

# Southwest Boise Transportation Study Ada County, Idaho

September 2009



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## Final Report

Prepared For: Ada County Highway District



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## 1.0 Introduction

### 1.1 PROJECT DESCRIPTION AND BACKGROUND

The Southwest Boise Transportation Study is an effort by the Ada County Highway District (ACHD) to refine recommendations in the regional long-range transportation plan *Communities in Motion* (CIM) and the ACHD Capital Improvements Plan (CIP) in the southwest Boise sub-area to provide a more detailed plan for the accommodating the transportation needs of existing and future land-uses in the southwest Boise area. This study:

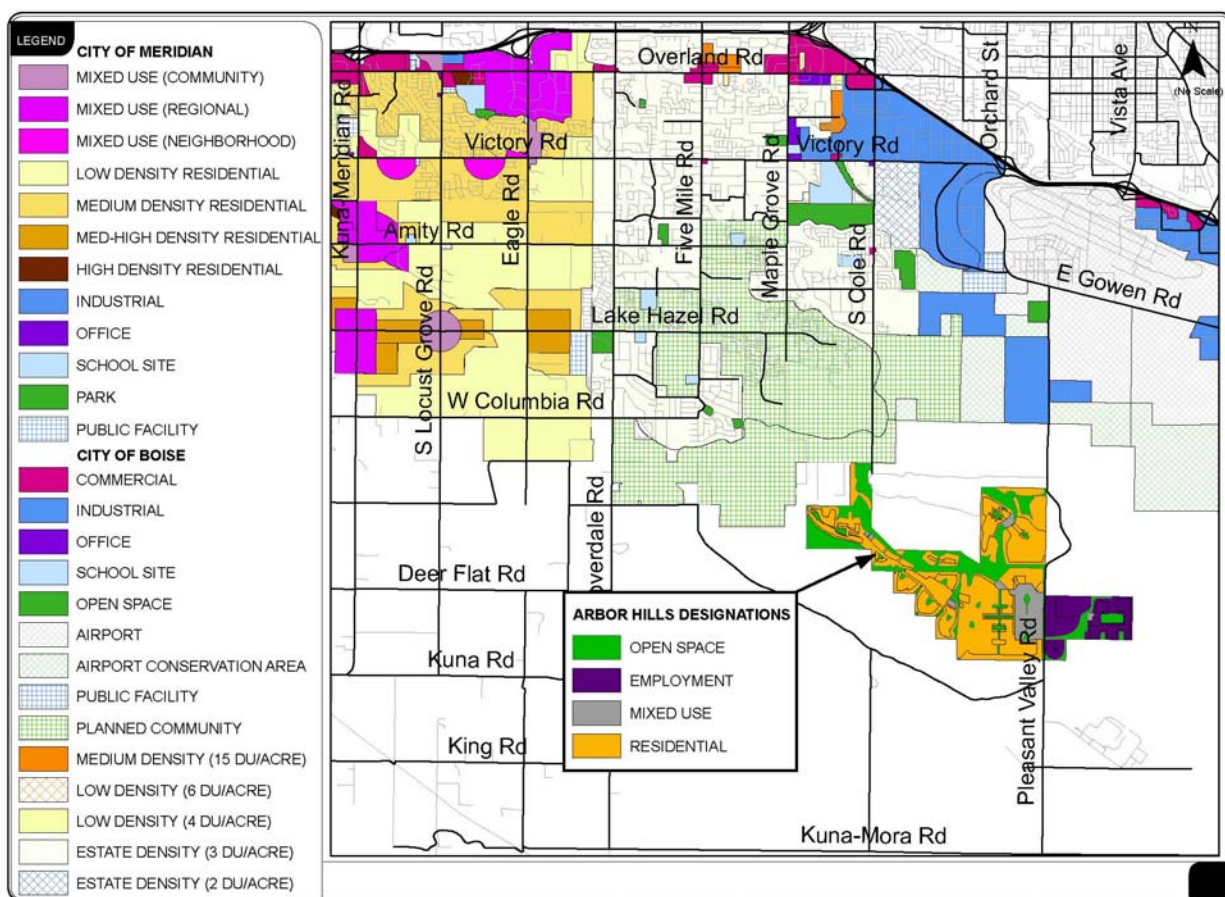
- Evaluates the pedestrian, bicycle, and vehicular roadway network planned by 2030
- Identifies deficiencies, and recommends improvements to meet the future multi-modal transportation needs in the study area.
- Provides guidance for the prioritization and implementation of the proposed improvements for use by ACHD in future updates to the CIP and Five-Year Work Plan.

The recommendations developed by this study were directly influenced by the public and stakeholder involvement efforts described in Section 2 and closely coordinated with other planning efforts, such as ACHD's *Transportation and Land-Use Integration Plan* (TLIP), *Roadways to Bikeways Plan*, and the *South Meridian Transportation Study*.

### 1.2 LAND USE CONTEXT

An overarching consideration with the development of this study was the integration between the transportation and surrounding land use (both existing, planned, and anticipated). A majority of the three study areas are included in the City of Boise Comprehensive Plan, with certain areas covered in the City of Meridian Comprehensive Plan. Ada County designates most the areas outside the City areas of impact as Rural Areas, though it does also have specific designations for the Arbor Hills development. Exhibit 1-1 shows the City of Boise, Ada County, and City of Meridian Comprehensive Plans for the study area. At the time of this study, the City of Kuna was outlining changes to their Comprehensive Plan for the area west of the study boundaries.

Exhibit 1-1 Comprehensive Plan Land Uses



As shown in Exhibit 1-1, much of the initial study area north of Lake Hazel Road is low-density residential and is expected to remain in the foreseeable future. The commercial uses are primarily along the Overland Road with industrial along the Cole Road, Gowen Road, and Pleasant Valley Road corridors. Between Ten Mile Creek Road and Lake Hazel Road most of the area is designated as planned community.

South of Ten Mile Creek Road, the Ada County zoning is primarily rural although a number of planned communities have met with Ada County. One planned community, Arbor Hills, has been approved and is included in the comprehensive plan.

Some of the key implications of the Boise and Ada County plans are:

- Much of the Initial Study Area is not expected to experience significant land use changes.
- Substantial land-use changes are likely to the south of Amity Road and Lake Hazel Road which currently does not have a robust transportation network.
- The transportation system in the Initial Study Area will need to support the land-use changes to the south without substantially impacting the quality of life in the initial study area.

The implications of the future land use demonstrate how important it is to develop a detailed transportation plan for the Southwest Boise area.



The City of Meridian land uses also influence the western edge of the study area; however, their integration has been the focus of ACHD's *South Meridian Transportation Study*. The *South Meridian Transportation Study* is an effort similar to this study that was completed for the area west of Eagle Road. The *South Meridian Transportation Study* was based on a land use estimate that included build-out of their study area under the City's updated Comprehensive Plan scenario. The SW Boise Transportation Study future forecast was based on combining the 2030 *Communities in Motion* (which is the regional long-range transportation plan) projections with a build-out scenario for the South Meridian study area. Due to the timing of these studies, slight differences in the traffic projections used for the two studies are expected because the South Meridian study made additional minor changes to its build-out land use scenario after a previous version had already been used for the SW Boise work. In addition, minor modifications were also made to the roadway networks used for the individual studies. Regardless, the recommendations resulting from both studies have been coordinated to maintain overall consistency.

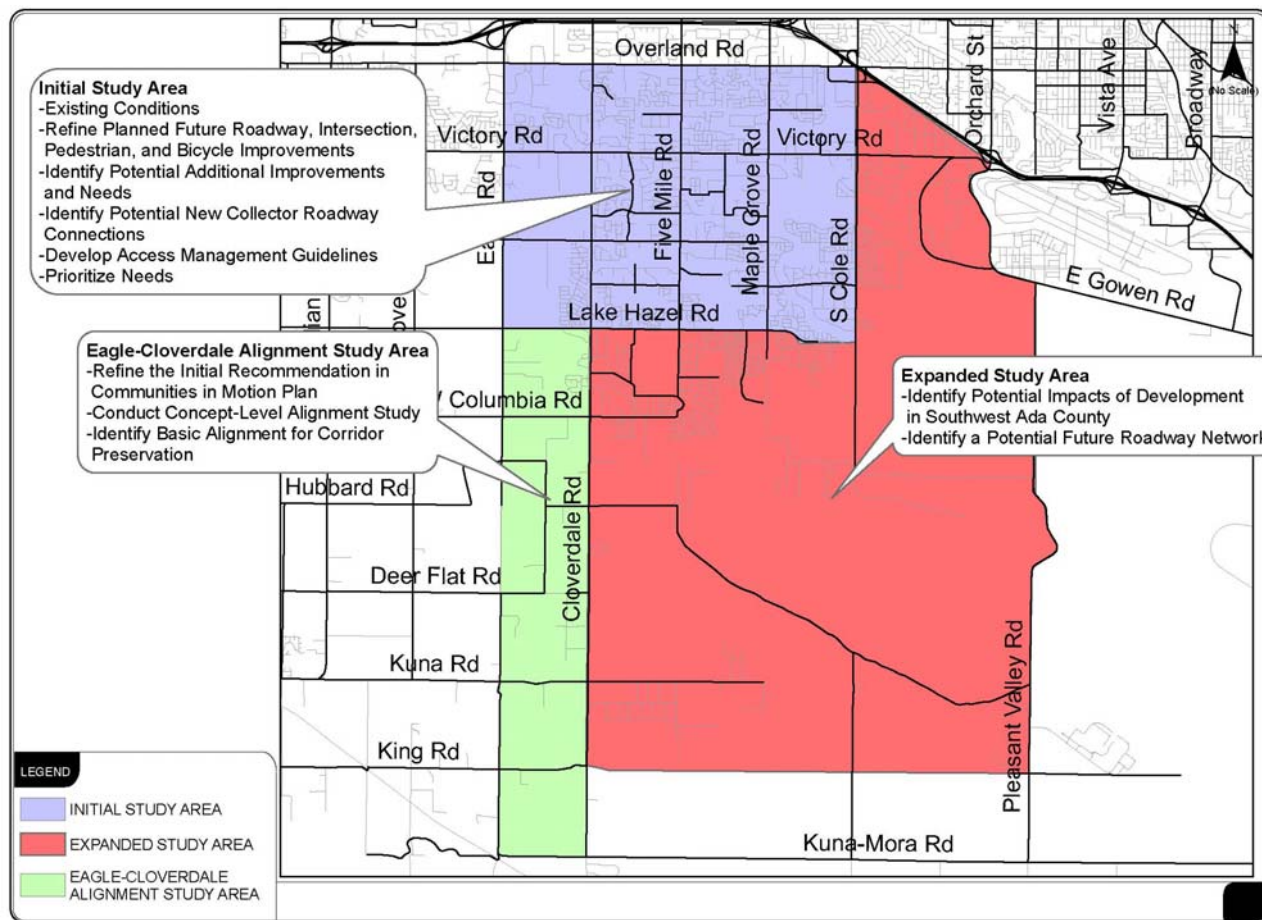
### 1.3 STUDY AREA

The area which was included in the study extended from Overland Road south to King Road and from Eagle Road east to Pleasant Valley Road. While this study develops an integrated transportation plan for the entire area, three distinct focus areas are contained within the overall study area:

- *Southwest Boise Initial Study Area*
- *Southwest Boise Expanded Study Area*
- *Eagle-Cloverdale Alignment Study*

Exhibit 1-2 provides a graphical illustration of each focus area's boundaries, as well as the key objectives for the area.

**Exhibit 1-2 Project Focus Areas**



### 1.3.1 Southwest Boise Initial Study Area

The Initial Study Area is bounded by Overland Road to the north, Lake Hazel Road to the south, and Cole Road to the east, and Eagle Road to the west. For this area, the study goals were to refine the future roadway, intersection, pedestrian, and bicycle improvements identified in CIM and the CIP, identify potential improvements needed in addition to ones previously identified, develop basic intersection layouts at each intersection of section-line roadways, and recommend a collector roadway network. Coordination with the ongoing TLIP project to develop recommended typologies, outline access management guidelines, identification of access transition plans, and prioritization of the improvement needs are also key components for this study area.

### 1.3.2 Southwest Boise Expanded Study Area

In the past few years, a number of new significant developments have been discussed for the unincorporated area of Ada County east of Cloverdale Road and south of Gowen Road. Most of these potential developments are not currently included in the regional land-use forecasts maintained by COMPASS for developing future traffic projections. As such, their impact had not been evaluated to determine what transportation improvements would be needed if the development were to occur in the future. This study evaluated the broad-level transportation needs



associated with this potential growth to provide a framework and guidance for both agencies and developers as development takes place.

This Expanded Study Area evaluation focused on the area west of Pleasant Valley Road, east of Cloverdale, south of Lake Hazel Road, and north of King Road. This area was identified as the area most likely to have a significant impact on the existing roadways in southwest Boise south of I-84.

The purpose of the Expanded Study Area is to take the first step toward creating a comprehensive transportation plan to identify the transportation improvements needed to accommodate future growth in the area and provide guidance for the possible creation of an Extraordinary Impact Fee (EIF) boundary. This study provides a planning-level evaluation of the anticipated impacts development within the expanded study area may have on the transportation system and identifies the roadway network that will be needed to accommodate the projected traffic growth associated with these developments.

### ***1.3.3 Eagle-Cloverdale Alignment Study***

CIM calls for a continuous north-south route between Kuna-Mora Road and the Eagle Road/I-84 interchange. While CIM identified the future need for this connection, it did not evaluate or make recommendations for the specific alignment or form the connection should take. As such, ACHD included the further evaluation of the future Eagle-Cloverdale alignment as part of this study.

As part of the study, six potential alignments of the Eagle-Cloverdale connection were evaluated. The goal of identifying a preferred alignment was to allow ACHD to preserve the future corridor prior to significant development occurring between Columbia Road and Kuna-Mora Road. The potential alignments were evaluated based on a number of factors, including impacts to the Hubbard Reservoir and flood zone, estimated cost, impacts to existing properties, environmental impacts, public feedback results, and anticipated traffic demand.

## 2.0 Public Involvement Summary

### 2.1 OVERVIEW OF PUBLIC INVOLVEMENT PROCESS



Throughout the Southwest Boise Transportation Study, agency coordination, stakeholder, and public involvement were key elements of the study. This coordination and involvement was fundamental to a successful study outcome. The specific benefits of the public involvement process were:

- Providing valuable information to the project team from those who are the day to day users of the study area transportation system;
- Allowing the public and ACHD's partnering agencies to be informed of the work being completed and the analysis results;
- Allowing the public and partnering agencies to provide input to the process and collaborate on developing study recommendations; and
- Providing the opportunity for the study team to work in collaboration with other on-going transportation and land use efforts (such as the South Meridian Study, the Kuna-Mora Road Study, and TLIP) to ensure they were closely coordinated and integrated.

Agency coordination and public involvement efforts comprised six main strategies:

- Technical Advisory Committee (TAC) meetings were held throughout the study where project information, analysis, results, and recommendations were discussed and reviewed with partnering agency staff as well as key stakeholder representatives (Boise School District, Meridian School District, neighborhood representatives, Idaho National Guard).
  - Ten TAC meetings were held between November 2006 and April 2009
- A series of small group stakeholder meetings for property owners and stakeholders in the Eagle-Cloverdale Alignment study area were held to review study area opportunities and constraints, develop and evaluate alignment alternatives, and to discuss and review recommendations for the preferred alignment option.
  - Two sets of Eagle-Cloverdale stakeholder meetings were held between November 2006 and February 2007
- A series of one-on-one meetings with property owners, developers, agency staff, and other stakeholders within the Expanded Study Area were held to develop appropriate land use estimates, identify study area opportunities and constraints, and review transportation system recommendations for the Expanded Study Area.

- Seven total one-on-one Expanded Study Area stakeholder meetings were held between August 2007 and June 2008
- A series of Public Information Meetings (PIM) were held throughout the study to present information, evaluation results, and draft recommendations to the public in general.
  - Three total Public Information Meetings were held between May 2007 and December 2007
- A project information mailing and detailed web posting were used for presenting the refined draft study recommendations and providing opportunity for general public input and comment.
  - Mail, web posting, and comment period held between February 2009 and April 2009.
- On-going study informational updates via public inquiry emails and phone calls, on-going discussions with partnering agency staff, and ACHD Commission updates were included.

Exhibit 2-1 provides an overview of the coordination and involvement schedule for the SW Boise Transportation Study.

**Exhibit 2-1 Study Coordination & Involvement Overview**

Task	2006		2007				2008				2009			
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	DEC	Q1	Q2	Q3	Q4
Technical Advisory Committee (TAC) Meetings														
Eagle-Cloverdale Alignment Stakeholder Meetings														
Expanded Study Area Stakeholder One-on-One Meetings														
Public Information Meetings														
Study Mailing & Web Posting														
On-going Study Informational Updates														

Detailed summaries from each of the stakeholder and public meetings are provided in *Technical Appendix A*. An overview of the key public comments received throughout the course of the study is provided by topic in subsequent report sections. The input and the feedback received throughout the study are reflected in the recommendations outlined in the remainder of this report.

## 3.0 Pedestrian and Bicycle Plan



Pedestrian and bicycle facilities are an important component of a vibrant, healthy, and safe community. These facilities are used for a number of purposes and provide residents of all ages and economic groups with the option of traveling without getting in a car. They provide access to schools for children and also provide a safe and fun place for adults, children, and families to recreate within their community. The pedestrian and bicycle plan for the study identifies near-

term and long-term improvements to the pedestrian and bicycle networks in the Initial Study Area.

The two most obvious pieces of a bicycle and pedestrian system are on-street bike lanes and sidewalks. However, in addition to sidewalks and on-street bike lanes, components of a quality bicycle and pedestrian network include multi-use paths and a complete street network (arterial, collector, and local streets). Multi-use paths provide cyclists and pedestrians with a pathway that is separated from the roadway. A complete street network typically resembles a grid pattern and has a high level of connectivity and a limited number of cul-de-sacs and dead-end roads. This type of network minimizes out-of-direction travel, which is important for pedestrians and bicyclists.

### 3.1 EXISTING CONDITIONS

#### 3.1.1 Existing Facilities

Pedestrian and bicycle facilities are extremely limited along the existing arterial system. Five Mile Road, from Lake Hazel Road to Overland Road, provides the only continuous route for bicyclists in the study area, and only on one side of the roadway. There is also a lack of mid-block collector routes available to bicyclists. For the most part, sidewalks exist only along the frontage of newer residential subdivisions and are not contiguous. A number of these short sections end at canal crossings, forcing pedestrians to walk along a narrow shoulder to travel over the canal. Sidewalk facilities are in place on the major roadways in the vicinity of schools in the area. However, they generally do not provide complete routes or connections to the ultimate pedestrian origins and destinations. The absence of these facilities is due in large part to the age and rural nature of the network. ACHD has made adding pedestrian and bicycle facilities a priority. It has made bike lanes and sidewalks a part of its standard cross-sections for arterials and collectors and makes a point to add bike lanes and sidewalks, where they are lacking, when it undertakes a roadway construction project. *Technical Appendix B* contains more information regarding existing facilities.

### **3.1.2 Existing Plans**

CIM, ACHD's *Pedestrian-Bicycle Transition Plan*, and *Draft Roadways to Bikeways Plan* have developed recommendations for pedestrian and bicycle facilities in the Initial Study Area. CIM recommended that bike lanes be added on Overland Road between Eagle Road and Five Mile Road, on Cole Road between Spectrum Street and Victory Road, and on Five Mile Road between Overland Road and Victory Road. It also recommended that the majority of other section line roadways be designated as bicycle routes, with the exception of Amity Road and the section of Overland Road between Five Mile Road and Cole Road.

The *Pedestrian-Bicycle Transition Plan* identified the need for a county-wide bicycle master plan. This recommendation has materialized as the *Roadways to Bikeways Plan*. Of the three background plans identified, this plan is taking the most comprehensive look at bicycle facilities in Ada County, including the Initial Study area. A draft of the final report has been issued for public comment at the time of this report. The recommendations from all three of these efforts were reviewed and coordinated with the recommendations from this study. The details of information provided in these studies for the SW Boise area are provided in *Supplement I*.

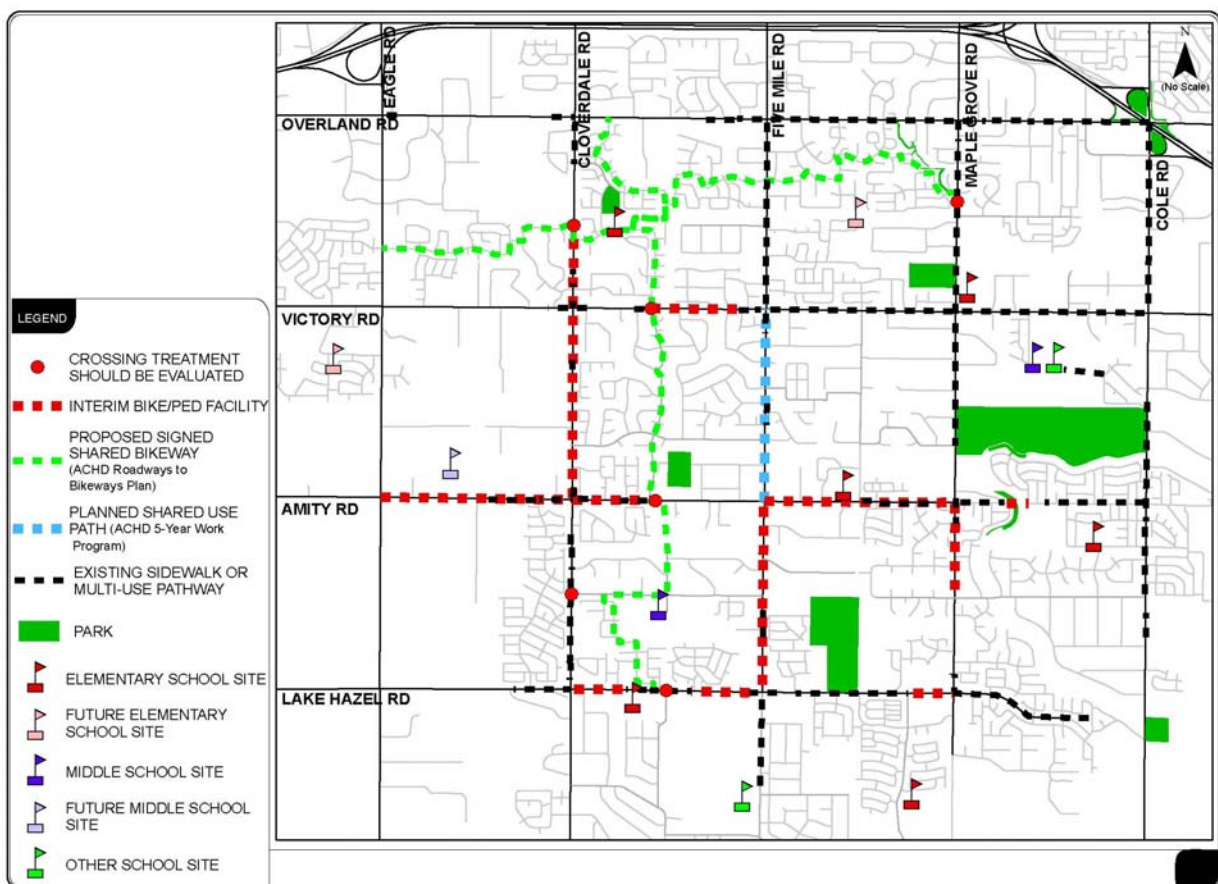
### **3.1.3 Public Input**

Comment and input was received through discussion at the study TAC meetings, the three Public Information Meetings, feedback on the study web site, and other input received from stakeholders via email, petition, and phone during the process. Further detail is provided in *Technical Appendix A*, but, related to the pedestrian and bicycle system, Stakeholders felt bicycle and pedestrian safety improvements are important since this will give people an option not to drive, provide better access to schools, and improve safety for people using alternate modes of transportation.

### 3.2 NEAR-TERM BICYCLE AND PEDESTRIAN IMPROVEMENTS

A robust bicycle and pedestrian system will be in place in the long term with the widening of all the section line roadways, the addition of the collector roadways recommended in this study, as bike lanes and sidewalks will be included as part of future roadway projects. However, many of these improvements and new connections will not be completed within the next 10 years. Therefore, this study identified multi-modal improvements for the near-term to provide connectivity and accessibility until the ultimate projects are implemented. Exhibit 3-1 illustrates the locations for near-term improvements to the bicycle and pedestrian system within the context of long-term plans.

**Exhibit 3-1 Near-Term (0-10 Years) Bicycle and Pedestrian System Recommendations**

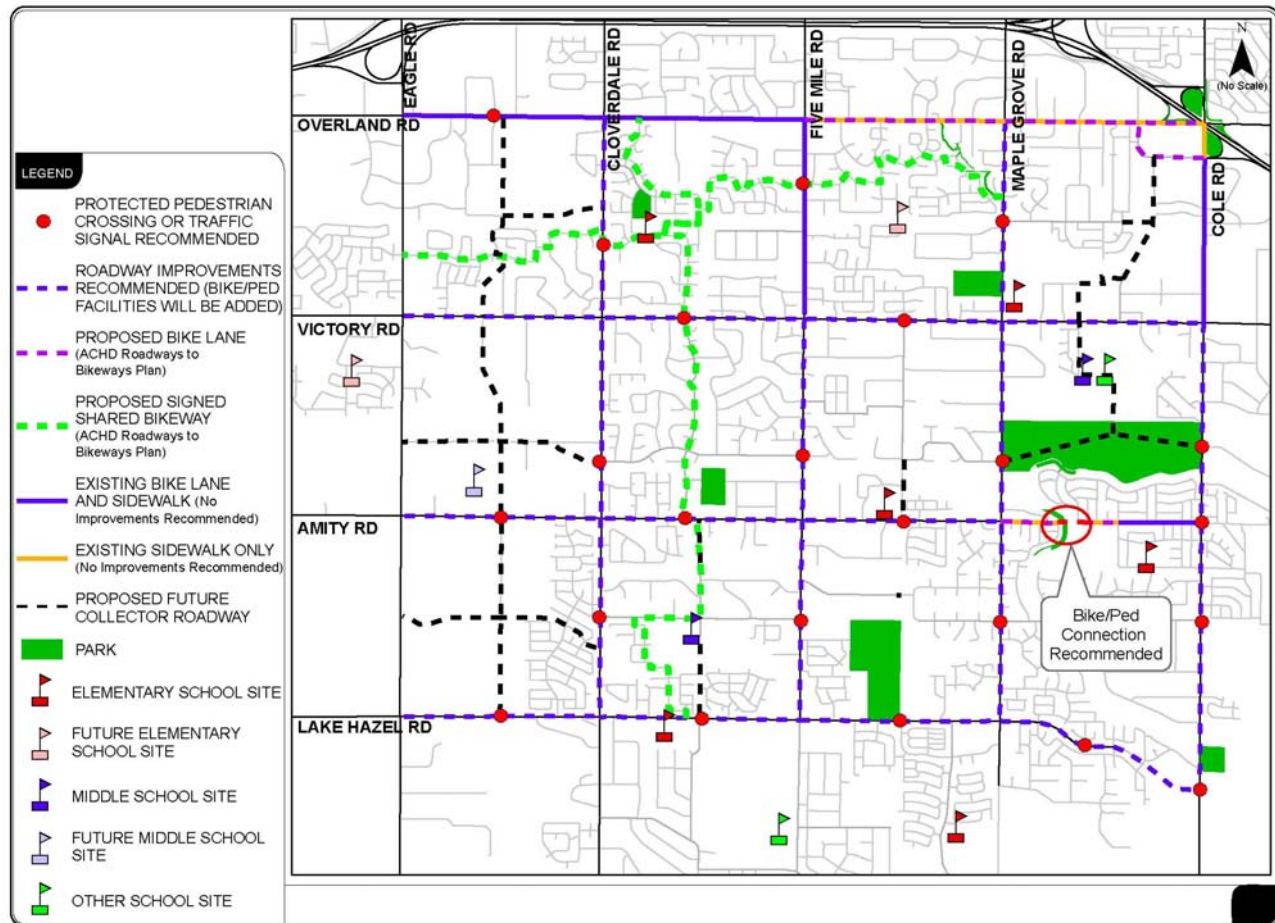


The identified locations for near-term bicycle and pedestrian facilities were chosen due to lack of current facilities, lack of current plans or recommendations to provide facilities, and needed connections to generators of pedestrian activity, such as schools and parks. Interim facilities could include widening roadway shoulders to accommodate bicyclists or building a multi-use path. Some of the locations shown in Exhibit 3-1 are not on the arterial system and are instead connections between neighborhoods. These locations were identified because they would provide shorter and potentially safer routes to a school.

