so severe that

the protected activities, features, or attributes that qualify a property for protection under Section 4(f) are substantially impaired. For example, a constructive use can occur when:

(a) the projected noise level increase, attributable to the project, substantially interferes with the use and enjoyment of a noise-sensitive facility of a property protected by Section 4(f);

(b) the proximity of the proposed project substantially impairs aesthetic features or attributes of a property protected by Section 4(f), where such features or attributes are considered important contributing elements to the value of the property (an example of such an effect would be the location of a proposed transportation facility in such proximity that it obstructs or eliminates the primary views of an architecturally significant historical building or substantially detracts from the setting of a park or historic site that derives its value in substantial part due to its setting);

and/or

(c) the project results in a restriction of access that substantially diminishes the utility of a significant publicly owned park, recreation area, or historic site.

A *de minimis* use of a Section 4(f) property occurs when the transportation project results in no adverse effect to the activities, features, or attributes qualifying a park, recreation area, or refuge for protection under Section 4(f). For example, a *de minimis* use can occur when:

- Impacts on publicly owned parks, recreation areas, and wildlife and waterfowl refuges are defined as those that do not adversely affect the activities, features, or attributes of the Section 4(f) resource
- Impacts on historic sites are defined as the determination of either "no adverse effect" or "no historic properties impacted" in compliance with Section 106 regulations, including SHPO's written concurrence, when applicable

#### 4.6.1 Coordination and Consultation

Section 4(f) requires coordination with the official with jurisdiction over a Section 4(f) property (23 CFR 774.5). Coordination with the SHPO regarding the historic eligibility and finding of no adverse effect at the Mr. Lucky's property is required. On March 7, 2023, the SHPO concurred with the eligibility recommendations under Section 106. SHPO concurred with a finding of no adverse effect for Mr. Lucky's on July 27, 2023 (attached in **Appendix H**). ADOT has notified SHPO of its intent to make a *de minimis* impact finding.

#### 4.6.2 Existing Conditions

ADOT identified six properties that are afforded protection under Section 4(f) in the Study Area. Four of the Section 4(f) properties are historic properties determined to be eligible for listing in the NRHP (BNSF Railway, Former Phoenix Coliseum, Mr. Lucky's, and the Grand Canal). Two of the Section 4(f) properties are not historic properties (Cielito Park and the Grand Canal Recreational Trail).

**Figure 20** shows the location of the properties, and **Table 13** lists each property, its location, type and significance, and amenities.





**Table 13. Section 4(f) Properties in the Study Area**

| Number on Figure 20 | Property Name   | Location/Address  | Type of Property/Significance   | Property Amenities  | Official(s) with Jurisdiction             |
|---------------------|---|---|---|---|---|
| 1                   | BNSF Railway (former Atchison, Topeka & Santa Fe Railway) | West side of US 60 (Grand Avenue) at the intersection of Indian School Road | Historic rail line (Criterion A); active rail line/significant elements are the tracks          | Two at-grade, parallel railroad tracks                        | State Historic Preservation Office (SHPO) |
| 2                   | Former Phoenix Coliseum                                   | South side of Indian School Road, west of 39th Avenue                       | Historic building (Criterion A); noncontributing parking lot/locally significant as event space | Building formerly used as an event space; on-site parking lot | SHPO                                      |
| 3                   | Cielito Park  | 3402 West Campbell Avenue, Phoenix, AZ 85017                                | City of Phoenix public park with active and passive recreation                                  | Ball courts, pool, playground, picnic area                    | City of Phoenix                           |
| 4                   | Grand Canal Recreation Trail                              | Intersection of North 35 <sup>th</sup> Avenue and Grand Canal               | City of Phoenix public trail  | Multi-use trail, concrete paved trail, lighting, seating      | City of Phoenix                           |
| 5                   | Historic Grand Canal                                      | Intersection of North 35 <sup>th</sup> Avenue and Grand Canal               | Historic canal  |   | SHPO                                      |
| 6                   | Mr. Lucky's   | Intersection of US 60 (Grand Avenue) and North 37 <sup>th</sup> Avenue      | Historic building and sign (Criterion A and C); noncontributing parking lot/former nightclub    | Existing building being used as a furniture store; sign       | SHPO                                      |

Source: ADOT 2023b

### 4.6.3 Environmental Consequences

#### 4.6.3.1 Preferred Alternative

**Table 14** summarizes the project impacts and the Section 4(f) determinations of use for historic Section 4(f) properties. SHPO concurred with a finding of no adverse effect for the historic properties listed in the table below on July 27, 2023 (attached in **Appendix H**).

**Table 15** summarizes the project impacts and the preliminary Section 4(f) determinations of use for non-historic Section 4(f) properties.

**Table 14. Project Impacts and Section 4(f) Determinations of Use: Historic Properties**

| Property Name   | Description of Project Impact   | Section 106 Finding of Effect (for Historic Properties) | Preliminary Section 4(f) Determination of Use |
|---|---|---|---|
| Former Phoenix Coliseum                                   | The project would not permanently or temporarily incorporate land from the Former Phoenix Coliseum.   | No adverse effect                                       | No use of Section 4(f) property               |
| Mr. Lucky's   | The project would permanently incorporate land from a portion Mr. Lucky's for transportation use. The new Indian School Road bridge would have an additional travel lane in each direction; ADOT would taper the bridge approach down to the existing US 60 (Grand Avenue) two-lane section near 39th Avenue. ADOT would acquire permanent ROW on both sides of US 60 (Grand Avenue) for this taper, including a strip of land (less than 0.08 acre) from the Mr. Lucky's parcel. No temporary impact.  | No adverse effect                                       | <i>De minimis</i> impact                      |
| BNSF Railway (former Atchison, Topeka & Santa Fe Railway) | The existing Indian School Road bridge over the railway would be removed, and a new bridge for 35th Avenue and Indian School Road would be constructed to pass over the railroad and US 60 (Grand Avenue). Impacts to the railroad tracks and railroad operations would be avoided. There may be a need to access or construct project elements on BNSF-owned properties adjacent to the railroad track corridor; however, the historic property boundary of the NRHP-eligible railroad is limited to the track ROW and does not include these parcels. | No adverse effect                                       | No use of Section 4(f) property               |
| Historic Grand Canal                                      | The existing canal and component of Salt River Project were constructed in 1878, and previously determined NRHP eligible under Criterion A. No impact to the property, as it is located south of the project limits and entirely avoided by the project.  | No adverse effect                                       | No use of Section 4(f) property               |

Source: ADOT 2023b

**Table 15. Project Impacts and Section 4(f) Determinations of Use: Parks and Trails**

| Property Name                  | Description of Project Impact  | Preliminary Section 4(f) Determination of Use |
|--------------------------------|--|---|
| Cielito Park                   | Project activities would be 700 feet south of the park; no temporary or permanent impact to the park. The project would not permanently or temporarily incorporate land from Cielito Park. Temporary closures of 35 <sup>th</sup> Avenue may be required during construction, but these closures would likely be limited to the segment of 35 <sup>th</sup> Avenue between roughly West Clarendon Avenue and West Glenrosa Avenue. Cielito Park is at the northeast quadrant of West Campbell and 35 <sup>th</sup> Avenue, and is outside the limits of where 35 <sup>th</sup> Avenue would be closed. People can access the park off of West Campbell Avenue and 35 <sup>th</sup> Avenue; no closures of those roads are anticipated. Park users may experience temporary delays getting to the park during construction due to traffic control. As a result, the Section 4(f) determination of use is no use.  | No use of Section 4(f) property               |
| Grand Canal Recreational Trail | Project activities would be 250 feet north of the trail; no temporary or permanent impact to the trail. The Grand Canal is a historic Section 4(f) property, while its associated recreation trail is a non-historic Section 4(f) property. The project would not permanently or temporarily incorporate land from the Grand Canal or associated recreation trail. Temporary closures of 35 <sup>th</sup> Avenue may be required during construction, but these closures would likely be limited to a small segment of 35 <sup>th</sup> Avenue between roughly West Clarendon Avenue and West Glenrosa Avenue. Access to the trail is located approximately 280 feet south of the southern project limits on 35 <sup>th</sup> Avenue, and would not be impacted by closures on 35 <sup>th</sup> Avenue. Trail users may experience temporary delays getting to the trail access off 35 <sup>th</sup> Avenue during construction. As a result, the Section 4(f) determination of use is no use. | No use of Section 4(f) property               |

Source: ADOT 2023b

#### 4.6.3.2 No-Build Alternative

The No-Build Alternative would not result in effects on properties afforded protection under Section 4(f) related to the proposed improvements. However, the No-Build Alternative would not prevent nonfederal projects (for example, private development) from adversely affecting properties afforded protection under Section 4(f).

#### 4.6.4 Environmental Commitments and/or Mitigation Measures

No mitigation is necessary for the affected historic Section 4(f) property (Mr. Lucky's) because the project would have no adverse effects under Section 106. ADOT has made an initial determination of a *de minimis* impact finding under Section 4(f) for Mr. Lucky's. This initial determination is subject to public review and comment before being finalized. No mitigation is necessary for the Cielito Park and the Grand Canal Trail, as the project would have no use of these properties and they would be avoided by permanent project improvements. The park and trail are within the limits of temporary traffic control measures during construction, and anticipated traffic control measures and closures on 35<sup>th</sup> Avenue may result in temporary delays for park visitors and trail users as they travel to these properties.

#### 4.6.5 Conclusion

Six Section 4(f) properties are located in the Study Area. One historic railroad property, BNSF Railway, has no impact. One historic Section 4(f) property, the former Mr. Lucky's, would be impacted by small sliver of ROW acquisition within the parking lot. SHPO concurred with a finding of no adverse effect for Mr. Lucky's on July 27, 2023 (attached in **Appendix H**). Two historic Section 4(f) properties (Grand Canal and Mr. Lucky's) would have no use, as they are avoided by the project. One park and one recreation trail (Cielito Park and Grand Canal Recreation Trail) are located outside the project construction limits with no Section 4(f) use. The park and recreation trail are located within the limits of temporary construction traffic control measures, but access to these properties would be maintained at all times during construction.



## 4.7 Traffic and Transportation

This section discusses the existing transportation system that connects to the US 60 (Grand Avenue), 35th Avenue, and Indian School Road intersection and potential future effects on the system resulting from the Project. Additional information on existing and future traffic and LOS and traffic operations may be reviewed in the Initial Design Concept Report prepared for the project (ADOT 2023b) and available on the project website.

The segment of US 60 (Grand Avenue) between I-17 and SR 101L is one of the primary urban arterial corridors serving regional commuter traffic supporting the Cities of Phoenix, Glendale, and Peoria. To the northwest, it is also a vital link in the Statewide Highway System serving as the continuation of US 93 linking the Phoenix metropolitan area to Las Vegas, Nevada. Indian School Road is an east-west arterial street that passes through the central portion of the Phoenix metropolitan area and provides a continuous east-west connection from SR 101L in the City of Scottsdale to SR 303L in the City of Goodyear. 35th Avenue is a north-south arterial street that passes through the central portion of the Phoenix metropolitan area spanning a length of 23 miles connecting south Phoenix to north Phoenix. The BNSF Railway is adjacent and parallel to US 60 (Grand Avenue). The BNSF Railway provides a high degree of access control for US 60 (Grand Avenue) throughout the corridor with roadway connections limited to the major arterial street intersections.

All three roadways serve regional or sub-regional mobility with US 60 (Grand Avenue) being one of the primary urban arterial streets in the west valley. Projected increases in population, housing, and employment will lead to increased travel demand.

### 4.7.1 Traffic Volumes

Historical traffic county data were obtained from the ADOT Multi-Modal Planning Division for years 2007 through 2017. Historically, during this time period, the traffic count data ranged from 46,000 to 49,000 vehicles per day (VPD) on US 60 (Grand Avenue) between 33rd Avenue and 39th Avenue. Traffic count data were also obtained from the MAG website. During the same time period, traffic count data ranged from approximately 41,000 to 60,000 VPD on Indian School Road between 33rd Avenue and 39th Avenue. The existing and future peak hour intersection traffic volumes are shown in **Table 16** (ADOT 2023b).

### 4.7.2 Operational Analysis

A traffic operational analysis was conducted using VISSIM, a traffic simulation software. This analysis included all signalized intersections for the existing conditions, No-Build Alternative, and Preferred Alternative. LOS is a qualitative measure of traffic operations used to characterize traffic flow conditions in terms of speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. LOS has different letter designations ranging from A to F with LOS A representing the best operational conditions and LOS F representing a high degree of congestion. **Table 17** summarizes the operational analysis for existing and future peak hour conditions within the project area.

**Table 16. Existing and Future Traffic Volumes**

| Intersection                         | AM Peak Hour (veh/hour) Entering Traffic volumes                               |          |                                    | PM Peak Hour (veh/hour) Entering Traffic volumes                               |          |                                    |
|--------------------------------------|--|----------|------------------------------------|--|----------|------------------------------------|
|                                      | Existing Conditions  | No-Build | Build                              | Existing Conditions  | No-Build | Build                              |
| US 60/35th Avenue/Indian School Road | 4,960  | 5,905    | Existing signal removed by project | 5,310  | 6,315    | Existing signal removed by project |
| 35th Avenue/Indian School Road       | New signal added by project (no signal under existing and No Build conditions) |          | 5,840                              | New signal added by project (no signal under existing and No Build conditions) |          | 6,935                              |
| Indian School Road/33rd Avenue       | 3,680  | 4,760    | 5,610                              | 4,420  | 5,520    | 6,225                              |
| US 60/33rd Avenue                    | 3,550  | 4,570    | 4,580                              | 3,300  | 4,280    | 4,305                              |
| 35th Avenue/Clarendon Avenue         | 1,820  | 2,300    | 2,245                              | 2,340  | 2,920    | 3,190                              |

Source: ADOT 2023b

**Table 17. Operational Analysis Results**

| Alternative          | Intersections with Overall Intersection LOS E or F during AM or PM Peak Hour |
|----------------------|--|
| Existing Conditions  | 35th Avenue / Monterosa Street   |
|                      | US 60 / 35th Avenue /Indian School Road                                      |
|                      | US 60 / 33rd Avenue  |
| No-Build Alternative | 35th Avenue / Monterosa Street   |
|                      | US 60 / 35th Ave/Indian School Road  |
|                      | US 60 / 33rd Avenue  |
|                      | 35th Avenue / Glenrosa Avenue  |
|                      | 35th Avenue / Clarendon Avenue   |
|                      | Indian School Road / 33rd Avenue   |
| Build Alternative    | None   |

Source: ADOT 2023b

### 4.7.3 Environmental Consequences

#### 4.7.3.1 Preferred Alternative

##### Permanent Impacts

The Preferred Alternative would increase capacity and operational efficiency of the intersections and roadways within the project area. The existing six-legged intersection would be removed from US 60 (Grand Avenue), thus reducing congestion along US 60 (Grand Avenue). The Preferred Alternative

would also eliminate vehicle and pedestrian conflict points with the BNSF Railway and would improve emergency response times by eliminating delays caused by the railroad crossing.

### **Temporary Construction-Related Impacts**

Construction of the Preferred Alternative would last approximately 2 years. During construction, some traffic disruption is expected to occur on Indian School Road, 35th Avenue, and US 60 (Grand Avenue). Temporary lane reductions and restrictions would be needed along with night construction operations. Because the new 35th Avenue bridge is close to the existing 35th Avenue roadway, full closures of 35th Avenue would likely be required. Closures would likely be limited to the segment of 35th Avenue between roughly West Clarendon Avenue and West Glenrosa Avenue. Closures of US 60 (Grand Avenue) would likely be required when the segment of the existing Indian School Road bridge over US 60 (Grand Avenue) is removed, and when the segment of the new bridges over US 60 (Grand Avenue) are constructed. Lane restrictions and closures on US 60 (Grand Avenue) would be minimized to the extent possible.

#### **4.7.3.2 No-Build Alternative**

The No-Build Alternative would only include projects that are planned by other agencies and would not result in any other improvements to this location. The BRT project along 35th Avenue would be implemented, and it is assumed that the BRT project would eliminate a northbound lane on 35th Avenue.

Under the No-Build Alternative traffic volumes would continue to increase over time. As shown in **Table 17**, the US 60 (Grand Avenue)/35th Avenue and Indian School Road intersection, along with several other intersections within the project area, would not accommodate the future traffic volumes and would result in unacceptable LOS.

There would be no construction impacts associated with the No-Build Alternative.

#### **4.7.4 Environmental Commitments and/or Mitigation Measures**

ADOT and the contractor would follow ADOT's Temporary Traffic Control Design Guidelines and ADOT's Standard Specifications for Road and Bridge Construction.

##### ADOT Department of Transportation Design Responsibility

- To offset major traffic disruptions to communities in the area, a traffic control plan will be developed and will be communicated to the public as part of final design.

#### **4.7.5 Conclusion**

As described throughout this section, the US 60 (Grand Avenue), 35th Avenue, and Indian School Road intersection is currently experiencing poor LOS E or LOS F and is only expected to increase and cause additional delays by 2040. The Preferred Alternative would increase mobility by constructing an elevated bridge for 35th Avenue that would cross US 60 (Grand Avenue) and the BNSF Railway. The overall LOS for all intersections is expected to improve, and would allow for implementation of high-capacity transit on both 35th Avenue and Indian School Road.

## 4.8 Air Quality

Air quality is regulated by the Clean Air Act (CAA) of 1990 and its amendments. The CAA and its amendments direct EPA to implement policies, procedures, and regulations that will ensure acceptable levels of pollutants in the ambient environment. Under the CAA, a project cannot:

- Cause or contribute to any new violation of any NAAQS in any area
- Increase the frequency or severity of any existing violation of any NAAQS in any area
- Delay timely attainment of any NAAQS or any required interim emission reductions or other milestones in any area

The CAA established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants to protect the public from the health hazards associated with air pollution. The criteria pollutants are carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), sulfur dioxide (SO<sub>2</sub>), and lead (Pb).

The federal NAAQS have been adopted by the state of Arizona and are shown in **Table 18**.

**Table 18. National Ambient Air Quality Standards**

| Pollutant         | Primary/<br>Secondary | Averaging<br>Time       | Level                  | Form  |
|-------------------|-----------------------|-------------------------|------------------------|---|
| Carbon Monoxide   | primary               | 8-hour                  | 9 ppm                  | Not to be exceeded more than once per year                                      |
|                   |                       | 1-hour                  | 35 ppm                 |   |
| Lead              | primary and secondary | Rolling 3-month average | 0.15 µg/m <sup>3</sup> | Not to be exceeded  |
| Nitrogen Dioxide  | primary               | 1-hour                  | 100 ppb                | 98th percentile, averaged over 3 years  |
|                   | primary and secondary | Annual                  | 53 ppb                 | Annual mean   |
| Ozone             | primary and secondary | 8-hour                  | 0.070 ppm              | Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years |
| PM <sub>2.5</sub> | primary               | Annual                  | 12 µg/m <sup>3</sup>   | annual mean, averaged over 3 years  |
|                   | secondary             | Annual                  | 15 µg/m <sup>3</sup>   | annual mean, averaged over 3 years  |
|                   | primary and secondary | 24-hour                 | 35 µg/m <sup>3</sup>   | 98th percentile, averaged over 3 years  |
| PM <sub>10</sub>  | primary and secondary | 24-hour                 | 150 µg/m <sup>3</sup>  | Not to be exceeded more than once per year on average over 3 years              |
| Sulfur Dioxide    | primary               | 1-hour                  | 75 ppb (4)             | 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years   |
|                   | secondary             | 3-hour                  | 0.5 ppm                | Not to be exceeded more than once per year                                      |

Source: EPA NAAQS Table. <https://www.epa.gov/criteria-air-pollutants/naaqs-table>.

Notes: ppb – parts per billion; ppm – parts per million; µg/m<sup>3</sup> – micrograms per cubic meter



## Mobile Source Air Toxics

In addition to the criteria air pollutants for which there are NAAQS, EPA also regulates mobile source air toxics (MSATs). Most MSATs originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), and stationary sources (e.g., factories or refineries). A subset of the 21 MSATs has been labeled by FHWA as the priority MSATs and include:

- benzene
- 1,3-butadiene
- diesel particulate matter
- formaldehyde
- naphthalene
- acrolein
- acetaldehyde
- ethylbenzene
- polycyclic organic matter

Unlike the NAAQS for criteria pollutants, there are no standards MSATs.

## Greenhouse Gases

Anthropogenic (human-caused) greenhouse gas (GHG) emissions are thought to contribute to climate change. Carbon dioxide makes up the largest component of these GHG emissions. Other transportation-related GHGs include methane and nitrous oxide.

To date, no national standards or thresholds have been established for GHG emissions. However, a considerable body of scientific literature exists addressing the sources of GHG emissions and their adverse effects on climate, including reports from the Intergovernmental Panel on Climate Change (IPCC 2013), the U.S. National Academy of Sciences (2022), EPA, and other agencies.

### 4.8.2 Transportation Conformity

Proposed transportation projects must be included in a regional transportation plan (RTP) or transportation improvement program (TIP) that conforms with the state air quality plans as outlined in the applicable State Implementation Plan (SIP). The SIP sets forth the state's strategies for achieving air quality standards.

The TIP include a list of roadway and transit projects selected as priorities for funding by cities, county road commissions, and transit agencies. Federal projects to be completed in the near-term must be included in the regional conformity analysis completed by the Metropolitan Planning Organization (MPO); such projects are also usually included in the region's TIP, and therefore conform with the SIP.

The proposed project improvements are included in the Maricopa Association of Governments Regional Transportation Plan: Momentum 2050 (MAG 2021c) and the Fiscal Year 2022-2025 Transportation Improvement Program (ID 42572 – 60 (Grand Ave): 35th Avenue/Indian School Road Intersection).

The conformity rule also establishes the process by which the FHWA, the Federal Transit Administration, and local MPOs determine conformance of transportation plans and transportation improvement plans (TIPs) and federally funded highway and transit projects.

As part of that process, local MPOs are required to undertake conformity determinations on metropolitan transportation plans and TIPs before they are adopted, approved, or accepted.