### 3.3 LONG-TERM BICYCLE AND PEDESTRIAN IMPROVEMENTS

Exhibit 3-2 shows the long-term pedestrian and bicycle network for the Initial Study Area. As shown, most of the arterials will provide sidewalks and bicycle lanes with future roadway improvement projects. In addition, the recommended collectors will provide access along lower volume roadways to neighborhoods and many of the existing and proposed schools.

**Exhibit 3-2 Long Term (>10 Years) Bicycle and Pedestrian System Recommendations**



### 3.4 PEDESTRIAN CROSSINGS

As traffic increases on roadways and most of the arterial system is widened, the need for safe crossing locations for pedestrians also increases. A key component in providing safety for pedestrians crossing high-volume arterials is the use of traffic signals. While traffic signals with crosswalks are planned at arterial/arterial intersections, the spacing between these signals can be up to a mile and too far out of direction for pedestrians to walk in order to cross the street. There are also a number of schools located on the collector roadways, which increases the need for crossings at locations between the arterial intersections. In order to accommodate pedestrians needing to cross arterial roadways, the following are recommended:

### Exhibit 3-3 Pedestrian Refuge

- Provision of mid-mile marked pedestrian crossings where collectors and/or schools access the arterial roadway system. The crossings may be either mid-block or at a public street intersection. The safety of these crossings can be increased with pedestrian refuges, such as the one shown in Exhibit 3-3.
- Addition of warning flashers at mid-block crossings and unsignalized intersections to emphasize the pedestrian crossing signs such as shown in Exhibit 3-4.



- Provision of pedestrian signals or full traffic signals at the mid-mile collector intersections once arterials are widened or protected crossings are warranted.

Exhibit 3-4 HAWK Beacon



## 4.0 Alternative Transportation & Intelligent Transportation System (ITS)

### 4.1 TRANSIT PLANNING

#### 4.1.1 Regional Transit Planning

Valley Regional Transit (VRT) provides regional transit services for Ada County and Canyon County. VRT owns and operates the transit service in the Boise and Garden City areas under the name of Valley Ride. VRT contracts for service in Canyon County and the inter-county routes.



The current system is composed of a fixed-route bus system that primarily serves the existing built areas of Boise with limited commuter service to Meridian and Canyon County via I-84. The existing transit routes provide limited service to the northern boundary of the study area.

The future transit services in the study area will depend on development patterns over the next 20 years. VRT defines future service improvements in its Regional Operations and Capital Improvements Plan, *Treasure Valley in Transit* (Reference 2). This plan identifies service improvement to be implemented in the six years from 2005 - 2011. The plan includes low-growth and high-growth scenarios. The services described in the plan represent an approximately 500 percent increase in service in the Treasure Valley; however, little is planned for the Southwest Boise Study area. The key reason for the low level of transit service in the study area is the low density of development and its ability to support transit. Details regarding the existing and planned transit service in the study area are provided in *Supplement II*.

With the possible expansion of development in the Expanded Study Area, greater transit service could be considered. The location and densities in the Expanded Area could provide the opportunity for increased transit service throughout the area. Ada County and the City of Boise have emphasized the land-use and design elements of future developments to promote transit use by creating higher-density town centers which could serve as connections to future express bus service. With these attributes, provision of transit service should be integrated into the overall plan for accessibility to the Expanded Study Area.

#### 4.1.2 ACHD Commuteride

ACHD Commuteride provides vanpool services and park and ride lots. There are existing park and ride lots near the intersection of Overland Road and Eagle Road and on Overland Road east of Cole Road adjacent to the Overland Park Shopping Center. Commuteride provides an opportunity to increase the availability of public transportation without adding fixed route transit service. As further development in the study area and the expanded area occurs, additional park and ride locations should be identified.

### 4.2 INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

The *Treasure Valley Intelligent Transportation Systems (ITS) Strategic Plan* identifies ITS projects and programs within the study area. The plan identifies short-term (0-5 years), medium-term (6-10 years), and long-term (over 10 years) ITS projects. This plan includes:



- Dynamic message signs (DMS) and a road weather information system (RWIS) on Overland Road.
- Future closed circuit television (CCTV) cameras on Victory Road and Lake Hazel Road.
- Speed detection zones on Victory Road
- Future ITS on the Kuna-Mora Road Corridor

The planned ITS system within the study area provides ITS systems on most of the major east-west corridors. If the potential planned community developments in the Expanded Area occur, it is likely that the ITS projects would be expanded to include additional roads between Lake Hazel Road and Kuna Mora Road. *Supplement III* provides an exhibit that illustrates the planned ITS improvements.

## 5.0 Roadway System Plan



The Roadway System Plan outlines roadway improvements in the Initial Study Area. It forecasts future deficiencies on the arterial system, recommends improvements to the system, and identifies a collector network. The future traffic volumes used for this evaluation are consistent with adopted Community Planning Association of Southwest Idaho (COMPASS) regional model projections and do not include additional growth from identified large-scale developments in the Expanded Study Area beyond that already in the CIM Long Range Transportation Plan. The

COMPASS model projections used for this study were coordinated with the modeling work done for the adjacent *South Meridian Transportation Study* and the *Kuna-Mora Road Corridor Study*.

### 5.1 EXISTING CONDITIONS

#### 5.1.1 Existing Traffic Operations

Exhibit 5-1 presents the existing level-of-service (LOS) for the intersections of the arterial<sup>1</sup> roadways in the Initial Study Area. This exhibit shows that only three intersections are currently operating at or below the ACHD LOS thresholds: Overland Road/Cloverdale Road, Overland Road/Maple Grove Road, and Victory Road/Eagle Road. The Victory Road/Eagle Road intersection is currently unsignalized and could be improved with widening and signalization. This intersection is planned for signalization in 2011 as part of the ACHD Five-Year Work Plan. The remainder of the Overland Road corridor operates at LOS "D" or better as does Victory Road. It should be noted that this existing conditions analysis was performed based on traffic volumes from 2006 and conditions may be somewhat different today. *Technical Appendix B* provides more information on the details of the existing conditions traffic operations analysis and *Supplement IV* provides an exhibit illustrating existing LOS at the study intersections.

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<sup>1</sup> Functional classifications are according to GIS data obtained from ACHD in August 2006. Amity Road is functionally classified as a *major collector* within the study area in the ACHD 2030 Functional Classification. However, for the purposes of this study, it is treated as a minor arterial.

**Exhibit 5-1 Existing Peak Hour Intersection Level of Service**

Roadway	Existing Peak Hour Level of Service at Intersection					
	ACHD CIP LOS Threshold	Eagle Rd	Cloverdale Rd	Five Mile Rd	Maple Grove Rd	Cole Rd
Overland Rd	E	D	E	D	E	D
Victory Road	E	F	C	D	C	D
Amity Road	E	B	D	C	B	B
Lake Hazel Road	E	B	C	C	C	-

### 5.1.2 Existing Safety Issues

Crash data was analyzed for the key arterial roadways to identify existing safety concerns on the major roadway facilities within the study area. ITD provided historical crash data for the five year period from 2001-2005. Crash rates per 100 million vehicle miles (crashes/100 MVM) were computed for each roadway segment using this data. More details regarding this safety analysis can be found in *Technical Appendix B*. ACHD ranks intersections in Ada County according to their crash rates. The intersections in the study area that are ranked in the top 50 in terms of highest crash rate are: Cole Road/Overland Road (4<sup>th</sup>), Cole Road/Spectrum Street (30<sup>th</sup>), and Cloverdale Road/Victory Road (37<sup>th</sup>).

### 5.1.3 Existing Study Area Constraints

Within the Initial Study Area, two issues in particular stand out as constraining ACHD's ability to widen, extend, or otherwise improve roadways:

- **Canal and Lateral Crossings:** Due to the rural nature of much of the area, there are several canals and laterals that traverse the study area, including the New York Canal.
- **Lack of Right-of-Way (ROW):** An analysis of ACHD's existing ROW in the study area revealed that the agency will need to acquire additional ROW in nearly all instances in order to widen the arterial roadways.

### 5.1.4 Public Input

Comment and input was received through discussion at the study TAC meetings, the three Public Information Meetings, feedback on the study web site, and other input received from stakeholders via email, petition, and phone during the process. Further detail is provided in *Technical Appendix A*, but key input received for the Initial Study Area was:

- The majority of feedback highlighted movement of traffic as the key priority to be considered as part of this study given that existing roads likely will not support the level of development planned in the future.
  - The majority of stakeholders supported planning for a certain level of roadway widening (up to five lanes) to minimize future congestion, provided it was done in combination with transit, bicycle, pedestrian, and collector improvements.

- Significant public comment related to an initial project recommendation to preserve right-of-way along Lake Hazel Road for seven lanes was also received. Given this input and feedback from discussions with ACHD and the City of Boise, the recommendation for Lake Hazel Road was modified to call for construction and right-of-way preservation for five lanes only plus expanded arterial intersections to accommodate the future travel demand.
- Stakeholders also supported the development of additional collector roadway connections within the study area to improve overall system capacity and enhance connectivity, provided the collectors are implemented in context and with sensitivity to the surrounding neighborhoods.
- Other priorities identified were: the need to ensure infrastructure is in place as needs and development occur, completing the Lake Hazel Road extension, maintaining the sense of current rural/country lifestyle of the area, planning for public transportation, and reviewing options to provide additional interchanges to I-84.

## 5.2 FUTURE TRAFFIC PROJECTIONS

COMPASS maintains the travel demand forecasting model used to estimate future traffic demand on the roadway network for this study. The model scenario used for this Initial Study Area evaluation is consistent with the regional forecast, incorporates the recent changes from the *South Meridian Transportation Study*, but does not include the build-out of potential large-scale developments in the study Expanded Study Area or along the Kuna-Mora Road corridor. The details regarding the development of future traffic projections used for the Initial Study Area evaluation are provided in *Technical Appendix C. Supplement V* provides the 2030 traffic volumes projections used for the Initial Study Area evaluation. It is important to note that the City of Meridian land uses also influence the western edge of the study area; however, their integration has been the focus of ACHD's *South Meridian Transportation Study*. The *South Meridian Transportation Study* is an effort similar to this study that was completed for the area west of Eagle Road. The *South Meridian Transportation Study* was based on a land use estimate that included build-out of their study area under the City's updated Comprehensive Plan scenario. The SW Boise Transportation Study future forecast was based on combining the 2030 *Communities in Motion* (which is the regional long-range transportation plan) projections with a build-out scenario for the South Meridian study area. Due to the timing of these studies, slight differences in the traffic projections used for the two studies are expected because the South Meridian study made additional minor changes to its build-out land use scenario after a previous version had already been used for the SW Boise work. In addition, minor modifications were also made to the roadway networks used for the individual studies. Regardless, the recommendations resulting from both studies have been coordinated to maintain overall consistency.

### 5.3 FUTURE ROADWAY NEEDS ASSESSMENT

A key objective of this study is to identify deficiencies in the roadway network expected to occur by 2030 and then evaluate and recommend improvements to meet the needs of the system. In order to accomplish this, traffic operations and safety conditions were analyzed to identify needs and possible improvement alternatives. The screening of alternatives included many considerations. Comments and guidance provided to the project team by the project TAC, as well as comments received from public involvement meetings, were taken into consideration. The project team also reviewed identified needs in context of applicable planning goals, environmental constraints, and land-use integration.

The process used to develop the future roadway system plan included:

- Review of existing projects and needs identified in the CIP (included in *Technical Appendix C*)
- Development of future traffic forecast for each five-year increment between 2015 and 2030
- Identifying the future roadway sizes necessary to meet ACHD operational thresholds (LOS "E" for principal arterials, LOS "D" for minor arterials) based on future forecast volumes
- Development of future peak intersection turning movement forecasts for intersections for each five-year increment between 2015 and 2030
- Identifying the required intersection sizes and lane configurations necessary to meet ACHD operational thresholds (CIP standard is overall intersection volume-to-capacity [v/c] ratio of 0.90 with no lane group with a v/c ratio greater than 1.0) with the future forecast volumes
- Review the roadway and intersection operational analysis in combination to determine the future roadway needs identified by forecast volumes
- Review roadway needs within the context of constraints, goals, and public input to develop ultimate recommendations

Two levels of analysis were utilized to determine roadway sizes:

**Peak Hour Link Volumes Thresholds:** Peak hour link volumes were used to determine the initial roadway number of through travel lanes. In locations which were 20-30% over the minimum link volume threshold, intersection analysis was performed using turning movements to determine if intersection improvements could accommodate the traffic demand without the additional through travel lanes.

**Intersection Turning Movement Analysis:** Each major arterial intersection was evaluated to determine the lane requirements and intersection configuration to meet the threshold levels of service.

### 5.4 FUTURE ARTERIAL ROADWAY ALTERNATIVES

In order to identify what improvements were actually feasible, desirable, and should be forwarded for recommendation, a number of factors were considered:



- Consistency with City, County, ACHD, and public goals and vision
- Use of access management to increase capacity and safety without adding lanes
- Constraints, impacts, and costs associated with improvements compared to benefits provided by the project
- Projected traffic demand exceeding the volume threshold, which is indicative of how much time during the day the substandard LOS will be experienced
- Presence of parallel collector roadways that can be used by local traffic within the area

Each of these factors was evaluated for each roadway segment to develop a list of recommended improvements. All the arterial improvements were evaluated, including improvements that have already been planned as part of the ACHD CIP.

#### **5.4.1 Constraints to Roadway Widening**

There are constraints that make widening roadways difficult. One primary constraint to widening roadways is obtaining necessary right-of-way (ROW). The price of ROW has risen substantially in recent years. While this cost increase may not continue as dramatically as in the past, it will likely continue to increase each year, and when property develops, the ability to obtain additional ROW can become a prohibitive factor. The ACHD *Policy Manual* sets a standard minimum of 90-feet of right-of-way for a five-lane minor arterial. An analysis of existing ROW possession by ACHD determined that ACHD will need to acquire additional ROW in order to widen any arterial roadway in the study area to a five-lane cross-section. More information on this analysis can be found in *Technical Appendix C*.

Another constraint on roadway widening is the amount of existing development that is located in close proximity to the existing roadway. Widening Overland Road from Eagle Road to Cole Road, or Victory Road from Five Mile Road to Cole Road, to seven lanes would have significant impacts on surrounding property. Constructing the following road segments to five-lanes could also impact a significant number of existing buildings:

- Victory Road east of Cloverdale Road
- Amity Road between Cloverdale Road and Five Mile Road
- Five Mile Road north of Amity Road
- Maple Grove Road south of Amity Road
- Cole Road from Victory Road to Desert Avenue

Parcels along other roadway segments in currently undeveloped areas may not remain that way much longer. Therefore, ACHD should make ROW acquisition in those areas a priority.

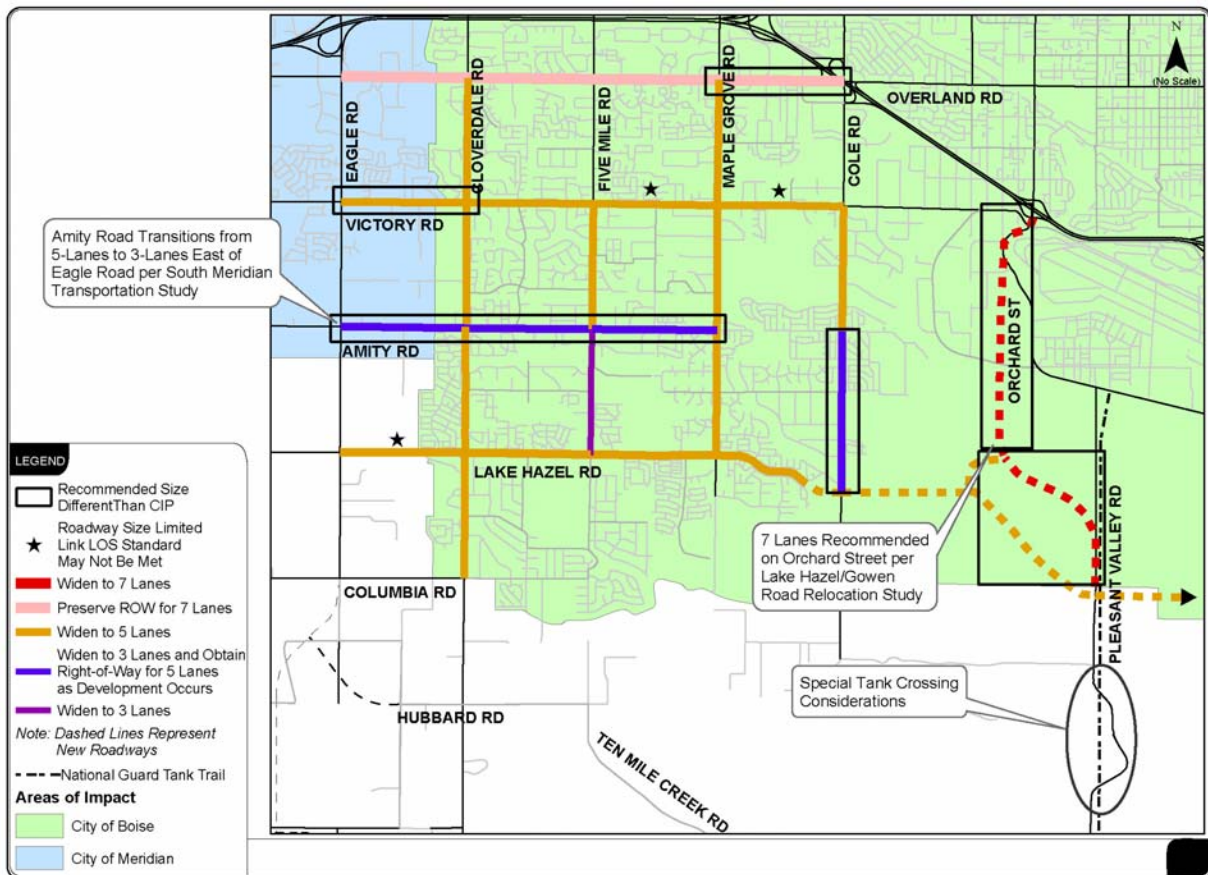
### 5.4.2 Recommended Road and Intersection Sizes

Recommendations for future roadway and intersection sizes were developed by evaluating roadway needs in context of feasibility, capacity benefit provided, and public input. The feasibility component is a relative measure based on the number of residences and commercial structures impacted, the number and size of waterway crossings along the road segment, and other impacts of widening the roadway. Capacity benefit is a relative measure of how high over the ACHD link LOS threshold the roadway would be if it were not widened.

Traffic projections for interim years between 2009 and 2030 were evaluated in order to estimate an approximate timeframe for the improvements. The results of this evaluation for roadway size needs without traffic from the Expanded Study Area developments are included in *Technical Appendix C*. The evaluation of roadways outside the Initial Study Area is discussed in Section 6 of this report.

Combining all of these considerations, Exhibit 5-2 illustrates the arterial roadway improvements for the Initial Study Area without growth from large-scale development in the Expanded Study Area. Intersection lane configurations are provided in *Supplement V*.

**Exhibit 5-2 Recommended Arterial Roadway Plan, Initial Study Area Scenario**



Note: Victory Road, between Eagle Road and Cloverdale Road, is recommended to be constructed to 5 lanes. In the South Meridian Transportation Study this segment is identified for right-of-way preservation for 5 lanes. The recommendation to build 5 lanes is due to the need to provide an alternative to Amity Road, east of Eagle Road, which has significant constraints to widening to the future 5 lanes and is not recommended for widening to 5 lanes until after 2030. West of Eagle Road Victory Road should transition to 3 lanes per the South Meridian Transportation Study



Exhibit 5-2 also highlights which segments differ from the current ACHD CIP and segments that are recommended to be sizes that will not meet the LOS threshold set by the CIP. Exhibit 5-3 lists each of these segments and describes the reason behind the different roadway size recommendation.

**Exhibit 5-3 Roadway Segments Over LOS Threshold for Year 2030**

Roadway	Segment	ACHD CIP	Size to Meet Threshold	Recommended Size	% Over LOS Threshold for PM Peak Hour	Reason for not Recommending Larger Size
Overland Road	Eagle Rd – Cole Rd	Corridor Preservation and ROW for 7 Lanes	7 Lanes	5 Lanes with ROW for 7 Lanes as available	15-20% Over LOS E	<ul style="list-style-type: none"> <li>-TAC recommends 5 Lanes</li> <li>-Limited capacity benefit</li> <li>-Significant impacts to surrounding properties</li> </ul>
Victory Road	Five Mile Rd – Cole Rd	5 Lanes	7 Lanes	5 Lanes	30-50% Over LOS D 10%-30% Over LOS E	<ul style="list-style-type: none"> <li>-TAC recommends 5 Lanes</li> <li>-Moderate capacity benefit</li> <li>-Moderate impacts to surrounding properties</li> <li>-TLIP recommends LOS E</li> </ul>
Amity Road	Eagle Road – Maple Grove Rd	No Improvement	5 Lanes	3 Lanes with ROW for 5 Lanes as available	30-50% Over LOS D 10%-30% Over LOS E	<ul style="list-style-type: none"> <li>-Moderate capacity benefit</li> <li>-Significant impacts to surrounding properties</li> <li>-TLIP recommends LOS E</li> <li>-Victory Road will be widened to 5 lanes to provide additional capacity between Cloverdale Road and Eagle Road</li> <li>-Amity Road does not provide continuous connectivity east of Maple Grove which makes Victory more preferable for widening</li> </ul>
Lake Hazel Road	Eagle Rd – Cloverdale Rd	5 Lanes	7 Lanes	5 Lanes	15% Over LOS E 25% Over LOS D	<ul style="list-style-type: none"> <li>-Only 1 mile of the corridor</li> <li>-Expanded intersection improvements can potentially accommodate</li> <li>-TAC recommends 5 Lanes</li> <li>-Limited capacity benefit</li> <li>-Moderate impacts to surrounding properties</li> </ul>

As shown in Exhibit 5-3, the four roadways where the forecasted traffic volumes exceed the LOS thresholds are the east-west arterials including: Overland Road, Victory Road, Amity Road, and Lake Hazel Road. Overland Road is the only segment that will be over the threshold through the entire study area assuming it remains a five-lane roadway. In order to accommodate the projected future demand on Overland Road, right-of-way for seven lanes will continue to be preserved as future development occurs such that future expansion to seven lanes may be possible at some time.

Amity Road, Victory Road, and Lake Hazel Road each have sections that exceed the LOS thresholds but expansion of all three roadways is not necessary. A review of all three roadways determined that extending the five-lane cross-section on Victory Road west to Eagle Road is the preferred option to provide sufficient east-west capacity between Cloverdale Road and Eagle Road. With five lanes to Eagle Road, Victory Road will have sufficient available capacity to accommodate excess demand from Amity Road and Lake Hazel Road if they remained three lanes and five lanes respectively. Victory Road is also identified in the South Meridian Transportation Study for right-of-way preservation for five lanes between Eagle Road and Cloverdale Road which is consistent with this recommendation. Amity Road is not identified for widening to five lanes within the 2030 planning horizon due to the significant constraints and impacts to properties that future expansion will have. Amity Road between Maple Grove Road and Eagle Road has been identified for right-of-way preservation for five lanes, which will be obtained as development occurs along the corridor. Lake Hazel Road is recommended to remain at five lanes since it is only a limited section that is over the threshold (and by only 15 percent) and there will be additional east-west capacity available on Victory Road.

Therefore, in order to accommodate the future east-west capacity needs, the following actions are identified:

- Overland Road: Maintain five lanes with right-of-way preservation for seven lanes, consistent with the current CIP
- Victory Road: Widen to five lanes through the study area (Eagle Road to Cole Road)
- Amity Road: Widen to three lanes with right-of-way preservation for five lanes
- Lake Hazel Road: Widen to five lanes through the study area

The South Meridian Transportation Study determined Victory Road requires only three lanes west of Eagle Road and therefore, Victory Road will need to transition from five lanes to three lanes west of Eagle Road. The South Meridian Transportation Study also identifies Amity Road as five lanes west of Eagle Road with a roundabout at Eagle Road. Therefore, the five-lane section on Amity Road will transition to three lanes east of Eagle Road.

## 5.5 COLLECTOR ROADWAY NETWORK

A collector road serves a number of purposes. One primary function is to gather traffic from local streets to be dispersed onto the arterial system. Collectors provide access for several modes of travel to properties adjacent to arterials. They typically carry low-to-moderate traffic volumes, are designed for slower speeds (35 MPH or less), and may provide on-street parking depending on the adjacent land use.



Collectors provide a number of benefits to the transportation system, as well as the properties and neighborhoods they serve:

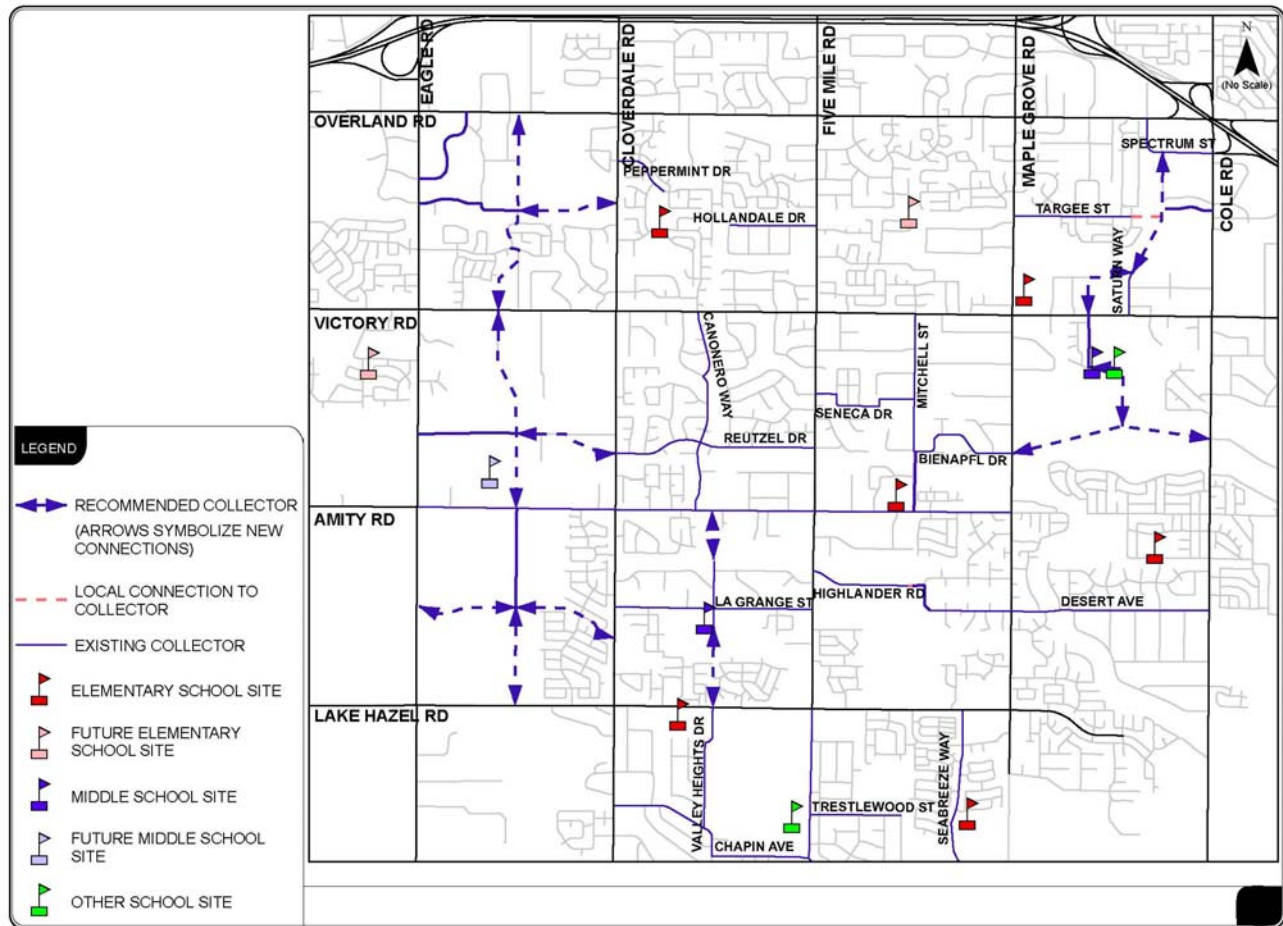
- Increase connectivity between neighborhoods so people don't have to use the arterial system.
- Increase the overall capacity of the roadway system.
- Create shorter and safer routes for bicyclists and pedestrians since collectors typically have less traffic on them.

While a collector system is necessary for all modes of travel, thought must be given to roadway placement and design. Long and straight roadways may lead to vehicles traveling faster than the posted speed limit. Numerous driveways from private residences accessing the road, or many houses fronting the road, can cause operational, safety, and livability issues to arise. When designed and implemented correctly, a quality collector network will provide capacity and safety benefits to the overall transportation system.

The project team worked with ACHD, the project TAC, and the public to help develop a conceptual collector roadway network for the Initial Study Area. This effort drew on past work including a past collector study conducted by ACHD, CIM, the *South Meridian Transportation Study*, TLIP, and other potential collectors previously identified by ACHD. *Technical Appendix C* contains more detailed information regarding this process.

Collector roads identified can be classified in three different categories: *New*, *Extension*, or *Re-designated*. The first category refers to new roadways that currently do not exist. Three of the recommended potential collectors fall into this category. The second category includes roads that would use some part of existing roads, but some new construction, and possibly upgrading of the existing road, would be required. Ten recommended collectors are in this category. The third category contains potential collectors that already exist, but would need to be re-designated as collectors. If right-of-way is available, roadways in this category should be upgraded to meet collector standards. Three recommended collectors are classified in this category. Exhibit 5-4 illustrates the recommended collector roadway network. The details of how collectors were screened and prioritized are discussed in Section 10.

Exhibit 5-4 Possible Future Collector Roadways



The new sections of collector roads shown in Exhibit 5-4 are intended to show recommended connections. As development occurs the final alignment between the two end points can be changed based on the development needs or a better alternative identified during the design process.

In areas of development or redevelopment, new or improved collector roadways are required to be constructed by the developer, without compensation, based on approval by ACHD. This includes the dedication of any required right-of-way.

## 6.0 Expanded Study Area



The Expanded Study Area evaluation identified the future major roadway network in the Expanded Study Area. Unlike the detail prepared for the Initial Study Area, it makes general assumptions for the timing and phasing of specific developments, which, for the most part, are not known at this time. The goal of the planning needs evaluation was to determine:

- Desired roadway network and connections
- General sizes of roadway connections
- Approximate growth levels that may trigger key improvements
- Potential feasibility and environmental challenges for the outlined improvements
- Potential identification of a future Extraordinary Impact Fee Area

This study, for the Expanded Area, did not include:

- A detailed peak-hour level-of-service analysis at intersections
- Timing/phasing for specific improvements based on an actual year
- Prioritization and implementation plan
- Environmental analysis
- Legal and funding components

### 6.1 STAKEHOLDER INVOLVEMENT

The study TAC guided development of the transportation recommendations for the Expanded Study Area. In addition, individual meetings were held with the following stakeholders:

- Skyline Development (Arbor Hills)
- City of Boise (planning for The Reserve and Murgoitio areas)
- Landmark Engineering (representative for DR Horton)
- Bureau of Land Management (BLM)
- COMPASS (planning and modeling for the area)

Comment and input for the Expanded Study Area was received through meetings with these property owners, developers, agency staff, discussion with the TAC, and at the three study Public Information Meetings (details contained in *Technical Appendix A*). Key input received was:

- Importance to plan ahead of the development in order to ensure infrastructures is in place to accommodate future growth

- Topography and environmental constraints exist within the Expanded Study Area that effect the possible location and nature of development and transportation system infrastructure
- Development near the edge of the City of Boise can be integrated into the existing transportation network and the City of Boise’s comprehensive planning goals
- Need to incorporate the planning and land-use work already completed for projects going through the application process
- Minimize the impact of growth in the Expanded Study Area on existing roadways and neighborhoods

## 6.2 ADDITIONAL GROWTH SCENARIO

### 6.2.1 Previous Growth Projections for the Study Area

COMPASS currently maintains two land-use scenarios for forecasting future travel demand: Community Choices and Trend. The Community Choices scenario is based on the adopted 2030 regional transportation plan, *Communities in Motion*. The Trend scenario is based on recent past growth patterns within the region. Exhibit 6-1 shows the 2005 and 2030 household and employment estimates for the area bounded by Kuna-Mora Road to the south, Lake Hazel Road to the north, Cloverdale Road to the west, and Pleasant Valley Road to the east. The Community Choices model estimates growth of 364 households where the proposed planned communities are located. Since 2005, much of the previously approved developments in the vicinity of Lake Hazel have been built out and may be close to already exceeding these estimated 364 additional units. The growth in the Trend model is approximately 2,065 households, with most of the incremental difference being assigned to the large TAZ 304 near Cloverdale Road and King Road. However, this increase is a small amount compared with the planned community ideas shared by developers.

**Exhibit 6-1 COMPASS Growth Assumptions in the Expanded Study Area**

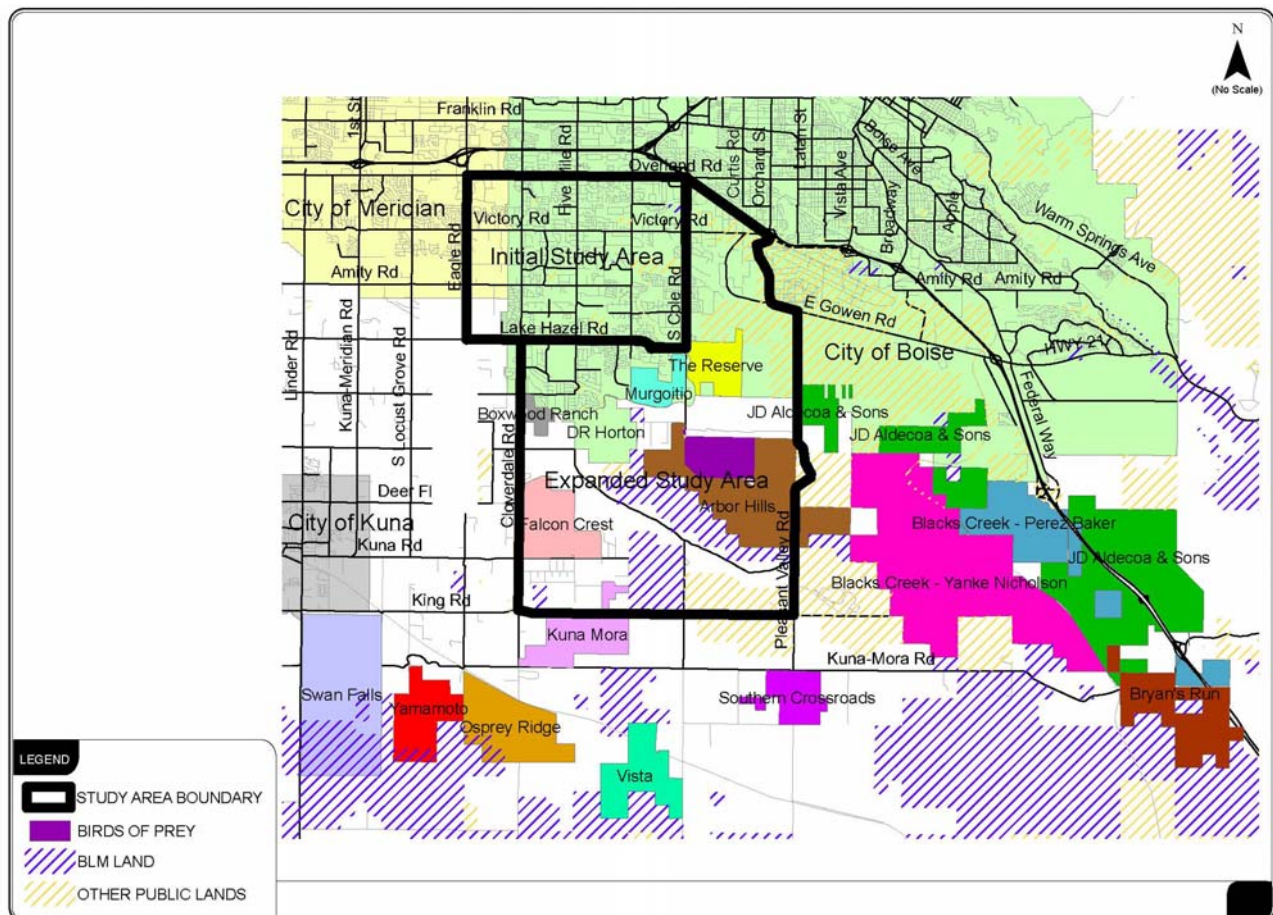
Land Use Scenarios	Households and Employment (TAZ's 76,90,93,94 303, 304, 344)					
	2005 Households	2005 Jobs	2030 Households	2030 Jobs	Growth in Households	Growth in Jobs
Community Choices	3,142 <sup>1</sup>	1,124 <sup>1</sup>	3,506	1,215	+364	+91
Trend			5,207	1,219	+2,065	+95

<sup>1</sup>2005 Households and Jobs based on the 2005 Community Choices Model. 2005 Trend estimates were lower due to lack of inclusion of some recent developments in 2005

### 6.2.2 Southwest Boise Expanded Study Area Development Estimates

In June 2007, Ada County, COMPASS, and known developers provided land use estimates for the proposed developments in the Expanded Study Area and along the Kuna-Mora Road corridor. Exhibit 6-2 shows the areas of potential development in the region. A summary of each proposed development's estimated number of housing units, population, number and type of jobs, and the number and type of schools is provided in *Supplement VI*. The estimates shown in *Supplement VI* were used for this planning-level evaluation but will likely change over time as specific developments go through the land use approval process. Due to the "big-picture" methodology of this study, changes to the land-use assumptions within specific developments will not significantly impact the overall recommendations. More detailed analysis will be conducted as part of development-specific traffic impact studies to refine site specific transportation impacts and required improvements.

Exhibit 6-2: Possible Planned Community Developments in the SW Boise Area



The land use assumptions for the expanded study area evaluation were separated into two categories. The first category is development specifically within the expanded study area boundaries. The second category is development physically located outside the expanded study area boundary that will still impact the roadways within the boundary. In order to develop a 2030 base-year estimate, it was assumed that of all the planned communities located within the Expanded Study Area will be fully built out by 2030. By assuming full development of these planned communities, the internal roadways in the study area can be properly sized. Conversations with developers and members of the project TAC also indicated these properties are likely to develop first. Developments located outside of the expanded study area boundary were assumed to be approximately 30 percent built out by 2030.

The total development in the Southwest Boise expanded study area boundary is expected to include approximately 20,625 housing units and 10,660 jobs by 2030. The planned communities outside of the study area were assumed to develop with 21,970 housing units and 9,390 jobs by 2030 (30-percent of full build-out). As such, the total 2030 land use estimates for additional growth used for this evaluation were 42,595 households and 20,050 jobs (full build-out of development within the study boundary plus 30-percent build-out of development outside the boundary). More detailed information about the projected development can be found in *Technical Appendix D*.

### 6.3 EXPANDED STUDY AREA INITIAL ROADWAY NETWORK

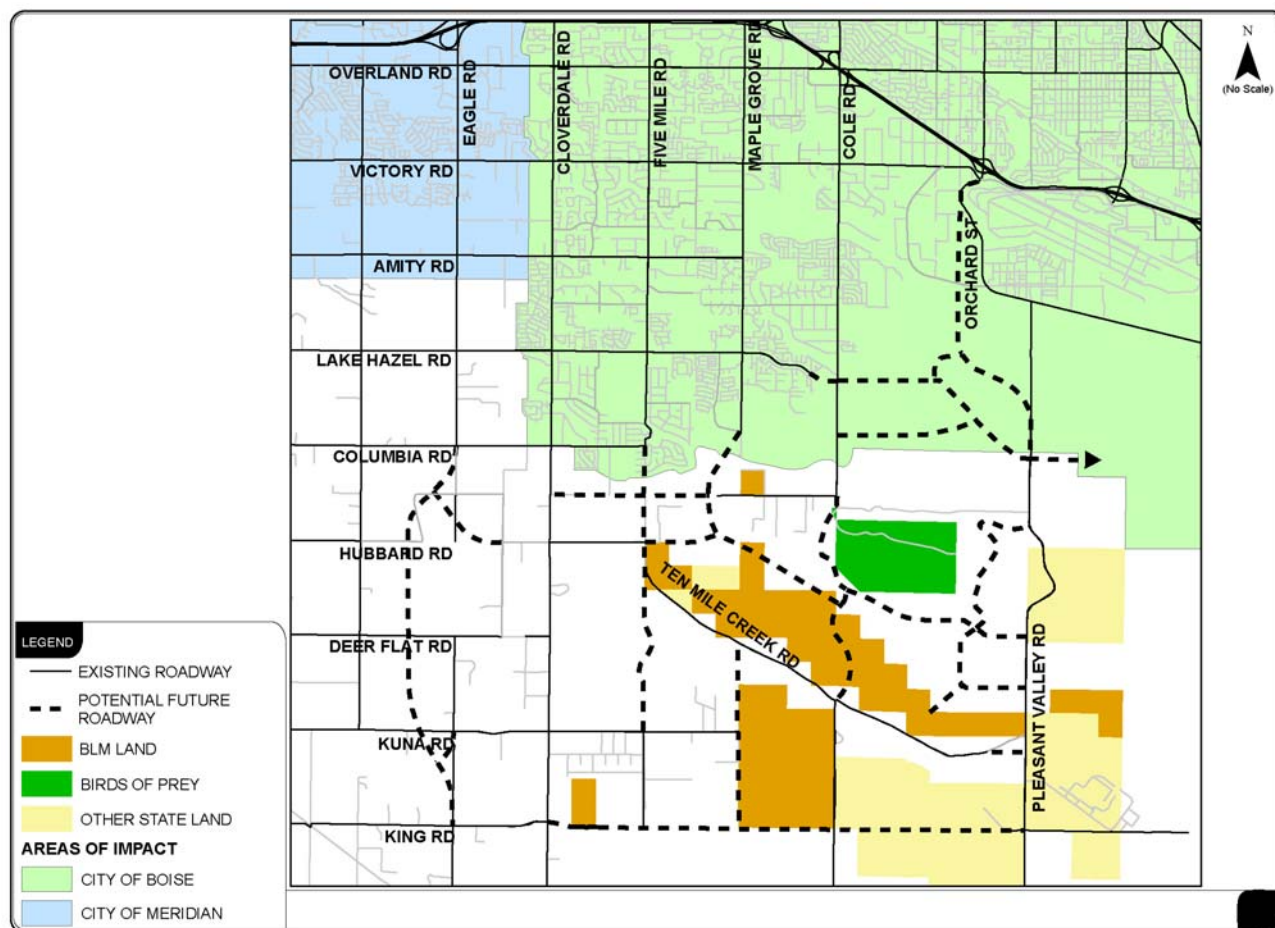
In order to evaluate the future roadway needs within the Expanded Study Area, an initial roadway network was developed beyond those roads already identified in the ACHD CIP and the Initial Study Area. The following items were considered in developing the preliminary roadway network:

- The existing roadway system
- The roadway network already being planned by ACHD and developments with preliminary development plans, which included Arbor Hills and DR Horton
- Future accessibility to the area by emergency vehicles
- Topography and other physical constraints
- Preliminary estimates of year 2030 daily traffic generated by the large scale developments
- Information regarding environmental constraints from the BLM
- Boundaries of the Birds of Prey natural area
- Feasibility based on field review

Exhibit 6-3 shows the preliminary roadway network used for the travel demand modeling for the Expanded Study Area evaluation.



**Exhibit 6-3 Expanded Study Area Conceptual Roadway Network**



Many of the new roadways shown in Exhibit 6-2 are already planned. These include the Lake Hazel Road, Orchard Street, and Pleasant Valley Road connections, which were identified in the *Lake Hazel Extension/Gowen Road Relocation Study*. Some of the additional new roadway connections are in the vicinity of the Arbor Hills development (which was recently approved by Ada County). Additional details regarding the connections with the Arbor Hills development can be found in *Supplement VII*.

## 6.4 IMPROVEMENT IDENTIFICATION

### 6.4.1 Year 2030 with Southwest Boise Expanded Study Area Developments

Year 2030 traffic volumes with the inclusion of the Southwest Boise Expanded Study Area developments are provided in *Supplement VIII*. Most of the existing roadways not providing direct access to the Expanded Study Area, such as Overland Road, Victory Road, or Cloverdale Road, experience a small increase in traffic demand, but do not change enough to significantly impact the size of the roadways. Roadways that provide direct access to the Expanded Study Area see the most significant impact and change.

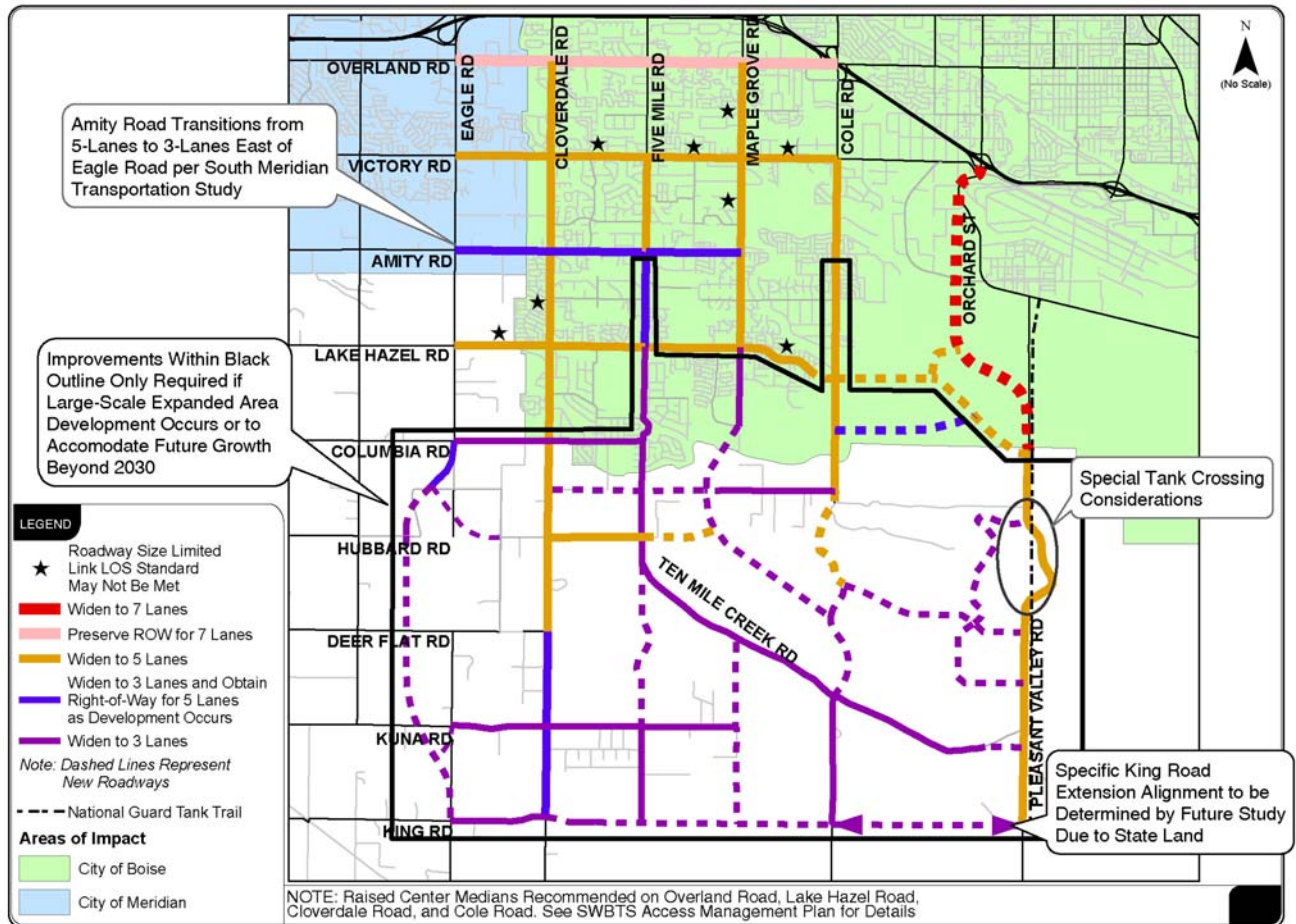
### 6.4.2 Threshold Analysis

Two levels of traffic analysis were conducted in order to identify roadway improvements required to serve anticipated development in the Expanded Study Area. ADT and peak hour directional thresholds were used to confirm the need for the proposed roadways in the Expanded Study Area and determine the general size of new roadways. Based on discussions with ACHD staff and the City of Boise, Level of Service "D" was assumed as the minimum threshold for the new roadway system within the Expanded Study Area.

### 6.5 RECOMMENDED TRANSPORTATION NETWORK

In order to develop a recommended transportation network, the project team evaluated the roadway widening needs identified by the threshold analysis. The evaluation of the improvements inside the Initial Study Area is discussed in greater detail in Section 5. Exhibit 6-4 illustrates the resultant overall recommended transportation network based on both the Initial Study Area and Expanded Study Area evaluations.

Exhibit 6-4 Recommended Roadway Network



As shown in the area outlined in black in Exhibit 6-4, the primary impacts of the development in the Expanded Study Area are south of Lake Hazel Road. Most of the improvements are the new roadway system that will be required to service the future development areas. The remaining additional improvements shown in Exhibit 6-4 are additional widening of existing roadways to accommodate the development. Exhibit 6-5 lists the incremental improvements associated with the expanded study area developments.

**Exhibit 6-5 Additional Arterial Improvements Associated with Expanded Area Developments**

Existing & Future Arterial Roadway/Segment	Additional Improvement	Comment
Lake Hazel Road Eagle Road – Cloverdale Road Cole Road – Pleasant Valley Road	Intersection Improvements or 7 lanes Widen from 3 to 5 lanes	Only with development Include in study plan
Pleasant Valley Road Kuna-Mora Road – Cole Road Extension Cole Road Extension – Lake Hazel Road	Widen from 2 to 5 lanes Widen from 2 to 5 lanes	Only with development Only with development
Cole Road Amity Road - Lake Hazel Road Lake Hazel Road - Hollilynn Drive Extension (Cole Road – Pleasant Valley Road) Extension to Ten Mile Creek Road Ten Mile Creek to King Road	Widen from 3 to 5 lanes Widen from 2 to 5 lanes New 3 lanes New 3 Lanes Widen from 2 to 3 lanes	Include in study plan & CIP Only with development Only with development Only with development Only with development
Maple Grove Road Lake Hazel Road – Columbia Road Extension to Hubbard Road Ten Mile Creek – King Road	Widen from 2 to 3 lanes New 3 lanes New 3 lanes	Only with development Only with development Only with development
Five Mile Road Amity Road - Lake Hazel Road Lake Hazel Road – Columbia Road King Road – Kuna Road Kuna Road – Hubbard Road Hubbard Road – Columbia Road	Right of way for 5 lanes Widen from 2 to 3 lanes Widen from 2 to 3 lanes New 3 lanes Widen from 2 to 3 lanes	Include in study plan Only with development Only with development Only with development Only with development
Cloverdale Road (Columbia Road – Deer Flat Rd)	Widen from 3 to 5 lanes	Only with development
Orchard Street Victory Road – Pleasant Valley Road Orchard Street to Lake Hazel Road	Widen from 3 to 7 lanes Widen from 3 to 5 lanes	Include in study plan Include in study plan
Hubbard Road Cloverdale Road - Five Mile Road Five-Mile Road – Maple Grove Road Extension (Maple Grove Road – Cole Road Ext.)	Widen from 2 to 5 lanes New 3 lanes New 3 lanes	Only with development Only with development Only with development
King Road (Cloverdale Road – Pleasant Valley Rd)	New 3 lanes	Only with development
Ten Mile Creek Road	Widen from 2 to 3 lanes	Only with development
Arbor Hills – Pleasant Valley Loop	New 3 lanes	Only with development
Kuna Road (Eagle Road – Maple Grove Road)	Widen from 2 to 3 lanes	Only with development

The “comment” column in Exhibit 6-5 shows some improvements associated with the Expanded Area are recommended in the study even without the development of the Expanded Study Area. These improvements were determined to be beneficial to construct in the anticipation of future growth because they may not be possible or may be too cost prohibitive once the development occurs.