For PM, the MAG Conformity Analysis for the FY 2022–2025 MAG Transportation Improvement Program and the MOMENTUM 2050 Regional Transportation Plan (MAG 2021c) and its amendments, concluded that vehicle-related emissions associated with the FY 2022–2025 TIP and the 2050 RTP for the analysis years of 2025, 2030, 2040, and 2050 are projected to be less than the approved 2012 emissions budget and the approved 2006 emissions budget. As a result, regional air quality conformity for PM has been satisfied.

For CO, the MAG Conformity Analysis for the FY 2022–2025 MAG Transportation Improvement Program and the MOMENTUM 2050 Regional Transportation Plan (MAG 2021a) and its amendments, concluded that vehicle-related emissions associated with the FY 2022–2025 TIP and the 2050 MOMENTUM Regional Transportation Plan for the analysis years of 2025, 2030, 2040, and 2050 are projected to be less than the approved 2025 emissions budgets. As a result, the regional air quality conformity test for CO has been satisfied.

For 8-hour ozone, the total vehicle-related VOC and NO<sub>x</sub> emissions associated with implementation of the FY 2022-2025 TIP and 2050 regional transportation plan for the analysis year of 2023 are projected to be less than the approved 2017 emissions budgets and the VOC and NO<sub>x</sub> emissions for the analysis years of 2025, 2030, 2040, and 2050 are projected to be less than the approved 2017 emissions budgets. The applicable conformity tests for 8-hour O<sub>3</sub> has been satisfied.

Air quality impacts in the project study area were assessed using interagency consultation procedures adopted by ADOT and EPA guidance for conducting such analyses (EPA 1992, 1995, 2021).

### **Interagency Consultation**

ADOT has developed a formal process to identify when a quantitative CO or PM hot-spot analysis is required at the project level. ADOT uses the Project Level PM Quantitative Hot-Spot Consultation Document to meet the interagency consultation requirements for federally-funded projects in PM<sub>10</sub> and PM<sub>2.5</sub> nonattainment areas. ADOT also uses the Project Level CO Hot-Spot Consultation Document to determine whether CO analysis is required in CO nonattainment or maintenance areas.

If, through interagency consultation, the Project requires a quantitative hot-spot analysis for either CO or PM, consultation documents are completed and circulated for interagency review to obtain consensus on the modeling assumptions and inputs required to complete the analyses.

If quantitative analyses are required, an Air Quality Technical Report is prepared demonstrating transportation conformity and circulated for interagency consultation. The air quality technical report will be included as an appendix to the Draft EA or circulated separately for public review.

On August 17, 2023, ADOT provided a copy of the CO hot-spot consultation document for a 30-day consultation period to the following consulting parties: EPA, FHWA, MAG, Arizona Department of Environmental Quality (ADEQ), and Maricopa County Air Quality Department (MCAQD). ADOT noted that the Project would proceed as a project that requires a quantitative CO hot-spot analysis.

On August 17, 2023, ADOT provided a copy of the PM hot-spot questionnaire to the same agencies as a project that was not of air quality concern and did not require quantitative hot-spot modeling.

On September 7, 2023, an interagency consultation meeting was held to discuss the methodology and modeling assumptions to be used in the CO hot-spot evaluation. The 30-day interagency review period closed on September 18, 2023, all interagency comments received during this review period can be found in Appendix C of this Draft EA..

### 4.8.3 Existing Conditions

#### 4.8.3.1 Regional Climate

The proposed project is in Phoenix, Arizona, in the Salt River Valley at an elevation of about 1,200 feet. Temperatures range from very hot during summer months to mild during winter months. In the winter many days are over 70 °F The normal high temperature is over 90 °F from early May through late September and over 100 °F from early June through late August. Annual precipitation averages about 6.5 inches per year (National Weather Service, 2023).

A summary of average monthly temperatures and precipitation is shown in **Table 19**.

**Table 19. Climate Data for Phoenix, Arizona (2000-2023)**

| Month     | Temperature (° F) |                       |                       | Precipitation (inches) |
|-----------|-------------------|-----------------------|-----------------------|------------------------|
|           | Average Daily     | Average Daily Maximum | Average Daily Minimum | Average                |
| January   | 56.9              | 68.0                  | 45.8                  | 0.72                   |
| February  | 59.7              | 71.1                  | 48.4                  | 0.75                   |
| March     | 66.5              | 78.6                  | 54.5                  | 0.68                   |
| April     | 74.1              | 86.8                  | 61.4                  | 0.17                   |
| May       | 82.6              | 95.3                  | 69.8                  | 0.09                   |
| June      | 92.5              | 105.5                 | 79.6                  | 0.05                   |
| July      | 96.3              | 107.2                 | 85.3                  | 0.82                   |
| August    | 94.4              | 105.2                 | 83.6                  | 0.92                   |
| September | 89.7              | 101.0                 | 78.4                  | 0.53                   |
| October   | 77.5              | 89.3                  | 65.7                  | 0.58                   |
| November  | 65.6              | 77.2                  | 54.1                  | 0.44                   |
| December  | 56.1              | 66.7                  | 45.5                  | 0.71                   |
| Annual    | 76.0              | 87.6                  | 64.3                  | 6.47                   |

Source: National Weather Service, 2023

#### 4.8.3.2 Attainment Status

Geographic areas in which the ambient concentrations of a pollutant exceed the NAAQS are classified as nonattainment areas. Federal regulations require states to prepare SIPs that establish methods to bring air quality in nonattainment areas into compliance with the NAAQS and to maintain compliance. Nonattainment areas that return to compliance are called maintenance areas and may be redesignated as attainment areas after 20 years of demonstrating compliance with no further NAAQS exceedances.

The major air pollutants of concern for transportation projects are CO, PM, and O<sub>3</sub>.

- CO is a colorless, odorless, and poisonous gas resulting from the incomplete combustion of carbon-based fuels. The highest CO emissions are associated with vehicles operating at slow speeds, in stop-and-go traffic at poorly operating intersections and at colder temperatures.
- Particulate matter generally falls into one of two categories: particulate matter with a diameter of 10 microns or less (PM<sub>10</sub>) or particulate matter with a diameter of 2.5 microns or less (PM<sub>2.5</sub>). The primary source of particulate matter is vehicle emissions. The principal health effects of airborne particulate matter are to the respiratory system.
- O<sub>3</sub> is a secondary pollutant formed when precursor emissions, nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOCs), react in the presence of sunlight. O<sub>3</sub> is a major component of photochemical smog. O<sub>3</sub> irritates the eyes and respiratory tract and increases the risk of respiratory and heart diseases.

Maricopa County is currently designated as a nonattainment area for O<sub>3</sub> and PM<sub>10</sub> and a maintenance area for CO (EPA 2023).

#### **4.8.3.3 Local Monitored Air Quality**

ADEQ and Maricopa County Air Quality Division (MCAQD) maintain a network of air monitoring stations throughout Maricopa County. These monitoring stations provide ambient air quality information in the vicinity in which they are located.

Monitoring sites vary in terms of the pollutants monitored, with some sites monitoring one pollutant and others monitoring up to five. Some monitoring sites operate for the entire year, while others operate for the peak pollutant season only. Most of the monitoring sites are in the Phoenix metropolitan area. The nearest monitoring site to the project area is the West Phoenix station (located at 847 West Earll Drive, about 1 mile southwest of the project area as shown on **Figure 21**). This monitoring site collects data on ambient concentrations of CO, O<sub>3</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub>. The West Phoenix site recorded exceedances of the O<sub>3</sub> standard in 2020 through 2022, PM<sub>2.5</sub> in 2020 through 2023, and PM<sub>10</sub> in 2020 and 2021. There were no exceedances of the CO standard during this period.

**Table 20** summarizes monitored concentrations at this location.



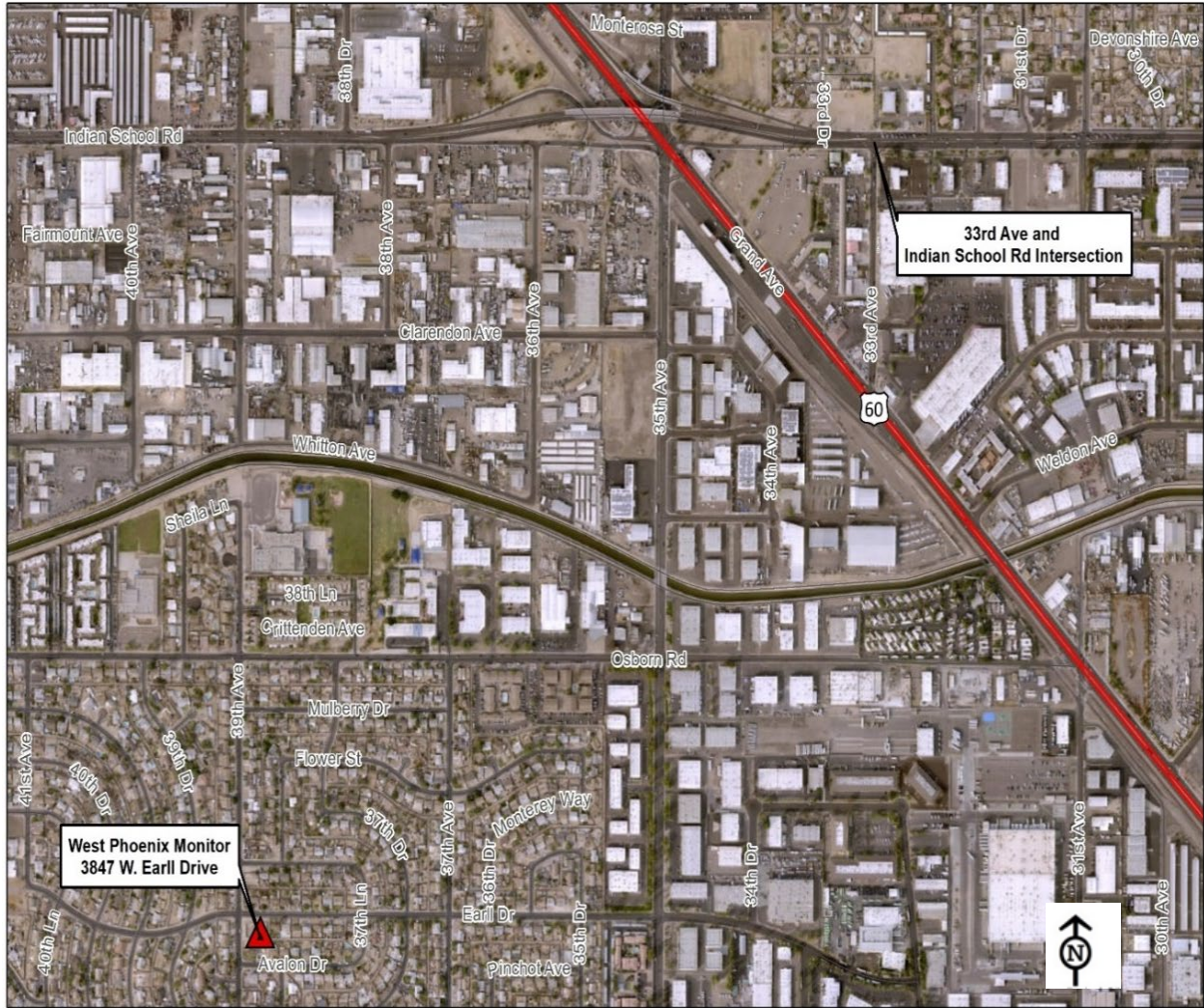


Figure 21. West Phoenix Air Quality Monitor Location

**Table 20. West Phoenix and Central Phoenix Air Quality Data**

| Monitoring Site      | Pollutant         | Averaging Time  | 2020                    |             | 2021                    |             | 2022                    |             |
|----------------------|-------------------|-----------------|-------------------------|-------------|-------------------------|-------------|-------------------------|-------------|
|                      |                   |                 | Concentration           | Exceedances | Concentration           | Exceedances | Concentration           | Exceedances |
| West Phoenix (WP)    | CO                | 1-hour          | 3.8 ppm                 | 0           | 3.7 ppm                 | 0           | 2.7 ppm                 | 0           |
|                      |                   | 8-hour          | 3.0 ppm                 | 0           | 3.5 ppm                 | 0           | 2.2 ppm                 | 0           |
|                      | O <sub>3</sub>    | 8-hour          | 0.091 ppm               | 10          | 0.081 ppm               | 11          | 0.081 ppm               | 17          |
|                      | PM <sub>2.5</sub> | 24-hour         | 149.1 µg/m <sup>3</sup> | 1           | 222.4 µg/m <sup>3</sup> | 3           | 110.3 µg/m <sup>3</sup> | 5           |
|                      | PM <sub>10</sub>  | 24-hour         | 159 µg/m <sup>3</sup>   | 1           | 250 µg/m <sup>3</sup>   | 1           | 127 µg/m <sup>3</sup>   | 0           |
|                      | NO <sub>2</sub>   | 1-hour max.     | 54 ppb                  | 0           | 55 ppb                  | 0           | 51 ppb                  | 0           |
|                      |                   | 1-hour 2nd max. | 54 ppb                  | --          | 51 ppb                  | --          | 51 ppb                  | --          |
|                      |                   | 98th percentile | 48                      | --          | 47                      | --          | 47                      | --          |
| Annual mean          |                   | 13.36           |                         | 14.66       |                         | 13.99       |                         |             |
| Central Phoenix (CP) | SO <sub>2</sub>   | 1-hour max      | 6 ppb                   | 0           | 26 ppb                  | 0           | 10 ppb                  | 0           |
|                      |                   | 24-hour max     | 1.9 ppb                 | 0           | 2.5 ppb                 | 0           | 1.4 ppb                 | 0           |

Source: EPA AirData. <https://www.epa.gov/outdoor-air-quality-data/monitor-values-report>

Maximum values shown.

ppb – parts per billion, ppm – parts per million, µg/m<sup>3</sup> – micrograms per cubic meter

#### 4.8.4 Environmental Consequences

This section describes the methods, impact criteria, and results of the air quality evaluations conducted for the proposed project. The analyses was conducted following guidelines and analysis protocols and procedures from ADOT, EPA, and FHWA.

The analysis is based upon information and data included in the Initial Design Concept Report: US 60, Grand Avenue 35th Avenue/Indian School Road Traffic Interchange (ADOT 2023b) and incorporates the most recent MAG Fall 2022 Conformity Model outputs. Traffic was modeled for CO at one intersection in the project study area (Indian School Road/33rd Avenue), which was determined to have the highest traffic volumes and worst vehicle delay in the project area and would result in maximum CO emissions (that is, it represented a “worst case” modeling scenario).

##### 4.8.4.1 Build Alternative

To determine the need for PM and CO hot-spot analyses to demonstrate transportation conformity, consultation documents developed by ADOT were completed and submitted to FHWA, EPA, MAG, MCAQD, and ADEQ for review and interagency consultation as discussed above under Interagency Consultation. The conclusions of each consultation document are discussed below, and the completed consultation documents are included in **Appendix C**.

#### Particulate Matter

PM<sub>10</sub> hot-spot analyses are required only for “projects of air quality concern,” as defined in 40 CFR 93.123 of the Transportation Conformity Rule. The proposed project does not meet any of the screening criteria in 40 CFR 93.123 used to define a “project of air quality concern,” as described below:

- The Build Alternative is not a new highway project, nor does it expand a highway (40 CFR 93.123(b)(1)(i)).
- The affected intersections do not experience significant numbers of diesel vehicles; nor would the Build Alternative result in increased traffic volumes from a significant number of diesel vehicles related to the Build Alternative (40 CFR 93.123(b)(1)(ii)).
- The proposed project is not a new bus or rail terminal that will have a significant number of diesel vehicles congregating at a single location (40 CFR 93.123(b)(1)(iii)).
- The proposed project is not an expanded bus or rail terminal and will not have a significant number of diesel vehicles congregating at a single location (40 CFR 93.123(b)(1)(iv)).
- The project is not in or affecting locations, areas, or categories of sites which are identified in the PM<sub>10</sub> implementation plan as sites of violation or possible violation (40 CFR 93.123(b)(1)(v)).

Under the 2050 Build Alternative, traffic volumes on Grand Avenue (US 60), Indian School Road, and 35th Avenue range from about 27,500 average annual daily traffic (AADT) to about 66,300 AADT and would be less than the 125,000 AADT threshold at which point EPA guidance suggests a project could potentially be a project of air quality concern for particulate matter. In addition, total truck volumes range from about 200 AADT to about 8,600 AADT in the 2050 Build Alternative and include both medium trucks and heavy trucks, not all of which would be diesel-fueled. The total truck volumes are less than the 10,000 AADT, which EPA guidance suggests could warrant a PM hot-spot evaluation.

Since none of the screening criteria discussed above were met that would suggest the proposed project is one of air quality concern, the 2050 Build Alternative has been determined not to be a project of air quality concern and as such does not require a quantitative analysis.

The proposed project would not be expected to cause a violation of the PM NAAQS.

### **Carbon Monoxide**

Carbon monoxide hot-spots are most likely to be a concern where traffic is congested and moving slowly. Under the 2050 Build Alternative, one intersection (Indian School Road/33rd Avenue) would operate at LOS D following completion of the project. The Indian School Road/33rd intersection was modeled for a CO hot-spot determination.

Vehicle emission rates were developed using EPA's MOVES3.1 emission factor program, and EPA's CAL3QHC dispersion model was used to estimate CO concentrations at receptor locations around the intersection.

Different emission rates occur when vehicles are stopped (i.e., idling) at signalized intersections during the red phase of the signal, accelerating away from the intersection, decelerating when approaching a signalized intersection, and moving at different average speeds.

### **MOVES3.1 Emission Rates**

MOVES3.1 was used to estimate CO emission rates from the roadway segments included in the modeling analysis. MOVES input files were provided by MAG consistent with their regional emissions analysis. MAG data were used to represent regional fuel specifications, vehicle age distribution, and meteorology. Traffic volumes on individual intersection links (approach, departure, and queue) were obtained from data included in the Traffic Report (ADOT 2023b). Link coordinates (northings and eastings) used in the CAL3QHC model for dispersion modeling were derived from a project design file provided by AECOM. Link-by-link traffic data were used to develop project-specific CO input files for each modeled link for each modeled scenario: 2022 Existing Conditions, the 2050 No-Build Alternative, and the 2050 Build Alternative.

### **Receptor Locations**

Receptors are generally located near the ROW line at public locations where people would reasonably be expected to have access for extended periods of time. Receptors were placed at crosswalk locations nearest the intersection and spaced at 25-meter (82 feet) intervals on sidewalk locations adjacent to the roadway. Receptors were modeled at a height of 6 feet above the ground to approximate an average breathing height. Forty-four receptors were modeled around the four legs of the intersection, extending more than 400 feet in each direction to capture the maximum modeled CO concentration nearest the intersection as well as at mid-block locations and at increasing distances from the intersection.

### **Background CO Concentrations**

Background CO concentrations were obtained from EPA monitored data. Data from the monitor located at the West Phoenix site (3847 West Earll Drive) were used to develop background CO concentrations since that monitor is closest to the Indian School Road/33rd Avenue intersection (about 1 mile southwest of the intersection) and had the highest 1-hour and 8-hour CO concentrations in Maricopa County over a 3-year period from 2020 to 2022. Monitor site details are included in the materials in **Appendix C**.

Based on data from the West Phoenix monitor, a 1-hour background concentration of 3.8 ppm and an 8-hour background concentration of 3.5 ppm were used in the existing and future-year analyses.



### Other Meteorological Variables

Other variables included in the CAL3QHC model were based on recommended values from EPA guidance (EPA 1992) and included:

- Wind Speed – 1 meter per second
- Wind Direction Increment – Every 10 degrees of wind direction for 0 degrees to 350 degrees (36 directions)
- Stability Class – D (4) for urban areas
- Mixing Height – 1,000 meters
- Source Height – 0 meters
- Surface Roughness – City land use – office environment (175 cm)

### CAL3QHC Impact Assessment

Maximum CO concentrations under 2022 Existing Conditions, the 2050 No-Build Alternative, and the 2050 Build Alternative at the Indian School Road/33rd Avenue intersection were estimated with the CAL3QHC model. At each receptor, the maximum 1-hour CO concentrations were determined. The 8-hour CO concentrations were estimated by applying a calculated persistence factor of 0.86 (which was derived by the MCAQD from 3 years of 1-hour and 8-hour data from the West Phoenix monitor) to the 1-hour concentrations, as discussed in EPA guidance.

The Indian School Road/33rd Avenue intersection was modeled based on the methodology and inputs discussed above. Background concentrations added to the highest 1-hour modeled CO concentrations provide a total estimated concentration, which was compared to the NAAQS.

As shown in **Table 21**, the total maximum 1-hour CO concentration (including a 3.8 ppm background concentration) was 4.9 ppm under 2022 Existing Conditions when emission rates would be highest. Under the 2050 No-Build Alternative and the 2050 Build Alternative, the maximum 1-hour CO concentrations were 4.8 ppm and 4.94 ppm, respectively, with higher traffic volumes and lower future-year emission rates.

The maximum 8-hour CO concentrations (including a 3.5 ppm background concentration) ranged from 4.36 ppm under the 2050 No-Build Alternative to 4.45 ppm under 2022 Existing Conditions and the 2050 Build Alternative.

Modeled concentrations are below the NAAQS for both the 1-hour and 8-hour CO standard.