Similar to the Initial Study Area recommendations, not all of the roadway sizes recommended are forecast to meet the current LOS threshold. Most of these segments are the same as highlighted before in the Initial Study Area evaluation and are not recommended for further widening for the reasons described in Section 5. The segments not described in Section 5 are discussed in Exhibit 6-6. The most significant difference is on Amity Road which is recommended to preserve right-of-way for five lanes but only recommended for widening to three lanes. The key segment on Amity Road that warrants widening to five lanes is between Eagle Road and Cloverdale Road. In this section, local traffic tends to use Amity Road instead of Lake Hazel Road because there is no available capacity on Lake Hazel Road between Eagle Road and Cloverdale Road.

**Exhibit 6-6 Additional Roadway Segments Over LOS Threshold Due to Expanded Study Area for Year 2030**

Roadway	Segment	ACHD CIP	Size to Meet Threshold	Recommended Size	% Over LOS Threshold for PM Peak Hour	Reason for not Recommending Larger Size
Victory Road	Cloverdale Rd – Five Mile Rd	5 Lanes	7 Lanes	5 Lanes	15% LOS D  0% LOS E	-TAC recommended 5 Lanes to be consistent with Cole Rd to Maple Grove Rd -Limited capacity benefit -Significant impacts to surrounding properties -TLIP recommends LOS E
Amity Road	Eagle Rd – Cloverdale Rd	No Improvement	7 Lanes	3 Lanes with ROW for 5 Lanes	160% LOS D  115% LOS E	-Only a single mile segment -Additional intersection improvements on Lake Hazel at Eagle and Cloverdale could mitigate diversion to this section -TLIP recommends LOS E -Victory Road will be widened to 5 lanes to provide additional capacity between Cloverdale Road and Eagle Road -Amity Road does not provide continuous connectivity east of Maple Grove which makes Victory more preferable for widening
Lake Hazel Road	Maple Grove Rd – Cole Rd	5 Lanes	7 Lanes	5 Lanes	25% LOS D 10% LOS E	-TAC recommended 5 Lanes -Limited capacity benefit
Maple Grove Road	Overland Rd – Amity Rd	5 Lanes	7 Lanes	5 Lanes	20-25% LOS D 5-10% LOS E	-TAC recommended 5 Lanes -Limited capacity benefit -Significant impacts to surrounding properties -TLIP recommends LOS E

While Amity Road has an identified need for widening beyond three lanes in the study area, only right-of-way preservation for five lanes is identified due to the impacts associated with widening to five lanes, available capacity on Victory Road between Eagle Road and Cloverdale Road, and Amity Road does not extend east of Maple Grove Road. If the intersections along Lake Hazel Road area are improved to accommodate greater capacity than currently planned, the diversion to Amity Road may not occur and, therefore, widening to five lanes on Amity Road may not be necessary.

The *South Meridian Transportation Study* determined Victory Road requires only three lanes west of Eagle Road and therefore, Victory Road will need to transition from five lanes to three lanes west of Eagle Road. The *South Meridian Transportation Study* also identifies Amity Road as five lanes west of Eagle Road with a roundabout at Eagle Road. Therefore, the five-lane section on Amity Road will transition to three lanes east of Eagle Road.

Due to the speculative nature of the land-use estimates and the phasing of development in the Expanded Study Area, review of the recommendations shown in Exhibit 6-6 should be completed periodically. As updates to the CIP occur and as detailed traffic impact studies are conducted for proposed developments, the timing, location, and need for new roadways and improvements to existing roadways should be re-evaluated.

## 6.6 RECOMMENDED IMPROVEMENT FEASIBILITY REVIEW

### 6.6.1 Feasibility Review

A feasibility review of the Expanded Study Area roadways and improvements was performed to identify environmental, right-of-way, and other potential feasibility issues associated with the recommended improvements. Within the expanded study, five primary constraints were identified that influence the feasibility of roadway improvement recommendations:

- **Topography:** The ridge north of Ten Mile Creek Road limits options for north-south connections and east-west connections to Pleasant Valley Road.
- **Homes and Driveways on Existing Arterials:** Existing roadways such as Cole Road, Maple Grove Road, and Five Mile Road have single family homes with driveways directly accessing the arterials. This can create safety issues as traffic volumes increase.
- **Gravel Quarry Operations:** There are a number of gravel operations on the ridge north of Ten Mile Creek Road that affect extending Cole Road from Arbor Hills to Ten-Mile Creek Road. Most quarries are under long-term leases with the BLM.
- **Slickspot Peppergrass:** Slickspot Peppergrass is not listed as an endangered species at the time of this report, but it is managed on public lands to reduce the likelihood of the species becoming endangered in the future. The ability to extend Cole Road from Arbor Hills to Ten Mile Creek Road and to construct the connection between Hubbard Road and the Cole Road extension will likely be affected by the presence of this plant species.
- **Right-of-Way Impacts:** Structures are close enough to existing roadways in some locations that widening will impact them.

Most of the improvements have one or more feasibility issues but this review did not identify any fatal flaw issues that cannot be overcome. The most difficult roadway improvement is likely the extension of Cole Road from the Arbor Hills development down to Ten Mile Creek Road. The topography for this connection is steep, will go through an active quarry operation, and a portion of the area has been documented by the BLM as a habitat area for Slickspot Peppergrass. Nonetheless, this connection is important to provide north-south connectivity and is still recommended for further refined study.

### **6.6.2 Idaho National Guard Tank Trail**

The Idaho National Guard currently has a gravel trail along the east side of Pleasant Valley Road for tanks and other military vehicles to travel from the guard facilities near the Gowen Road/Pleasant Valley Road intersection to the military training range south of Kuna Mora Road. Due to its



alignment, the military vehicles currently cross Pleasant Valley Road in two locations to avoid the curved alignment north of Ten Mile Creek Road. With the higher traffic demands projected in the future on Pleasant Valley Road from developments in south-west Ada County, special treatments at the two crossing will likely be needed to ensure safe operations. Another option is to relocate the gravel road so that it remains only the east side of Pleasant Valley Road when Pleasant Valley Road is widened to five lanes in the future.

## **6.7 IMPACT ON TIMING OF PLANNED IMPROVEMENT NEEDS**

One of the most significant impacts of the additional growth identified in the Expanded Study Area is that it accelerates the timing and the funding timeframe of improvements already identified as part of the Initial Study Area. This is of particular concern to ACHD and the City of Boise as part of region-wide implementation of adequate public facilities requirements. While it's difficult to anticipate the rate of development growth and the timing for improvements until the specific land use planning for developments occur, a generalized evaluation was completed to identify improvements likely needed earlier as a result of the large-scale developments. Most of the intersection and roadway improvements along Cloverdale Road, Five-Mile Road, and Maple Grove Road would be needed at least five years earlier due to the possible development in the Expanded Study Area. More information on the implementation timeframes of recommended improvements is presented in Section 10 of this report.

## 6.8 POTENTIAL EXTRAORDINARY IMPACT FEE AREA

The purpose of evaluating a potential Extraordinary Impact Fee area was to evaluate the likely impact fee collection area and to establish the roadways and improvements covered under the fee area. Typical considerations when defining an Extraordinary Impact Fee area include:

- Proportion of traffic on roadways from proposed developments
- Ability of roadways to accommodate additional projected traffic demand
- Roadways serving as barriers between areas
- Physical and jurisdictional boundaries

In order to determine the proportion of traffic on roadways from developments within the Expanded Study Area boundaries, COMPASS performed a select link model run for only these developments. The results of the select link evaluation found that the expanded study area developments contribute ten percent or more of the total traffic in the area extending slightly north of I-84, just south of Kuna-Mora Road, east to I-84, and west to nearly State Highway 69 (Meridian Road).

In addition to the proportionate impact of traffic from developments in the Expanded Study Area, the following considerations were identified as relevant in establishing the future fee boundary:

- At the northern boundary of the study area, I-84 serves to distribute traffic from Southwest Boise to multiple locations.
- In the areas along Orchard Street and Vista Avenue, where the boundary extends toward downtown, the transportation system is built out and additional capacity improvements will likely be limited.
- Eagle Road serves as the primary western boundary with exception of a two mile area between Amity Road and Columbia Road.
- Pleasant Valley Road serves as a good dividing line between development inside the Expanded Study Area and development to the east of the area. Development on the west side of the road relies on the roadway network east of it as much as developments on the east side rely on the roadway network on the west side.

Based on these factors and discussions with ACHD staff, a potential impact area for development in the Expanded Study Area is bounded by Lake Hazel Road to the north, Pleasant Valley Road to the east, Kuna-Mora Road to the south, and Eagle Road to the west. The Extraordinary Impact Fee Area will be implemented with the study but will not be designated by a boundary on a map. Since the timing and nature of specific develop in this area is still unknown it would be premature to assign a specific boundary at this time. This does not preclude the study from having an impact area or collection location designated. A study impact boundary may be implemented at a later date when growth in the area is expanding at a higher rate and it is more beneficial to specific issues designated for improvement.



## 6.9 EXPANDED STUDY AREA KEY CONSIDERATIONS

The transportation system in Southwest Ada County can be improved to accommodate the proposed planned developments in the Expanded Study Area. In summary:

- Most of the impacts from traffic generated by development in the Expanded Study Area are within the region bounded by I-84 to the north and east, Kuna-Mora Road to the south, Eagle Road to the west, and Pleasant Valley Road to the east.
- The Expanded Study Area developments can be accommodated without the extension of Lake Hazel Road east of Pleasant Valley Road, but the extension will be needed for access to the future developments east of Pleasant Valley Road.
- While several additional transportation improvements will be required to accommodate the additional traffic associated with the Expanded Study Area development scenario, the most critical issue associated with this growth is the need for the planned Lake Hazel Road extension to Pleasant Valley Road and the Orchard Street connection to this extension. This extension will likely be needed in the 2015-2020 timeframe which is approximately 10 years prior to when it is needed without growth from the Expanded Study Area.
- Key roadways, such as Cloverdale Road, Five Mile Road, and Maple Grove Road, are already in need of widening and will need to be improved to their recommended configuration prior to significant development in the Expanded Study Area.
- Widening of Pleasant Valley Road should be coordinated with the Idaho National Guard to incorporate the gravel trail used by tanks and other military equipment. Special attention should be on the two crossing locations and at public street intersection locations.
- Future planning should include coordination with Valley Ride and ACHD Commuteride to ensure long-term access to transit is provided.
- Additional improvements beyond the year 2030 may be needed within the Expanded Study Area to accommodate additional future growth beyond that assumed in this study. The periodic updates to the ACHD CIP (which occur every three years) provide the mechanism to monitor these future needs.

As updates to the ACHD CIP occur and as detailed traffic impact studies are conducted for individual proposed developments, the timing, location, and need for new roadways and improvements to existing roadways must be re-evaluated.

## 7.0 Eagle/Cloverdale Alignment

CIM calls for a continuous north-south route between Kuna-Mora Road and the Eagle Road/I-84 interchange. While CIM identified the future need for this connection, it did not evaluate or make recommendations for the specific alignment or form the connection should take. As such, ACHD included the further evaluation of the future Eagle-Cloverdale alignment as part of this study.

The process used to identify the preferred alignment was:

- Obtain initial input from stakeholders
- Identify opportunities and constraints
- Develop alternatives
- Evaluate alternatives
- Present alternatives to stakeholders for additional feedback
- Recommend a preferred alternative

### 7.1 ALIGNMENT ALTERNATIVES

In addition to the “No Build” alternative, the project team developed six alternatives. These alignment alternatives are presented in Exhibits 7-1A and 7-1B. Each alternative included in the study is described here:

**No Build Alternative:** Expand Columbia Road and the intersections of Eagle Road/Columbia Road and Cloverdale Road/Columbia Road. This would include adding dual northbound left-turn lanes and an eastbound right-turn lane at the Cloverdale Road/Columbia Road intersection and dual southbound left-turn lanes and a westbound right-turn lane at the Eagle Road/Columbia Road intersection as well as widening Columbia Road in the section between Cloverdale Road and Eagle Road.

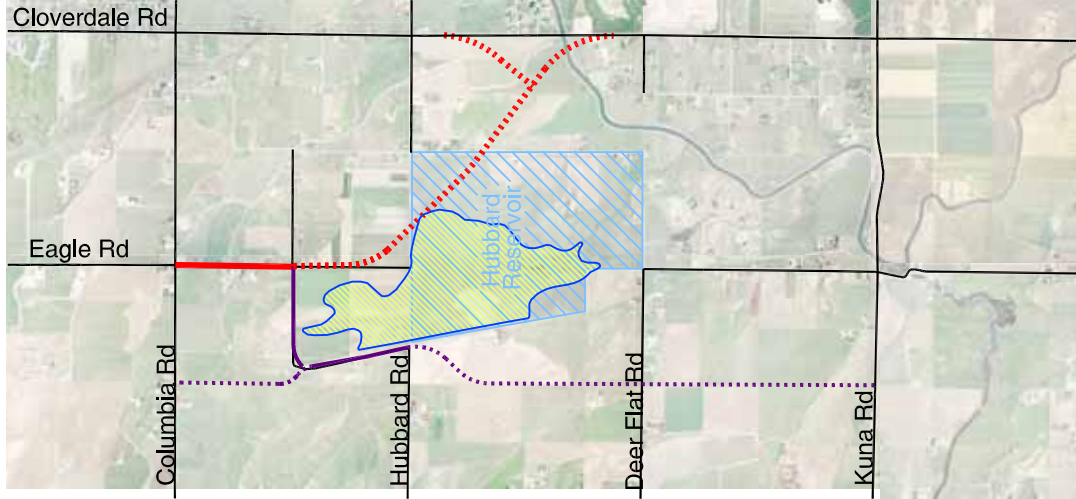
**Alternative #1 CIM Concept Alignment:** Connection similar to that shown in the CIM plan which provides an “S” curve of Cloverdale Road to connect with Eagle Road.

**Alternative #2 Hubbard Road Alignment:** Use a series of “S” curves with Hubbard Road to provide the connection between Eagle Road and Cloverdale Road.

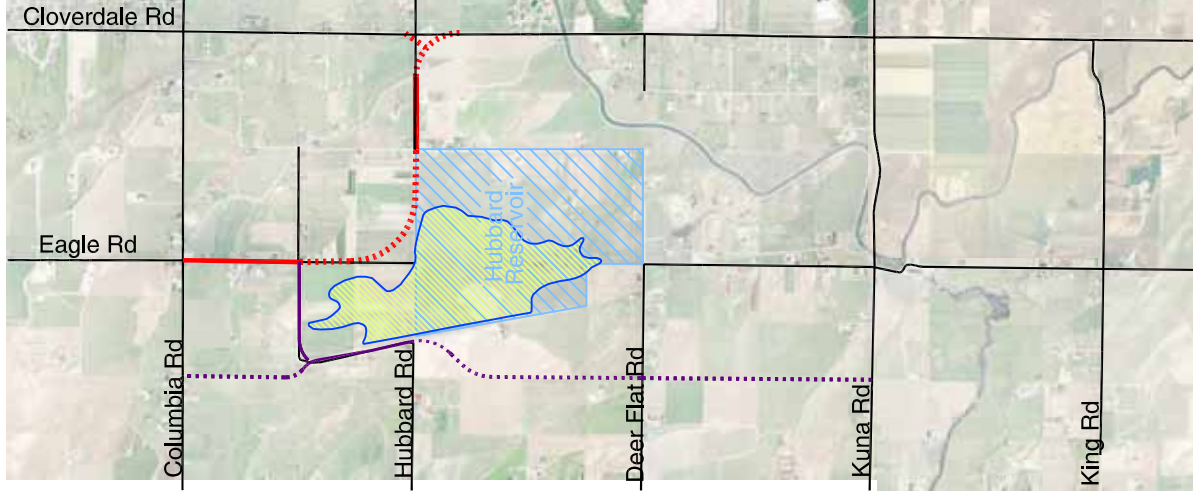
**Alternative #3 Eagle Road Section Line Alignment:** Extend Eagle Road directly through the Hubbard Reservoir.

**Alternative #4 West Alignment:** Provide an extension of Eagle Road west of the reservoir to the mid-mile collector location between Kuna Road and Hubbard Road through currently open farm land.

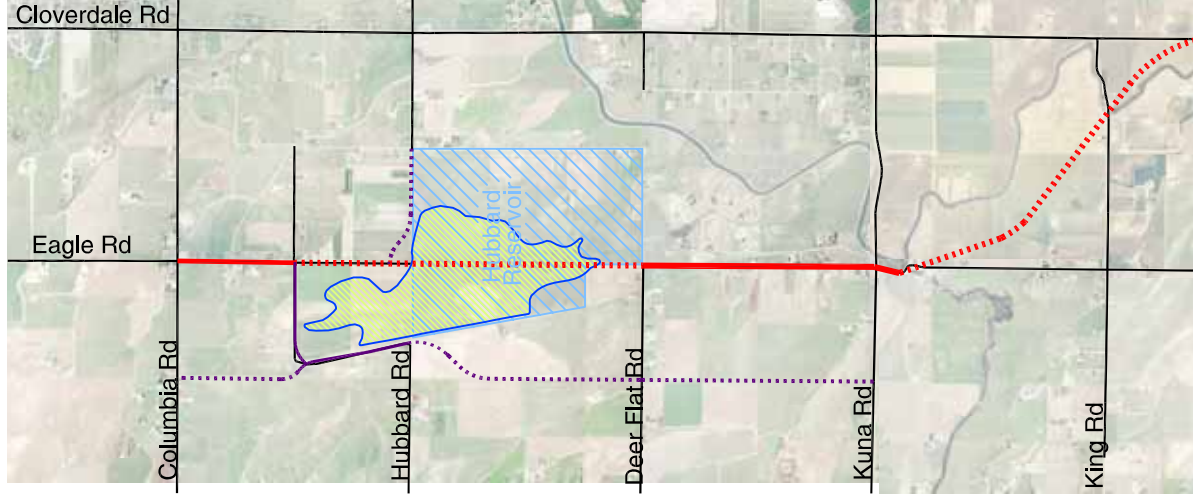
# ALTERNATIVE 1



# ALTERNATIVE 2



# ALTERNATIVE 3



## LEGEND

- New Arterial Roadway
- Widen Ex. Arterial Roadway
- New Collector Connection
- Widen Ex. Collector Roadway

Note: Future collectors are shown for illustrative purposes and would be built by development

# EAGLE-CLOVERDALE INITIAL ALIGNMENT ALTERNATIVES

FIGURE 7-1A





Expanding traffic capacity for north-south traffic in the area and impact to Hubbard Reservoir were considered the two most critical issues to address and, therefore, were weighted more heavily than the other criteria. These issues were considered important for the following reasons:

**Expansion of North-South Capacity:** By funneling all the north-south traffic demand from both Cloverdale Road and Eagle Road into Cloverdale Road south of Columbia Road, the overall corridor capacity remains similar to the No-Build scenario. Therefore options that allow Eagle Road to remain separate and contiguous are preferred because they provide additional corridor capacity, complete an arterial grid network, and, as a parallel and redundant facility to Cloverdale Road, may minimize the amount of expansion needed on Cloverdale Road in the future.

**Hubbard Reservoir:** The Boise Project Board of Control has flood rights in the Hubbard Reservoir that go back to the turn of the century. They will not allow any roadway within the flood plain area unless the flood plain capacity is replaced in another location to their satisfaction. In addition, Ada County has plans for a regional park with a nature area on the Hubbard Reservoir property and does not support a roadway bisecting the property.

As shown in Exhibit 7-2, each of the alternatives had some aspects that supported the key criteria identified by the stakeholders and the public. Alignment Alternatives #4 and #6 best accomplish the two most critical objectives. A more detailed description of the alternatives evaluation is provided in *Technical Appendix E*.

### 7.3 PUBLIC INPUT

Comment and input for the Eagle-Cloverdale Alignment was received through the initial small group stakeholder meetings, discussion at the study TAC meetings, the three Public Information Meetings, feedback on the study web site, and other input received from stakeholders via email, petition, and phone during the process. Further detail is provided in *Technical Appendix A*. Key input received for the Eagle-Cloverdale Alignment was:

- Many properties in the area are for sale and/or are redeveloping and the stakeholders felt this is area will see significant growth within the 20 year planning horizon.
- Key concerns related to developing a new alignment were: impacts to private property, impacts to the existing Hubbard Reservoir, how the existing roads would be restructured to tie into the alignment, and the importance of not further impacting the existing congestion issue at the Eagle Road/ I-84 interchange.
- Out of the first small group stakeholder meetings, ideas for alignment alternatives were developed as follows:
  - do nothing
  - use and improve existing roadways (Cloverdale Road-Columbia Road-Eagle Road)
  - complete missing pieces of the grid network (Hubbard Road, Eagle Road, and Deer Flat Road) to provide multiple options for connectivity
  - create a curvilinear connection between Eagle Road and Cloverdale Road

- create a direct connection of Eagle Road through Hubbard Reservoir
- Out of the second small group stakeholder meetings, the key themes that emerged as preferred direction were:
  - Desire to focus improvements on existing roadways and intersections
  - Complete missing connections by building out the section line and arterial grid network.
  - Provide multiple travel routes so all traffic isn't constrained at one or two locations.
  - Minimize property impacts and parcel segregation
  - Maintain the existing flood plain in the Hubbard Reservoir
  - Continue to review the opportunity to provide additional interchanges to I-84
- Comments on the advantages and challenges associated with each initial alternative were received (provided in *Technical Appendix A*). These comments were used to feed into the refined alternatives evaluation summarized in the Eagle-Cloverdale Alignment section of this report.
- During feedback received at the Public Information Meetings, approximately 60-percent of the respondents agreed with the recommended preferred alignment. The positive input received stated:
  - Eagle Road should be connected in addition to Cloverdale Road to provide redundancy in the arterial network
  - The concept has the least amount of impact on existing homes
  - There is the ability to fund and construct this option in partnership with private development
  - This option limits environmental impacts to the Hubbard Reservoir
- The concerns raised regarding the recommended preferred alignment were:
  - Eagle Road and its interchange would become more of a bottleneck with this connection
  - The concept is too expensive
  - More information, such as true engineering costs and evaluation of project necessity, is needed for detailed review
  - The desire to see a more detailed analysis of the alternative to extend Eagle Road straight through the reservoir
  - This should be a lower priority than many other transportation projects in the County

## 7.4 STATEMENT OF NEED

The alternatives evaluation for the Eagle-Cloverdale Alignment lead to these conclusions:

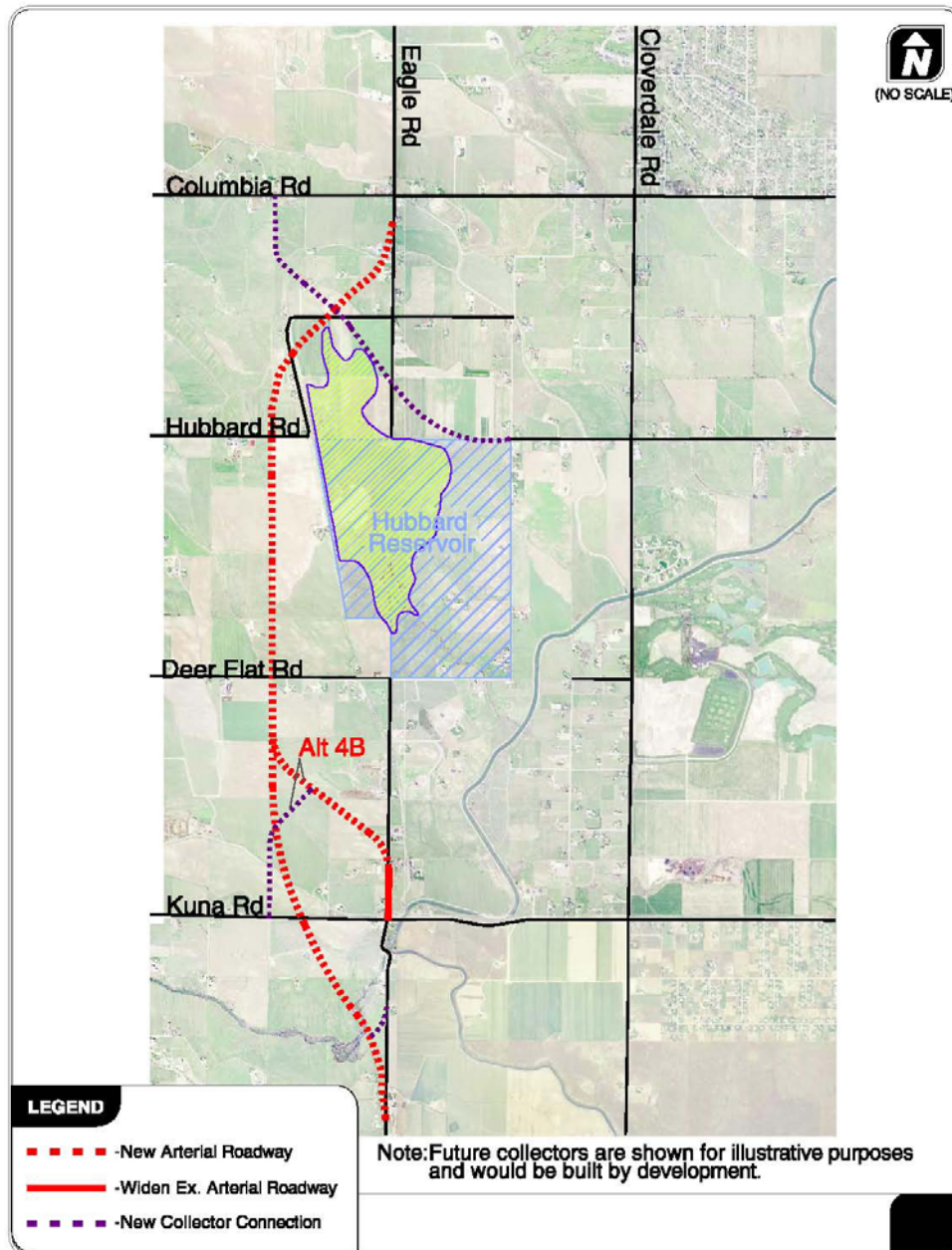
- The necessary timing for construction of an alignment in the vicinity of Eagle Road and Cloverdale Road near the Hubbard Reservoir will be largely dependant on the rate of development in and around the study area.
- However, an alignment will provide system benefits such as relief to other arterials, redundancy in the arterial network, and enhanced system connectivity for both arterials and collectors in the study area.
- ACHD has more ability to control the design and operational characteristics of the roadway connection if it is constructed as an arterial rather than if it is constructed as a collector by private development.
- Particularly beyond the 2030 planning horizon used for this study, it is anticipated that the additional north-south traffic capacity and connectivity provided by an Eagle-Cloverdale alignment will be necessary to meet the needs of future travel demand and network development.
- If the corridor and right-of-way required for this alignment are not identified now for preservation, it cannot be certain the ability to implement the most appropriate alignment configuration will be possible in the future when its construction is needed.