**Table 21. Total Predicted 1- Hour (8-Hour) Carbon Monoxide Concentrations**

| Intersection                     | 2022 Existing <sup>a</sup>    | 2050 No-Build   | 2050 Build      |             |
|----------------------------------|-------------------------------|-----------------|-----------------|-------------|
|                                  | 1-hour (8-hour <sup>b</sup> ) | 1-hour (8-hour) | 1-hour (8-hour) | NAAQS (ppm) |
| Indian School Road & 33rd Avenue | 4.9 (4.45) <sup>c</sup>       | 4.8 (4.36)      | 4.9 (4.45)      | 35.0 (9.0)  |

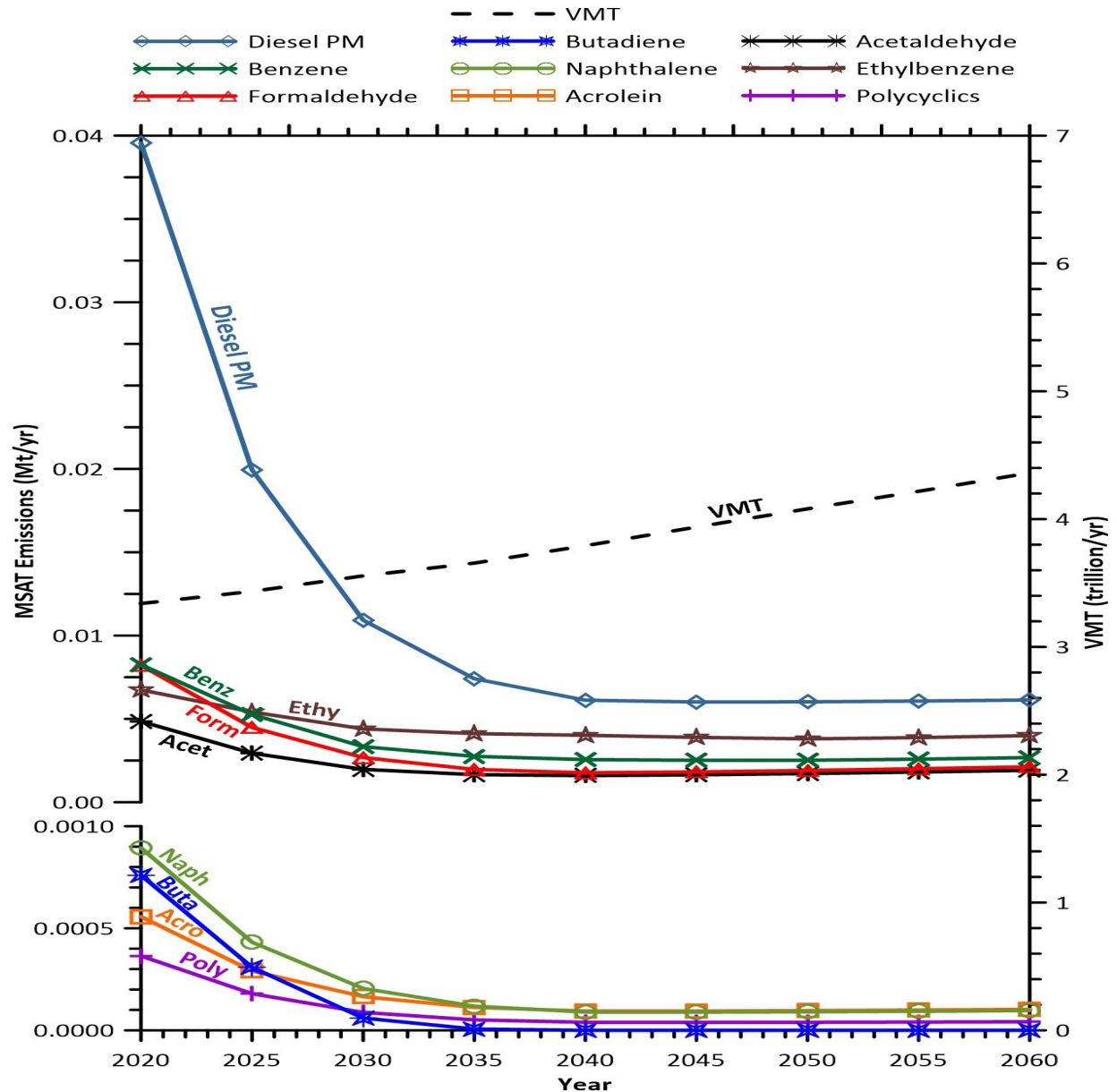
<sup>a</sup> Concentrations shown in parts per million (ppm)

<sup>b</sup> 8-hour concentration calculated with 0.86 ppm persistence factor and maximum 8-hour background concentration of 3.5 ppm from the West Phoenix monitor.

<sup>c</sup> 1-hour results include maximum background CO concentration of 3.8 ppm from the West Phoenix monitor.

### MSAT Analysis

The most recent FHWA MSAT guidance (FHWA 2023) incorporates emission estimates that include the effect of recent EPA rulemakings that will further control motor vehicle emissions. These regulations will result in a substantial decline in MSAT emissions over the next several decades. Based on an FHWA analysis using the MOVES3 model, FHWA estimates that even if vehicle miles traveled (VMT) increases by 31 percent from 2020 to 2060, there will be an estimated 76% reduction in the total annual emissions for the priority MSATs over the same period (**Figure 22**).



**Figure 22. FHWA Projected National MSAT Emission Trends 2020-2060 for Vehicles Operating on Roadways**

FHWA’s guidance groups projects into the following categories for considering potential MSAT effects:

- No analysis for projects without the potential for meaningful MSAT effects
- Qualitative analysis for projects with a low potential for MSAT effects
- Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects

As noted in the guidance, FHWA expects that most projects will be considered to have a low potential for MSAT effects.

The Project is considered to have a low potential for MSAT effects for the following reasons:

- The Project would construct new bridges for 35th Avenue and Indian School Road to pass over the BNSF railroad tracks, creating a grade-separated interchange that improves operational efficiency in the vicinity of 35th Avenue, Indian School Road, and Grand Avenue without adding substantial new capacity.
- Under the 2050 Build Alternative, annual traffic volumes in the area range from about 27,500 AADT to 66,300 AADT and are less than the 140,000 to 150,000 AADT where a quantitative MSAT analysis could be warranted.
- As noted above, MSAT emissions are expected to decrease substantially in the future because of new engine and fuel standards.

#### **4.8.4.2 No Build Alternative**

Under the 2050 No-Build Alternative, Project improvements would not be constructed. Traffic volumes would continue to increase over time, resulting in unacceptable LOS at several intersections in the project area. While emission rates are expected to improve in the future, increased congestion at surrounding intersections would likely result in higher concentrations of priority pollutants.

There would be no construction impacts associated with the 2050 No-Build Alternative.

#### **4.8.5 Environmental Commitments and/or Mitigation Measures**

ADOT and the contractor would follow ADOT's *Standard Specifications for Road and Bridge Construction*.

#### **4.8.6 Conclusion**

The Preferred Alternative would not be expected to cause a violation of the PM NAAQS. Under the 2050 Build Alternative, one intersection (Indian School Road/33rd Avenue) would operate at LOS D following completion of the project. The Indian School Road/33rd intersection was modeled for a CO hot-spot determination. CAL3QHC modeled concentrations are below the NAAQS for both the 1-hour and 8-hour CO standard for the Preferred Alternative. The Project was determined to have a low potential for MSAT effects because the Preferred Alternative would improve operational efficiency without adding substantial new capacity. Furthermore, annual traffic volumes would be less than the AADT where a quantitative MSAT analysis could be warranted and MSAT emissions are expected to decrease substantially in the future because of new engine and fuel standards.

While emission rates are expected to improve in the future, increased congestion at surrounding intersections would likely result in higher concentrations of priority pollutants under the No-Build Alternative; however, because the No-Action Alternative would not result in construction of the proposed roadway, no traffic air quality mitigation measures would be warranted.

## 4.9 Noise Analysis

Sound is created when an object vibrates and radiates part of its energy as acoustic pressure or waves through a medium, such as air, water, or a solid object. Sound levels are expressed in units called decibels (dB). Noise is generally defined as the undesired component of sound. Noise levels are also expressed in decibels. Since the human ear does not respond equally to all frequencies or pitches, measured noise levels are adjusted or weighted to correspond to the frequency-response of the human hearing capability and the human perception of loudness. The weighted noise level corresponding to the human ear is designated as A-weighted in decibels, or dBA.

Typical noise levels range from 40 dBA (the daytime level in a quiet living room) to 85 dBA (the approximate level from a sidewalk adjacent to a roadway during rush-hour traffic). A 3-dBA change in noise level may be perceptible to most listeners, whereas a 10-dBA change may be perceived as a doubling of the noise level.

Title 23 CFR 772 requires that a traffic noise analysis be conducted for proposed federal-aid highway projects that will construct a highway on a new location or substantially alter an existing highway. A traffic noise study was conducted for this project pursuant to ADOT's 2017 Noise Abatement Requirements (NAR) and in accordance with FHWA's Noise Abatement Criteria (NAC) outlined in Procedures for Abatement of Highway Traffic Noise and Construction Noise (FHWA 2010).

The noise analysis evaluates existing or ambient noise through on-site monitoring and modeling and predicting traffic noise level changes in the project's build design year (2050) for the Preferred Alternative and the No-Build Alternative. The predictions use a computer model approved by the FHWA—Traffic Noise Model Version 2.5.

### 4.9.1 Existing Conditions

The FHWA NAC has defined noise levels for land activity categories (**Table 22**). For land use activities B and C, design year noise level must approach (within 1 dBA) or exceed 67 dBA to be considered for mitigation under ADOT NAR (ADOT 2017). In addition, guidelines also state that noise abatement should be considered when the noise levels substantially exceed the existing noise levels (23 CFR 772.5(g)). This criterion is defined by ADOT as increases in the Leq of 15 dBA or more above existing noise levels.

Land use in the study area may be categorized as FHWA Activity Categories B, E, and F, as defined in 23 CFR 772 and ADOT NAR (ADOT 2017). Residential areas in the study area, which for the noise analysis is defined as within 650 feet of the future edge of pavement for the Preferred Alternative, include single-family, multi-family (apartments), and mobile home communities. These uses were evaluated as Category B in the noise study.

Commercial uses in the study area include restaurants and office buildings categorized as Activity Category E. Locations with outdoor use (sitting, dining, or common area) were included in the evaluation of potential noise impacts. Category F land uses, such as industrial and warehouse areas, were not included in the study.

Short-term noise level monitoring was conducted within the project limits in January 2023 during the morning and afternoon peak traffic hours. Four measurement locations were chosen to represent noise-sensitive receptors in residential communities, the U.S. Vet facility, and to validate the noise model. Three 10-minute interval equivalent noise level measurements (Leq) were conducted at each site. Noise level monitoring helps describe the existing noise environment throughout the project area and captures the contribution of traffic noise from surrounding roadways. Measured noise



levels may include contributions from other noise sources, including but not limited to, industrial operations, airplanes, trains, wind, birds, insects, etc. The measured noise level ranged from 61 dBA to 66 dBA.

**Table 22. FHWA Noise Abatement Criteria**

| Activity Category | dBA, LAeq1h   | Activity Description  |
|-------------------|---------------|---|
| A                 | 57 (exterior) | Land on which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose  |
| B                 | 67 (exterior) | Residential   |
| C                 | 67 (exterior) | Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings |
| D                 | 52 (interior) | Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio structures, recording studios, schools, and television studios  |
| E                 | 72 (exterior) | Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in categories A–D or F  |
| F                 | —             | Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing   |
| G                 | —             | Undeveloped lands that are not permitted  |

Source: FHWA (2010); 23 CFR 772

## 4.9.2 Environmental Consequences

### 4.9.2.1 Preferred Alternative

The analysis was performed in compliance with the current ADOT NAR (ADOT 2017). The ADOT NAR establishes official policy on highway noise and describes the process that is used in determining traffic noise impacts and evaluating abatement measures. The ADOT NAR is based on the noise levels approaching the FHWA NAC. ADOT defines “approaching” as within 1 dBA of the FHWA NAC for Activity Categories A, B, C, D, and E. There are no noise impact thresholds for Activity Category F or G. The ADOT NAR determines highway traffic noise level impacts and considers mitigation for residential land uses when the predicted noise level is equal to or greater than the noise impact threshold of 66 dBA. In addition, guidelines also state that noise abatement should be considered when the noise levels substantially exceed the existing noise levels (23 CFR 772.5). This criterion is defined by ADOT as increases in the Leq of 15 dBA or more above existing noise levels. ADOT also indicated that noise levels should be rounded to the nearest integer prior to impact determination and in project reports. ADOT requires that feasible and reasonable measures be considered and evaluated to abate traffic noise at all identified traffic noise impacts.

Under the Preferred Alternative, peak-hour traffic noise levels were predicted to range from 54 dBA to 76 dBA for the AM peak hour condition and from 55 dBA to 76 dBA for the PM peak hour condition. Peak-hour traffic noise levels under the Preferred Alternative would exceed ADOT's NAP threshold at 16 receiver locations (representing 37 receptors) for the AM peak hour condition and at 17 receiver locations (representing 38 receptors) for the PM peak hour condition. A summary of noise analysis parameters is presented in **Table 23**.

**Table 23. Summary of Noise Analysis**

| Parameters                                  | 2050 AM Peak No-Build | 2050 PM Peak No-Build | 2050 AM Peak Build Alternative | 2050 PM Peak Build Alternative |
|---|-----------------------|-----------------------|--------------------------------|--------------------------------|
| Number of modeled receivers                 | 58                    | 58                    | 58                             | 58                             |
| Number of representative receptors          | 106                   | 106                   | 106                            | 106                            |
| Number of impacted receivers (receptors)    | 15 (30)               | 15 (30)               | 16 (37)                        | 17 (38)                        |
| Range of unmitigated noise levels, dBA      | 53 to 77              | 55 to 76              | 54 to 75                       | 55 to 76                       |
| Number of barriers evaluated for mitigation | N/A                   | N/A                   | 5                              | 5                              |
| Cost of evaluated mitigation <sup>a</sup>   | N/A                   | N/A                   | \$1,533,735                    | \$1,533,735                    |

<sup>a</sup> Barrier cost is based on \$35 per square foot.

ADOT considers mitigation for noise-sensitive areas predicted to be impacted by highway traffic noise levels from ADOT transportation improvement projects. The noise level impact determination used in this analysis is based on the ADOT NAR (ADOT 2017). Noise barriers (walls) were considered as mitigation measures that would provide noise shielding to impacted locations. Reasonableness and feasibility criteria were evaluated for each proposed noise wall or wall combination (two or more walls) per ADOT NAR guidelines.

A total of five noise walls were evaluated to provide mitigation of future (2050) peak hour noise levels associated with the Preferred Alternative, but none are recommended. Two barriers along the north side of Indian School Road, between 33<sup>rd</sup> Avenue and 32<sup>nd</sup> Avenue, were evaluated but did not meet the acoustic feasibility criteria of achieving at least 5 dBA noise reduction at 50% of the impacted receptors. Three different barrier configurations along the north side of Indian School Road and Monterosa Avenue were evaluated in the northeast quadrant of the intersection, but exceeded the maximum reasonable cost of abatement at \$49,000 per benefitted receptor.

#### **4.9.2.2 No-Build Alternative**

Under the No-Build Alternative, peak-hour traffic noise levels were predicted to range from 53 dBA to 77 dBA for the AM peak hour condition and from 55 dBA to 76 dBA for the PM peak hour condition. Peak-hour traffic noise levels under the No-Build Alternative would exceed ADOT's NAP threshold at 15 receiver locations (representing 38 receptors) for both the AM and PM peak hour conditions.

Under the No-Build Alternative, the project would not be built. According to FHWA regulations and ADOT requirements, noise mitigation can be provided only as part of a "Type I" construction project, which adds a transportation facility on a new alignment, increases the capacity of an existing transportation facility, or results in substantial vertical or horizontal alterations. Consequently, under the No-Build Alternative, noise mitigation measures would not be provided for any of the receivers.

### **4.9.3 Environmental Commitments and/or Mitigation Measures**

ADOT and the Contractor should follow ADOT's 2017 Noise Abatement Requirements, ADOT's Standard Specifications for Road and Bridge Construction, and local jurisdiction noise ordinances. No further mitigation is recommended to address noise impacts.

### **4.9.4 Conclusion**

ADOT considers mitigation for noise-sensitive areas predicted to be impacted by highway traffic noise levels from ADOT transportation improvement projects. The noise level impact determination used in this analysis is based on the ADOT NAR (ADOT 2017).

Under the No-Build Alternative, traffic noise levels would exceed ADOT's threshold for noise abatement consideration at 15 receivers; however, because the No-Action Alternative would not result in construction of the proposed roadway, no traffic noise mitigation measures would be warranted.

Traffic noise levels would exceed ADOT's threshold for noise abatement consideration at 16 receiver locations (representing 37 receptors) for the AM Peak hour condition and at 17 receiver locations (representing 38 receptors) for the PM peak hour condition; however, the five noise barriers evaluated as mitigation were unable to achieve the noise reduction goal and are not reasonable and/or feasible to construct.

Temporary noise impacts would be experienced by noise-sensitive properties during construction of the project. ADOT's Standard Specifications for Road and Bridge Construction includes noise control measures that would be implemented during construction to minimize noise impacts.

A final determination of noise abatement measures will be made upon completion of the project design, the public involvement process, and concurrence with ADOT NAR.

## 4.10 Utilities and Railroads

Utilities are facilities that transmit or distribute various commodities such as electrical power, irrigation, communications, sewer, water, reclaimed water, natural gas, and petroleum. They can be private, public, or cooperatively owned.

Utilities in the study area were evaluated for potential impacts from the Project (**Figure 23**). For additional, more detailed data and information on utilities, see Sections 1.3.5 and 4.12 in the Design Concept Report (ADOT 2023b).

### 4.10.1 Existing Conditions

The BNSF Railway is adjacent and parallel to US 60 (Grand Avenue). The BNSF Railway limits access to and across US 60 (Grand Avenue), with roadway connections across US 60 (Grand Avenue) and the BNSF limited to the major arterial street intersections. Most of these intersections are signalized and are coordinated with the BNSF crossing signals to clear vehicle traffic as a train approaches. The railroad right-of-way varies between 90' and 125' between 33rd Avenue and 37th Avenue.

Existing utilities within the study area were identified based on previous utility surveys and as-built information obtained from ADOT, the City of Phoenix, and utility companies. Major utilities are listed in **Table 24** and shown in **Figure 23**.

**Table 24. Utilities in the Project Area**

| Location  | Utility Description                            |
|---|--|
| <b>Along US 60 (Grand Avenue):</b>  |  |
| South side of US 60 (Grand Avenue)  | APS overhead power (230 kV)                    |
| North side of US 60 (Grand Avenue)  | SRP overhead power (69 kV)                     |
| North of centerline (north of Indian School Road)   | Cox fiber optic                                |
| South of centerline (north of Indian School Road)   | Cox fiber optic                                |
| North of centerline (outer lane) south of Indian School Road                                | 2-inch gas line                                |
| North of centerline (outer lane) 700 feet south of 37th Avenue, north of Indian School Road | 2.5-inch gas line                              |
| South of BNSF railroad north of Indian School Road  | Southwest Gas 4-inch STL                       |
| North of centerline (outer lane)  | CenturyLink telecommunications and fiber optic |
| North of centerline (under curb/sidewalk)   | City of Phoenix 12-inch water                  |
| Southern of centerline (north of SD) south of Indian School Road                            | City of Phoenix 18-inch sewer                  |
| North of centerline (behind S/W) north of Indian School Road                                | City of Phoenix 10-inch sewer                  |
| <b>Along 35<sup>th</sup> Avenue:</b>  |  |
| Both sides of 35th Avenue from Weldon Avenue to Monterosa Street                            | SRP overhead power (12 kV)                     |
| East side of 35th Avenue, north of Monterosa Street   | SRP overhead power (12 kV)                     |
| West of centerline (outer lane) south of railroad tracks                                    | Southwest Gas 4-inch STL                       |
| East of centerline, north of US 60 (Grand Avenue)   | Southwest Gas 2-inch STL                       |



## AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES

| Location  | Utility Description   |
|---|---|
| East of centerline  | City of Phoenix 8-inch water line   |
| West of centerline  | City of Phoenix 66-inch water line  |
| East of centerline  | City of Phoenix 6-inch water line; 8-inch north of West Glenrosa Avenue   |
| West of centerline, north of US 60 (Grand Avenue)   | City of Phoenix 4-inch water line   |
| West of centerline  | SRP 54-inch irrigation; transitions to 48 inches just south of railroad tracks; runs under sidewalk north of US 60 (Grand Avenue)                                     |
| East of centerline (outer lane), south of US 60 (Grand Avenue)                              | City of Phoenix 8-inch sewer  |
| West of centerline (at sidewalk), south of US 60 (Grand Avenue)                             | City of Phoenix 8-inch sewer  |
| East of centerline, between US 60 (Grand Avenue) and 850 feet north of West Glenrosa Avenue | City of Phoenix sewer – two sewer lines (8-inch and 18-inch) from US 60 (Grand Avenue) to roughly 850 feet north of West Glenrosa Avenue intersection where they join |
| East of centerline, north of West Glenrosa Avenue   | City of Phoenix 18-inch sewer line  |
| <b>Along Indian School Road:</b>  |   |
| North of centerline, west of US 60 (Grand Avenue)   | Southwest Gas 4-inch mainline   |
| South of centerline, east of US 60 (Grand Avenue)   | Southwest Gas 2-inch mainline   |
| South of railroad   | Southwest Gas 4-inch mainline; running southeast across Indian School Road just south of BNSF Railroad  |
| South of centerline, west of US 60 (Grand Avenue)   | City of Phoenix 4-inch waterline  |
| North of centerline, west of US 60 (Grand Avenue)   | City of Phoenix 8-inch waterline; shifts south of centerline at 36th Ave and runs along north side of eastbound Frontage Road   |
| South of centerline, east of US 60 (Grand Avenue)   | City of Phoenix 48-inch waterline and 4-inch waterline (run along eastbound Frontage Road)  |
| South of centerline, east of 33rd Avenue  | City of Phoenix 8-inch waterline (south of 4-inch waterline)  |
| South of centerline, 39th Avenue to 38th Drive  | City of Phoenix 8-inch sewer line   |
| North of centerline, 39th Avenue to 38th Drive  | City of Phoenix 8-inch sewer line   |
| South of centerline, west of US 60 (Grand Avenue)   | City of Phoenix 8-inch sewer line (abandoned) along eastbound Frontage Road; still active north/south along 36th Avenue   |

Source: ADOT 2023b



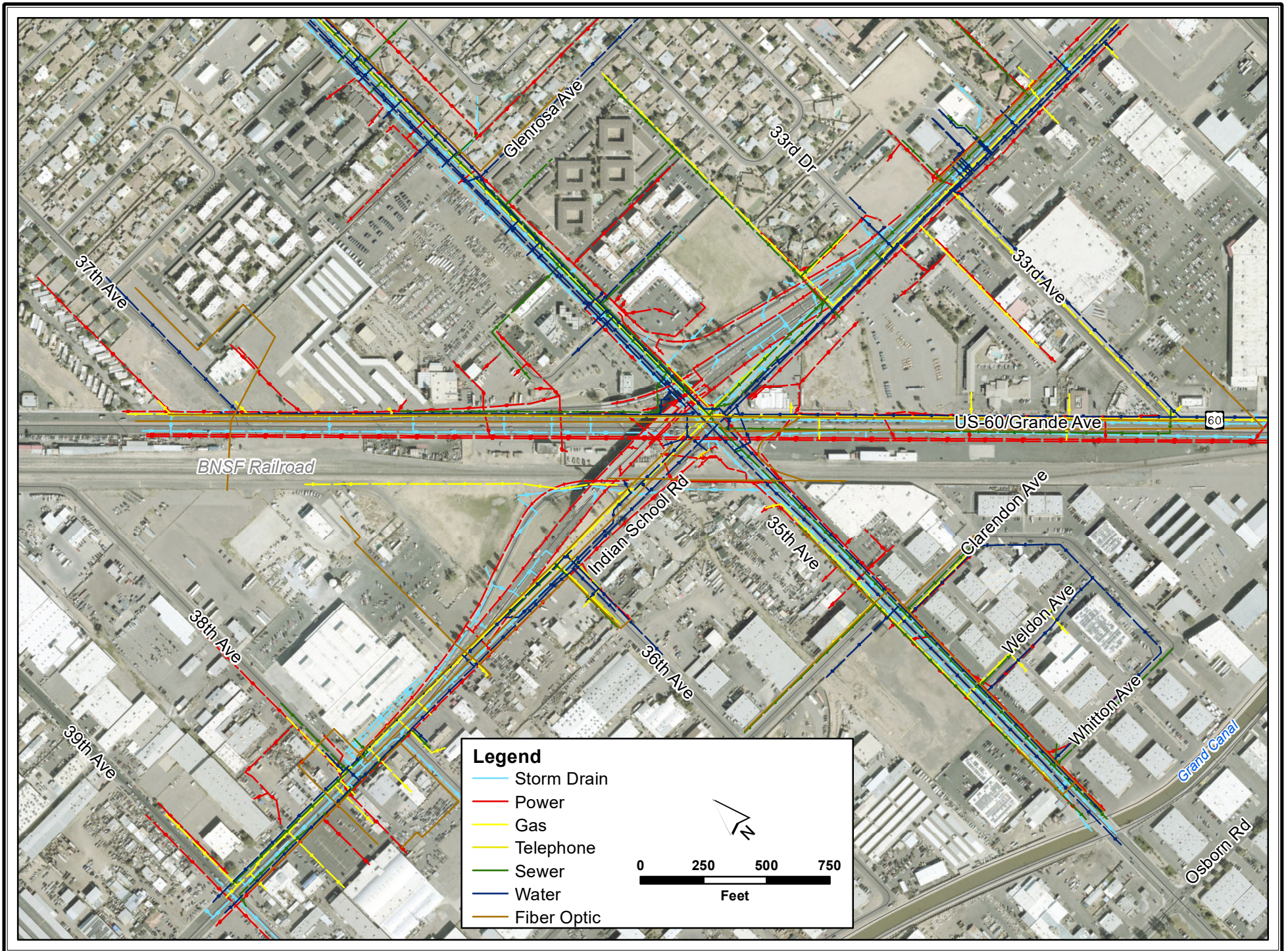


Figure 23. Utilities in the Project Area



## 4.10.2 Environmental Consequences

### 4.10.2.1 Preferred Alternative

During agency scoping for this project, the Arizona Corporation Commission (ACC) provided input that any modification to a public railroad crossing must go through the ACC process for approval. The ACC approval process requires an application, a public hearing, and a vote of approval by the commissioners. ADOT has continued to coordinate with the BNSF during alternatives development to discuss various aspects of the proposed action. The main concerns of the meetings were related to project design/updates, grade separation, and the impact of project design alternatives to the existing railroad infrastructure. During final design, ADOT would continue to coordinate with BNSF and the Arizona Corporation Commission to outline the requirements for the final design of the railroad crossing, engage in design reviews with BNSF, and initiate the permitting and approval process.

Preliminary discussions regarding relocations have occurred with a few of the utility agencies and are described in **Table 25**. Detailed information on the depth and specific location of utilities would be obtained during final design, and is needed to confirm conflicts. ADOT would coordinate with the appropriate utility companies during design and construction regarding impacts, adjustments, and any service disruptions. Efforts would be made to minimize utility service disruptions.

**Table 25. Utility Agency Coordination**

| Agency  | Consequence   |
|---|---|
| SRP Irrigation  | Existing facilities along 35th Avenue are in conflict with proposed bridge structures, retaining walls and earthen fills for the realignment of 35th Avenue. SRP would require the pipe material to be upgraded to current standards and a re-alignment would be required to avoid the proposed improvements.   |
| SRP Power   | Existing overhead facilities along 35th Avenue would need to be relocated and raised to go over the new Indian School Road improvements. Any facilities currently located on the west side of 35th Avenue would need to be relocated to the east side of the road. Additional conflicts with retaining walls, and structures, would need to be resolved.  |
| APS   | Existing 230 kV overhead facilities along US 60 (Grand Avenue) would be impacted by the proposed improvements. Due to the size of the facilities, APS would need to perform an outage study to determine if the project area can sustain an outage for the relocation (study takes about 3 months). Any loss of revenue during the relocation may be a potential cost to the project.   |
| Southwest Gas   | Existing gas facilities along 35th Avenue, Indian School Road and US 60 (Grand Avenue) would be impacted by the proposed improvements. Some facilities may require horizontal and vertical relocations, while others may require evaluation of existing conditions and possible impacts due to earthen fills (additional loads).  |
| City of Phoenix<br>(Sanitary and Stormwater<br>Sewer) | Existing facilities along 35th Avenue, Indian School Road and US 60 (Grand Avenue) would be impacted by the proposed improvements. Horizontal relocation of the sewer facilities would be required in some areas to avoid retaining walls and/or bridge structures. An evaluation of the existing pipe conditions would be required and upgrades to the existing pipes may be required in order to provide adequate capacity due to the new earthen fill. |

| Agency                  | Consequence  |
|-------------------------|--|
| City of Phoenix (Water) | Existing facilities along 35th Avenue, Indian School Road, and US 60 (Grand Avenue) would be impacted by the proposed improvements. Horizontal relocation of the water facilities would be required in some areas to avoid retaining walls and/or bridge structures. An evaluation of the existing pipe conditions would be required and upgrades to the existing pipes may be required in order to provide adequate capacity due to the new earthen fill. |

Source: ADOT 2023b

Based on coordination with utility owners to date, it is anticipated that a majority of the utilities, would be relocated within the proposed project ROW. Evaluation of the relocation plan for the SRP irrigation line is underway, and could require a new utility corridor for use by that facility only.

#### 4.10.2.2 No-Build Alternative

The No-Build Alternative would make no changes or improvements in the study area and would have no impact on existing utilities. Existing utilities in the study area could be expanded or replaced by their providers in the future.

#### 4.10.3 Environmental Commitments and/or Mitigation Measures

ADOT and the Contractor should follow ADOT's *Standard Specifications for Road and Bridge Construction*.

##### Arizona Department of Transportation Design Responsibility

- During final design the Arizona Department of Transportation would continue coordination with BNSF Railway Company and the Arizona Corporation Commission regarding final crossing design requirements, permitting, and approval processes.

#### 4.10.4 Conclusion

While construction of the proposed action would require the relocation and adjustment of utilities, no new utility projects are identified in the study area needed to support the Project. The Preferred Alternative would have utility impacts throughout the corridor, including APS overhead power, SRP overhead and underground power, SRP Irrigation, City water/sewer, and Southwest Gas. ADOT would coordinate with the appropriate utility companies during design and construction regarding impacts, adjustments, and any service disruptions. The ADOT Utility Section would further investigate utility involvement to coordinate the need for relocation and the accommodation of utilities with the proposed construction.



## 4.11 Visual Resources

The assessment of aesthetic impacts of proposed actions is grounded in federal law, policy, and agency regulations. NEPA requires the federal government “to use all practicable means ... [to] ... assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings” [(42 USC 4331); NEPA Section 101(b)(2)]. Additionally, NEPA Section 202 (42 USC 4342) established the CEQ, whose members are “to be conscious of and responsive to the scientific, economic, social, aesthetic, and cultural needs and interests of the Nation; and to formulate and recommend national policies to promote the improvement of the quality of the environment.”

Visual resources are part of the project’s affected environment. A visual resources analysis studies the relationship between viewers and their visual surroundings, and their reactions to changes in those surroundings. FHWA guidance for visual impact analysis is found in the *Guidelines for the Visual Impact Assessment of Highway Projects* (FHWA 2015). This section describes the characteristics of the viewshed in the project area and potential impacts on visual resources.

### 4.11.1 Existing Conditions

The project area is highly urbanized with dense development adjacent to the project limits. The terrain is generally flat, with elevation ranges between 1,180 and 1,200 feet. Little undisturbed landscape remains. The existing visual quality of the project area associated with vacant and industrial land uses is generally low. The visual quality within these land uses would generally be low to moderate. Land use is a mixture of general commercial, light-to-heavy industrial, residential, and vacant land.

Much of the project area is characterized by commercial and industrial development. Neither US 60 (Grand Avenue), 35th Avenue, and Indian School Road are considered a high value visual resource. The current intersection within the existing urban interface includes a typical, weathered asphalt pavement roadway with concrete barriers and bridges, light fixtures, signals, signs, and billboards. Major utility features of the BNSF Railway and overhead electrical transmission lines are visible from US 60 (Grand Avenue), 35th Avenue, and Indian School Road in the near foreground. The existing interchange includes two bridge structures, two at-grade railroad crossings, and two retaining walls. Detailed information and evaluation of the locations and history of these utility features may be found in the Initial Design Concept Report (ADOT 2023b).

For roadway improvement projects, visual resources are considered from two perspectives: (1) the view from the roadway to motorists and (2) the view of the roadway to the surrounding community. Visual resources and effects to these resources are defined by identifying key views and considering community goals and preferences, when applicable.

The visual impact assessment conducted for the Preferred Alternative evaluated changes in the visual character compared to the No-Build Alternative. The magnitude of these changes is expressed qualitatively using levels of impact, as listed in **Table 26**.

**Table 26. Visual Character Level of Impact**

| Level of Impact | Visual Integrity of the Landscape and Visual Character                   |
|-----------------|--|
| High            | Would be adversely affected in the long-term by the proposed alternative |
| Moderate        | Would noticeably deviate from the existing visual setting                |
| Low-to-Moderate | Would deviate slightly from the existing visual setting                  |
| Low             | Would deviate very little or not at all from the existing visual setting |

To conduct the visual impact analysis, four viewpoints were selected (**Figure 24**), analyzed, and discussed below and shown in **Appendix E**.

#### **4.11.1.1 Viewpoint 1 and Viewpoint 2**

Viewpoints 1 and 2 are both of the perspective of residents within the northeastern quadrant of the existing interchange. Viewpoint 1 is of the perspective of residents in and around the residential portion of the project located along North 35th Avenue, north of the interchange. At present, residents in the multi-family dwellings face west at an at-grade roadway (North 35th Avenue) in the foreground, with the elevated existing Indian School Road overpass in the southern middleground. Surrounding the area are various commercial developments, overhead utilities, and signage all of low-quality visual resource and value.

Viewpoint 2 is of the perspective of residents in and around the residential portion of the project located along West Indian School Road, northeast of the interchange. At present, residents face an at-grade roadway (West Indian School Road) in the foreground, with the elevated existing Indian School Road overpass and on-ramp in the western middleground. Surrounding the area are various commercial and industrial developments, vacant lots, overhead utilities, and signage all of low-quality visual resource and value.

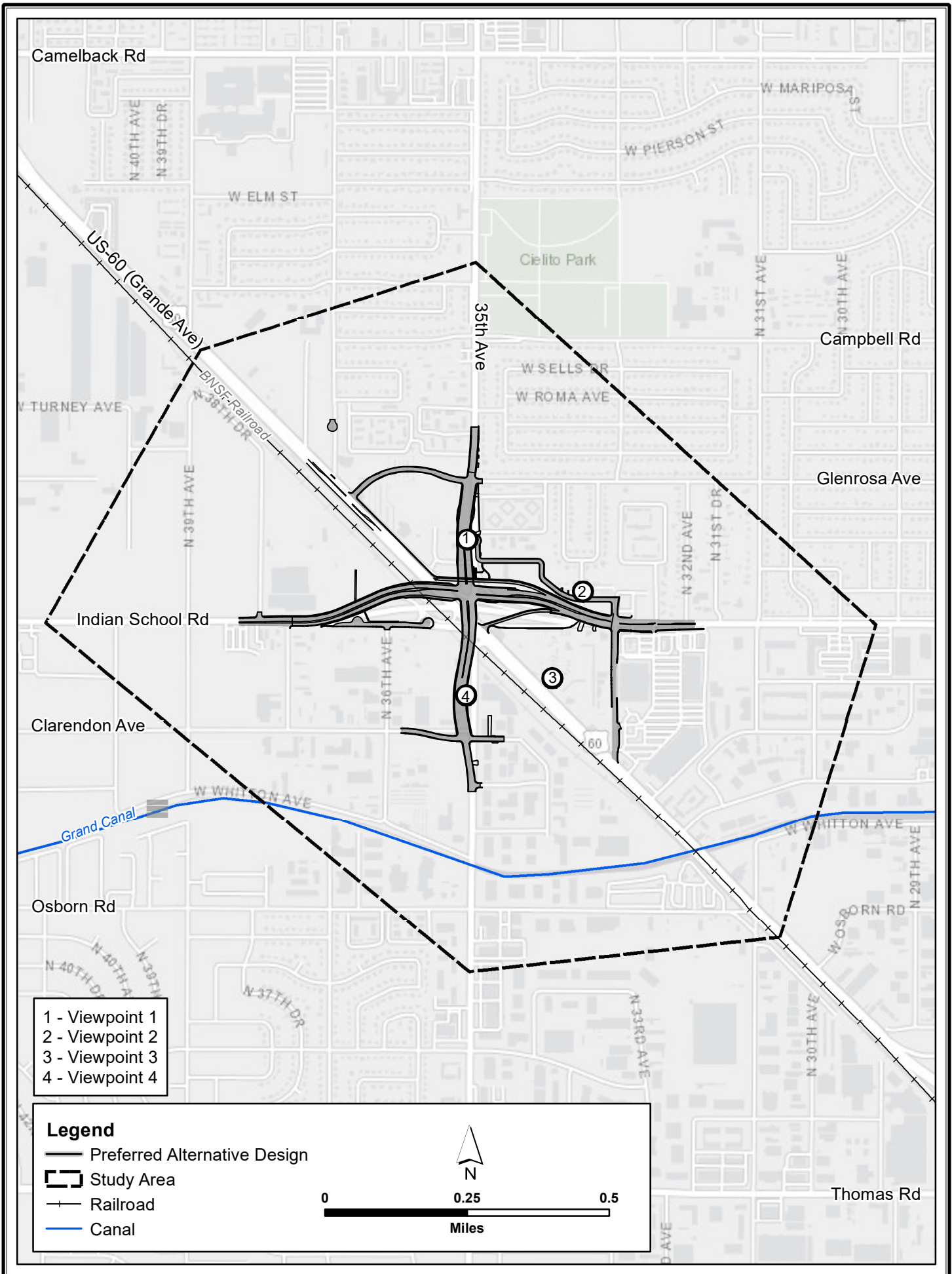
Typically, residents would have sustained views of the project and higher expectations for the landscape, and, in turn, higher sensitivity to landscape changes. Visual impacts of the Preferred Alternative in Viewpoint 1 and Viewpoint 2 would be Low-to-Moderate. The interchange, bridges, and associated ramps would further bisect an area predominantly comprised of commercial and industrial development. The elevated structures of the interchange would present a Low-to-Moderate intrusion into the currently urbanized landscape. Observers would notice the elevated structures, but these changes would not dramatically alter the urban character.

#### **4.11.1.2 Viewpoint 3 and Viewpoint 4**

Viewpoint 3 and Viewpoint 4 are both of the perspective of observers within the southern portion of the project. Viewpoint 3 is the perspective of observers in and around the southeastern portion of the project located along US 60 (Grand Avenue). Surrounding views include an at-grade roadway (US 60 [Grand Avenue]) in the foreground, with the elevated existing Indian School Road overpass in the northern middleground. The area has a strong industrial use, with views of various manufacturing yards and the BNSF Railway running along US 60 (Grand Avenue) to the north and south. In addition, surrounding views also include overhead utilities and signage of low-quality visual resource and value.

Viewpoint 4 is the perspective of observers in and around the southwestern portion of the project located along North 35th Avenue. Surrounding views include an at-grade roadway (North 35th Avenue) in the foreground, with the elevated existing Indian School Road overpass in the northern middleground. The area consists predominantly of commercial and industrial development, with overhead utilities and signage (commercial/industrial signs, billboards, roadway signage).

Visual impacts of the Preferred Alternative in Viewpoint 3 and Viewpoint 4 would be Low-to-Moderate. The interchange would be visible to motorists and residents for a considerable distance; however, due to the existing buildings, existing roadway and overpass, and utilities/signage visually interrupting views in the middleground and foreground, the visual conditions would not differ substantially from existing conditions.



- 1 - Viewpoint 1
- 2 - Viewpoint 2
- 3 - Viewpoint 3
- 4 - Viewpoint 4

**Legend**

- Preferred Alternative Design
- Study Area
- Railroad
- Canal

N  
 0 0.25 0.5  
 Miles

**Figure 24. Visual Resource Viewpoints**

## **4.11.2 Environmental Consequences**

### **4.11.2.1 Preferred Alternative**

The Preferred Alternative improvements for the intersection are generally contained within or immediately adjacent to the existing roadways and are structurally consistent with current roadway features. The Preferred Alternative would preserve much of the existing configuration, but the increase in the overall number of lanes would result in an increase to the overall width, as well as the addition of the new overpass. Therefore, the existing distance between the freeway and the adjacent land uses would decrease. Ramp and bridge reconfigurations would closely resemble, in most locations, the existing ramps and would tie into existing roadways.

Within the project limits, temporary impacts to visual resources would result from construction activities. These relate to the presence of construction equipment (e.g., cranes, trucks, bulldozers, scaffolding), dust and emissions from construction equipment, and construction lighting.

Impacts to the railroad tracks and railroad operations will be avoided. There may be a need to access or construct project elements on railroad-owned properties adjacent to the railroad track corridor. ADOT will continue to coordinate with BNSF on review of project plans and to execute an agreement for work on railroad-owned properties.

### **4.11.2.2 No-Build Alternative**

Under the No-Build Alternative, no impact to visual quality would occur.

## **4.11.3 Environmental Commitments and Mitigation Measures**

ADOT and the contractor would follow the ADOT *Standard Specifications for Road and Bridge Construction*.

## **4.11.4 Conclusion**

The Preferred Alternative would introduce low to moderate degrees of alteration to the existing visual landscape. The foreground views are of urban structure (residential structures, commercial and industrial buildings, overhead utilities, roadway infrastructure). The Preferred Alternative would have a minimal effect on the visual character or quality of the project area, based upon low visual quality of the surrounding area and since the new facilities are similar to existing facilities present in the project area. However, the Preferred Alternative may have a potentially moderate effect on the sensitive viewers, based upon anticipated “noticeable” contrasting views as current conditions along residential development would become a prominent feature. The overall level of change to the visual resources resulting from the Preferred Alternative is anticipated to be minimal.



## 4.12 Drainage and Floodplain Considerations

This section identifies drainage and floodplain issues to be considered when evaluating impacts resulting from the project. Included in this analysis are discussion on surface water, groundwater, and floodplains. Surface water includes water present above the soil surface such as rivers, streams, lakes, pools, and stormwater runoff. Groundwater is water that flows below the soil surface that can be collected by underground wells or other facilities constructed for collecting water or for monitoring. A floodplain is generally level land subject to periodic flooding from an adjacent body of water.

Executive Order 11988, Floodplain Management, requires that impacts on floodplains be evaluated for all federal actions, and directs agencies to reduce impacts on floodplains, minimize flood risks on human safety and well-being, and restore and preserve floodplain values. Floodplains are delineated and managed by the Federal Emergency Management Agency (FEMA).

A 100-year flood is a storm event having a 1 percent chance of being exceeded in magnitude in any given year. The 100-year floodplain includes areas adjoining a water body that are inundated by water during a flood. The floodway is the area within the floodplain where the water is likely to be the deepest and fastest; this area should be kept free of obstructions to allow floodwaters to move downstream without increasing the water surface elevation more than 1 foot.