## 7.5 RECOMMENDED ALIGNMENT

Based on the evaluation of alternatives, the recommended alignment is Alternative #4, which is shown in greater detail in Exhibit 7-3.

Exhibit 7-3 Eagle-Cloverdale Recommended Alignment



Although this is the longest alignment, it reduces the overall amount of new roadway miles being constructed by removing a collector roadway and has the following benefits:

- It has limited impact to existing houses and structures
- It has no significant impact to the Hubbard Reservoir
- It eliminates the need to build a mid-mile collector in addition to the arterial alignment
- It will directly serve the areas of future growth west of Hubbard Reservoir
- It can most readily be implemented as properties develop in the future

Based on these conclusions, the following is recommended:

- ACHD identify Alignment #4 as a future connection for right-of-way preservation.
- As developments occur, preserve the corridor right-of-way for future need.
- Periodically review the need during CIP updates. The ultimate timing of the alignment's construction will be based on future development in this area.

By preserving the right-of-way, ACHD will be able to maintain the ability to construct the roadway, while questions about future growth in the area are answered in the coming years.

## 8.0 Roadway & Intersection Planning Standards

This section provides guidance for planning of improvements in the study area. The items discussed in this section are guidelines and do not replace ACHD design standards that should be used when designing specifics of various improvements.

### 8.1 ROADWAY STANDARDS

#### 8.1.1 Roadway Typologies

The study worked in collaboration with the ongoing TLIP project to develop a typology system for the roadways in the study area. The system is based on the environment and use of each arterial and collector roadway in the ACHD system. The recommendations in the Initial Study Area are based on ACHD and City of Boise joint workshops. The study project team developed recommendations for the Expanded Study Area after a review of the proposed roadway network. These recommendations were discussed and refined with the project TAC. The draft typologies recommended for roadways within the study area boundaries are shown in Exhibit 8-1 and described in detail in *Supplement IX*.

The Planned Commercial typology designated on Overland Road may need to be revisited if Overland Road is widened to seven lanes in the future. Overland Road was recently constructed to five lanes and has a posted speed limit of 40 MPH. In its current configuration, Overland Road acts as a significant transportation corridor that carries high volumes of traffic and operates as a diversion route to I-84. These characteristics require a level of sensitivity to vehicle mobility that may not be required on other Planned Commercial arterials. Land use decisions should be sensitive to the possibility that the existing five lane configuration may change in the future. If pedestrian-oriented development and redevelopment is desired along this corridor special care should be taken to ensure pedestrian safety and comfort. Unique site design techniques may be required to accommodate vehicle mobility and pedestrian activity in appropriate balance.

#### 8.1.2 Design Guidelines

Another element of the TLIP project is the draft *Livable Streets Design Guidelines*, which was also coordinated with this study. The *Livable Streets Design Guidelines* provides new context-sensitive design guidelines for each roadway typology. Generally this includes cross-section elements, such as travel lane, bike lane, median, and sidewalk widths. It also provides information regarding whether or not on-street parking or medians are acceptable for certain typologies. Once adopted, this document will be used to guide the design of future roadway improvements in the study area.

**LEGEND**

**BOISE COMP PLAN CLASSIFICATIONS**

- Commercial
- Industrial
- Office
- School Site
- Open Space
- Airport
- Airport Conservation Area
- Public Facility
- Planned Community
- Medium Density (15 DU/Acre)
- Low Density (6 DU/Acre)
- Low Density (4 DU/Acre)
- Estate Density (3 DU/Acre)
- Estate Density (2 DU/Acre)

**MERIDIAN COMP PLAN CLASSIFICATIONS**

- Mixed Use (Community)
- Mixed Use (Regional)
- Mixed Use (Neighborhood)
- Low Density Residential
- Medium Density Residential
- Med-High Density Residential
- High Density Residential
- Industrial
- Office
- School Site
- Park
- Public Facility

**ARTERIAL TYPOLOGIES**

- Mobility
- Residential Mobility
- Transitional/Commercial
- Planned Commercial
- Residential
- Neighborhood Residential
- Town Center
- Industrial/Office Park
- Rural

**ARBOR HILLS COMP PLAN CLASSIFICATIONS**

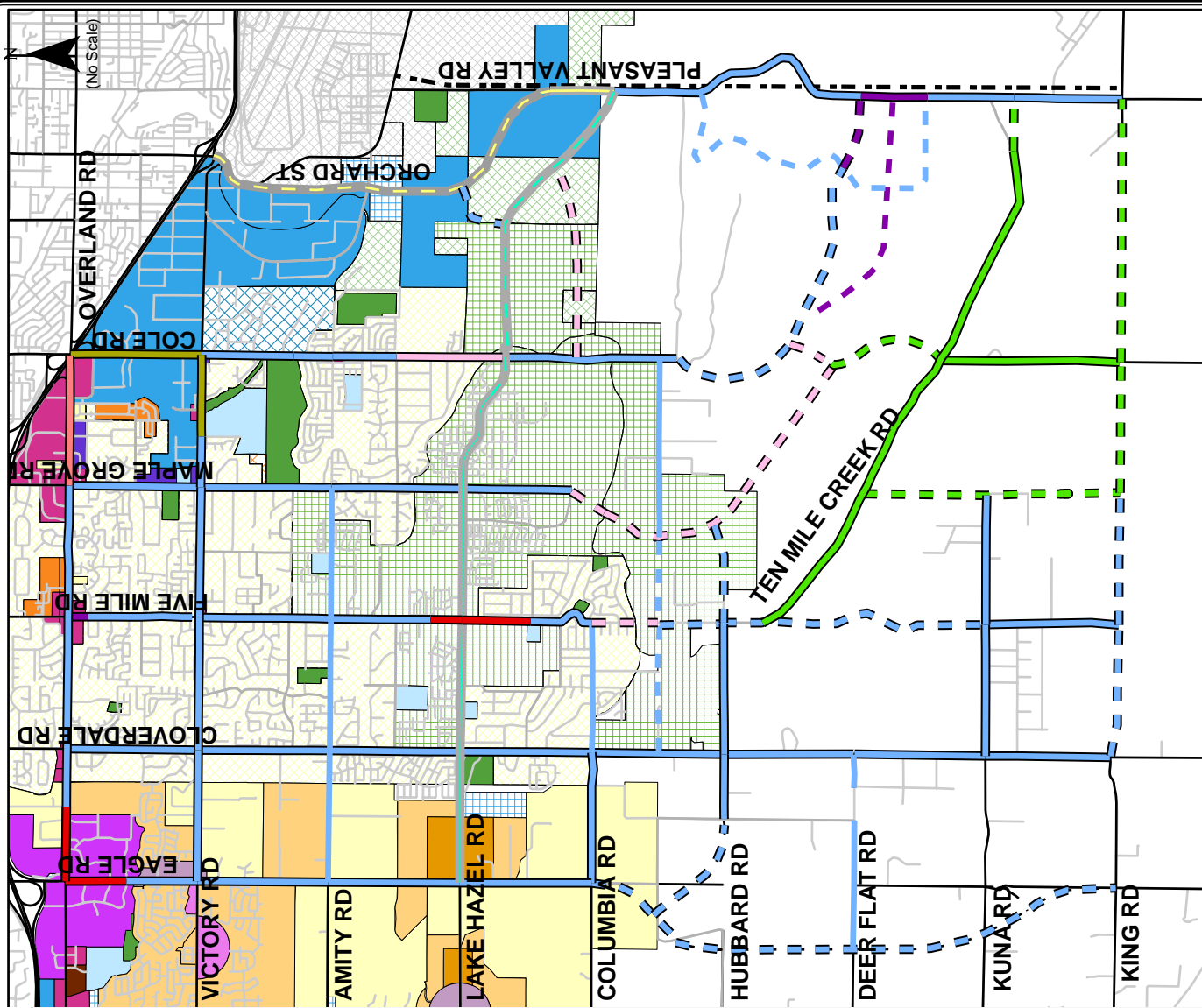
- Open Space
- Employment
- Mixed Use
- Residential

**COLLECTOR TYPOLOGIES**

- Town Center
- Residential

**OTHER FACILITIES**

- National Guard Tank Trail



Note: Dashed Lines Represent Future Roadways



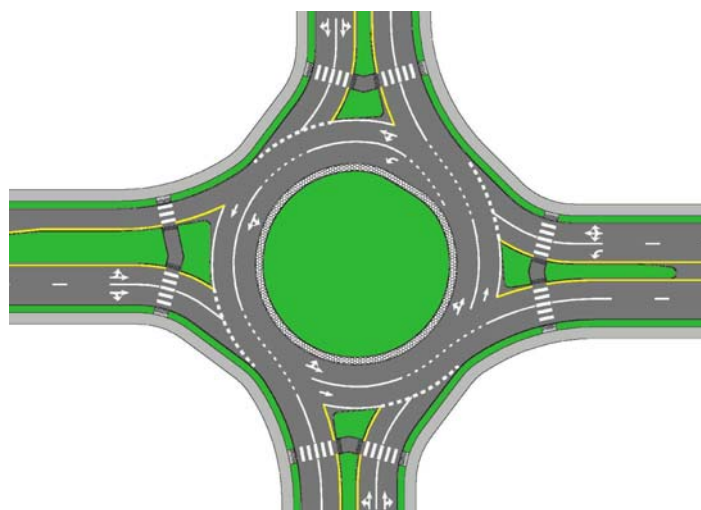
## 8.2 INTERSECTION CONCEPTS

### 8.2.1 Conceptual Intersection Design Layouts

Based on the recommendations presented in Sections 5 and 6, conceptual design layouts were prepared for each arterial-arterial intersection in the Initial Study Area. These layouts show *approximate* locations of intersection footprints and future ROW boundaries that would be needed to accommodate the improvements recommended in the study. These are concept drawings only and are not detailed design drawings based on survey information. The drawings are included in *Technical Appendix F*.

### 8.2.2 Roundabouts

The recommendations included in this study generally only considered the signalization of intersections when two-way stop control would no longer be sufficient. However, given appropriate conditions and characteristics, roundabouts should be considered as a traffic control option instead of signal, all-way stop, or two-way stop control for many collector intersections and some arterial intersections. Perhaps the most significant benefit of constructing a roundabout is they can reduce injury crashes by over 70 percent (Reference 5) compared to other intersection forms in certain situations. Applied in appropriate context, a roundabout intersection could have less delay and shorter queues than another traffic control option. ACHD is currently finalizing a draft policy to guide the development of roundabouts. In the current draft of this policy, roundabouts are noted as being desirable at locations that exhibit the following characteristics:



- High crash rate
- Unconventional intersection geometry (e.g. skewed or “T” intersections)
- Capacity beyond two-way stop control is needed
- Limited available queue storage (since queues are often shorter)
- Access is controlled by raised medians (u-turns can be accommodated)
- Approach widening is not possible (e.g. no space to add exclusive left-turn and right-turn lanes)
- Future traffic patterns are uncertain
- History of excessive speeds
- Gateway treatment would be desirable

There are a number of items that need to be considered before constructing a roundabout. The specific intersection turning movements and area travel demand patterns play a major role in determining whether or not a roundabout provides adequate capacity at major intersections. The capacity of a double lane roundabout is typically limited to a total entering volume of approximately 50,000 vehicles per day (Reference 6). Also, due to their shape, roundabouts can require a significant amount of right-of-way at the intersection. Forecast volumes at the arterial-arterial intersections in the Initial Study Area are such that signals or double-lane roundabouts will be needed in most locations to provide sufficient capacity. ACHD has currently identified locations with the following characteristics as being unsuitable for roundabouts:

- The distance between the roundabout and the next controlled intersection does not meet ACHD spacing requirements
- Right-of-way costs are prohibitive
- Grades in the circulating roadway will have to be greater than 4%
- Traffic volumes are greater than what can be accommodated by a double lane roundabout

The draft policy also cites the following as being characteristics of locations where careful analysis would be required to determine if a roundabout is appropriate:

- Intersections within a coordinated signal network (may disrupt the overall flow of traffic in the network)
- Grades exceeding 4% in the travel path will be difficult to reduce
- Inadequate sight distance
- Downstream queues extend back into the roundabout
- Heavy through volumes on the major street with low volumes on the minor street
- Pedestrian volumes are often the greatest movement
- Significant utility, irrigation, or drainage impacts would be caused by a roundabout

A roundabout could be considered for any intersection as one option for traffic control in addition to traffic signal control or all-way stop control. The above guidelines can be used as part of the evaluation process in determining the most appropriate traffic control for the given situation. In all instances, careful analysis should be conducted to ensure that the roundabout can be sized appropriately to fit the location while providing adequate capacity for future traffic volumes.

Once issued, the final version of the ACHD Roundabout Policy should be followed in the site selection and design process for roundabouts. Further guidance can also be obtained from the Federal Highway Administration's publication *Roundabouts: An Informational Guide*.

Within the *Initial Study Area* most of the key study roadways are principal arterials or minor arterials that are projected to carry 40,000-60,000 ADT with intersection volumes in excess of 50,000-75,000 ADT. These volume levels exceed the typical capacity of a double lane roundabout, and therefore, it is not likely that roundabouts will be appropriate intersection control for the majority of the arterial-arterial intersections within this area. Most of the area between arterials in the initial

study area is partially built out and right-of-way for roundabouts may be difficult to obtain. However, it will be recommended that roundabouts be considered along with traffic signals as options for intersection control as part of all future transportation improvements so they can be implemented where deemed beneficial based on traffic operations, cost, property impact, and neighborhood considerations.

In the *Expanded Study Area*, the final roadway alignments and intersection designs will be determined as development occurs and therefore this study did not evaluate specific intersection treatments. Again, for this area it will be recommended that roundabouts be considered along with traffic signals as options for intersection control as part of all future transportation improvements so they can be implemented where deemed beneficial based on traffic operations, cost, property impact, and neighborhood considerations.

## 9.0 Access Management Plan

The purpose of access management is to balance the needs of multiple modes of transportation and access to land development while maintaining the safety, efficiency, and intended functionality of the surrounding roadway network. A practical access management plan takes into account existing property rights, land uses, access locations, comprehensive planning documents, and existing and anticipated future policies and roadway typologies (Reference 7). The goal of the study is to create an access management plan that:

- Is implementable
- Provides some flexibility to accommodate location specific circumstances
- Uses adopted plans, policies, and standards to form the framework
- Uses roadway classifications or typologies to outline access management categories and standards for those categories
- Provides access transition strategies so agencies have a feasible methodology to modify access on a facility to meet the adopted standards
- Allows for active collaboration between the governing agency and the land owners so cooperative agreements may be formed to effectively transition access on a facility
- Balances the needs of multiple modes of transportation

The following benefits can be realized through creation and adoption of an effective access management plan:

- Extended life of roadways
- Increased public safety
- Reduced traffic congestion
- Improved appearance and quality of the built environment (Reference 7)

Implementing an access management plan in an already built environment, such as the Initial Study Area, is a significant challenge. Therefore, it is essential that the access management plan include a feasible transition and implementation strategy. The Southwest Boise access management plan provides descriptions and graphical representations of feasible transition strategies. These access management guidelines are written primarily for the Initial Study Area. In the Expanded Study Area, where most roadways have yet to be constructed and most land uses have yet to develop, it is anticipated that projects will be implemented with the goals and intent of these policies from the onset.

### 9.1 EXISTING ACCESS MANAGEMENT POLICIES

ACHD's existing access management policies and standards are contained within Section 7200 of the ACHD *Policy Manual* (Reference 4). ACHD is currently in the process of revising Section 7200 to include, in general, more restrictive access spacing standards for arterial and collector roadways. As



a rule, ACHD attempts to limit direct access onto its arterial and collector roadways as much as feasible and prefers development to use combined access points whenever possible. ACHD's primary goal with access management is to extend the life of roadways, increase public safety, reduce traffic congestion, and improve the appearance and quality of the built environment.

## 9.2 ACCESS SPACING STANDARDS BY ROADWAY TYPOLOGY

Access management categories are typically developed based on roadway functional classifications or typologies for existing and planned roadways. The general access management goals of the roadway typologies relevant to the Southwest Boise Study Area are described in *Supplement X*. The study's access management plan categories apply to all arterials in both the Initial Study Area and the Expanded Study Area, as well as any collectors within both study areas.

The access management standards for the study area were developed based on discussions with ACHD and City of Boise staff, access considerations and requirements set forth in ACHD's *Policy Manual*, and the characteristics of the recommended roadway typologies. The access management standards for the Southwest Boise Study Area are outlined in Exhibit 9-1.

**Exhibit 9-1 Southwest Boise Area Access Management Standards<sup>6</sup>**

Roadway Typology		Recommended Minimum Access Spacing Standards			
		Full Access <sup>1</sup>	Right-in/ Right-out/ Left-in	Right-in/ Right-out	Signal Spacing <sup>1,2</sup>
Arterials	Mobility	2,640'	1,320'	660'	2,640'
	Residential Mobility	2,640'	1,320'	660'	2,640' <sup>3</sup>
	Planned Commercial	1,320'	1,320'	660'	2,640' <sup>3</sup>
	Transitional/ Commercial	1,320'	1,320'	330'	2,640' <sup>3</sup>
	Residential	1,320'	1,320'	660'	2,640' <sup>3,4</sup>
	Neighborhood Residential	1,320'	660'	330'	1,320' <sup>4</sup>
	Town Center	500' <sup>5</sup>	330' <sup>6</sup>	150' <sup>6</sup>	500' <sup>4,5</sup>
	Industrial/ Office Park	1,320'	660'	330'	1,320' <sup>4</sup>
	Rural	5,280'	2,640'	2,640'	5,280'
Collectors	Town Center	Refer to the current ACHD <i>Policy Manual</i>			500' <sup>4,5</sup>
	Residential				1,320' <sup>4</sup>
Local Roads					Not Applicable

<sup>1</sup> Full access spacing and signal spacing is required in situations where existing conditions do not constrain the location of median breaks or traffic signals. Refer to Exhibit 9-2 for a detailed illustration of proposed signal locations and median breaks within the Southwest Boise Study Area.

<sup>2</sup> In order for a signal to be considered at any location, a traffic impact study, evaluating mitigation measures, including a signal warrant analysis, must be completed to demonstrate the justification for the preferred mitigation option.

<sup>3</sup> ¼ mile signal spacing acceptable for pedestrian crossings that warrant signalization.

<sup>4</sup> Roundabouts considered an acceptable treatment at these locations where an engineering study recommends installation of a roundabout in lieu of a traffic signal.

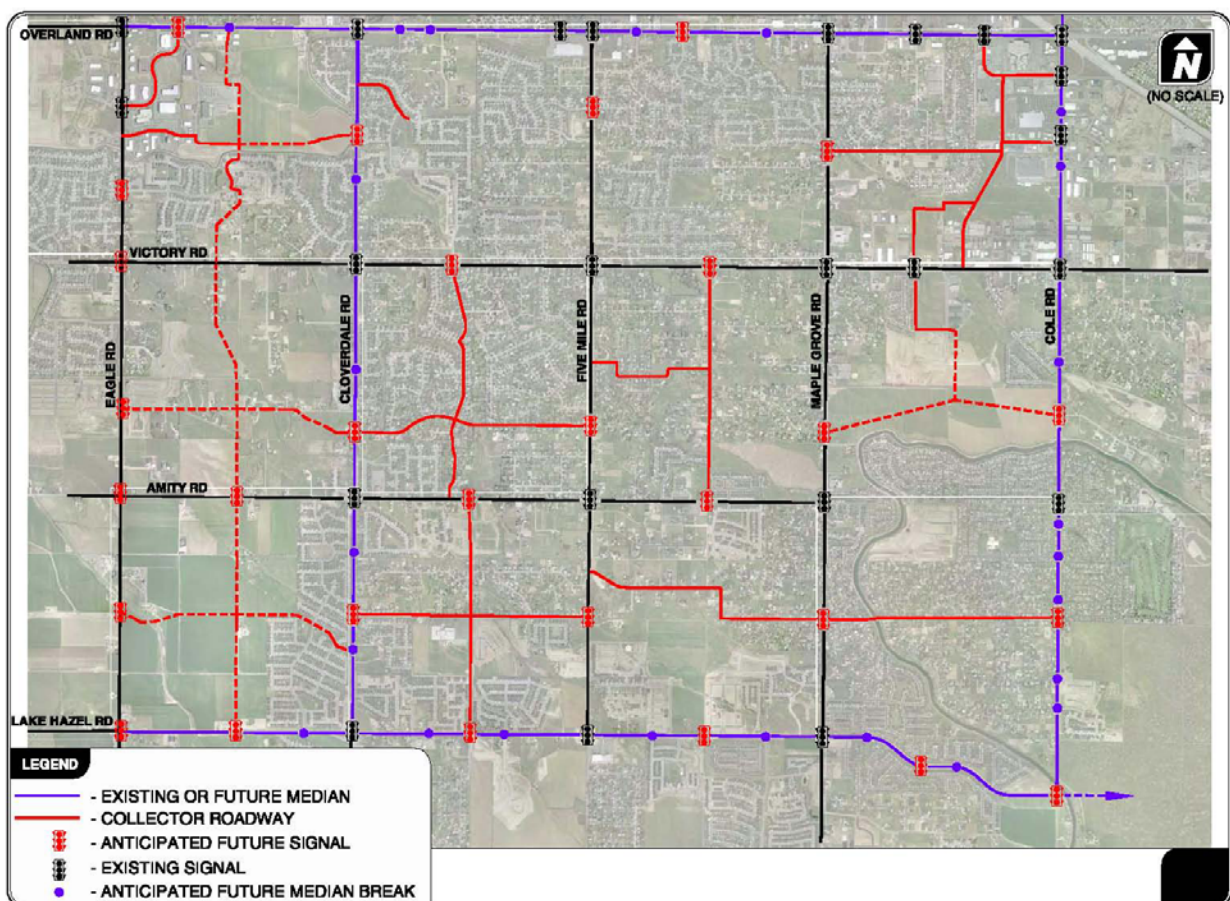
<sup>5</sup> Assumes 500' block spacing per Draft TLIP *Livable Streets Design Guide* (Reference 8). Geometric constraints may dictate feasibility. A RIRO/LT-IN must be a minimum of 330' from an arterial/arterial intersection, but may be within 150' of an arterial/collector intersection or arterial/local intersection. 5,280' = 1 mile; 2,640' = 1/2 mile; 1,320' = 1/4 mile; 660' = 1/8 mile; 330' = 1/16 mile

<sup>6</sup> Any access is subject to proving need via an approved traffic impact study

The access management standards outlined in Exhibit 9-1 correspond to the street typologies in the Livable Street Design Guide; however, the particular cross-sections from that document do not have to be used or may not be in place when access is being evaluated. Even if the roadway has a different cross-section, the access management standards will still apply.

The access management standards in Exhibit 9-1 provide the recommended access and signal spacing standards for each typology. These spacing standards are considered to be the desired target; however, some flexibility may be necessary to deal with location specific constraints and achieve implementation of the plan. To demonstrate how the access spacing standards could specifically be applied to the study area, Exhibit 9-2 was created showing anticipated median openings and signal locations upon the full transition of the study area network to the access management plan. Exhibit 9-2 displays the overall access management vision for the Southwest Boise Initial Study Area, taking into account existing infrastructure in locating future median openings and signal locations.

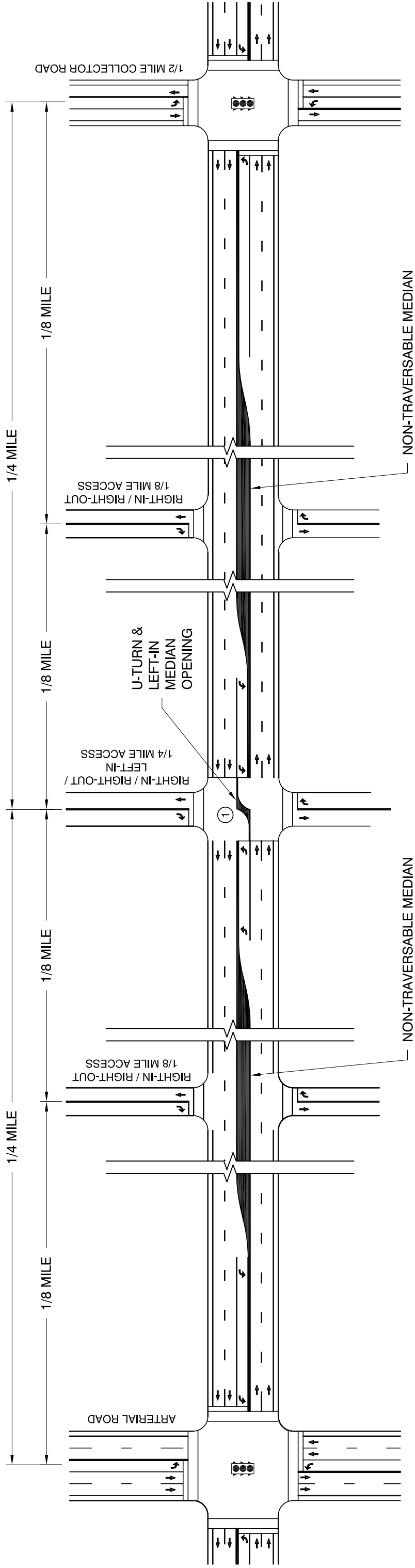
**Exhibit 9-2 Access Management Vision**



Exhibits 9-3 through 9-5 illustrate these general recommended access standards for Mobility & Residential Mobility Arterials (Exhibit 9-3), Commercial, Industrial, Residential, and Neighborhood Residential Arterials (Exhibit 9-4), and Town Center Arterials (Exhibit 9-5).