### 4.12.1 Existing Conditions

#### 4.12.1.1 Floodplains

FEMA designates Special Flood Hazard Areas (SFHA) where National Flood Insurance Program's floodplain management regulation must be enforced, and flood insurance is required. FEMA maintains a database of Flood Insurance Rate Maps (FIRMs) detailing official flood studies. There are numerous SFHA designations, only two being relevant to the project study area. These SFHAs are Zone A and Zone AE, they are defined as:

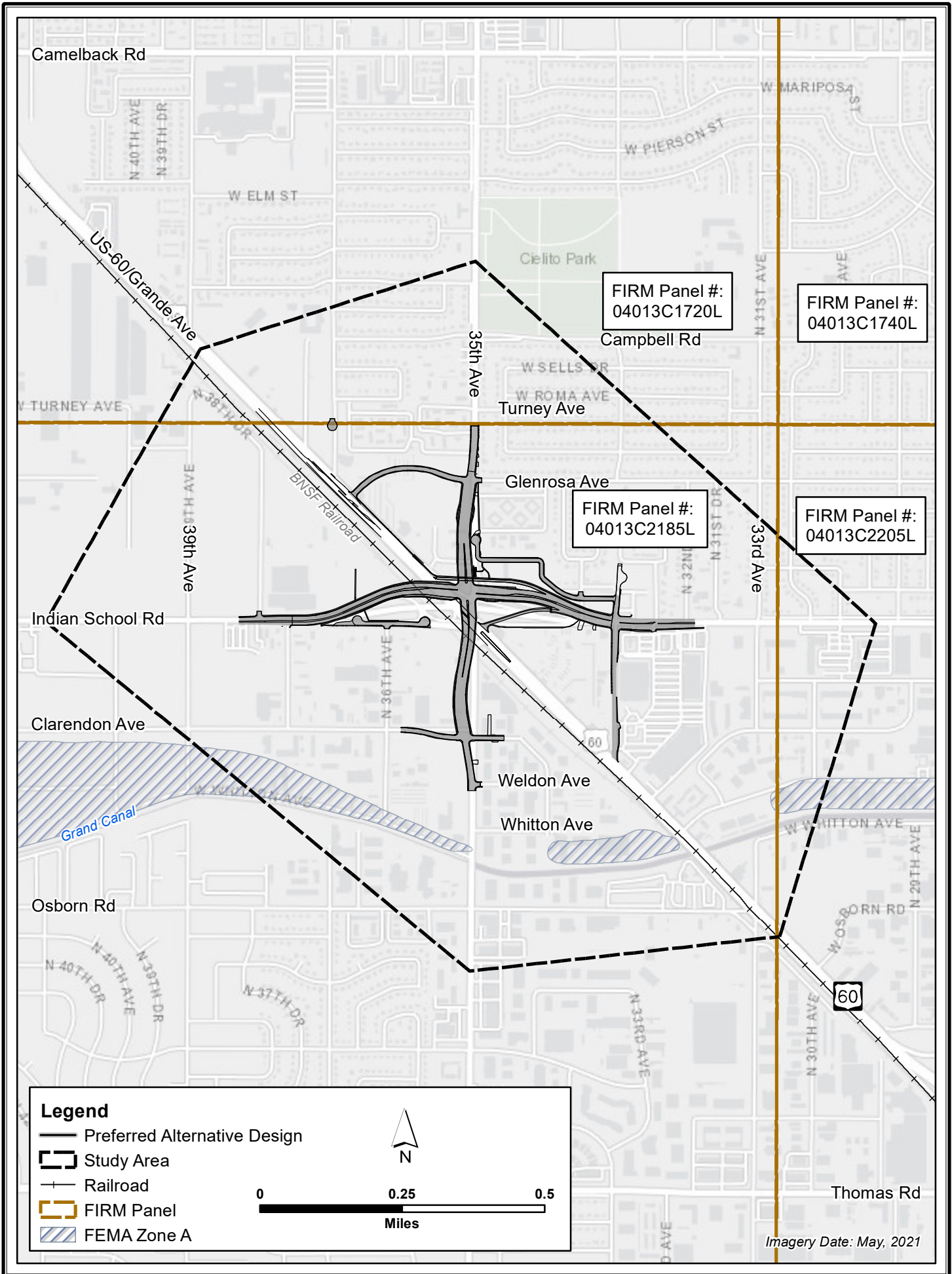
- **Zone A:** Areas with a 1 percent annual chance of flooding (100-year floodplain) and a 26 percent chance of flooding over the life of a 30-year mortgage. No base flood elevations are determined for these areas.
- **Zone AE:** A regulated floodway where the base flood elevations have been determined.

Impervious surface such as asphalt pavement on roadways produces concentrated runoff during storm events. To collect and manage this runoff and reduce areas of flood risk, the City of Phoenix and ADOT install roadway drainage structures and stormwater catchment basins.

The Study Area is covered by three FIRMs (04013C1720L, 04013C1740L, and 04013C2185L), all with an effective date of October 16, 2013.

**Figure 25** shows FIRM panels and flood hazard areas in the Study Area.

The Grand Canal is not considered a Regulated Floodway and there are no other floodways in the Study Area. Lands north of the Grand Canal are listed as Zone A. A portion of lands east of 35th Avenue and US 60 (Grand Avenue) are not listed as Zone A. The Project Footprint is outside of all listed Zone A lands and there are no other floodplains in the Study Area.



**Figure 25. FEMA Special Flood Hazard Areas in the Study Area**

### 4.12.1.2 Drainage

Roadway drainage is collected in a series of inlets and drains throughout the vicinity into a Municipal Separate Storm Sewer System (MS4). The MS4 discharges drainage into large catchment basins located on both sides of 35<sup>th</sup> Avenue, north of the Indian School Road Bridge. The MS4 is owned and operated by both ADOT and the City of Phoenix. Section 402 of the Clean Water Act regulates impacts to the MS4 by construction projects and discussed in more detail in **Section 4.13**.

## 4.12.2 Environmental Consequences

### 4.12.2.1 Preferred Alternative

#### Floodplains

The Preferred Alternative is outside of any regulated flood zones. The lands designated as Zone A floodplains north of the Grand Canal would not be affected by the proposed project. The closest project component to designated Zone A floodplains are improvements to US 60 (Grand Avenue) in the southeast portion of the project. Only minor improvements such as road striping would take place at that location and would not impact the floodplain.

#### Drainage

The Preferred Alternative proposes to rebuild Indian School Road and 35<sup>th</sup> Avenue with a shifted, elevated, and widened alignment. Additional side roads would be constructed to maintain access to adjacent properties. An increase in roadway surface will result in an increase in total drainage that enters the MS4 system. The proposed alignment would require acquisition of the existing basins for roadway construction. The Preferred Alternative includes a redesigned MS4 system with roadway drainage and underground pipes. The existing catchment basins would be rebuilt with a smaller footprint. Multiple new catchment basins would be constructed adjacent to Indian School Road and 35<sup>th</sup> Avenue. **Figure 26** shows the proposed project design and proposed drainage features.

### 4.12.2.2 No-Build Alternative

The No-Build Alternative includes planned and programmed projects in the Regional Transportation Plan. Planned minor improvements to 35<sup>th</sup> Avenue would cross the designated Zone A floodplains adjacent to 35<sup>th</sup> Avenue; however, no floodplain impacts are expected. Minor improvements on 35<sup>th</sup> Avenue would not change drainage patterns on the roadway and would not affect the existing stormwater catchment basins.

## 4.12.3 Environmental Commitments and/or Mitigation Measures

### Arizona Department of Transportation Design Responsibility

- The Maricopa County Floodplain Manager would be provided an opportunity to review and comment on the design plans.

### 4.12.4 Conclusion

The Preferred Alternative would result in an increase in roadway surface and would require redesigning existing stormwater catchment basins. New stormwater basins would be built adjacent to 35<sup>th</sup> Avenue and Indian School Road to increase overall drainage capacity surrounding the project intersection. The Preferred Alternative would result in a loss of access to a business parcel located at Clarendon Avenue and 35<sup>th</sup> Avenue. This parcel is proposed to be acquired and used for an additional catchment basin to reduce the overall impact from construction. The Preferred Alternative would have no impact on existing floodplains.



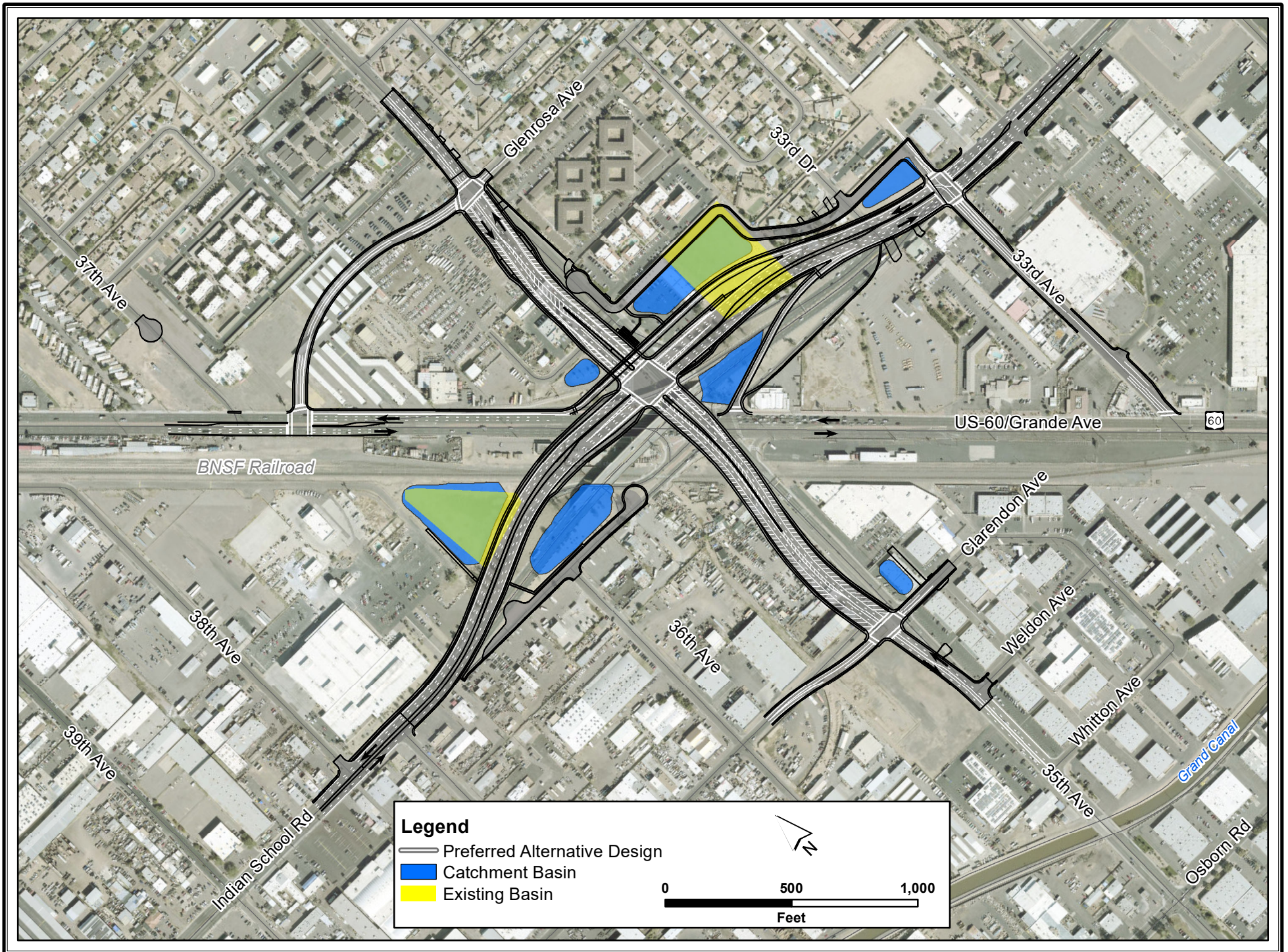


Figure 26. Preferred Alternative with Proposed Drainage Features



### **4.13 Section 404, 401 of the Clean Water Act and National Pollutant Discharge Elimination System**

The Clean Water Act (CWA) is the primary federal statute governing discharge of pollutants into jurisdictional Waters of the United States (Waters), which, in Arizona, include perennial, intermittent, and ephemeral watercourses and adjacent wetlands. The principal goal of the CWA is to establish water quality standards to restore and maintain the chemical, physical, and biological integrity of the nation's Waters by preventing point (concentrated output) and nonpoint (widely scattered output) pollution sources.

Section 401 of the CWA requires any applicant requesting a federal permit or license for activities that may result in discharge into Waters to first obtain a Section 401 Water Quality Certification from the state in which the discharge originates. Section 401 Water Quality Certification verifies the prospective permits comply with the state's applicable effluent limitations and water quality standards. Federal permits or licenses are not issued until Section 401 certification is obtained. ADEQ is responsible for the Section 401 certification in Arizona. If a project meets criteria for conditional Section 401 Water Quality Certification, notification to ADEQ is not required. However, if a project does not meet criteria for conditional certification, such as projects occurring within 0.25 mile of unique or impaired waters, an individual Section 401 Water Quality Certification application to the ADEQ is required.

Section 402 of the CWA regulates pollutant discharges, including stormwater, into Waters through the National Pollutant Discharge Elimination System (NPDES). An NPDES permit sets specific discharge limits for point-source pollutants into Waters and outlines special conditions and requirements for a particular project to reduce impacts to water quality. In 2002, EPA authorized the ADEQ to administer the NPDES program at the state level, called the Arizona Pollutant Discharge Elimination System (AZPDES). AZPDES permits require that the project be designed to protect Waters, that erosion control best management practices (BMPs) be implemented, and that a Storm Water Pollution Prevention Plan (SWPPP) be prepared for construction activities exceeding one acre of ground disturbance.

Section 404 of the CWA regulates the discharge of earthen fill, concrete, and other construction materials into Waters, and authorizes the US Army Corps of Engineers (USACE) to issue permits regulating the discharge of dredge or fill material into Waters. The most common types of Section 404 permits for transportation projects are (1) Nationwide Permit (NWP) 14 (Linear Transportation Projects), which authorizes projects with less than 0.50 acre of permanent loss to Waters with no impacts to special aquatic areas such as wetlands, and (2) individual permits, which are required for projects that affect more than 0.50 acre of waters or cause impacts to jurisdictional wetlands. An individual permit requires mitigation to minimize or offset the impacts to waters with no net loss of functions and values of the water resource.

In addition to the NWP program, the USACE created Regional General Permit (RGP) 96 (Routine Transportation Activities). RGP 96 authorizes ADOT administered projects adjacent to existing ADOT ROW through non-tribal lands. Projects must impact less than one acre of Waters, or less than 0.025 acre or less of special aquatic sites.

#### **4.13.1 Existing Conditions**

The Grand Canal is the only aquatic resource within the Study Area. There are two stormwater catchment basins adjacent to the project intersection, one to the northeast and one to the northwest. Water is directed into these catchment basins through the MS4. Both ADOT and the City of Phoenix

operate and manage their own separate MS4 infrastructure. Although these agencies operate independently, the stormwater infrastructure is connected and Agency coordination will be required.

The Grand Canal is a concrete-lined canal that directs water from the Arizona Canal in Tempe westward towards Glendale. Grand Canal travels east-west through the Study Area due south of the Project Area. US 60 (Grand Avenue) and 35th Avenue have bridge crossings over the canal. A paved multi-use path runs along the southern bank of the canal.

ADEQ, ADOT, and the City of Phoenix all require construction projects over one acre to protect the MS4 from pollutants. ADEQ requires construction projects to submit for a Construction General Permit (CGP). ADOT MS4 assets are subject to the ADOT Stormwater Management Program (SWMP). City of Phoenix MS4 assets are subject to the City of Phoenix SWMP. Both require that construction projects prepare an SWPPP. A SWPPP must detail how the construction project would implement BMPs to prevent pollutants from entering the storm drain system.

#### **4.13.2 Environmental Consequences**

##### **4.13.2.1 Preferred Alternative**

The Preferred Alternative is not expected to have any direct impacts on Waters. Increased roadway surface area would increase the amount of impervious surface and would result in increased stormwater run-off. This run-off would be directed into stormwater catchment basins through the MS4s. Temporary construction impacts to the MS4s from the Project would be mitigated by installing and maintaining BMPs.

ADOT and City of Phoenix operate and manage their own MS4 infrastructure. Due to the connected nature of stormwater drainage, significant Agency coordination will be required for design, operation, and maintenance of the proposed drainage system.

##### **4.13.2.2 No-Build Alternative**

The No-Build Alternative would not result in any direct impacts to any existing aquatic resources in the Study Area.

#### **4.13.3 Environmental Commitments and/or Mitigation Measures**

ADOT and the Contractor should follow ADOT's *Standard Specifications for Road and Bridge Construction*.

#### **4.13.4 Conclusion**

While the Grand Canal is an aquatic resource within the Study Area, it would not be impacted by the Preferred Alternative. Temporary traffic control or signage would be present outside of the Study Area and may intersect with the canal. These impacts are not considered permitting triggers and therefore no Section 401 or 404 permits would be required. In compliance with Section 402 and AZPDES, a SWPPP would be developed to mitigate the discharge of pollutants into the MS4 during construction. Coordination between the City of Phoenix and ADOT would be required for the design, operation, and maintenance of the proposed MS4 system.

## 4.14 Biological Resources

This section addresses the existing conditions of, and possible impacts to: wildlife, vegetation, and protected species or their habitats by the proposed Project. These resources are regulated by various federal and state agencies and guidance provided by the agencies may influence roadway design, construction, and operation. Biological resources that were evaluated include; threatened and endangered species, Arizona special-status species, invasive species, protected vegetation, wildlife habitat and connectivity, and riparian and wetlands. Biological resources were identified using approved desktop research methods and a field survey. Field surveys were conducted in March 2020 and March 2023 to document the existing biological conditions and land use. A Biological Evaluation Short Form (BESF) was prepared for the project.

The BESF evaluates potential impacts using information from the US Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) (USFWS 2023) and the Arizona Game and Fish Department (AZGFD) Online Environmental Review Tool (AZGFD 2023).

### 4.14.1 Existing Conditions

The Study Area is located within the Lower Colorado River Valley Subdivision of the Sonoran Desertscrub Biotic Community (Brown 1994). The Project Area is relatively flat with elevations ranging from 1,110 to 1,140 feet. Flora commonly present in this biome include creosote bush (*Larrea tridentata*), mesquite (*Prosopis* spp.), paloverde (*Parkinsonia* spp.), saguaro (*Carnegiea gigantea*), and bursage (*Ambrosia* spp.). The Project Area is heavily developed and urban with little natural vegetation remaining.

The Project Area is bordered to the south by the Grand Canal a concrete lined channel that moves water from the Arizona Canal in Tempe, westward through Phoenix, and into Glendale. The canal does not receive drainage from the Project Area, nor does it provide riparian habitat for biotic communities. There are no other water features in the project vicinity.

During the field surveys, the Project Area was observed to be heavily developed and urbanized. Land use in the Project Area included industrial and commercial districts to the southwest with smaller commercial properties and residential neighborhoods to the northeast. Vegetation was limited to herbaceous species and landscaped plants on existing ADOT ROW and private property. No intact native habitat was observed within the Project Area.

In Correspondence with AZGFD dated December 4, 2020, the agency responded that the proposed Project Area provided relatively low value to wildlife and anticipated no significant adverse impacts to wildlife resources.

#### 4.14.1.1 Threatened and Endangered Species

The Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) protects threatened and endangered species from actions that jeopardize their continued existence and authorizes the protection of critical habitat these species depend on for maintaining population viability. If a proposed or listed species or designated critical habitat exist within the Study Area, a Biological Evaluation (BE) is prepared that evaluates the potential impacts to the species and their habitat. If adverse impacts are identified, avoidance and minimization mitigation measures are developed for the project. **Table 27** lists the federally protected species in the Study Area.

**Table 27. Federally Protected Species in the Study Area**

| Common Name           | Scientific Name                          | Status                                 | Habitat Requirements  | Potential for Occurrence   |
|-----------------------|--|--|---|--|
| <b>Mammals</b>        |  |  |   |  |
| Sonoran Pronghorn     | <i>Antilocapra americana sonoriensis</i> | Experimental Population, Non-Essential | Species prefers desert washes, arroyos, grassland steppe, and creosote scrub bajadas.   | No potential to occur. Study Area is predominantly urban with minimal vegetation.                    |
| <b>Birds</b>          |  |  |   |  |
| California Least Tern | <i>Sterna antillarum browni</i>          | Endangered                             | Nests on open sandy beaches, sandbars, gravel pits, and exposed flats on rivers, lakes, and reservoirs. Will form nesting colonies where habitat is present. Breeding has been documented in Maricopa County. | No potential to occur. Study area does not contain sufficient water resources.                       |
| Yellow-billed Cuckoo  | <i>Coccyzus americanus</i>               | Threatened                             | Requires wooded habitat with dense cover and water. In the southwest, it prefers cottonwood and mesquite sites located near water.  | No potential to occur within Study Area. Study Area does not contain riparian vegetation.            |
| Yuma Ridgway's Rail   | <i>Rallus obsoletus yumanensis</i>       | Endangered                             | Requires dense woody riparian vegetation with wet substrate such as mudflats or sandbars.   | No potential to occur. Study Area does not contain sufficient vegetation.                            |
| <b>Insects</b>        |  |  |   |  |
| Monarch Butterfly     | <i>Danaus plexippus</i>                  | Candidate                              | Utilizes several milkweed species found throughout Arizona. Monarchs are found in all regions of Arizona.   | Monarchs may occur within the Study Area. Milkweeds are ubiquitous throughout Arizona and may occur. |

Source: USFWS IPaC (2022)

No federally protected species were observed during field reviews. The monarch butterfly was added as a candidate species in December 2020, after the first field review was conducted. Monarch butterfly populations occur in riparian areas, native desert habitats and urban parks. Cielito Park located northeast of the Study Area may support monarch butterfly. No monarch butterfly or milkweed species were observed in the Project Area.

#### **4.14.1.2 Special Status Species**

The AZGFD Online Environmental Review Tool (ERT) was used to identify special-status species that could occur within 3 miles of the Project Area. Two special status species were identified as



documented within 3 miles of the Study Area: western burrowing owl, and monarch butterfly. No western burrowing owl habitat or burrows were observed during field review. No monarch butterflies were observed during field review. The disturbed, urban nature of the project area make it unlikely to find special status species within the Project Area.

#### **4.14.1.3 Protected Plants**

Arizona Native Plant Law (Arizona Revised Statutes 3-901 to 3-916) is administered by the Arizona Department of Agriculture (AZDA), who manages native plant resources and impacts to protected native plant species. Arizona Native Plant Law-listed plants include four protection categories: Highly Safeguarded, Salvage Restricted, Salvage Assessed, and Harvest Restricted. Landowners have the right to destroy or remove native plants growing on their land, but at least 60 days prior to the destruction of any protected native plants, landowners are required to notify the AZDA. At the time of the notification the landowner can state if they would allow salvage companies an opportunity to salvage the plants or if they intend to destroy the plants. Removal of protected native plants from the site would require tags/permits from ADA. The landowner is allowed to transplant healthy native trees within the site without a permit or notification.

A Native Plant Survey was not conducted. During the field reviews observed vegetation was limited to landscaped plants.

#### **4.14.1.4 Invasive Species**

Numerous invasive species were present in the Project Area during field review including stinknet (*Oncosiphon piluliferum*), buffel grass (*Cenchrus ciliaris*), puncturevine (*Tribulus terrestris*), Russian thistle (*Salsola* spp.), and common purslane (*Portulaca oleracea*). Stinknet was the most abundant and was widespread throughout the Project Area. Buffel grass was not as abundant but widespread as well.