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NOTES:

- ① 1/4 MILE SIGNAL SPACING ACCEPTABLE FOR PEDESTRIAN CROSSINGS THAT WARRANT SIGNALIZATION. (RESIDENTIAL MOBILITY ARTERIALS ONLY).

LEGEND

TRAFFIC SIGNAL

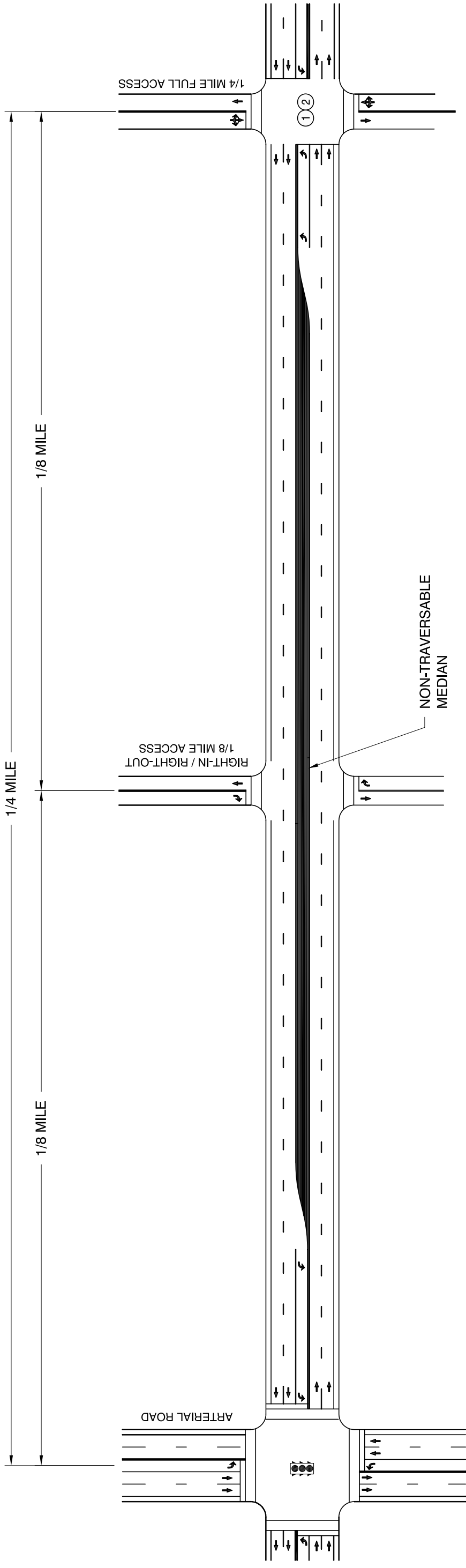
MOBILITY & RESIDENTIAL MOBILITY ARTERIALS, RECOMMENDED MINIMUM ACCESS SPACING

EXHIBIT 9-3





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NOTES:

- ① 1/4 MILE SIGNAL SPACING ACCEPTABLE FOR PEDESTRIAN CROSSINGS THAT WARRANT SIGNALIZATION.
- ② ROUNDABOUT CONSIDERED AN ACCEPTABLE TREATMENT AT 1/4 MILE LOCATIONS WHERE AN ENGINEERING STUDY RECOMMENDS INSTALLATION OF A ROUNDABOUT IN LIEU OF A TRAFFIC SIGNAL.

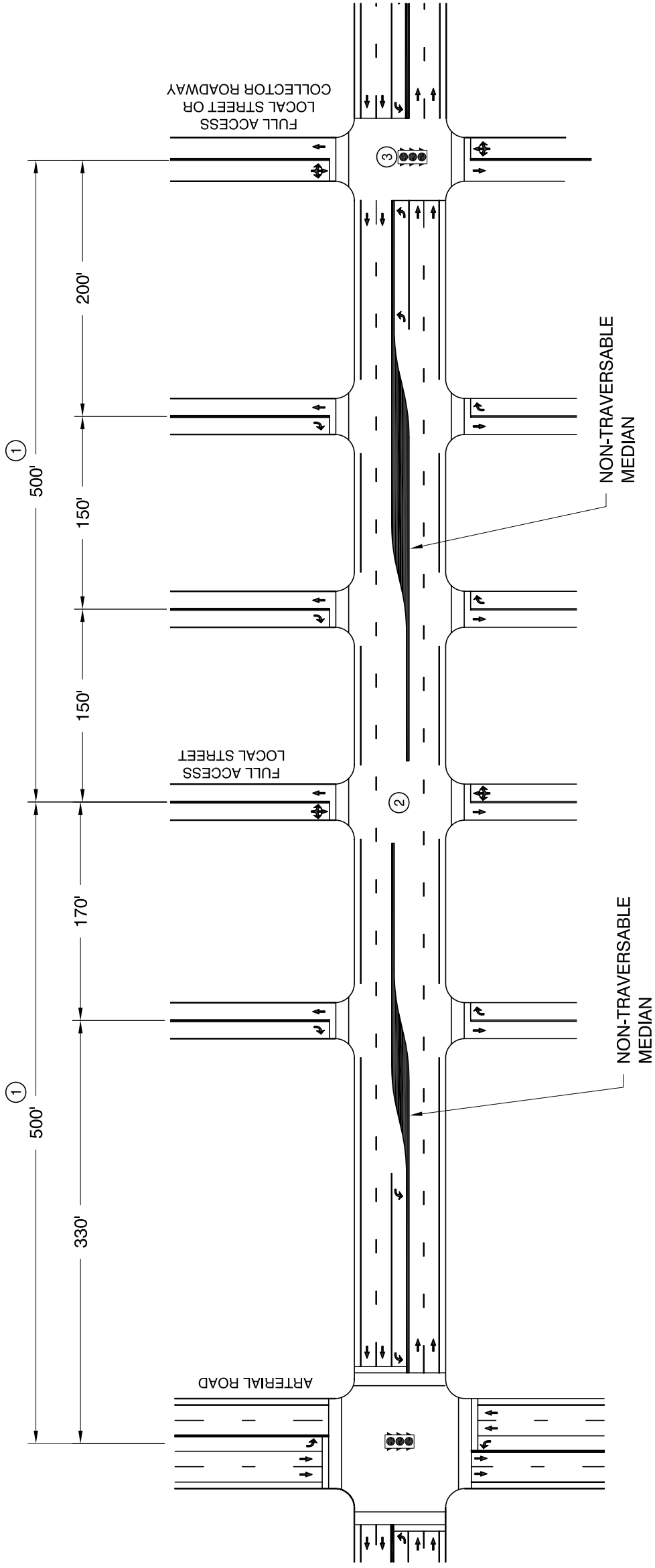
LEGEND

 - TRAFFIC SIGNAL

COMMERCIAL, INDUSTRIAL, AND RESIDENTIAL ARTERIALS, RECOMMENDED MINIMUM ACCESS SPACING

EXHIBIT 9-4





NOTES:

- ① ASSUMES 500' BLOCK SPACING PER DRAFT ACHD LIVEABLE STREETS DESIGN GUIDE.
- ② ROUNDABOUTS CONSIDERED AN ACCEPTABLE TREATMENT AT 500' LOCATIONS WHERE AN ENGINEERING STUDY RECOMMENDS INSTALLATION OF A ROUNDABOUT IN LIEU OF A TRAFFIC SIGNAL.
- ③ SIGNALIZATION DEPENDENT UPON A SIGNAL WARRANT ANALYSIS AND A TRAFFIC STUDY DEMONSTRATING THE NEED FOR SIGNALIZATION. IF SIGNALIZED, ANY ACCESS WITHIN 330' MAY BE RESTRICTED TO RIGHT-IN/RIGHT-OUT OPERATION ONLY.

H:\profile\18178 - SW Boise Transportation Plan\access management\Access Management Plan\graphics\figs\18178fig3.dwg Sep 11, 2009 - 4:00pm - shenum Layout Tab: TOWN CENTER ARTERIALS

LEGEND

⊞ - TRAFFIC SIGNAL



KITTELSON & ASSOCIATES, INC.  
TRANSPORTATION ENGINEERING / PLANNING

TOWN CENTER ARTERIALS, RECOMMENDED MINIMUM ACCESS SPACING

EXHIBIT 9-5

## 9.3 ACCESS TRANSITION PLANS

Access transition plans were developed for the roadway typologies identified in the study area. These transition plans provide strategies for use by ACHD in transitioning access along existing arterial roadways in developed areas to the recommended standards. Roadway typologies were grouped as follows given that the typologies within each group have similar transition strategies and the access transition plans are illustrated in Exhibits 9-6 through 9-8:

- Mobility & Residential Mobility Arterials (Exhibit 9-6)
- Residential & Neighborhood Residential Arterials (Exhibit 9-7)
- Commercial & Industrial Arterials (Exhibit 9-8)

While only conceptual, these transition plans are based on an actual section of roadway for each of the three categories, with the intent to provide a realistic scenario for transitioning to the access management standards. It's important to understand that the illustration of the access transition plans in Exhibits 9-6 through 9-8 are only meant to provide an example, and specific access transition plans for each roadway segment or corridor should be developed prior to implementation. Detailed descriptions of the access management transition plans for each roadway typology in the Southwest Boise Study Area are provided in *Supplement XI*.

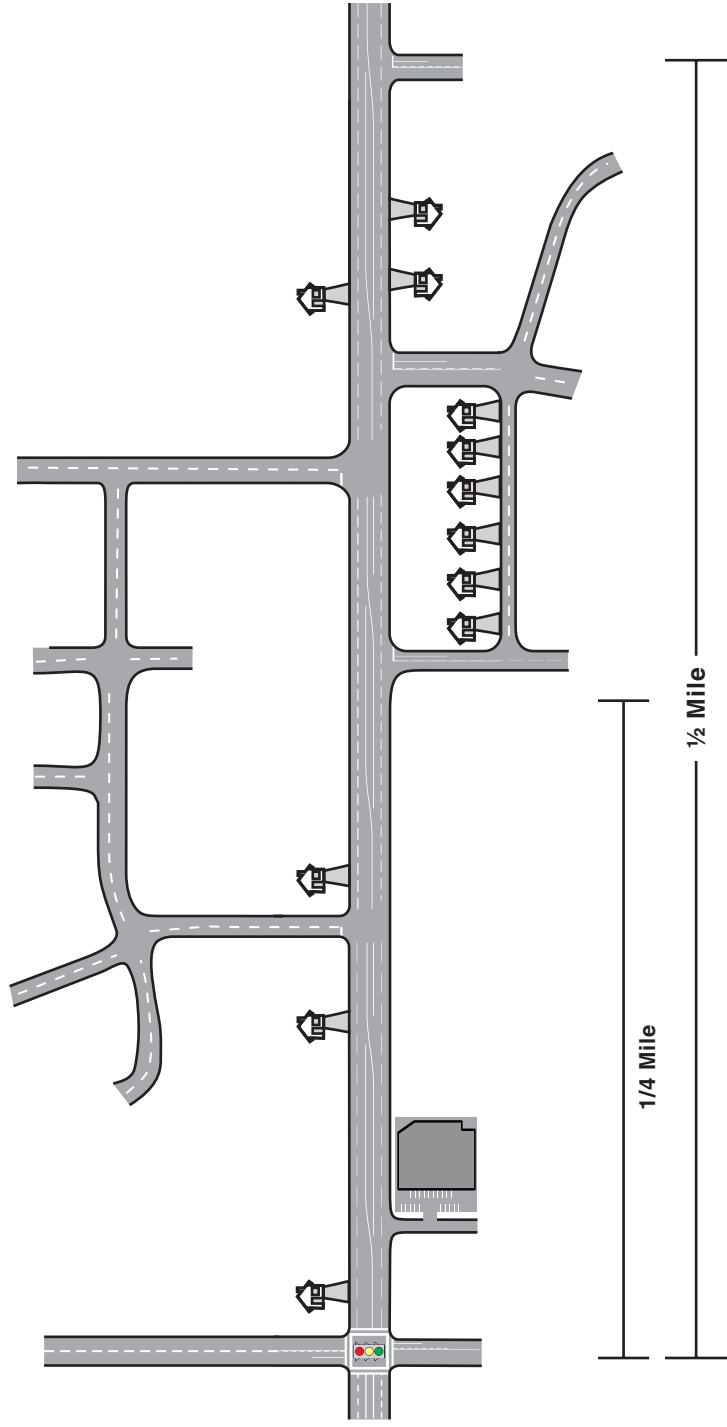
### 9.3.1 Initial Study Area

A significant portion of the Southwest Boise Initial Study Area is composed of developed residential areas, with numerous driveways located along the arterial roadways that do not meet the recommended standards. Consequently, access management in this area will primarily have to occur through transitioning existing access schemes as redevelopment and roadway projects occur. It's recommended that ACHD look for opportunities to transition existing accesses that do not meet the recommended spacing standards as redevelopment and roadway projects occur according to the transition plans described on the following pages. The access transition plans were developed to provide direction for how this can occur for roadways of each typology. Any new roadways should be constructed according to the standards provided in Exhibit 9-1 and illustrated in Exhibits 9-3 through 9-5.

### 9.3.2 Expanded Study Area

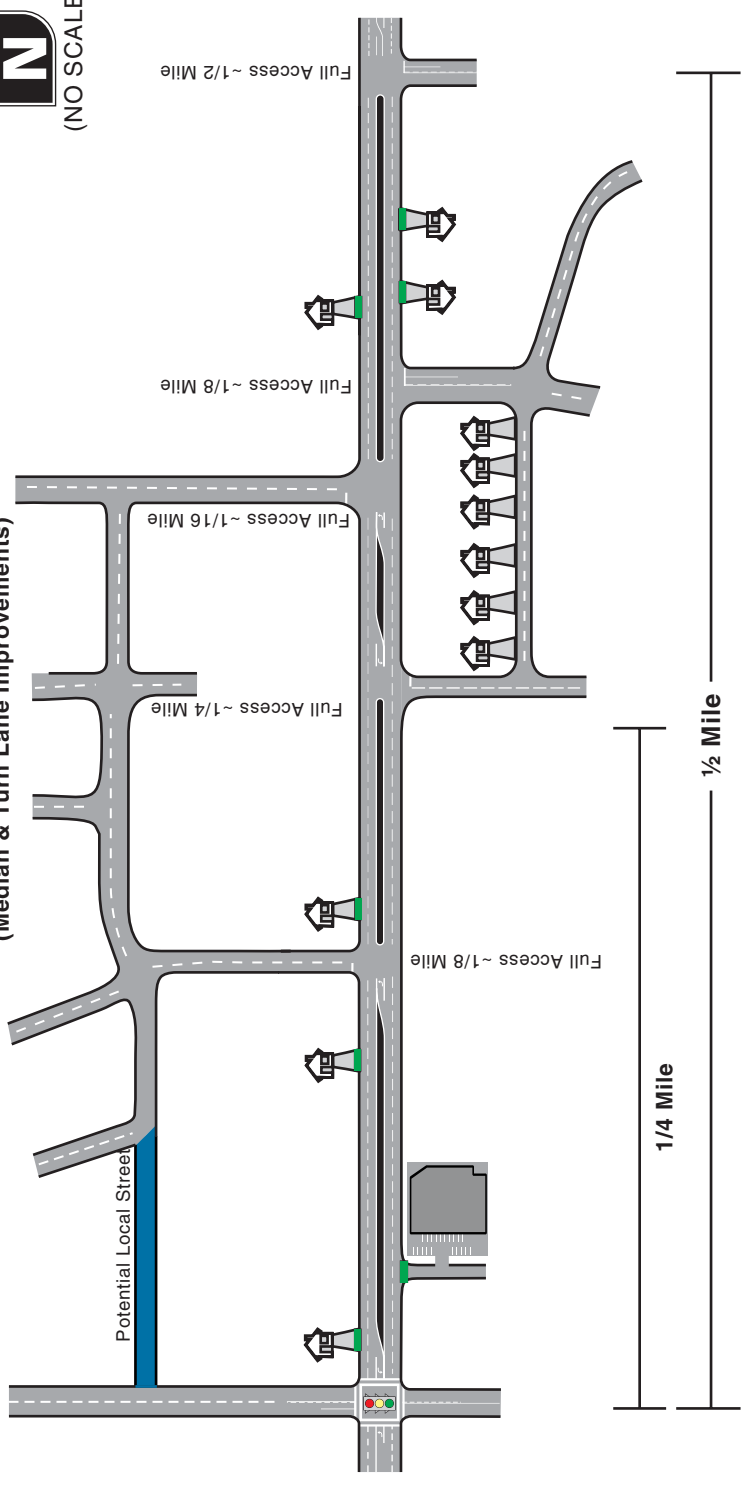
Only a small portion of the Southwest Boise Expanded Study Area is composed of built-out residential areas with existing driveways on arterial or collector roadways. Much of the focus of the access transition plans within the Expanded Study Area will be on transitioning existing roadways with a limited number of driveways to the proposed access management standards. Transitioning access in the Expanded Study Area will be similar to the transition plans described above. Any new roadways in the Expanded Study Area should be constructed according to the access management standards provided in Exhibit 9-1 and illustrated in Exhibits 9-3 through 9-5.

### Base Conditions



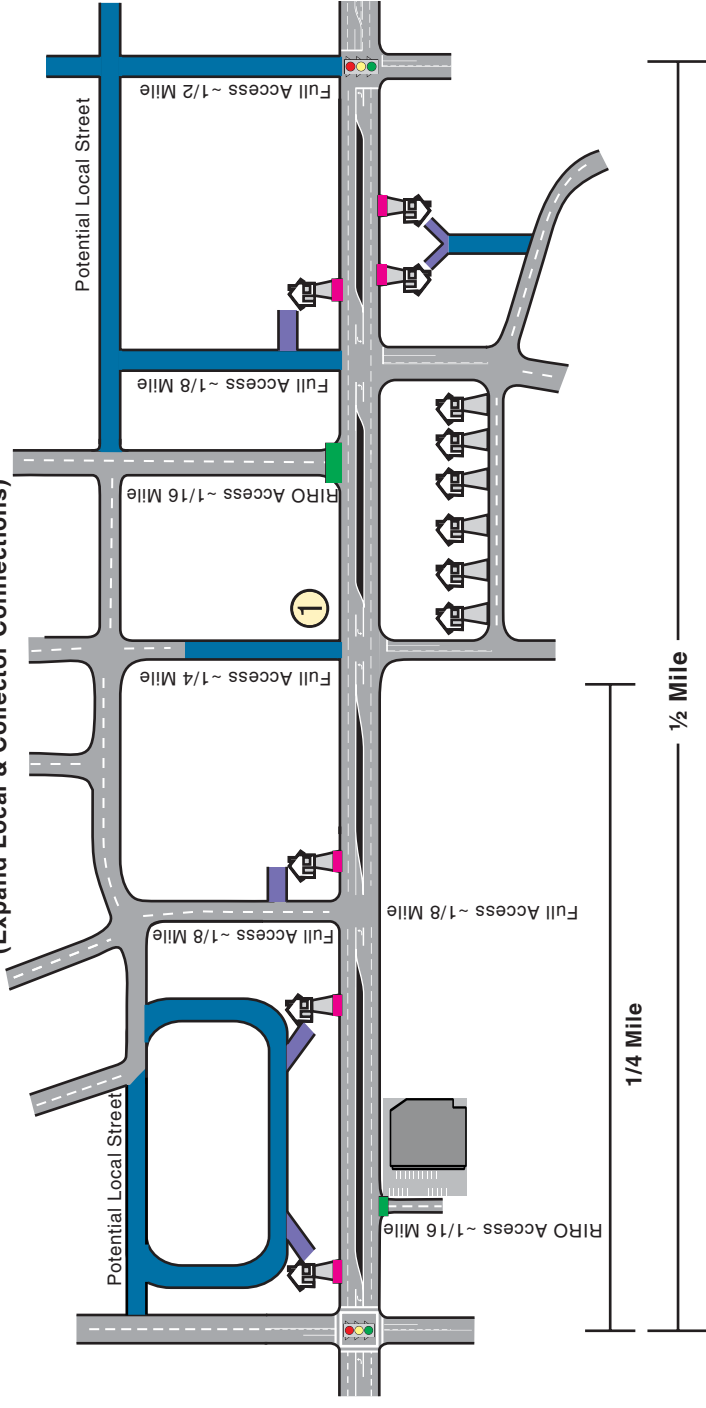
### Stage 1

(Median & Turn Lane Improvements)



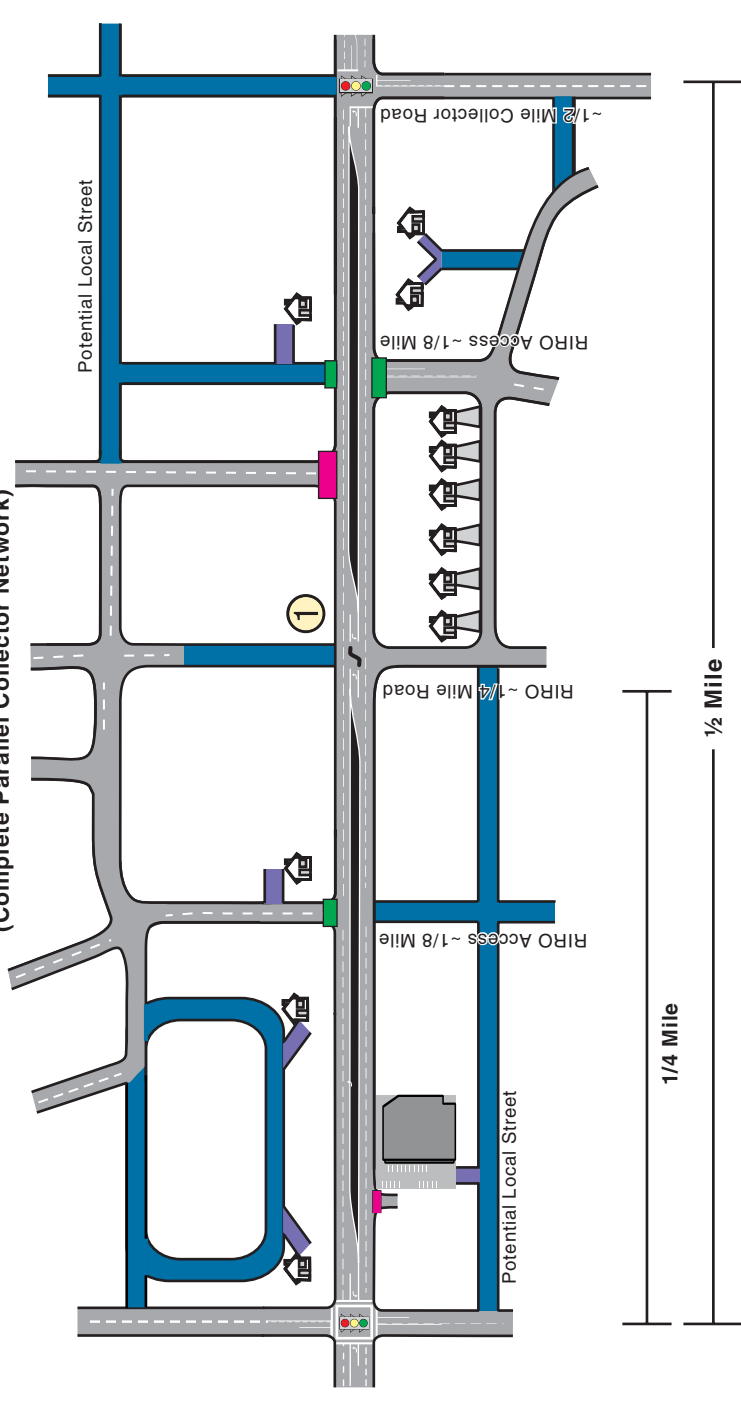
### Stage 2

(Expand Local & Collector Connections)



### Stage 3

(Complete Parallel Collector Network)