#### **4.14.1.5 Wildlife and Habitat Connectivity**

The Maricopa County Wildlife Connectivity Assessment (AZGFD 2012) identifies the Phoenix Metro Area as a Fracture Zone, an area which limits wildlife movement between Habitat Blocks. The Project Area is heavily developed with minimal to no natural characteristics. There are no wetlands, rivers or riparian vegetation which could provide habitat for native wildlife. The BESF found the Project Area was predominantly residential, commercial, industrial and landscaped roadways with minimal, landscaped vegetation. In Correspondence with AZGFD dated December 4, 2020, the agency responded that the proposed Project Area provided relatively low value to wildlife and anticipated no significant adverse impacts to wildlife resources.

#### **4.14.1.6 Riparian Area and Wetlands**

The Grand Canal borders the Project Area to the south. The canal is a concrete-lined channel which brings water from the Arizona Canal in Tempe, westward through Phoenix, and terminates in Glendale. A paved multi-use path runs along the southern bank. Riparian vegetation is not supported by this segment of Grand Canal.

### **4.14.2 Environmental Consequences**

#### **4.14.2.1 Preferred Alternative**

##### **Threatened and Endangered Species**

No suitable habitats were observed for candidate, threatened, and endangered species in the Project Area.

### **Special Status Species**

No suitable habitats were observed for any special status species.

### **Protected Plants**

No protected plants were observed in the Project Area. Landscaped vegetation within ADOT ROW and private property may be removed during construction.

### **Invasive Species**

Construction activities have the potential to expose soils and introduce invasive species. Construction equipment may transport invasive species or seeds from outside the Project Area. Exposed soils may also receive invasive species through biological activity or wind.

### **Wildlife and Habitat Connectivity**

The Project Area was identified within the larger metro Phoenix area Fracture Zone. Reconstruction of the project intersection would not significantly impact the larger overall effect the metro area creates.

### **Riparian Area and Wetlands**

No riparian areas or wetlands were observed in the Project Area.

#### **4.14.2.2 No-Build Alternative**

The No-Build Alternative includes planned and funded improvements to 35th Avenue including pedestrian and safety improvements and a Bus Rapid Transit (BRT) project which would occur within the existing ADOT ROW. Existing landscaped vegetation may be disturbed where necessary to install new pole-mounted lights. Construction activities may introduce invasive species.

### **4.14.3 Environmental Commitments and/or Mitigation Measures**

#### **Contractor Responsibility**

- To prevent the introduction of invasive species seeds, all earth moving and hauling equipment would be washed at the contractor's storage facility prior to entering the construction site.
- All disturbed soils that would not be landscaped or otherwise permanently stabilized by construction would be seeded using species native to the project vicinity.
- To prevent invasive species seeds from leaving the site, the contractor would inspect all construction equipment and remove all attached plant/vegetation and soil/mud debris prior to leaving the construction site.

#### **4.14.4 Conclusion**

The Preferred Alternative would not result in impacts to threatened or endangered species, or other special status species. The Study Area is a heavily disturbed, urban environment with little natural characteristics remaining. There are no water resources or riparian vegetation required for many Federally protected or other Special Status species. The Preferred Alternative would require removal of landscaped vegetation. Temporary impacts from construction may include additional noise which may deter species from the area but would be short-term in duration.

## 4.15 Hazardous Materials

The presence of hazardous materials may create ownership liability and construction safety concerns for infrastructure projects. Roadway surfaces and adjacent properties may have been constructed using materials harmful to human and environmental health. Current or historic generation, storage, or disposal of hazardous substances may contaminate soils, groundwater, and surface waters. Common hazardous materials concerns relevant to transportation projects includes asbestos, lead-based paint, heavy metals, dry-cleaning solvents, and petroleum hydrocarbons (gasoline and diesel fuels).

### 4.15.1 Existing Conditions

The Project Area is developed, urbanized and includes areas of public ROW, city-owned stormwater basins, and privately owned commercial, industrial, and residential properties. Commercial and industrial developments exist primarily in the southern and western portions of the Project Area with residential properties primarily in the northern portion. To identify hazardous materials in the Project Area a Preliminary Initial Site Assessment (PISA) including lead-based paint and asbestos sampling was conducted. The majority of sites identified by site reconnaissance and regulatory database search were categorized as low or no-risk. However, numerous properties were identified as high and moderate risk. The database search also identified the West Central Phoenix (WCP) North Canal Plume which is an area of contaminated groundwater due to industrial processes in the area. The PISA details the high and moderate risk sites and is attached in **Appendix F**. Findings from the PISA, approved by ADOT Environmental Planning in May 2023, include:

- 25 properties within the Project Area were identified as “high environmental risk.” High-risk sites are those that have a high potential for releasing hazardous materials to the soil or groundwater, or have a recorded release issue;
- 3 properties within the Project Area were identified as “moderate risk.” Moderate risk sites are those that have a moderate risk for releasing hazardous materials to the soil or groundwater;
- The southern and western portions of Project Area are located within the West Central Phoenix (WCP) North Canal Plume Water Quality Assurance Revolving Fund area of groundwater contamination. Chemicals of concern may remain in soils in the surrounding area, and are due to industrial processes in the area.

Concrete structures that may be impacted by construction of the Preferred Alternative were visually inspected and samples were taken to determine the presence of asbestos. The Indian School Road bridge spans over 35th Avenue, US 60 (Grand Avenue) and the BNSF Railroad and is split into 2 bridge structures. A total of 18 bulk samples were collected from the Indian School Bridge structures. Three white and yellow striping samples were also taken from the project roadways. No asbestos containing materials were detected.

Yellow and white roadway paint was collected from Indian School Road and analyzed for the presence of lead. A sample of red painted concrete from the Indian School Bridge was also tested for lead. Lead content is reported as percent by weight and no samples contained above the reportable limit.

### 4.15.2 Environmental Consequences

#### 4.15.2.1 Build Alternative

The Preferred Alternative would require the acquisition of numerous high and moderate-risk sites in the Project Area. Acquisition of properties that involve regulated hazardous materials may affect

project cost due to potential remediation requirements. This would not be determined until final design, when further studies (such as Phase I Environmental Site Assessment [ESAs]) are conducted and definitive ROW needs are developed. Acquisition of properties that require remediation may also affect the property value and would be addressed during the acquisition process.

#### **4.15.2.2 No-Build Alternative**

The No-Build Alternative includes the infrastructure changes along 35<sup>th</sup> Avenue that have the potential to disturb roadway surfaces requiring the removal of paint. Paint sampled in the Project Area did not contain reportable levels of lead. The No-Build Alternative would not disturb any existing buildings outside of existing ROW. Therefore, it is unlikely for the No-Build Alternative to have any impacts involving hazardous materials.

#### **4.15.3 Environmental Commitments and/or Mitigation Measures**

ADOT and the Contractor should follow ADOT's Standard Specifications for Road and Bridge Construction.

##### Arizona Department of Transportation Design Responsibility

- The Department project manager would contact the Arizona Department of Transportation, Environmental Planning, Hazardous Materials Coordinator (602.920.3882 or 602.712.7767) 60 (sixty) days prior to bid advertisement to determine the need for additional site assessment or asbestos sampling.

#### **4.15.4 Conclusion**

The PISA report recommends conducting a Phase I ESA on all acquired parcels listed as moderate or high-risk sites. Additional assessments including local and state agency review and/or Phase II ESAs may be recommended based on Phase I findings. No further assessment of the WCP North Canal Plum is recommended unless groundwater would be encountered during construction (such as dewatering activities).



## 4.16 Secondary Impacts

Secondary impacts are defined by the CEQ as those impacts that are caused by an action and occur later in time, or are farther removed in distance but are still reasonably foreseeable after the action has been completed (40 CFR 1508.8). These impacts comprise a variety of secondary effects, such as changes in land use, economic vitality, and population density. This section identifies the likely, foreseeable secondary impacts that would result from the construction of the proposed roadway (cumulative impacts are addressed in **Section 4.17**).

FHWA has developed interim guidance on the analysis of secondary and cumulative impacts (FHWA 2003), which supplements the CEQ guidance. Combined, these documents provide the primary basis for analysis. The classification of secondary impacts discussed below, in accordance with FHWA guidance, is presented in **Table 28**.

**Table 28. Secondary Impact Classification**

| Impact Category | Impact Classification           | Description  |
|-----------------|---------------------------------|--|
| Type            | Neutral, positive, or negative  | Compares the final condition of a given resource with its existing condition (assumes that the expected impact occurs); impacts on personal property are considered negative |
| Severity        | Minor, moderate, or substantial | Considers the relative contribution of the proposed action to a given impact   |
| Duration        | Temporary or permanent          | Assumes "permanent" unless otherwise specified   |

Source: 2019 ADOT NEPA EA and EIS Guidance

**Table 29** summarizes resources considered in this analysis. Secondary impacts on other resources are not included in the following discussion being they considered negligible.

**Table 29. Resources Considered for Secondary Impacts**

| Resource                                    | Secondary Impact |
|---|------------------|
| Land Use                                    | Yes              |
| Social and Economic Considerations          | Yes              |
| Title VI and Environmental Justice          | Yes              |
| Cultural Resources                          | Yes              |
| Traffic and Transportation                  | Yes              |
| Air Quality Analysis                        | No               |
| Noise Analysis                              | Yes              |
| Utilities                                   | No               |
| Visual Resources                            | Yes              |
| Drainage and Floodplain                     | No               |
| Sections 404 and 401 of the Clean Water Act | No               |
| Biological Resources                        | No               |
| Hazardous Materials                         | No               |

## 4.16.1 Environmental Consequences

### 4.16.1.1 Preferred Alternative

Under the Preferred Alternative, negative secondary impact on job opportunities could be expected due to the closure of businesses from the ROW acquisition and changes in access for some properties along 35th Avenue closest to the intersection. **Table 30** lists the potential secondary impacts, as related to the Recommended Alternative and other actions.

**Table 30. Potential Secondary Impacts from Preferred Alternative**

| Resource                           | Impact  | Type, Intensity, And Duration of Secondary Impact |
|------------------------------------|---|---|
| Land Use                           | Improved motility and access along the project area may attract commercial and industrial development.  | Negative, minor, permanent                        |
|                                    | Changes in land ownership and land use may occur as a result of the project.  |   |
| Social and Economic Considerations | There may be a reduction in local employment opportunities and tax base losses if the acquired businesses do not relocate within the project vicinity, but improved local traffic operations, congestion, and access may result in the area becoming more appealing to future development   | Neutral, moderate, permanent                      |
|                                    | In the event some acquired land is found to be in excess, they may be made available for purchase and developed for similar uses.   |   |
| Environmental Justice              | Minority and low-income populations would experience project benefits with the improvement of traffic operations and public safety. Local development will continue with or without the Recommended Alternative including new infrastructure and roadway improvements. The displacement of businesses could result in a potential reduction in local employment opportunities for EJ populations if the businesses do not relocate within the project vicinity. | Neutral, moderate, permanent                      |
| Cultural Resources                 | New development could change the visual setting in proximity to existing historical sites, such as the former Phoenix Coliseum and Mr. Lucky's.   | Neutral, no impact, permanent                     |
| Traffic and Transportation         | It is anticipated the BRT project would result in additional changes along 35th Avenue, such as re-striping the roadway and installing a station north of Indian Road.  | Positive, moderate, permanent                     |
|                                    | The improved traffic operations would also result in a reduction in vehicle crashes and provide a positive public safety benefit.   |   |
|                                    | The improved traffic operations would also result in reduced vehicular incidents and congestion, and provide a positive public safety benefit at the intersection of US 60 (Grand Avenue), 35th Avenue, and Indian School Road while maintaining regional mobility and access for economic centers.   |   |
| Air Quality Analysis               | Operational efficiencies resulting from grade-separating the intersection would be considered neutral to positive.  | Positive, minor, permanent                        |

## AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES

| Resource         | Impact  | Type, Intensity, And Duration of Secondary Impact |
|------------------|---|---|
| Noise Analysis   | The potential for additional traffic growth in the Study Area resulting from increased secondary development could cause an associated increase in noise. | Neutral, minor, permanent                         |
| Visual Resources | Potential changes in the visual setting may impact existing cultural resources, as there would be new visual elements in the Study Area.                  | Neutral, minor, permanent                         |

#### **4.16.1.2 No-Build Alternative**

The No-Build Alternative would not result in any secondary impacts within the project area.

#### **4.16.2 Conclusion**

Continuous growth in population and employment has filled most of the study area with commercial, residential, and industrial developments. Overall, the improved traffic operations would be expected to benefit future development and economic vitality and result in a moderate positive impact to the region. The improved traffic operations would also result in reduced vehicle crashes and provide a positive public safety benefit.

## 4.17 Cumulative Impacts

The CEQ's Regulations for Implementing the Procedural Provisions of NEPA define cumulative impacts as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions" (40 CFR 1508.7).

Cumulative impacts are considered direct impacts, which are "caused by the action and occur at the same time and place" (40 CFR 1508.8). The CEQ regulations also require including a discussion of cumulative actions and connected actions in the scope of the environmental review.

FHWA has developed interim guidance on cumulative impact analysis (FHWA 2003). This interim guidance is presented in a question-and-answer format that reviews current NEPA requirements regarding the consideration, analysis, documentation, and mitigation of direct, secondary, and cumulative impacts. Much of the guidance is based on individual state department of transportation procedures and the approach followed by other federal agencies. The FHWA interim guidance supplements the CEQ guidance; combined, they provide the primary basis for analysis.

For this cumulative impacts assessment: past, present, and reasonably foreseeable future transportation projects and non-transportation-related projects are considered. Present and reasonably foreseeable future actions include those listed in long-range planning documents from the City of Phoenix, ADOT, Valley Metro, and Maricopa County. This EA assumes that the local municipalities and county comprehensive and general plans direct the type of development in the study area. This development would likely occur eventually regardless of whether the US 60 (Grand Avenue) and 35th Avenue project is implemented. **Table 31** describes past, present, and reasonably foreseeable actions in the study area that contribute to cumulative effects on the environment.

**Table 31. Past, Present, and Reasonably Foreseeable Actions in the Study Area**

| Date                            | Action   |
|---------------------------------|--|
| <b>Past and Present Actions</b> |  |
| 1877-1878                       | The Grand Canal was planned in 1877 and constructed in 1878 by the Grand Canal Company.  |
| 1888                            | Grand Avenue is created initially as a 100-foot-wide unpaved roadway connecting Peoria to northwest Phoenix.   |
| 1887                            | The Maricopa and Phoenix Railroad was constructed to connect Phoenix to the Southern Pacific's mainline.   |
| 1891-1895                       | Construction of the Santa Fe, Prescott, & Phoenix rail line began along Grand Avenue, running from Phoenix to Prescott was completed. This railway was constructed to connect Phoenix to the Atlantic & Pacific Railroad mainline in Ash Fork. The railroad continues to be operated within the project area as the upgraded BNSF Railway. |
| 1919                            | Grand Avenue is paved with asphalt, improving the road to keep up with the Valley's population and vehicular growth.   |
| 1926-1930                       | US 60 is commissioned to be one of two transcontinental highways and construction begins. The section from Wickenburg through Phoenix, Grand Avenue, is constructed in 1930.   |
| 1973                            | The City of Phoenix initiated a study related to building overpasses at all major intersections along Grand Avenue to alleviate westside traffic congestion at the six-point intersections created by Grand Avenue.  |
| 1974 – 1978                     | The City of Phoenix council gave final design approval for the Indian School Overpass. In the spring of 1977, construction of the overpass began. On April 26, 1978, the overpass opened to traffic.   |



## AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES

| Date                                  | Action  |
|---------------------------------------|---|
| 2023                                  | City of Phoenix Safety Project including 3 HAWK signals, LED lighting, nine intersection modernization improvements, upgraded traffic signals, raised medians, pavement treatment on deteriorated sections, broadband and fiber to support intelligent and connect transportation systems. This project runs along 35th Avenue from I-10 to Camelback Road. It is currently 'Underway' and expected to be in use by Q2 2025.  |
| <b>Reasonably Foreseeable Actions</b> |   |
| Planned                               | City of Phoenix Grand Canal Phase IV: 47th Avenue – I-17 is expected to design and construct an expanded canalscape project along the Grand Canal. It is currently in 'Planned' status.   |
| Planned                               | City of Phoenix Construction of positive offset and flashing yellow arrows at the intersection of Indian School Road and 31st Avenue. It is currently in 'Planned' status.  |
| Planned<br>2023-2024                  | Valley Metro West Phoenix High-Capacity Transit Alternatives Analysis - This study is looking at high capacity transit options in west Phoenix. The study area boundaries are Camelback Road on the north, McDowell Road on the south, Central Avenue on the east, and 99th Avenue on the west. The goal of the study is to identify a recommended transit type and route.<br>The analysis is currently under study. No construction funding has been identified at this time of publication.   |
| Planned<br>2026-2028                  | Phoenix Bus Rapid Transit Program (BRT): a new high-capacity bus network that operates throughout the day on major roads. The City of Phoenix selected its first BRT corridor as 35th Avenue and Van Buren Street, which identified potential stops at the following intersections: <ul style="list-style-type: none"> <li>• 35th Avenue and Thomas Road</li> <li>• 35th Avenue and Indian School Road</li> <li>• 35th Avenue and Camelback Road</li> </ul> The BRT program is included in the Phoenix T2050 transit plan, approved by voters in 2015. The first corridor was selected and approved in 2021, which will run along 35 <sup>th</sup> Avenue and Van Buren Street. It is currently in 'Planned' status and in the 'Detailed Corridor Planning' phase. The Phoenix BRT team is currently in early design, developing alternatives for the selected BRT corridor. It is anticipated that construction activities for this corridor would begin in 2026, and be completed by 2028.  |
| Planned<br>2024-2027                  | The 1.4-mile Capitol Extension will provide an important connection between the downtown core and the Arizona State Capitol. Integrating with the existing Valley Metro Rail system at 3rd Avenue, the route extends west on Washington Street, turns south on 19th Avenue and then loops back to downtown along Jefferson Street. This project will bring together state, regional and local agencies, as well as community partners, and energize the downtown and State Capitol areas. <ul style="list-style-type: none"> <li>• A new Locally Preferred Alternative (LPA) that was approved by Phoenix City Council and the Valley Metro Rail Board of Directors in November 2021.</li> <li>• Preliminary engineering (PE) work is now underway to develop early construction plans and technical specifications for the extension.</li> <li>• The project team is also beginning preparations for the federally required Environmental Assessment in 2023.</li> </ul> Preliminary engineering is expected to begin by fall 2023. Design and construction are expected to start and conclude from 2024-2027. |

Source: ADOT 2023b

## 4.17.1 Environmental Consequences

### 4.17.1.1 Preferred Alternative

The Preferred Alternative would contribute no cumulative impacts on cultural resources and biological resources. Native biological resources within the project area have either been eliminated or substantially reduced, as the area has been under urban development with multiple transportation features since the early 1900s. The Preferred Alternative would not add any incremental nor cumulative impacts to cultural resources, as none remain due to the study area being previously developed with no undisturbed land left. Cumulative impacts associated with social and economic conditions and land use would be mostly neutral or positive. Cumulative impacts on air quality are expected to be neutral or positive due to operational efficiencies resulting from grade-separating the intersection under the Preferred Alternative. **Table 32** lists the potential cumulative impacts, as related to the to the Preferred Alternative and other actions.

**Table 32. Potential Cumulative Impacts from Preferred Alternative**

| Resource                           | Impact   | Type, Intensity, And Duration of Secondary Impact |
|------------------------------------|--|---|
| Land Use                           | The build alternative complements or supports the region's growth and provide improved traffic operations. These factors typically encourage community growth, and the study area has capacity in terms of opportunities for urban infill or redevelopment and infrastructure in place.                                  | Neutral to positive, minor, permanent             |
| Social and Economic Considerations | The major planned developments in the Study Area related to the BRT Program, Grand Canal Phase IV would be expected to continue with or without the project. The Preferred Alternative would however complement those facilities and developments with improved traffic operations adding to potential economic impacts. | Neutral, moderate, permanent                      |
| Title VI and Environmental Justice | Other planned transportation projects in the Study Area would provide further safety improvements and transit services for EJ populations in the Study Area, although the planned projects may cumulatively result in a longer period of construction and disruption for the surrounding community.                      | Neutral, moderate, permanent                      |
| Cultural Resources                 | Minimal to minor cumulative impacts on cultural resources would be expected due to the project and past, ongoing, and reasonably foreseeable future actions. The study area and vicinity are lacking in cultural resource sites that have not already been evaluated or documented.                                      | Neutral, minor, permanent                         |
| Traffic and Transportation         | With the addition of the reasonably foreseeable future actions, traffic volumes would continue to increase over time with no improvements to the 35 <sup>th</sup> Avenue/Grand Avenue/Indian School Road Intersection that would divert traffic.   | Positive, moderate, permanent                     |
|                                    | The long-term impact on traffic and the transportation system with the Preferred Alternative would be beneficial for traveling motorists, businesses, and freight transportation locally, regionally, and nationally.  |   |

## AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES

| Resource             | Impact   | Type, Intensity, And Duration of Secondary Impact |
|----------------------|--|---|
| Air Quality Analysis | Grade-separating intersection improves operational efficiency (increased vehicle speeds leading to lower emissions). Future improvements with cleaner burning fuels, lower emission vehicles and alternative vehicle types lead to reduced emissions. Planned BRT projects in the study area are expected to remove some vehicle traffic from roads in the study area. | Neutral, minor, positive                          |
| Noise Analysis       | With added pedestrian, transit, and vehicular capacity due to improved conditions and the reasonably foreseeable future projects, projected noise increased from traffic are expected.   | Negative, minor, permanent                        |
|                      | The Preferred Alternative would result in improved circulation on the transportation facilities. The higher travel speed, areas of new alignment, and shift in the existing alignment to widen would result in a long-term increased noise generation as a result of the Preferred Alternative.  |   |
| Visual Resources     | The visual character of the study area would continue to change over time with continued urban development.  | Neutral, minor, permanent                         |

#### 4.17.1.2 No-Build Alternative

The No-Build Alternative would not result in any cumulative impacts within the project area.

#### 4.17.2 Conclusion

The study area has seen significant development since the early 1900s, which has had significant impacts on land use, cultural resources, noise, air quality, and visual environments. Moreover, the Preferred Alternative has only limited direct impact to these resources. For these reasons, the project would have only minor, neutral or negative, and permanent cumulative impacts.

## 4.18 Conclusion

**Table 33** summarizes the potential environmental impacts associated with the Preferred and No Build Alternatives.

**Table 33. Summary of Environmental Impacts**

| Preferred Alternative  | No-Build Alternative   |
|--|--|
| <b>Land Use</b>  |  |
| <p>The Preferred Alternative conforms to the general and comprehensive plans for land use, transportation, and future development in the jurisdictions surrounding the Preferred Alternative.</p> <p>The Preferred Alternative would convert approximately 21 acres of land to a transportation use. Approximately half of land to be acquired is in business land use, over 30% is vacant land or stormwater basins, and 4% is single-family residential. The long-term impact would be minimal in intensity. The Preferred Alternative is not expected to have a significant impact on land ownership, jurisdiction, or land use.</p>  | <p>The No-Build Alternative would not result in changes to existing or future land use patterns or the acquisition of land in the study area.</p> <p>It would not conform to plans and policies established by regional planning organizations, ADOT, and municipalities regarding future development based on an efficient transportation system. It is expected that development would slow in locations where future traffic volumes would approach and/or exceed the maximum capacity of the intersection in the study area.</p> |
| <b>Social and Economic Considerations, including Acquisitions, Relocations, and Displacements</b>  |  |
| <p>The Preferred Alternative would require approximately 21 acres of new right-of-way, affecting 78 parcels in the immediate vicinity of the intersection and resulting in the displacement of approximately 60 businesses and 5 residences.</p> <p>Five single-family residential parcels to be acquired comprise approximately one acre, or 4% of the new right-of-way required for the project.</p> <p>The long-term impact would be of minimal intensity and the proposed project conforms to the Community's long-range planning and development efforts.</p> <p>Five single-family residential parcels in the Indian Gardens neighborhood would be adversely affected. The 5 houses acquired would not be expected to negatively affect continuity and viability of the overall Indian Gardens neighborhood.</p> | <p>The No-Build Alternative would not result in the acquisition of land in the study area because no new right-of-way would be required to rebuild the intersection.</p> <p>The No-Build Alternative would not result in community impacts, but as future development continues, local street/roads and access would be adversely affected by increased traffic congestion.</p>  |



## AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES

| Preferred Alternative  | No-Build Alternative  |
|--|---|
| <b>Environmental Justice</b>   |   |
| <p>The potential adverse effects to minority and low-income EJ populations would not be considered disproportionately high and adverse once mitigation and benefits are considered. Measures to avoid and minimize impacts have been identified and incorporated into the project to lower the adversity of the impacts. ADOT will continue to conduct targeted outreach to two groups: the tenants and/or homeowners of in the neighborhood affected by residential displacements, and the owners of the displaced businesses.</p> <p>Benefits of the Preferred Alternative, such as improved circulation, reduced travel times, shorter travel delays, and improved safety would accrue to both environmental justice and non-environmental justice communities.</p>                                 | <p>The No-Build Alternative would not adversely affect protected populations, but such populations would also not obtain the benefits and opportunities afforded by the intersection improvements.</p>  |
| <b>Cultural Resources</b>  |   |
| <p>The Preferred Alternative would result in no adverse effect to the six NRHP-eligible properties within the APE. Impacts to unknown cultural resources or inadvertent disturbance of human remains are always a possibility during construction, but the review indicated there is little potential for such discoveries.</p>  | <p>The No-Build Alternative would have no direct or indirect impacts on TCPs in the study area.</p>   |
| <b>Section 4(f) Properties</b>   |   |
| <p>Two recreational Section 4(f) properties and four historic Section 4(f) properties are within the study area. There would be no direct or constructive use of the two recreational Section 4(f) properties and three of the historic Section 4(f) properties.</p> <p>The Preferred Alternative would require a small sliver of right-of-way acquisition within the parking lot of one historic Section 4(f) property, for which SHPO concurred with a Section 106 finding of no adverse effect. ADOT has made a de minimis impact determination for this property.</p>  | <p>No impacts on Section 4(f) properties would occur under the No-Build Alternative because a new federally funded transportation facility would not be built.</p>  |
| <b>Air Quality</b>   |   |
| <p>The Preferred Alternative would not cause or contribute to any new violation of any air quality standard in any area, increase the frequency or severity of any existing violation of any standard in any area, or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area. The Preferred Alternative was determined to have a low potential for MSAT effects because the Preferred Alternative will improve operational efficiency without adding substantial new capacity. Furthermore, annual traffic volumes in project area will be less than the AADT where a quantitative MSAT analysis could be warranted and MSAT emissions are expected to decrease substantially in the future because of new engine and fuel standards.</p> | <p>Under the No-Build Alternative, traffic volumes and traffic congestion are predicted to increase through 2050. Through improved engine technology and cleaner vehicle options, the No-Build Alternative would result in air quality improvements, although not to the extent of the Preferred Alternative.</p> |

AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES

| Preferred Alternative  | No-Build Alternative   |
|--|--|
| <b>Noise</b>   |  |
| <p>There are locations within the project area where predicted noise levels exceed ADOT’s mitigation criteria; however, based on ADOT’s Noise Abatement Requirements, noise abatement at these locations would not meet reasonable and feasible criteria set forth in the ADOT Noise Abatement Requirements.</p>   | <p>The No-Build Alternative would have no effect on noise levels.</p>                      |
| <b>Utilities</b>   |  |
| <p>The Preferred Alternative would affect existing utilities, resulting in the need to relocate and accommodate certain utilities before or during construction.</p> <p>The ADOT Utility Section would further investigate utility involvement to coordinate the need for relocation and the accommodation of utilities with the proposed construction. Utility relocations could result in minor service disruptions during construction, with prior notice provided to local customers.</p>  | <p>The No-Build Alternative would have no impact on existing utilities.</p>                |
| <b>Visual Resources</b>  |  |
| <p>The Preferred Alternative would result in permanent minor visual impacts within the project area. Only minor changes to viewer exposure or awareness are anticipated. Minor impacts (not considered adverse) would be intensified by built features such as taller bridges and expanded roadways for viewers who live within a few hundred feet of the project, predominantly Indian School Road and 35th Avenue.</p>   | <p>The No-Build Alternative would have no impact on visual quality or local character.</p> |
| <b>Floodplain and drainage considerations</b>  |  |
| <p>The Preferred Alternative is outside of any regulated flood zones; however, the closest project component to designated Zone A floodplains are improvements to US 60 (Grand Avenue) in the southeast portion of the project. Only minor improvements such as road striping will take place at that location and will not impact the floodplain.</p> <p>The Preferred Alternative would result in an increase in impervious surface and would require redesigning existing stormwater catchment basins. New stormwater basins would be built adjacent to 35th Avenue and Indian School Road to increase overall drainage capacity surrounding the project intersection. Additional parcel acquisitions will be required to accommodate new basins.</p> | <p>The No-Build Alternative would have no impact on floodplain and drainage resources.</p> |

## AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES

| Preferred Alternative   | No-Build Alternative  |
|---|---|
| <b>Clean Water Act Sections 404, 401, and 402 and National Pollutant Discharge Elimination System</b>   |   |
| <p>The Preferred Alternative is not expected to have any direct impacts on Waters, as there are no aquatic resources within the study area. Temporary construction related traffic control or advance signage may be present outside of the Project Area on 35th Avenue and US 60 (Grand Avenue) where they cross the Grand Canal. Increased roadway surface area will increase the amount of impervious surface and will result in increased stormwater run-off. This run-off would be directed into stormwater catchment basins through the MS4. Temporary construction impacts to the MS4 from the Project will be mitigated by installing and maintaining BMPs.</p> | <p>The No-Build Alternative would have no impact on Clean Water Act resources.</p>  |
| <b>Biological Resources</b>   |   |
| <p>The Preferred Alternative will not result in impacts to vegetation or wildlife. The study area is a heavily disturbed, urban environment with little natural characteristics remaining. There are no water resources or riparian vegetation required for many federally-protected or other Special Status species. The Preferred Alternative would require removal of landscaped vegetation.</p> <p>Temporary impacts from construction may include additional noise which may deter species from the area but would be short-term in duration.</p>  | <p>The No-Build Alternative would have no impact on vegetation or wildlife.</p>   |
| <b>Hazardous Materials</b>  |   |
| <p>The Preferred Alternative would require the acquisition of 25 high and 3 moderate-risk sites in the project area. Acquisition of properties that involve regulated hazardous materials may affect project cost due to potential remediation requirements.</p>  | <p>No impacts on hazardous material sites would be associated with the No-Build Alternative because there would be no disturbance to any existing buildings outside the right-of-way.</p> |

AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES

| Preferred Alternative  | No-Build Alternative   |
|--|--|
| <b>Secondary impacts</b>   |  |
| <p>The Preferred Alternative would improve motility and access along the project area, which may attract commercial and industrial development; however, most of the area is already developed, with little remaining undeveloped land. Changes in land ownership and land use may occur as a result of the project, but would only represent minor, neutral, permanent changes within the context of the existing area.</p> <p>With the Preferred Alternative, improved local traffic operations and access may result in the area becoming more appealing to commercial development. A secondary economic impact could be expected if acquired businesses do not relocate within the project vicinity, resulting in a reduction in immediately local employment opportunities and tax base losses.</p> | <p>No secondary impacts related to the improvements would occur with the No-Build Alternative because the Preferred Alternative would not be implemented. With the No-Build Alternative, travel demand is projected to increase, resulting in continued degradation of LOS, longer travel times, and severe congestion in the study area by 2050.</p>  |
| <b>Cumulative impacts</b>  |  |
| <p>Cumulative impacts are likely to occur as the study area and the City of Phoenix continue rapidly urbanizing. The cumulative impacts related to population and growth, and accessibility and quality of life are considered positive and substantial over the long term.</p> <p>Most impacts on natural resources could be reduced through mitigation measures, best management practices, permits, municipal ordinances and oversight, and related means and methods aimed at protecting such resources over the long term.</p>  | <p>If the improvements to the intersection are not constructed, no contribution to cumulative effects by the Preferred Alternative would occur. The No-Build Alternative would not, however, preclude other present activities and reasonably foreseeable projects from affecting the built environment resources in or near the study area. Most cumulative impacts would result from ongoing conversions of land to more intensive urban development. Additionally, with the No-Build Alternative, the existing intersection is forecast to operate at a very poor LOS, resulting in long-term adverse cumulative effects on the transportation system in and near the study area.</p> |

*ADOT = Arizona Department of Transportation, APE = Area of Potential Effect, BMP = Best Management Practice, LOS = level of service, MAG = Maricopa Association of Governments, MS4 = City of Phoenix Municipal Separate Storm Sewer System, NRHP = National Register of Historic Places, Preferred Alternative = Recommended Build Alternative, ROW = Right of Way*



## 5. PUBLIC INVOLVEMENT AND AGENCY COORDINATION

The Preferred Alternative has gone through extensive community outreach and stakeholder coordination. All public and stakeholder outreach activities are in accordance with the ADOT Public Involvement Plan that complies with federal nondiscrimination requirements for Title VI, Environmental Justice (EJ), and Limited English Proficiency (LEP), which has been approved by FHWA and complies with all Title VI, EJ, NEPA, and LEP requirements. Refer to **Section 4.3** for more information on the Title VI, EJ, and LEP analysis. This chapter provides an overview of outreach activities, outlines project study coordination activities since initiation of the NEPA process for this study, and summarizes the comments received during public and agency scoping.

As part of the NEPA process, agency and public meetings were held to discuss and evaluate potential modifications to improve capacity and traffic flow on the proposed project in Phoenix, Arizona. The purpose of the scoping process is to identify potential issues, concerns, and opportunities that should be considered in the development of alternatives and environmental studies for the proposed project. Information on potential issues, concerns, and opportunities was obtained from area residents, business and property owners, stakeholders, and government agency representatives through these agency and public meetings. Two websites were developed to provide an overview of the study, public meeting information, and technical reports (<https://azdot.gov/planning/transportation-studies/grand-35-study>, <https://adotgrand35study.com/>). Agency scoping was conducted through letters to affected jurisdictions, agencies, organizations, and interest groups, and through an agency scoping meeting.

### 5.1 Key Outreach and Coordination Milestones

#### 5.1.1 Public Information Meetings

##### 5.1.1.1 October 2020

Two virtual public information meetings were held from 5:30 to 6:30 p.m. in Spanish, and 7 to 8 p.m. in English on Thursday, October 22, 2022, to inform the public about the study and obtain their input on any issues, concerns, and opportunities. To ensure community members knew about the meeting and had an opportunity to participate, ADOT provided notification by:

- Placing advertisements in *The Arizona Republic* and *Prensa* (Spanish Language) newspapers
- Sending an email notification (e-blast) via ADOT's GovDelivery system
- Sending a press release to media outlets and securing live "shots" during the public meeting
- Creating 38 social media posts on ADOT's Facebook and Twitter pages, providing information about the public meeting and commenting opportunities
- Mailing a postcard to 11,066 property owners and occupants in the study area
- Direct outreach via ADOT's Community Relations team, which called businesses within a ¼ mile radius of the project area
- Live interviews with KSAZ Fox 10, 1190 AM/107.5 FM, Contacto Total Radio, and *Glendale Independent* newspaper
- Posting meeting information on the ADOT Grand-35 study and interactive commenting webpages: <https://azdot.gov/planning/transportation-studies/grand-35-study>, <http://adotgrand35study.com/>

The meeting was hosted online through the WebEx Events meeting platform. Participants could also call into the meeting if they did not have the ability to participate online. Each public meeting featured a presentation by the study team, followed by a question-and-answer period. Participants were provided information on how to ask questions or provide comments. Participants could ask questions verbally or submit questions through the online chat feature.

A panel of study team members and ADOT's Spanish Public Information Officer were panelists at the meeting. Panelists included: ADOT Project Manager Olivier Mirza, AECOM Consultant Project Manager Rodney Bragg, ADOT Assistant Communications Director, Community Relations Daina Mann, and ADOT Spanish Public Information Officer Lourdes Lerma. Additional ADOT and consultant staff were present to assist in facilitating the online meeting and Q&A session. Participants were notified that comments and questions about the project could also be submitted during the formal public comment period through email, telephone, USPS mail, or online. Participants were notified that all project-related materials, including the presentation, were available online.

Comments received during and after the meeting totaled 72 by way of:

- **Virtual Public Meetings:** 8 comments
- **Online Comments:** 34 via online survey, 19 via interactive mapping tool, 1 via general comment form (includes one Spanish comment)
- **Project Information Line:** 4 comments
- **Email:** 6 comments
- **Mail:** No comments received

Comments primarily focused on expressing a preference among the concepts being considered for grade separations at the intersection, as well as concerns about congestion, pedestrian and bike connectivity, safety, security, and right of way impacts. Many similar comments were received from multiple commenters.

The comments received indicate community members are generally supportive of proposed improvements at the interchange. The concept of raising or lowering US 60 (Grand Avenue) appears to be favored by the majority due to perceptions that this would better alleviate traffic due to higher traffic volumes along US 60 (Grand Avenue), as well as commenters' familiarity with other US 60 (Grand Avenue) grade separations farther west. The concepts of lowering or raising 35th Avenue were not as popular as the US 60 (Grand Avenue) options, and received more neutral comments from commenters. The concept of raising or lowering the railroad is not generally favored, due to potential issues with doing so. Improving pedestrian and bicycle connectivity and safety, as well as transit facilities to wait for buses, are important to several respondents.

Detailed comment information is provided in the Public Scoping and Information Meeting Summary Report, which is included in **Appendix G**.

#### **5.1.1.2 January 2023**

A public information meeting was held in-person from 5:30 to 8:00 p.m. on January 31, 2023, at Alhambra High School (3839 West Camelback Road, Phoenix AZ 85019) to provide an overview of the proposed alternatives and accept public comment. To ensure community members knew about the meeting and had an opportunity to participate, ADOT provided notification by:

- Placing advertisements in local newspapers:

- *The Arizona Republic* (Zone 3) – English (published January 14, 2023)
- *Contacto Total* (digital newspaper) – Spanish (published January 12 to January 25, 2023)
- Radio advertisements:
  - Contacto Total Radio 1190 AM – Spanish (aired between January 12 and January 31, 2023)
- Sending email notifications (e-blast) via ADOT’s GovDelivery system
- Sending a news release to media outlets
- Creating social media posts on ADOT’s Facebook, Twitter, and NextDoor pages, providing information about the public meeting and commenting opportunities
- Sending a direct mailer to 11,000 property owners and occupants in the study area
- Email sent via ADOT’s Community Relations team to stakeholders within the community
- Hand-delivery of an informational poster to all businesses within the study area in English, Spanish, and Vietnamese translation

Copies of all notices may be found in **Appendix G**.

The in-person public meeting was held following the format in **Table 34**.

**Table 34. In-Person Public Meeting Agenda**

| Time             | Agenda                |
|------------------|-----------------------|
| 5:30 – 6:30 p.m. | Doors Open/Open House |
| 6:00 – 6:30 p.m. | Presentation*         |
| 6:30 – 7:00 p.m. | Q&A                   |
| 7:00 – 7:30 p.m. | Presentation*         |
| 7:30 – 8:00 p.m. | Q&A                   |

*\*The presentation was provided in Spanish, English, and Vietnamese.*

The public meeting was held as an open house, with four rooms designated as follows:

- **Area 1:** open house
- **Area 2:** English presentation and Q&A, combined for all attendees
- **Area 3:** Spanish presentation
- **Area 4:** Vietnamese presentation

In Area 1, attendees were encouraged to view display boards and receive handouts providing additional information about the study. Team members were available to answer questions on-one with attendees, and iPads/comment forms were available for attendees to submit written comments on a comment form. In Area 2, a pre-recorded version of the English presentation was shown, followed by a Q&A session with the study team for all participants. The presentation was shown a second time, followed by an additional Q&A session with an audience area available. Following the presentation, Spanish and Vietnamese interpreters offered assistance during the Q&A session in both languages. A total of 12 Spanish-speaking individuals participated in the Q&A, while no Vietnamese translation was requested during the meeting.

In Area 3, a pre-recorded version of the Spanish presentation was shown, followed by a Q&A session with the study team for all participants. The presentation was shown a second time, followed by an additional Q&A session. In Area 4, a pre-recorded version of the Vietnamese presentation was shown, followed by a Q&A session with the study team for all participants. The presentation was shown a second time, followed by an additional Q&A session. During the Spanish and Vietnamese presentations, an interpreter was offered in each room.

A full list of questions and answers from the Q&A portion of the meeting can be found in **Appendix G**.

Comments received during the last day of the comment period, February 21, 2023, totaled 64 by way of:

- **Public Meeting:** 28 verbal comments; No written comments were received
- **Online Comments:** 11 via online comment tool on the study website
- **Project Information Line (Phone):** 13 comments
- **Email:** 12 comments
- **Mail:** No comments received

Comments primarily focused on questions about the proposed alternatives, design recommendations, as well as concerns about congestion, construction impacts, and right of way/access impacts. Detailed comment information is provided in the Public Scoping and Information Meeting Summary Report, which is included in **Appendix G**.

### 5.1.2 Agency Coordination

An agency stakeholder meeting was held October 28, 2020, to kick off the Design Concept Report/EA process. The meeting was held via a virtual Microsoft Teams meeting, with nine attendees representing ADOT, MAG, City of Phoenix, Valley Metro, and the Phoenix Union High School District. The meeting introduced the study team, discussed the study process, and provided a plan and schedule for the activities. A summary of that meeting is included in **Appendix H**.

Letters were mailed to 14 entities representing city, county, state, and federal agencies, jurisdictions, schools, and interest groups in October 2020. The agency mailing list and an example letter is included in **Appendix H**. The letters sought specific input from these entities on their interests, concerns, or potential opportunities to be considered during the alternatives development and design. Three written responses were received from the Arizona Corporation Commission (ACC), AZGFD, and Maricopa County Flood Control District (see **Appendix H**). The letters by these organizations provided support for the continued development of the Design Concept Report/EA and saw no concerns with the proposed project. The letter received from ACC offered comments in relation to their approval process for modifications to public railroad crossings. Copies of the responses from the three parties may be found in **Appendix H**. A summary of the agency scoping and coordination is provided in **Table 35**.



**Table 35. Agency Scoping and Coordination Activities**

| Agency                                    | Scoping Outreach   | Scoping Response/ Coordination Summary  |
|---|--------------------|---|
| Alhambra Elementary School District       | Letter, 10/14/2020 | No response to scoping letter   |
| Arizona Corporation Commission            | Letter, 10/14/2020 | <p>Letter, 10/22/2020</p> <p>“Any modification to a public railroad crossing at-grade and/or grade separated, must go through the ACC process for approval. Process requires an application, a public hearing, and a vote of approval by the commissioners. Takes about 6 months from start to finish.”</p> <p>“That application will cover railroad crossings in the categories of new, modified and or closing.”</p> <p>“The ACC is in full support of a grade separated crossing at this location. Next to a closed crossing, this is as safe as it can be.”</p> <p>“There are currently 2 at-grade and 1 grade separated crossing at this location and the DOT numbers are as follows: 025424D, 025425K.”</p> <p>“A new grade separated crossing should have a new DOT#. It’s not a difficult process and I can talk you through it when it’s closer.”</p> <p>“The BNSF is the underlying landowner for all of this and as such in addition to a construction agreement, and easement will also be required.”</p> |
| Arizona Department of Public Safety       | Letter, 10/14/2020 | No response to scoping letter   |
| Arizona Game and Fish Department          | Letter, 10/16/2020 | <p>Letter, 12/4/2020</p> <p>"As the proposed project is located in a previously disturbed area, with the present habitat providing relatively low value to wildlife, the Department does not anticipate any significant adverse impacts to wildlife resources would occur as a result of this project."</p>   |
| BNSF Railway                              | Letter, 10/14/2020 | <p>No written response to scoping letter.</p> <p>Project coordination meetings on 03/11/2021, 06/18/2021, &amp; 9/8/2022. BNSF comment summary:</p> <ul style="list-style-type: none"> <li>• No work activities will be allowed within BNSF ROW October through December</li> <li>• New at-grade crossings are considered a fatal flaw and encourage alternatives that separate crossings.</li> </ul> <p>There were also weekly meetings between MAG &amp; BNSF regarding the federal grant(s) from 8/29/22 to 12/5/22.</p>   |
| City of Phoenix                           | Letter, 10/14/2020 | Attended 10/28/2020 Agency Scoping Meeting  |
| Maricopa Association of Governments (MAG) | Letter, 10/14/2020 | Attended 10/28/2020 Agency Scoping Meeting  |

| Agency                                       | Scoping Outreach   | Scoping Response/ Coordination Summary   |
|--|--------------------|--|
| Maricopa County Department of Transportation | Letter, 10/14/2020 | No response to scoping letter  |
| Maricopa County Flood Control District       | Letter, 10/14/2020 | No response to scoping letter  |
| Maricopa County Sheriff's Office             | Letter, 10/14/2020 | No response to scoping letter  |
| Phoenix Union High School District           | Letter, 10/14/2020 | No response to scoping letter  |
| Phoenix VA Health Care System                | Letter, 10/14/2020 | No response to scoping letter  |
| St. Joseph's Hospital and Medical Center     | Letter, 10/14/2020 | No response to scoping letter  |
| Valley Metro                                 | Letter, 10/14/2020 | Attended 10/28/2020 Agency Scoping Meeting. Valley Metro comment summary:<br>There is a bus route on Grand Avenue and coordination with the City of Phoenix was suggested. |

Source: ADOT 2023b

### 5.1.2.1 Project Coordination Meetings

Throughout the alternatives development and evaluation period of the project, representatives from ADOT, MAG, and the City of Phoenix have held regular recurring coordination meetings. Beginning April 2020, representatives from the City of Phoenix and MAG met regularly to discuss project updates and progress. The main concerns of the meetings were related to pedestrian activity/movements, traffic operations, maintaining traffic movements, and minimizing areas for homeless encampments. When the BRT (Bus Rapid Transit) study was initiated in 2023, representatives from the City of Phoenix BRT project team were included in these project coordination meetings.