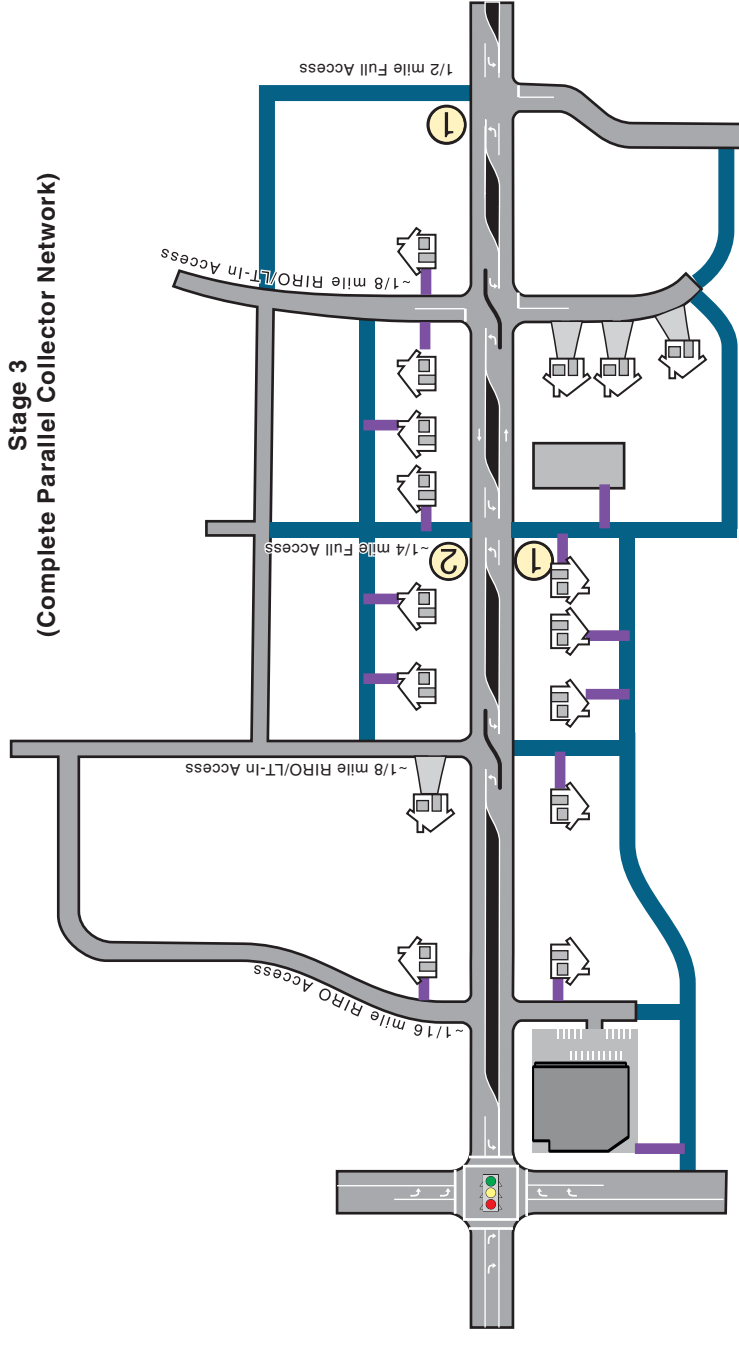
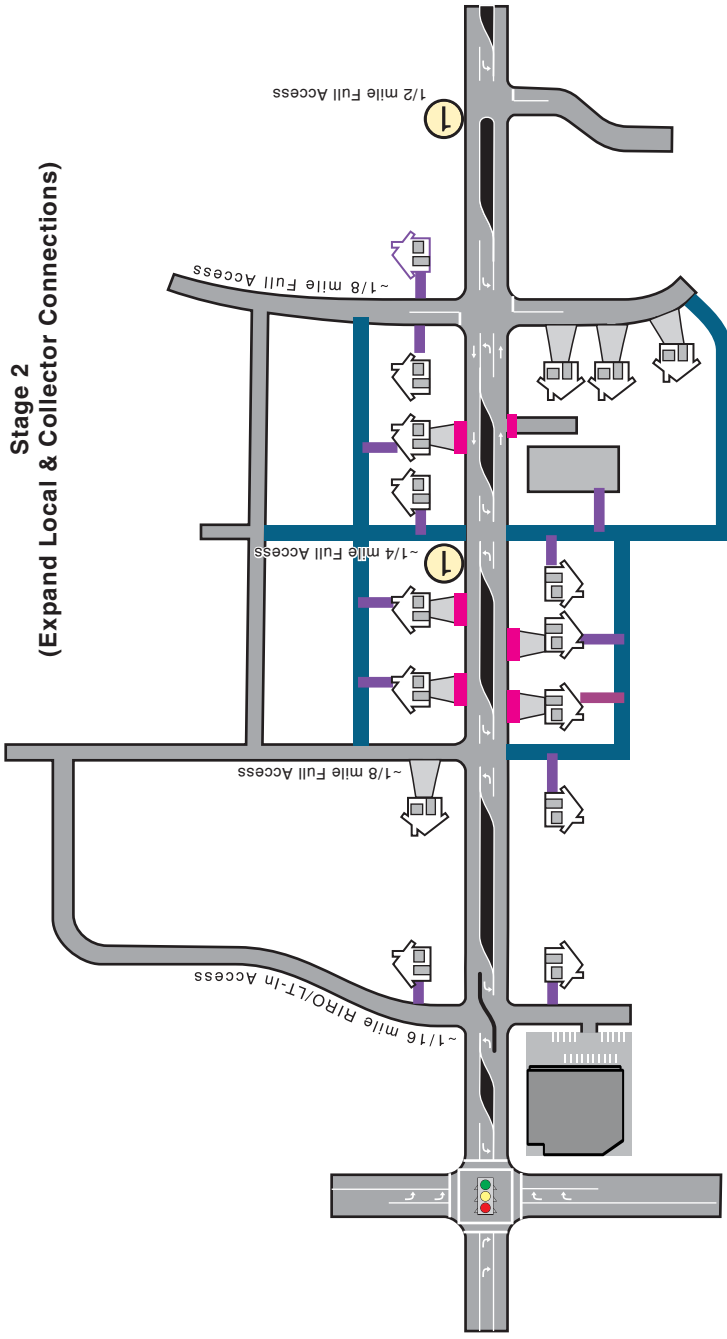
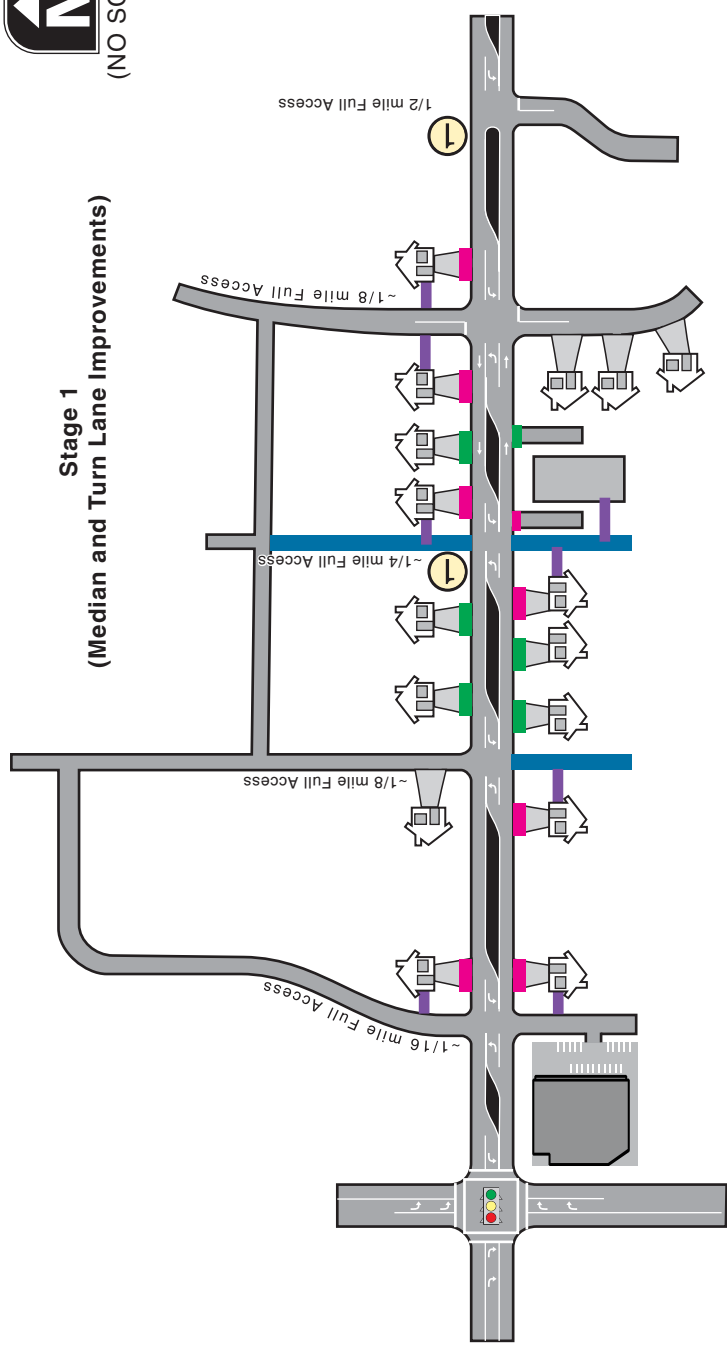
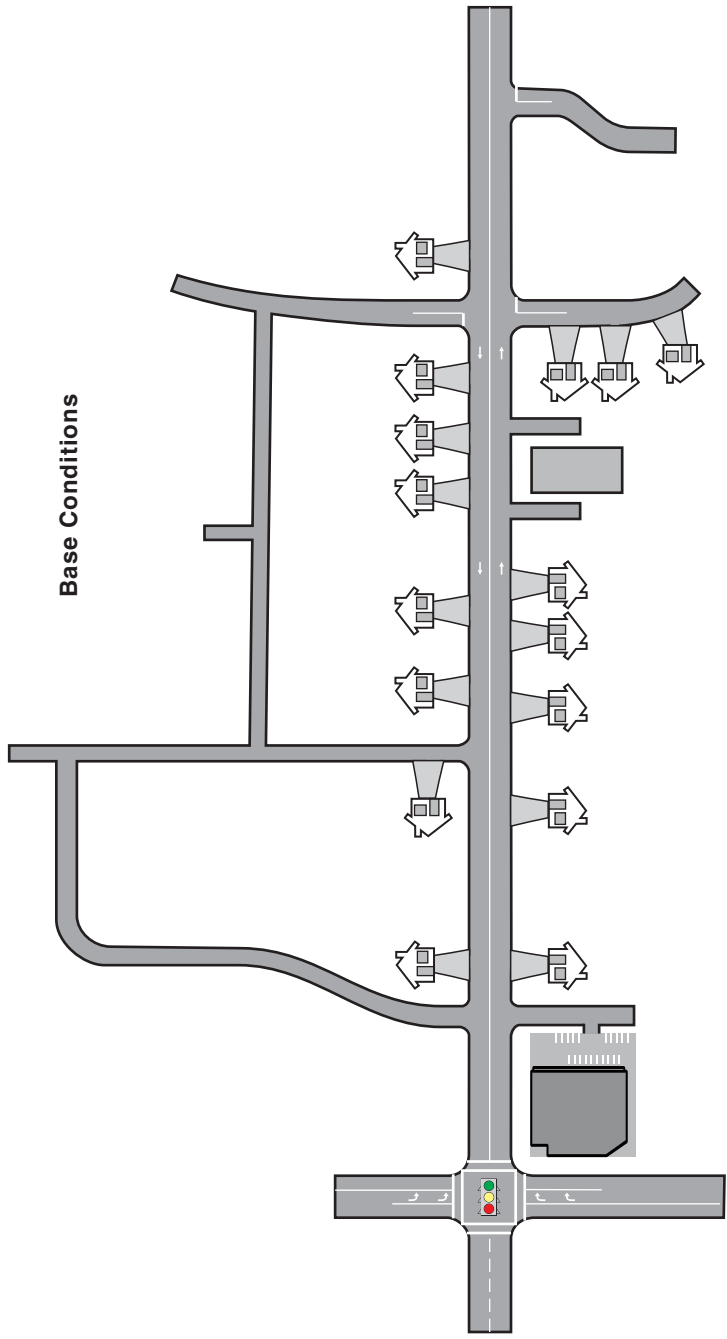
#### LEGEND

- █ Convert to Right-In/Right-Out Access (U-Turns at Medians & Signals)
- █ Potential Roadway Connection
- █ Relocated Access
- █ Closed Access
- █ Potential Median

① 1/4 Mile signal spacing acceptable for pedestrian crossings that warrant signalization.



(NO SCALE)



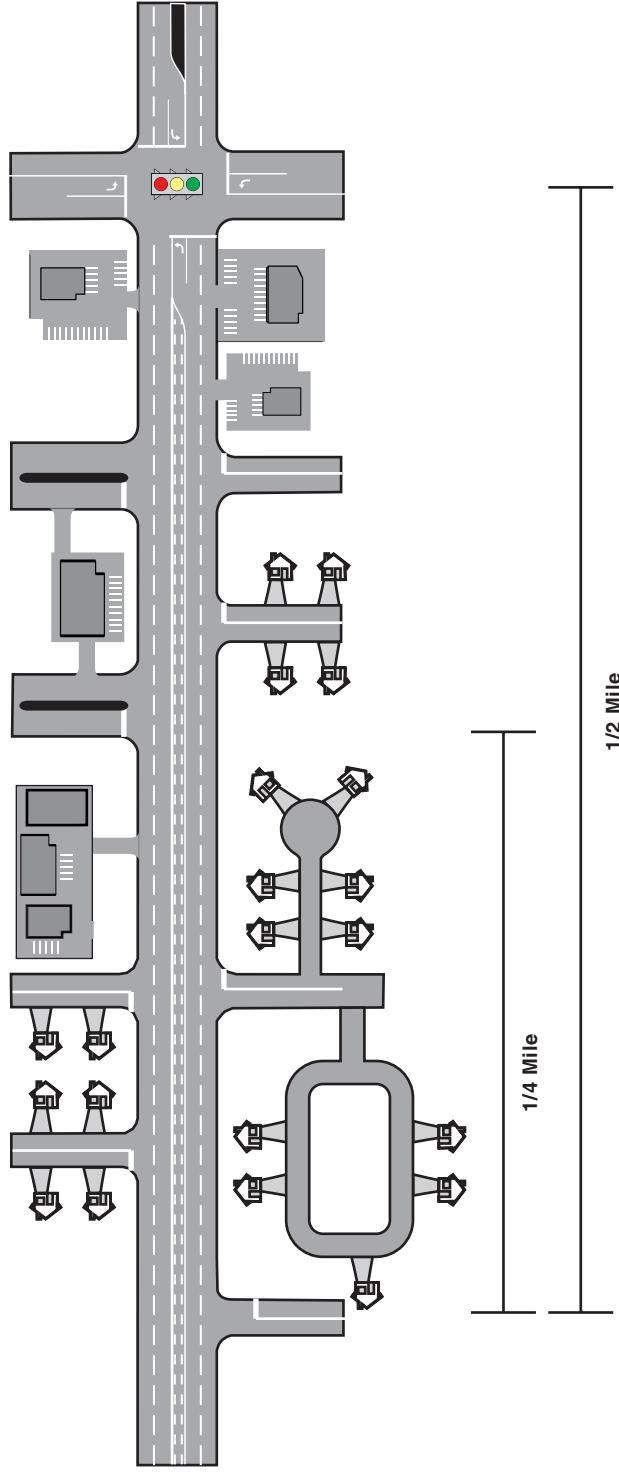
**LEGEND**

- █ Convert to Right-In/Right-Out Access (U-Turns at Medians & Signals)
- █ Potential Roadway Connection
- █ Relocated Access
- █ Closed Access
- █ Potential Median

- Roundabouts considered an acceptable treatment at 1/4 mile and 1/2 mile locations where an engineering study recommends installation of a roundabout in lieu of a traffic signal
- 1/4 mile signal spacing acceptable for pedestrian crossings that warrant signalization

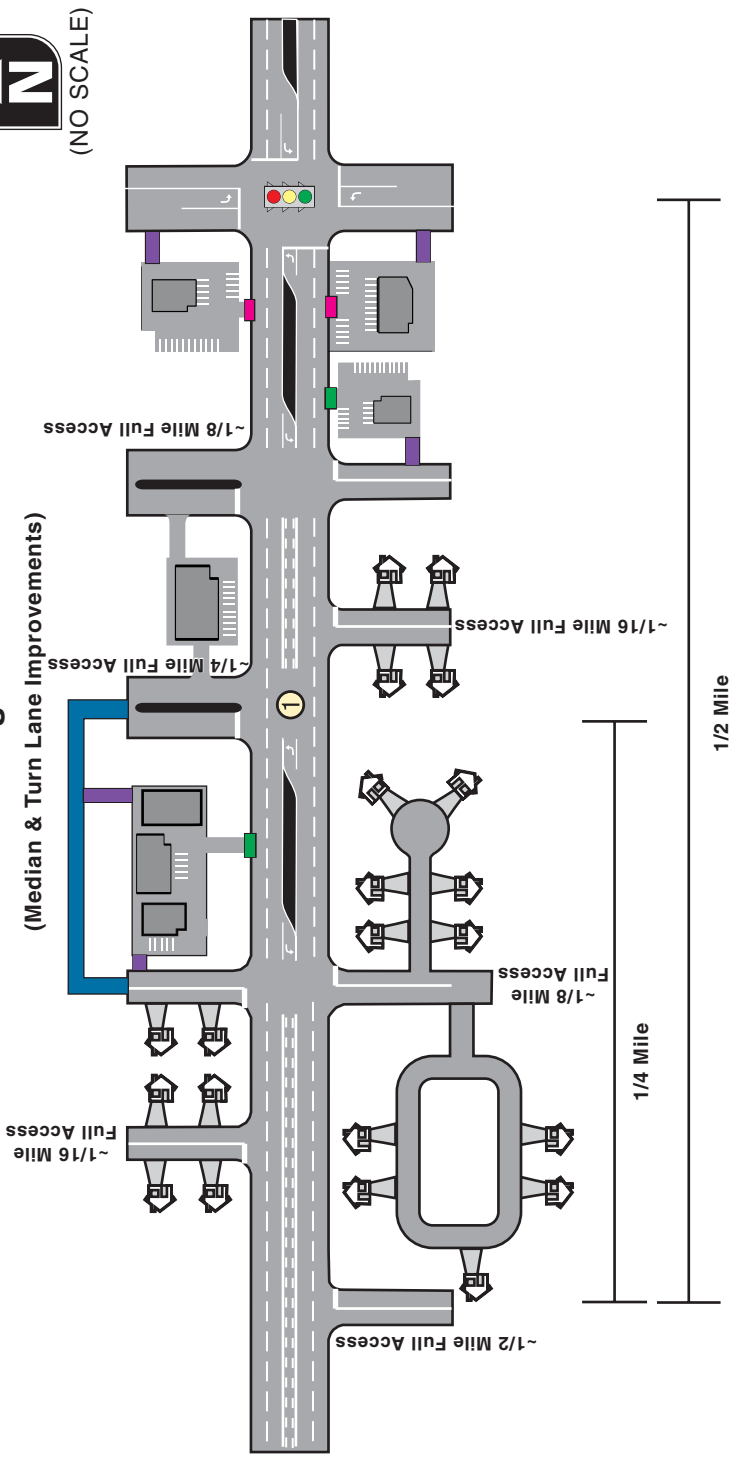


### Base Conditions



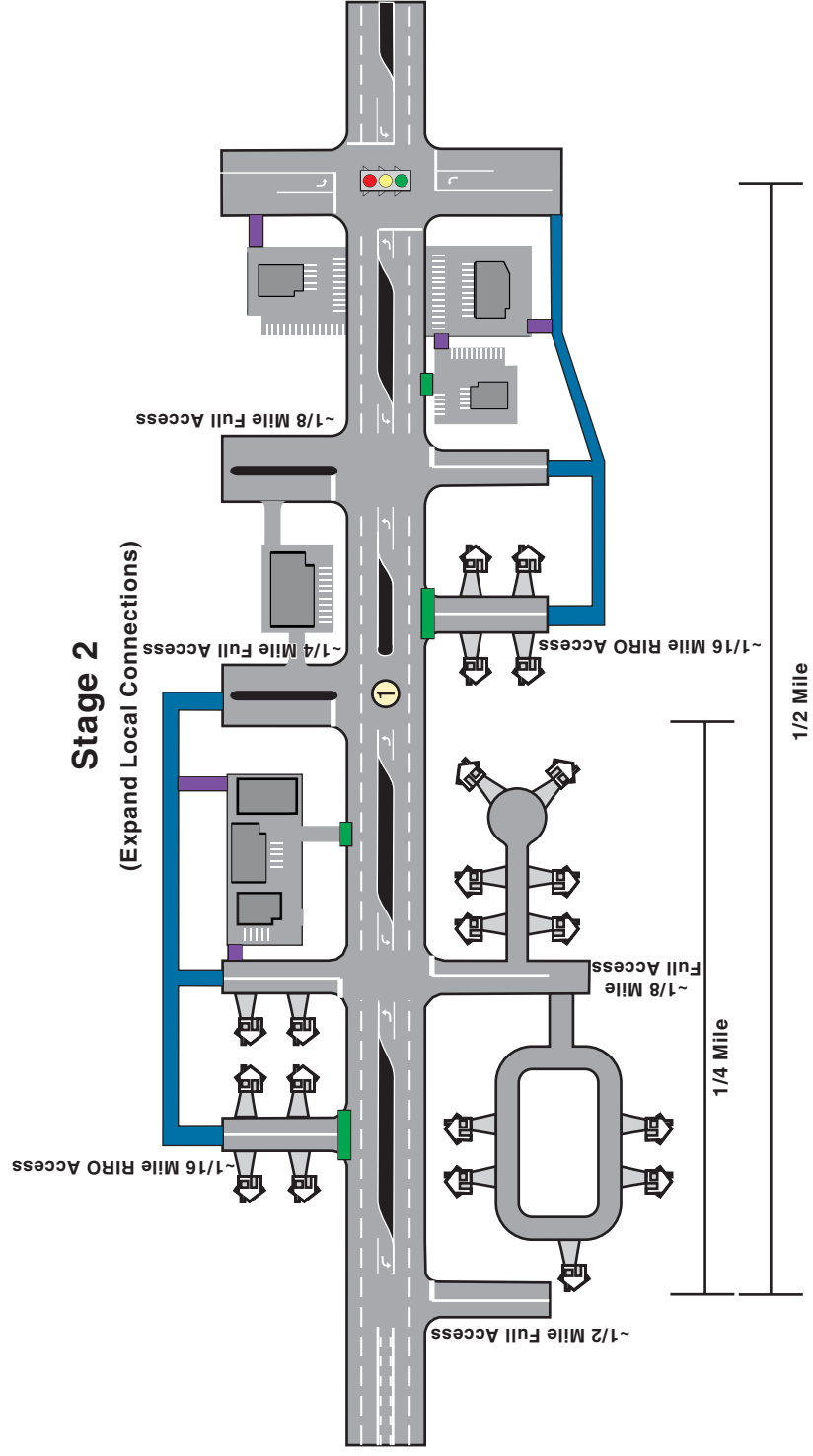
### Stage 1

(Median & Turn Lane Improvements)



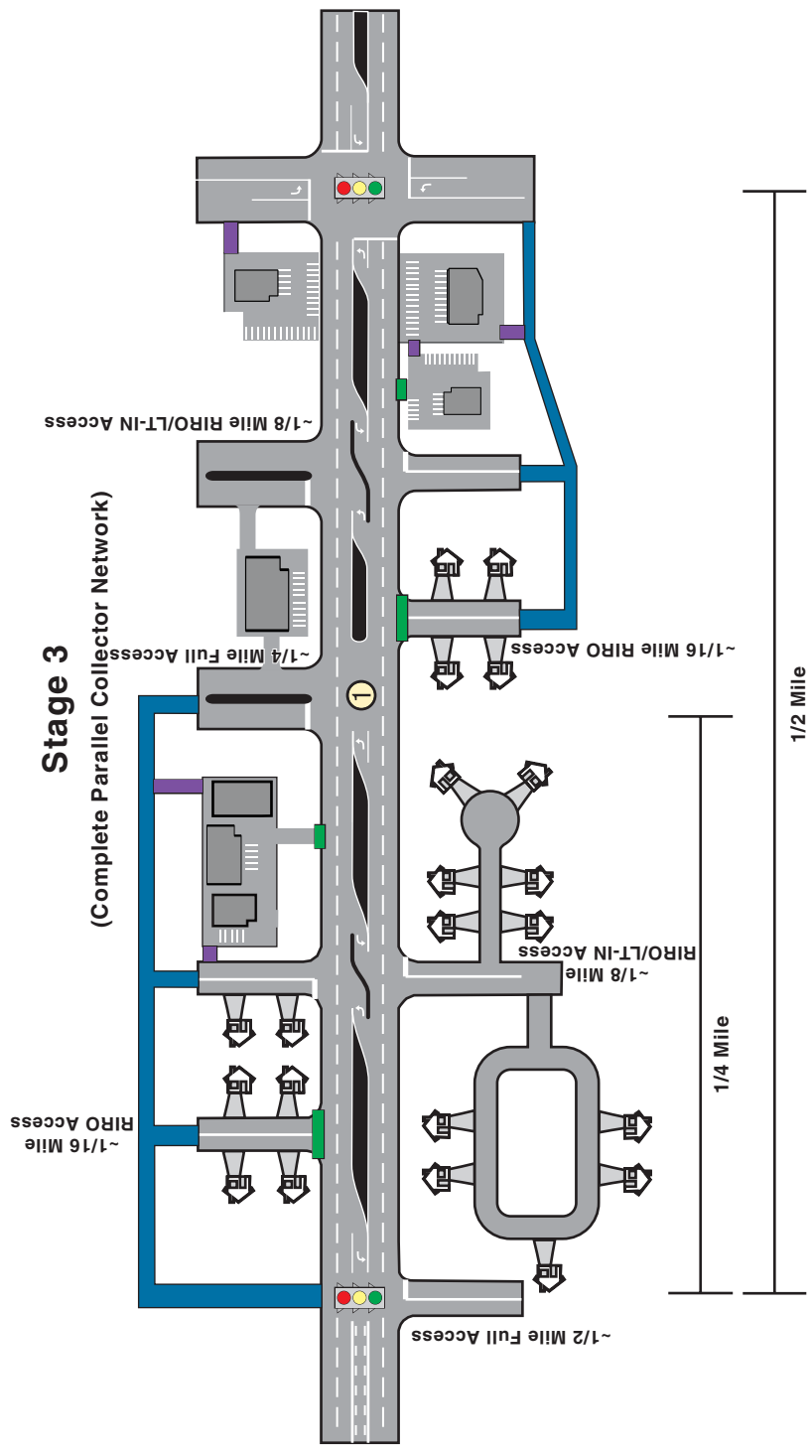
### Stage 2

(Expand Local Connections)



### Stage 3

(Complete Parallel Collector Network)



#### LEGEND

- █ Convert to Right-In/Right-Out Access (U-Turns at Medians & Signals)
- █ Potential Roadway Connection
- █ Relocated Access
- █ Closed Access
- █ Potential Median

① 1/4 mile signal spacing acceptable for pedestrian crossings that warrant signalization. Signal at 1/4 mile location acceptable on Industrial /office park arterials if warranted.



## 9.4 ACCESS MANAGEMENT IMPLEMENTATION PLAN

The access management standards and future median breaks and signal locations for the Southwest Boise Study Areas outlined in Exhibits 9-1 and 9-2 should be adopted by the ACHD Commission as policy. Upon adoption of the policy, ACHD should actively collaborate with new and redeveloping parcels to implement the access management standards and ensure compliance with the access transition plan for each arterial roadway type.

Implementation of the access management plan involves collaboration between ACHD, Ada County, the City of Boise, and land owners in the Southwest Boise Study Area. Land owners looking to develop or redevelop parcels should be informed and educated on the access management standards and the access transition plans. Land owners looking to develop or redevelop a parcel of land within the Southwest Boise Study Area must submit the appropriate documentation and applications to ACHD, Ada County, and the City of Boise, taking into account the access management policies for the area as outlined in this plan and ACHD policy. Through the public hearing process, ACHD, Ada County, the City, and land owners should work collaboratively to implement the best access strategy, which both satisfies the standards and transition plans laid forth in this plan and the current ACHD *Policy Manual*, and addresses other concerns of ACHD, Ada County, the City of Boise, and the public.

ACHD can also implement the access management goals through future corridor improvement projects. Through a public approval process ACHD, Ada County, or the City of Boise may require parcels with existing access to an arterial roadway to form cross access agreements with adjacent parcels and/or take access to a nearby collector or local roadway. The City of Boise and Ada County may adopt an ordinance or amend the City's and County's comprehensive plan to require new and redeveloped parcels to act in accordance with the Southwest Boise Access Management Plan.

The mobility and residential mobility arterials have relatively restrictive access management standards in order to preserve the safety, operation, and intended functionality of these corridors. As such, land use planning and roadway refinement plans should carefully consider the roadway networks surrounding these arterial types. ACHD, Ada County, and the City of Boise should take special care to collaborate with development alongside mobility and residential mobility arterials to ensure an adequate parallel collector system and good local connections are implemented along these corridors. ACHD, Ada County, and the City of Boise should also collaborate with development alongside all other roadways to develop access agreements that are consistent with the Southwest Boise Access Management Plan.

Any proposed access that does not meet the access management standards as outlined in Exhibit 9-1 or comply with a future access location shown in Exhibit 9-2, must be reviewed by ACHD, Ada County and the City of Boise. Parcels with existing arterial access points that do not meet the access management standards in Exhibit 9-1 and the future median breaks and signal locations shown in Exhibit 9-2, may maintain existing arterial access points until either redevelopment of the parcel occurs or until access is available to a collector or local street abutting the parcel. At such time as either occurs, ACHD, Ada County and/or the City of Boise may require the parcel to comply with the access transition plan outlined for the specific arterial roadway type.

## 10.0 Implementation Plan

The study examined three focus areas, as was shown in Exhibit 1-1. The Initial Study Area is bounded by Overland Road to the north, Lake Hazel Road to the south, Eagle Road to the west, and Cole Road to the east. The Expanded Study Area covers the area south of Lake Hazel Road to King Road, between Cloverdale Road and Pleasant Valley Road. The Eagle-Cloverdale Alignment Study examined the opportunity to create a continuous north-south connection between Kuna-Mora Road and the Eagle Road/I-84 interchange. The recommendations from the Eagle-Cloverdale Alignment Study are provided in Section 7. This section provides a summary of the transportation improvements recommended by this study in the Initial and Expanded Study Areas, prioritizes improvements for the Initial Study Area, and provides an implementation plan for these improvements. Planning-level cost estimates for the recommendations are provided in *Technical Appendix G*.

The improvements outlined in this study were developed based on the specific land use characteristics and densities assumed in the analysis. If land uses change or comprehensive plans are amended, different transportation improvement may be required and those listed here may not longer be sufficient. The timeframes and prioritization strategies outlined here are not ultimate or absolute. They are intended to provide initial information and guidance to feed into the larger County-wide processes that ACHD will undertake with partnering agencies during regular updates to the ACHD CIP and Five-Year Work Plan. These processes review projects across the entire County, as well as available funding, thereby integrating regional factors into the timing of improvements. In addition, improvements within the Expanded Study Area are highly dependent on the location, size, and type of developments that are finally approved and constructed. The ability to review these recommendations as part of the periodic updates to the CIP will allow this implementation plan to adjust to reflect changes that may occur in the future. Due to different horizon years and varying traffic volumes along corridors, some of the prioritization timeframes shown for roadway segments in this study vary slightly from those outlined in the South Meridian study. These variations will also be reviewed and refined through a holistic evaluation as part of the ACHD CIP and Five-Year Work Plan updates.

### 10.1 PROJECT PRIORITIZATION

A process was developed and used to prioritize improvements in the Initial Study Area. The purpose of the process was to develop and apply a consistent process for prioritizing improvements that are recommended within a certain timeframe for construction. In addition, the process is intended to create the ability to modify the prioritization in the future if project timeframes need to shift.

#### 10.1.1 EXISTING PRIORITIZATION PROCESSES

Many different processes have been developed to prioritize projects in the region. COMPASS uses a process that includes four key categories which are: 1) Efficient Use of Transportation Resources; 2) Transportation Land-Use Connection; 3) Safety; and 4) Intermodal and Multi-modal. Within each category, four criteria are qualitatively ranked between 0 and 5 and weighted. ACHD also uses a

detailed project prioritization process for its projects, which it divides into four general categories: 1) Roadway; 2) New Intersection; 3) Intersection Rebuild; and 4) Community projects. Each of the ACHD categories has two general criteria: 1) Technical and 2) Programming. Both of these criteria categories have two to nine specific criteria within them covering a range of topics, such as capacity, safety, and costs.

### **10.1.2 PRIORITIZATION PROCESS**

The purpose of the prioritization process is to provide a tool to compare the relative benefits of projects that are recommended as part of the study, as well as provide a suggested timeframe for what improvements are needed. The improvements recommended as part of the study generally fall into four categories: roadway widening and construction; intersection expansion; collector street improvements; and pedestrian and bicycle improvements. Each of these project types is unique and, therefore, the prioritization process was different for each.

#### **Roadway Construction & Widening**

The roadway construction and widening projects were initially grouped by five-year increments based on the projected year of need from travel demand. For projects within each five-year increment, four criteria categories were then evaluated between 0 and 10 to produce an overall score to assess priority of the project relative to the others within that timeframe. The four criteria categories used to evaluate the roadway construction and widening were: Safety, Traffic Volume, Pedestrian & Bicycle Considerations, and Other Criteria. The details of these criteria categories and the scoring format can be found in *Technical Appendix H*.

Based on relative scores, improvements for each timeframe were grouped into three tiers, with Tier I projects being the highest priorities and Tier III the lowest. Exhibit 10-1 shows the roadway widening and construction projects recommended for each study year and their respective tier within that timeframe. *Technical Appendix H* contains more detailed information regarding the scoring of each project.

As shown in Exhibit 10-1, a majority of the improvements are needed beyond 2015 and improvements on various sections within the same corridor may have differing priorities and different timeframes. This is because this prioritization process does not specifically consider how the improvements fit in with other improvements to corridors outside the study area, the advantages that can result in improving a long section of a corridor at one time, or funding. Therefore, this prioritization is intended to be used as guidance for ACHD as they update their CIP and Five-Year Work Plan. These processes review the entire County as well as funding and therefore can integrate regional factors into the timing of improvements. Furthermore, the prioritization of roadways in the City of Meridian area of impact (i.e., those in the vicinity of Eagle Road) will need to be coordinated with the results from the *South Meridian Transportation Study* to provide a comprehensive strategy for the greater area.

In areas of development or redevelopment, new or improved collector roadways are required to be constructed by the developer, without compensation, based on approval by ACHD. This includes the dedication of any required right-of-way.

**Exhibit 10-1 Roadway Projects Prioritization**

Roadway	Improvement	Timeframe and Tier			
		By 2015	2015-2020	2020-2025	2025-2030
Victory Road Eagle Road to Cloverdale Road Cloverdale Road to Five Mile Road Five Mile Road-Maple Grove Road Maple Grove Road-Cole Road	Widen to 5 Lanes Widen to 5 Lanes Widen to 5 Lanes Widen to 5 Lanes	I II		I	II
Amity Road Eagle Road-Cloverdale Road Cloverdale-Five Mile Road	Widen to 3 Lanes/ROW 5 Lanes Widen to 3 Lanes/ROW 5 Lanes		I		III
Five Mile Road-Maple Grove Road	Widen to 3 Lanes			III	
Lake Hazel Road Eagle Road – Cloverdale Road Cloverdale Road-Five Mile Road Five Mile Road-Maple Grove Road Maple Grove-Cole Road Extension Maple Grove-Cole Road Cole Road to Pleasant Valley Road	Widen to 5 Lanes Widen to 5 Lanes Widen to 5 Lanes 3 Lanes Widen to 5 Lanes Construct 5 Lanes	II		I	I II I
Columbia Road (Eagle Rd-Five Mile Rd)	ROW for 3 Lanes				ROW <sup>1</sup>
Cloverdale Road Overland Road-Victory Road Victory Road-Amity Road Amity Road-Lake Hazel Road Lake Hazel Road-Columbia Road Columbia Road-Hubbard Road Hubbard Road-Deer Flat Road	Widen to 5 Lanes Widen to 5 Lanes Widen to 5 Lanes Widen to 5 Lanes Widen to 3 Lanes/ROW 5 Lanes Widen to 3 Lanes/ROW 5 Lanes		III	II II II III	III
Five Mile Road Victory Road-Amity Road Amity Road-Lake Hazel Road Lake Hazel-Columbia	Widen to 5 Lanes Widen to 3 Lanes ROW for 3 Lanes			III	III ROW <sup>1</sup>
Maple Grove Road Overland Road-Victory Road Victory Road-Amity Road Amity Road-Lake Hazel Road	Widen to 5 Lanes Widen to 5 Lanes Widen to 5 Lanes	III	I		III
Cole Road Victory Road-Amity Road Amity Road-Lake Hazel Road Lake Hazel Road-Columbia Road	Widen to 5 Lanes Widen to 3 Lanes/ROW 5 Lanes ROW for 3 Lanes		I		I ROW <sup>1</sup>
Orchard Street Victory Road-Gowen Road Gowen Road-Lake Hazel Rd/PI Vly Rd	Widen to 7 Lanes Widen to 7 Lanes		II		III
Eagle Road Extension (Columbia-Eagle)	ROW for 3 Lanes				ROW <sup>1</sup>

<sup>1</sup>Projects that involved ROW acquisition only (no construction) were not scored

## Intersection Improvements

The goal of prioritizing intersection improvements is to provide guidance for choosing which intersection improvements to construct, assuming other factors are not driving the timing for the projects, such as an overall corridor widening project. Benefit-cost analysis is a way to identify the capacity benefits (measured in the estimated dollar value of travel time savings) relative to the approximate costs for intersection improvements. ACHD has recently used benefit-cost analysis for prioritizing intersection improvements in other areas so it was also used here for the improvements proposed at each intersection. A ratio of greater than 1.0 indicates that the project's benefit is anticipated to be greater than its cost over a five-year horizon, while a ratio of less than 1.0 indicates that the cost is greater than the benefit for the specific five-year horizon. It is important to note that the projects listed will have a longer life-span than five years and their benefit-cost ratio may increase if evaluated over a longer time period.

Exhibit 10-2 shows the benefit-cost ratios for the improvements at the key intersections in the study area, which were previously shown in Section 5. While benefit-cost ratios were calculated for each intersection improvement that does not directly coincide with a roadway widening project, it is likely many more of the improvements will be driven and completed in coordination with larger corridor widening and construction projects.

**Exhibit 10-2 Intersection Improvement Benefit-Cost Ratios**

Intersection	Year for Improvement & Benefit/Cost			
	By 2015	2015-2020	2020-2025	2025-2030
Overland Road/Cloverdale Road			Road Impr	2.03
Overland Road/Five Mile Road	1.53	0.71	0.78	
Overland Road/Maple Grove Road	Road Impr	1.03	2.84	
Overland Road/Cole Road – SB Dual LT				0.08
Victory Road/Cloverdale Road			Road Impr	Road Impr
Victory Road/Five Mile Road		0.36	Road Impr	3.34
Victory Road/Maple Grove Road		Road Impr	1.64	0.40
Victory Road/Cole Road	1.75	Road Impr		0.42
Amity Road/Cloverdale Road			Road Impr	3.31
Amity Road/Five Mile Road	2.23	2.26		Road Impr
Amity Road/Maple Grove Road	4.93			Road Impr
Amity Road/Cole Road – SB RT		Road Impr.		
Lake Hazel Road/Cloverdale Road – All Approaches			Road Impr	Road Impr
Lake Hazel Road/Five Mile Road		0.37	Road Impr	Road Impr
Lake Hazel Road/Maple Grove Road	1.04			
Lake Hazel Road/Cole Road	Road Impr			Road Impr
Columbia Road/Cloverdale Road		NA		
Hubbard Road/Cloverdale Road		Road Impr		0.53
Kuna Road/Cloverdale Road		3.43	2.42	0.96
Ten Mile Creek/Pleasant Valley – Turn Lanes & Signal				NA

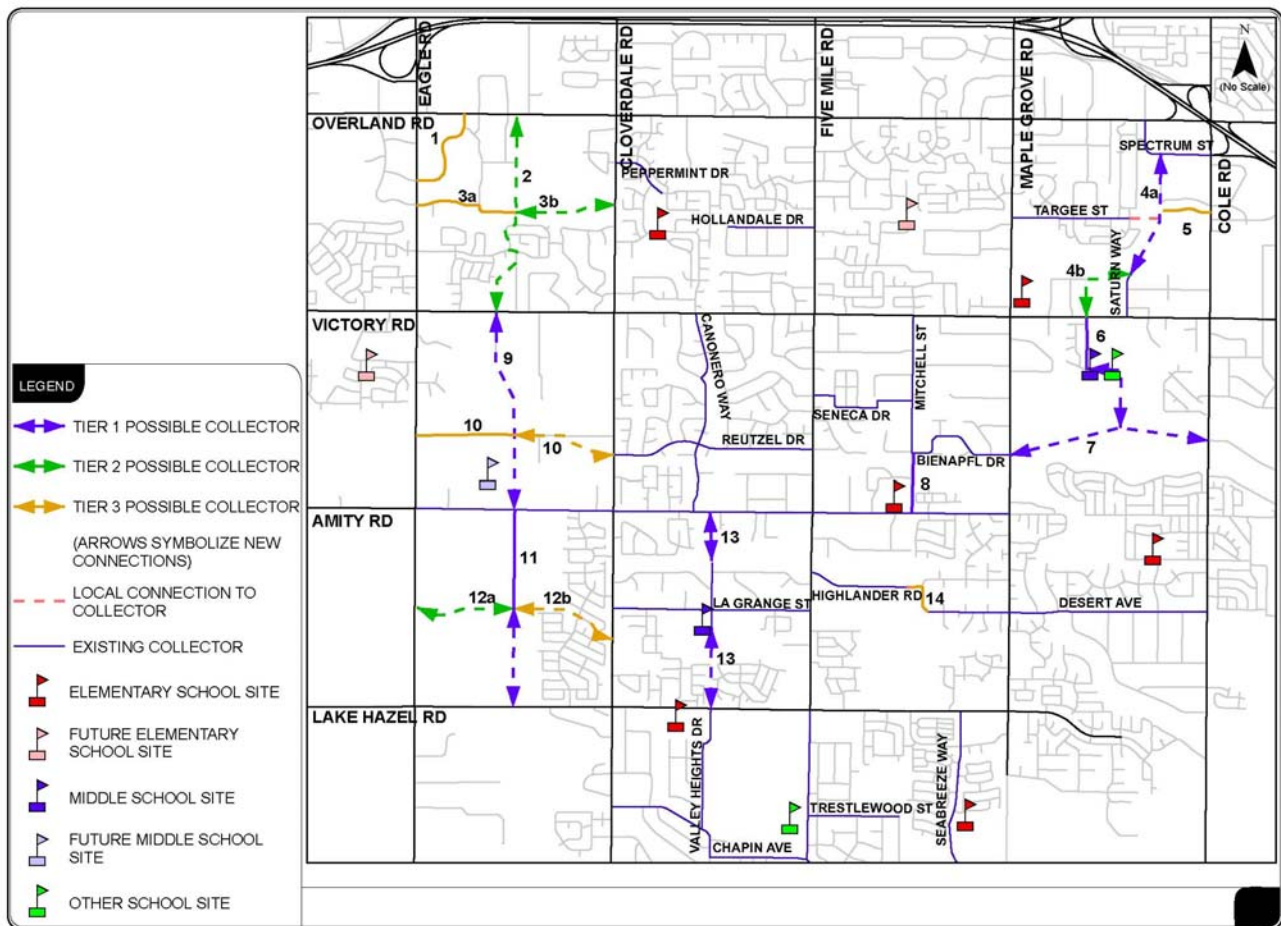
Road Impr. designation indicates completion in conjunction with roadway project.

NA – Not applicable for conversion of a two-way stop to a signal since overall intersection delay increases.

### Collector Roadways

Collector roadways provide a critical part of the multi-modal transportation system. ACHD currently does not construct new collector roadways but does require them as part of development. As part of the evaluation of collector roadway needs discussed in Section 5, the recommended future collector roads were also prioritized. A detailed summary of the evaluation and prioritization process is presented in *Technical Appendix C*. Through the prioritization process, each collector was evaluated using the criteria summarized in the appendix and an overall score for each was developed. The potential collectors were then divided into three different tiers based on their total scores. Tier I collectors were those with the highest priority, and Tier III collectors were those deemed lowest priority. The results of this ranking are illustrated along with their locations in Exhibit 10-3.

Exhibit 10-3 Prioritization of Recommended Collector Roadways



In addition to the prioritization outlined in Exhibit 10-3, the prioritization of collectors in the City of Meridian area of impact (i.e., those in the vicinity of Eagle Road) will need to be coordinated with the results from the *South Meridian Transportation Study* to provide a comprehensive strategy for the greater area.

## 10.3 IMPLEMENTATION PLAN

### 10.3.1 Roadways

Exhibit 10-4 summarizes the roadway and intersection improvements that are recommended by the study and lists the timeframe that each improvement would be required under the scenario used in the Initial Study Area analysis. The exhibit also shows what additional improvements would be recommended with the added growth due to Expanded Study Area developments and what improvements would likely need to be constructed earlier due to this growth. Timeframes for improvements recommended for roadway segments that are outside the Initial Study Area are generally not shown since the need for these improvements will primarily be based on the location, timing, and size of developments in the Expanded Study Area. More information regarding the development thresholds likely to trigger improvements can be found in *Technical Appendix D*.

**Exhibit 10-4 Roadway Improvements Implementation Plan**

Roadway	Segment	Base Growth		With Expanded Area Growth	
		Recommendation	Timeframe	Additional Recommendation	Timeframe <sup>1</sup>
<b>Initial Study Area Roadway Segments</b>					
Victory Road	Eagle Rd – Cloverdale Rd	Widen to 5 Lanes	2025-2030		2020-2025
	Cloverdale Rd – Five Mile Rd	Widen to 5 Lanes	2020-2025		
	Five Mile Rd – Cole Rd	Widen to 5 Lanes	By 2015		
Amity Road	Eagle Rd – Cloverdale Rd	Widen to 3 Lanes and Obtain ROW for 5 Lanes	2025-2030		
	Cloverdale Rd – Five Mile Rd	Widen to 3 Lanes and Obtain ROW for 5 Lanes	2015-2020		
	Five Mile Rd – Maple Grove Rd	Widen to 3 Lanes	2020-2025		
Lake Hazel Road	Eagle Rd – Cloverdale Rd	Widen to 5 Lanes	2025-2030		
	Cloverdale Rd – Five Mile Rd	Widen to 5 Lanes	2020-2025		
	Five Mile Rd – Maple Grove Rd	Widen to 5 Lanes	2025-2030		
	Maple Grove Rd – Cole Rd	Construct 3 Lane Extension <sup>2</sup>	By 2015		
	Maple Grove Rd – Pleasant Valley Rd	Construct 5 Lane Extension <sup>2</sup>	2025-2030		2015-2020
Cloverdale Road	Overland Rd – Lake Hazel Rd	Widen to 5 Lanes	2020-2025		2015-2020
Five Mile Road	Victory Rd – Amity Rd	Widen to 5 Lanes	2020-2025		2015-2020
	Amity Rd – Lake Hazel Rd	Widen to 3 Lanes	2025-2030	Obtain ROW for 5 Lanes	2025-2030
Maple Grove Road	Overland Rd – Victory Rd	Widen to 5 Lanes	By 2015		
	Victory Rd – Amity Rd	Widen to 5 Lanes	2015-2020		
	Amity Rd – Lake Hazel Rd	Widen to 5 Lanes	2025-2030		2015-2020
Cole Road	Victory Rd – Amity Rd	Widen to 5 Lanes	2015-2020		



Roadway	Segment	Base Growth		With Expanded Area Growth	
		Recommendation	Timeframe	Additional Recommendation	Timeframe <sup>1</sup>
	Amity Rd – Lake Hazel Rd	Widen to 3 Lanes and Obtain ROW for 5 Lanes	2025-2030	Widen to 5 Lanes	2025-2030
<b>Expanded Study Area Roadway Segments</b>					
Columbia Road	Eagle Rd – Five Mile Rd	Obtain ROW for 3 Lanes	2025-2030	Widen to 3 Lanes	
Hubbard Road	Cloverdale Rd – Five Mile Rd			Widen to 5 Lanes	
	Five Mile Rd – Maple Grove Rd			Construct 5 Lane Extension	
	Cole Rd – Lake Hazel Rd			Construct 3 Lane Extension with ROW for 5 Lanes	
Ten Mile Creek Road	Five Mile Rd – Pleasant Valley Rd			Widen to 3 Lanes	
Kuna Road	Eagle Rd – Maple Grove Rd			Widen to 3 Lanes	
King Road	Eagle Rd – Cloverdale Rd			Widen to 3 Lanes	
	Cloverdale Rd – Pleasant Valley Rd			Construct 3 Lane Extension	
Eagle Road Extension	Columbia Rd – Eagle Rd	Obtain ROW for 3 Lane Extension	2025-2030	Construct 3 Lane Extension	
Cloverdale Road	Lake Hazel Rd – Columbia Rd	Widen to 5 Lanes	2020-2025		
	Columbia Rd – Hubbard Rd	Widen to 3 Lanes and Obtain ROW for 5 Lanes	2015-2020	Widen to 5 Lanes	
	Hubbard Rd – Deer Flat Rd	Widen to 3 Lanes and Obtain ROW for 5 Lanes	2025-2030	Widen to 5 Lanes	
Five Mile Road	Lake Hazel Rd – Columbia Rd	Obtain ROW for 3 Lanes	2025-2030		
Five Mile Road	Columbia Rd – Ten Mile Creek Rd			Widen to 3 Lanes	
	Ten Mile Creek Rd – Kuna Rd			Construct 3 Lane Extension	
	Kuna Rd – King Rd			Widen to 3 Lanes	
Maple Grove Road	Lake Hazel Rd – Current Terminus			Widen to 3 Lanes	
	Current Terminus – Cole Rd Extension			Construct 3 Lane Extension	
Maple Grove Road	Ten Mile Creek Rd – King Rd			Construct 3 Lane Extension	
Cole Road	Lake Hazel Rd – Hollilynn Dr			Widen to 5 Lanes	
	Hollilynn Dr – Arbor Hills			Construct 5 Lane Extension	
	Arbor Hills – Pleasant Valley Rd			Construct 3 Lane Extension	
	Arbor Hills – Ten Mile Creek Rd			Construct 3 Lane Extension	
	Ten Mile Creek Rd – King Rd			Widen to 3 Lanes	
Orchard Street	Victory Rd – Pleasant Valley Rd	Realign and Widen to 7 Lanes <sup>2</sup>	2025-2030		2015-2020
	Pleasant Valley Rd – Lake Hazel Rd	Construct 5 Lane Extension <sup>2</sup>	2025-2030		2015-2020
Pleasant Valley Road	Orchard St – Lake Hazel Rd	Realign and Widen to 7 Lanes <sup>2</sup>	2025-2030		2015-2020

Roadway	Segment	Base Growth		With Expanded Area Growth	
		Recommendation	Timeframe	Additional Recommendation	Timeframe <sup>1</sup>
	Lake Hazel Rd – Kuna-Mora Rd			Widen to 5 Lanes	
Arbor Hills/ Pleasant Valley Loop	Pleasant Valley Rd – Pleasant Valley Rd			Construct New 3 Lane Roadway	

<sup>1</sup>Timeframe for improvements on Expanded Study Area roadway segments is dependent upon location and size of large-scale development in the Expanded Study Area

<sup>2</sup>Per ACHD *Lake Hazel Extension/Gowen Road Relocation Study* (Reference 9)

In addition to what is shown in Exhibit 10-4, the prioritization of roadway projects in the City of Meridian area of impact (i.e., those in the vicinity of Eagle Road) will need to be coordinated with the results from the *South Meridian Transportation Study* to provide a comprehensive strategy for the greater area.

### 10.3.2 Intersection Improvements

Exhibit 10-5 lists when each intersection in the Initial Study Area should be constructed to its ultimate size as discussed in Section 5. These timeframes are primarily based on when major corridor projects are likely to occur that include these intersections. In some instances, certain approaches may be scheduled for a roadway project in advance of the timeframe shown in Exhibit 10-4 (e.g. east-west road is widened to three-lanes, but the north-south approaches remain unchanged until the roadway widening project on it occurs). Intersection improvements should be reviewed when a roadway project that includes any of these intersections is undertaken. The specific details of the intersection projects listed here are presented in Exhibit 5-5 and *Technical Appendix D*.

**Exhibit 10-5 Implementation of Intersection Improvements**

E/W Roadway	N/S Roadway	Recommended Timeframe – Base Case	Recommended Timeframe – with Expanded Area Growth
Overland Road	Cloverdale Road	2020-2025	2015-2020
Overland Road	Five Mile Road	2015-2020	
Overland Road	Maple Grove Road	By 2015	
Overland Road	Cole Road	2025-2030	
Victory Road	Cloverdale Road	2020-2025	2015-2020
Victory Road	Five Mile Road	2020-2025	2015-2020
Victory Road	Maple Grove Road	2015-2020	
Victory Road	Cole Road	By 2015	
Amity Road	Cloverdale Road	2020-2025	2015-2020
Amity Road	Five Mile Road	2015-2020	
Amity Road	Maple Grove Road	2015-2020	
Amity Road	Cole Road	2015-2020	
Lake Hazel Road	Cloverdale Road	2020-2025	2015-2020
Lake Hazel Road	Five Mile Road	2020-2025	
Lake Hazel Road	Maple Grove Road	2025-2030	2015-2020
Lake Hazel Road	Cole Road	2025-2030	2015-2020

While the intersection improvements listed here provide a general overview of the anticipated needs within the study area, ACHD will require development to implement any site specific improvements attributable the specific use as a condition of approval.

### 10.3.3 Coordination with ACHD CIP and Five-Year Work Plan

This implementation plan is intended to be used as guidance for ACHD as they update their CIP and Five-Year Work Plan. These processes review projects across the entire County, as well as available funding, thereby integrating regional factors into the timing of improvements. In addition, improvements within the Expanded Study Area are highly dependent on the location, size, and

type of developments that are finally approved and constructed. The ability to review these recommendations as part of the periodic updates to the CIP will allow this implementation plan to adjust to reflect changes that may occur in the future.

Associated with this, if traffic impact review shows that an improvement is required prior to being programmed in ACHD CIP or FYWP, development will be required to dedicate the ultimate right-of-way necessary for that improvement and may be required to construct the improvement. Compensation for any eligible system improvements will be subject to a development agreement between ACHD and the developer.

## 11.0 Conclusion

This study refines recommendations in the regional long-range transportation plan *Communities in Motion* (CIM) and the ACHD Capital Improvements Plan in the southwest Boise area. It also provides a more detailed plan for accommodating the transportation needs of existing and future land-uses identified in the Comprehensive Plans of City of Boise, City of Meridian, and Ada County in the southwest Boise area. The recommendations developed by this study were also directly influenced by the public and stakeholder involvement efforts and were arrived at in coordination with other planning efforts, such as ACHD's *Transportation Land-Use Integration Plan* (TLIP), *Roadways to Bikeways Plan*, and the *South Meridian Transportation Study*.

In addition, this plan identifies a future transportation system and improvement strategy for accommodating potential significant developments that could occur in the rural areas south of the current City Areas of Impact. Planning for these potential developments is not intended to endorse or incorporate such development into the existing plans, but to provide a framework to respond to such development if it does occur in the future.

Finally, this plan provides guidance for the prioritization and implementation of the proposed improvements for use by ACHD in future updates to the CIP and Five-Year Work Plan. The periodic updates to the CIP and Five-Year Work Plan provide the mechanism for the recommendations contained in this plan to be implemented over time and to be adjusted for future changes that will occur between now and 2030.

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