### 5.1.2.2 BNSF

From March 2021 through April 2023, representatives from BNSF Railway met with ADOT to discuss various aspects of the proposed action. The main concerns of the meetings were related to project design/updates, grade separation, and the impact of project design alternatives to the existing railroad infrastructure. From August 2022 through December 2022, weekly meetings were held between MAG and BNSF regarding the federal grant(s) related to the project.

During final design, ADOT would continue to coordinate with BNSF and the Arizona Corporation Commission to outline the requirements for the final design of the railroad crossing, engage in design reviews with BNSF, and determine the permitting, fee, and approval process.

## 5.2 Public Engagement Methods

A Public Involvement Plan was developed for the project prior to the start of the public scoping phase. The Public Involvement Plan is a living document that continues to be reviewed for effectiveness and updated as needed. The document is guiding the public outreach and involvement efforts for this project. The document contains a project-specific LEP analysis following the 2005 U.S. Department of Transportation-issued Policy Guidance Concerning Recipient's Responsibilities to Limited English Proficient (LEP) Persons, a stakeholder analysis, a basic schedule of project milestones, and a description of the tools used to solicit and record public input.

The LEP analysis indicated the need for all outreach materials and communications relating to this project to be available in both English and Spanish. Due to presence of LEP populations in the area, translation for Spanish has been available for all public involvement activities. Community Relations staff were accompanied by ADOT's Spanish Public Information Officer Lourdes Lerma. During business canvassing, several businesses on the northeast corner of the intersection were identified with a need for Vietnamese translation. ADOT had an email notice about the study and opportunities to provide input translated into Vietnamese, which was distributed to these stakeholders.

ADOT established a project website, <https://azdot.gov/planning/transportation-studies/grand-35-study>, a bilingual Project Information Line (602.474.3952), and an email address (ADOTGrand35Study@hdrinc.com) to provide the public with continuous access to updated information and an avenue for continued questions and comments throughout the process.

The interactive commenting project website ([www.ADOTGrand35study.com](http://www.ADOTGrand35study.com)) offers the public and team 24/7 access to current information and documents related to the study. The website provides a central, consistent source of information and updates intended to educate the public about the study and provide an opportunity for input during all phases of public involvement.

For LEP persons, the website includes a language translation feature as well as a font enlargement feature and complies with Website Accessibility Initiative standards and the American Disabilities Act (ADA) standards.

ADOT uses a variety of notification methods to reach as many people as possible. For this project, as described above, these have included bilingual newspaper advertisements, email notifications, press releases, notifying study area municipalities, mass postcard mailings, flyers, and social media invitations, in addition to word of mouth. As the study proceeds, the dedicated website will continue to be updated to provide current study information and documents, as well as collect additional feedback from the public.

### 5.3 Draft EA Comment Period and Public Hearing

The 30-business-day comment period for the Draft EA will begin on October 10, 2023, and end on November 27, 2023. The Draft EA will be posted online on the project website: <https://azdot.gov/planning/transportation-studies/grand-35-study> and a copy will be available for review during normal business hours through November 27, 2023, at the following locations:

**Yucca Library**  
5648 North 15<sup>th</sup> Avenue  
Phoenix, AZ 85015  
602-262-4636

**Palo Verde Library**  
404 North 51<sup>st</sup> Avenue  
Phoenix, AZ 85031  
602-262-4636

A public hearing will be held during the Draft EA review period on Wednesday October 25, 2023, from 5:30 p.m. to 7:00 p.m. at Heard Elementary School located at 2301 W. Thomas Road Phoenix, Arizona to provide opportunity for review and comment. The public hearing will be an open house format and will include an informational video in English and Spanish, an interactive visual presentation, and an opportunity to provide oral remarks before a formal study panel. Comment forms will also be available to record written and oral comments for the study record from members of the public. Project team members will be available to address questions and concerns. Printed and visual materials will be available in English and Spanish, and translation in Spanish and Vietnamese will be available. To ensure proper engagement from all LEP populations, information

will be provided to the various chambers of commerce including the Asian Chamber and the Hispanic Chamber. Additionally, invitation flyers will be hand-delivered to low-income areas.

Comments can also be submitted any time during the comment period using any of the following methods:

| Method    | Address  |
|-----------|--|
| Mail      | ADOT Grand-35 Study<br>C/O HDR, Inc.<br>20 E. Thomas Rd., Suite 2500<br>Phoenix, AZ 85012  |
| Telephone | 602.474.3952   |
| Email     | ADOTGrand35Study@hdrinc.com  |
| Website   | <a href="https://azdot.gov/planning/transportation-studies/grand-35-study">https://azdot.gov/planning/transportation-studies/grand-35-study</a><br><a href="http://adotgrand35study.com/">http://adotgrand35study.com/</a> |

Agency, tribal, and public comments received by ADOT during the public comment period will be incorporated and considered in the Final EA and FONSI, if applicable, along with ADOT responses to each comment.

Pursuant to Title VI of the Civil Rights Act of 1964, the Americans with Disabilities Act (ADA) and other nondiscrimination laws and authorities, ADOT does not discriminate on the basis of race, color, national origin, sex, age, or disability. Persons that require a reasonable accommodation based on language or disability should contact [Nancy Becerra at [ngbecerra@azdot.gov](mailto:ngbecerra@azdot.gov) or leave a voicemail at 623.695.7411. Requests should be made as early as possible to ensure the State has an opportunity to address the accommodation.

De acuerdo con el título VI de la Ley de Derechos Civiles de 1964 y la Ley de Estadounidenses con Discapacidades (ADA por sus siglas en inglés), el Departamento de Transporte de Arizona (ADOT por sus siglas en inglés) no discrimina por raza, color, nacionalidad, edad, género o discapacidad. Personas que requieren asistencia (dentro de lo razonable) ya sea por el idioma o por discapacidad deben ponerse en contacto con Nancy Becerra al [ngbecerra@azdot.gov](mailto:ngbecerra@azdot.gov) o al 623.695.7411. Las solicitudes deben hacerse lo más pronto posible para asegurar que el equipo encargado del proyecto tenga la oportunidad de hacer los arreglos necesarios.

Theo Tiêu đề VI của Đạo luật Dân quyền năm 1964, Đạo luật Người Mỹ Khuyết tật (ADA) và các đạo luật về không phân biệt đối xử và căn cứ khác, ADOT không phân biệt đối xử trên cơ sở chủng tộc, màu da, nguồn gốc quốc gia, giới tính, tuổi tác hoặc tình trạng khuyết tật. Những người cần sự điều chỉnh hợp lý vì các lý do ngôn ngữ hoặc tình trạng khuyết tật nên liên hệ với Nancy Becerra theo số 602.474.3952 hoặc địa chỉ [ngbecerra@azdot.gov](mailto:ngbecerra@azdot.gov) Nên thực hiện các yêu cầu càng sớm càng tốt để đảm bảo Tiểu bang có cơ hội thực hiện sự điều chỉnh.



## 6. BIBLIOGRAPHY

- ADOT. 2006. *Grand Avenue Major Investment Study Phase II*.
- ADOT. 2017. *Noise Abatement Requirements*. May 2017.  
<https://azdot.gov/sites/default/files/2019/06/noise-abatement-requirements-may2017.pdf>.
- ADOT. 2019a. *5-Year Transportation Facilities Construction Program (2020-2024)*.
- ADOT. 2019b. *NEPA EA and EIS Guidance*.
- ADOT. 2019c. *Section 4(f) Manual, Section 4(f) Evaluation Guidance and Requirements*.  
<https://azdot.gov/sites/default/files/2019/09/Section-4f-Manual-04-19.pdf>.
- ADOT. 2020. *Public Involvement Plan, US 60 (Grand Avenue), 35th Avenue and Indian School Road Intersection Design Concept Report and Environmental Study*. October 2020.
- ADOT. 2022a. *Arizona State Rail Plan Update*. May 2022.  
<https://azdot.gov/sites/default/files/media/2022/07/state-rail-plan-update.pdf>.
- ADOT. 2022b. *Hazardous Material Team, Preliminary Initial Site Assessment Procedures*.  
<https://azdot.gov/sites/default/files/media/2021/12/HAZ-MAT-PISA-Guidelines.pdf>
- ADOT. 2023a. *2024-2028 Five-Year Transportation Facilities Construction Program*.  
<https://azdot.gov/planning/transportation-programming/current-five-year-program>
- ADOT. 2023b. *Initial Design Concept Report US 60, Grand Avenue 35th Avenue/Indian School Road Traffic Interchange*. April 2023.
- ADOT. 2023c. *Public Involvement Plan, 2023 Update*. May 18, 2023.  
<https://azdot.gov/sites/default/files/2023-06/2023-ADOT-Public-Involvement-Plan-Final-6-2-23.pdf>.
- ADOT. 2023d. *Right of Way Procedures Manual*. <https://azdot.gov/business/right-way-properties/booklets-and-manuals-right-way-properties>.
- AZGFD. 2012. *Arizona's State Wildlife Action Plan: 2012 – 2022*. May 16, 2012.  
[https://s3.amazonaws.com/azgfd-portal-wordpress/PortallImages/files/wildlife/2012-2022\\_Arizona\\_State\\_Wildlife\\_Action\\_Plan.pdf](https://s3.amazonaws.com/azgfd-portal-wordpress/PortallImages/files/wildlife/2012-2022_Arizona_State_Wildlife_Action_Plan.pdf).
- AZGFD. 2023. *Arizona Environmental On-line Review Tool for Grand-35 Study*. 10pp.  
<https://ert.azgfd.gov/>.
- ASTM. 2014. *Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process*. ASTM Standard E1528-14. <https://www.astm.org/e1528-14.html>.
- Bailey, Jim. 2010. *Salt River Project Diversion and Conveyance System Historic District National Register of Historic Places Nomination Form*. Bureau of Reclamation, Glendale, Arizona.
- Brown, D.E. (ed.). 1994. *Biotic communities: Southwestern United States and Northwestern Mexico*. University of Utah Press, Salt Lake City. 342 p.
- City of Phoenix. 2014. *Comprehensive Bicycle Master Plan*. November 2014.  
[https://www.phoenix.gov/streetssite/documents/bicycle%20master%20plan/2014bikephx\\_final\\_web.pdf](https://www.phoenix.gov/streetssite/documents/bicycle%20master%20plan/2014bikephx_final_web.pdf).
- City of Phoenix. 2018a. *2014-2016 Collision Rate Study*. April 2018.  
<https://www.phoenix.gov/streetssite/Documents/2016%20Collision%20Rate%20Report.pdf>.

- City of Phoenix. 2018b. *2015 General Plan*. April 2018.  
<https://www.phoenix.gov/pdds/site/Documents/PZ/PlanPhx%20Draft%20General%20Plan%20Update-Printable.pdf>.
- City of Phoenix. 2019. *35th Avenue S/O Indian School Road Railroad Crossing Final Project Assessment*.
- City of Phoenix. 2021. *Final Design Concept Report for 35th Avenue: I-10 to Camelback Road*.  
<https://www.phoenix.gov/streets/35thavesafety>.
- City of Phoenix. 2023a. *Grand Canalscape – Phase 3*. <https://www.phoenix.gov/streets/grandcanal3>.
- City of Phoenix. 2023b. *Transportation 2050: A Plan to Advance PHX's Transportation Future*.  
<https://www.phoenix.gov/t2050>.
- Error! Hyperlink reference not valid.** EPA. 1992. *Guideline for Modeling Carbon Monoxide from Roadway Intersections*. November.
- EPA. 1995. *User's Guide to CAL3QHC Version 2.0: A Modeling Methodology for Predicting Pollutant Concentrations Near Roadway Intersections (Revised)*. September.
- EPA. 2021. *Using MOVES3 in Project-Level Carbon Monoxide Analyses*. December.
- EPA. 2023. *EPA Green Book*. <https://www.epa.gov/green-book>.
- FHWA. 1987. *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*. Technical Advisory T 6640.8A. October 30, 1987.
- FHWA. 2002. *Interim Procedures for the Treatment of Historic Roads*. Historic Preservation Team, Arizona Department of Transportation, Phoenix, Arizona.
- FHWA. 2003. "Questions and Answers Regarding the Consideration of Indirect and Cumulative Impacts in the NEPA Process."  
<http://www.environment.fhwa.dot.gov/strmlng/newsletters/may03nl.asp>.
- FHWA. 2010. *Procedures for Abatement of Highway Traffic Noise and Construction Noise*.
- FHWA. 2012. *Section 4(f) Policy Paper*.  
<https://www.environment.fhwa.dot.gov/legislation/section4f/4fpolicy.aspx>.
- FHWA. 2014. *Relocation: Your Rights and Benefits As a Displaced Person Under the Federal Relocation Assistance Program*.  
[https://www.fhwa.dot.gov/real\\_estate/publications/your\\_rights/rights2014.pdf](https://www.fhwa.dot.gov/real_estate/publications/your_rights/rights2014.pdf).
- FHWA. 2015. *Guidelines for the Visual Impact Assessment of Highway Projects*.
- FHWA. 2023. *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents*.
- FHWA/ADOT. 2019. Memorandum of Understanding. April 16, 2019.
- FRA. 2016. *FRA Releases List of Railroad Crossings with Most Incidents over Last Decade*. April 21, 2016.
- FRA. 2023. FRA Web Accident Prediction System (WBAPS). <https://safetydata.fra.dot.gov/webaps/>.
- Indermill, Roc H. 1995. *Peavine Trail Corridor: An Archaeological Survey and Cultural Resource Inventory of 5.7 Miles of the Santa Fe, Prescott and Phoenix Railway Line and Jerome Junction, Arizona*. RHI, Flagstaff, Arizona.

- IPCC. 2013. Stocker, T.F., D. Qin, et. al. Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.
- Johnson, Kirsten and A.E. (Gene) Rogge. 2023. *Cultural Resource Study for the US 60 (Grand Avenue)/35th Avenue/Indian School Road Traffic Intersection Improvement Project, Phoenix, Maricopa County, Arizona*. ADOT (TRACS) No. 060 MA 159 F0272 01L. AECOM, Phoenix, Arizona.
- Lite, Jeremy A. and Teresa L Cadiente. 1997. *A Cultural Resources Survey of 18.29 Miles of Existing U.S. Highway 70 Right-of-Way (Between Mileposts 366.96 and 385.25), in the Vicinity of Duncan, Greenlee County, Arizona, and 600 Square Feet of Proposed New Right-of-Way at the Intersection of High Street and U.S. Highway 70 in Duncan*. Project 97-08. Archaeological Research Services, Tempe, Arizona.
- Luhnow, Glenda Gene. 2014. *Results of Cultural Resource Monitoring and Phased Data Recovery along US 60 (Grand Avenue) between Mileposts 158.40 and 161.80, Phoenix, Maricopa County, Arizona*. Report 10-039:CMON. Archaeological Consulting Services, Tempe, Arizona.
- MAG. 2008. *Commuter Rail Strategic Plan*. March 2008.  
[https://azmag.gov/Portals/0/Documents/pdf/cms.resource/CRSG\\_2008\\_Commuter-Rail-Strategic-Plan88296.pdf?ver=hcqYLFm2J-LhccVcyji2Qq%3d%3d](https://azmag.gov/Portals/0/Documents/pdf/cms.resource/CRSG_2008_Commuter-Rail-Strategic-Plan88296.pdf?ver=hcqYLFm2J-LhccVcyji2Qq%3d%3d).
- MAG. 2010. *Grand Avenue Commuter Rail Corridor Development Plan*. May 2010.  
[https://azmag.gov/Portals/0/Documents/CRGA\\_2010-07-06\\_Commuter-Rail-Grand-Ave-Corridor-Development-Plan-FINAL\\_.pdf?ver=Q9eL-EiDkPHKCQWgHXXynw%3d%3d](https://azmag.gov/Portals/0/Documents/CRGA_2010-07-06_Commuter-Rail-Grand-Ave-Corridor-Development-Plan-FINAL_.pdf?ver=Q9eL-EiDkPHKCQWgHXXynw%3d%3d).
- MAG. 2014. *US 60/Grand Avenue Corridor Optimization, Access Management Plan, and System Study (COMPASS)*.
- MAG. 2015. *COMPASS Study Recommendations Map Book*.  
<https://azmag.gov/Programs/Transportation/Freeways-and-Highways/US-60-Grand-Avenue-COMPASS-Study>
- MAG. 2018a. *Grand Avenue/35th Avenue/Indian School Road Intersection Concept Design Review and Cost Estimate Final Report*. December 2018.  
<https://azmag.gov/Portals/0/Documents/MagContent/grand-ave-35th-ave-indian-school-road-intersection.pdf?ver=0t29kQWmxHyspfK5mSuyuQ%3d%3d>.
- MAG. 2018b. *Regional Commuter Rail System Study Update*. May 2018.  
<https://azmag.gov/Portals/0/Documents-Ext/Transportation/Regional-%20Commuter-Rail-System-Study-Update%20Final-Report-%20optimized-10-2018.pdf>.
- MAG. 2019. *Socioeconomic Projections*. <https://azmag.gov/Programs/Maps-and-Data/Population-Housing/socioeconomic-Projections>.
- MAG. 2021a. *Conformity Analysis for the FY 2022-2025 MAG Transportation Improvement Program and the MOMENTUM 2050 Regional Transportation Plan*. December 2021.
- MAG. 2021b. *Existing Land Use for Maricopa and Pinal Counties, Arizona, 2020*. July 2, 2021.  
<https://geodata-azmag.opendata.arcgis.com/datasets/AZMAG::existing-land-use-for-maricopa-and-pinal-counties-arizona-2020/explore>.
- MAG. 2021c. *Regional Transportation Plan: MOMENTUM 2050*. December 1, 2021.  
<https://azmag.gov/Portals/0/Transportation/RTP/2022/RTP-Momentum-2050-Accessible.pdf?ver=xx2lqoCFdM-VnZtc-20ckQ%3d%3d>.

- MAG. 2022. *2022 Annual Report Implementation Status of Proposition 400*. November 2022. <https://azmag.gov/Portals/0/Transportation/RTP/2022/FY-2022-Prop-400-Annual-Report.pdf?ver=IDhO6nyj9xPtt4-adkuiEQ%3d%3d>.
- MAG. 2023. *Transportation Improvement Program FY 2022-2025*. <https://azmag.gov/Programs/Transportation/Transportation-Improvement-Program-TIP>.
- National Academies of Sciences, Engineering, and Medicine. 2022. *Greenhouse Gas Emissions Information for Decision Making: A Framework Going Forward*. Washington, DC:
- National Weather Service. 2023. *Annual and Monthly Record Data for Phoenix, AZ: 2000-2023*. <https://www.weather.gov/psr/PhoenixRecordData#>.
- President Carter. 1977. *Executive Order 11988, Floodplain Management*.
- Spalding, Nathanael E. and Nathan J. Lefthand. 1995. *An Archaeological Survey of a Portion of US 89 Right-of-Way, From Milepost 465.39 to 470.8, North and South of Cameron, Coconino County, Arizona*. Plateau Mountain Desert Research, Flagstaff, Arizona.
- Stone, Bradford W. 1998. *Cultural Resources Survey of a ca. 1.19 Mile Long Corridor for a Proposed Drainage Channel Associated with the Agua Fria Freeway (State Route 101L), Located Directly North of the Grand Canal and Bethany Home Road in Glendale, Maricopa County, Arizona*. Project 97:128. Archaeological Research Services, Tempe, Arizona.
- TRB. 2010. *Highway Capacity Manual 2010*.
- USACE. 1987. *Corps of Engineers Wetland Delineation Manual*.
- USACE. 2008a. *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States*.
- USACE. 2008b. *Regional Supplement to the Corps of Engineers Delineation Manual: Arid West Region (Version 2.0)*.
- USDOT. 2005. *Policy Guidance Concerning Recipient's Responsibilities to Limited English Proficient (LEP) Persons*.
- USFWS. 2023. USFWS Information for Planning and Consultation Resource List. Report generated: January 18, 2023. <https://ecos.fws.gov/ipac/>.
- USGS. 2014. *Fowler Quadrangle, Arizona-Maricopa Co., 7.5-Minute Series*.
- Valley Metro. 2023. *Fiscal Year 2022 Annual Ridership Report*. <https://www.valleymetro.org/about/agency/transit-performance/ridership-reports>.
- Wright, Thomas E. 1994. *A Cultural Resources Survey of U.S. Highway 60 Right of-Way Between Mileposts 290 and 301.5, North of Seneca, Gila County, Arizona*. Report 94:10. Archaeological Research Services, Tempe, Arizona.