

AIRPORT BOULEVARD CORRIDOR DEVELOPMENT PROGRAM

FEBRUARY 2014



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AIRPORT BOULEVARD CORRIDOR DEVELOPMENT PROGRAM EXECUTIVE SUMMARY

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EXECUTIVE SUMMARY



PROGRAM GOALS

The primary goal of the Airport Boulevard Corridor Development Program is to develop recommendations to improve safety, mobility, sustainability, and quality of life along Airport Boulevard from North Lamar Boulevard to US 183. This includes the development of a multi-modal program of improvements that would ultimately meet the needs of all users of the transportation system within and around the corridor. The Corridor Development Program will work in concert with redevelopment initiatives throughout the corridor to ensure the safe, efficient, and multi-modal accessibility that was identified as a priority through public participation in the project.

PROJECT PURPOSE AND PROCESS

The City of Austin has undertaken the Airport Boulevard Corridor Development Program in conjunction with the efforts currently being conducted for the Upper Airport Redevelopment Initiative and has engaged interested stakeholders in the development of a long term vision for Airport Boulevard.



Data collection began in the summer of 2011. Public meetings were used to gather input about existing conditions, validate the objectives of the project, receive feedback about the design solutions, and further explain the reasons for undertaking the project. Other stakeholder meetings occurred on an as-needed basis, including meeting with land owners who expressed concerns or desired additional information about the corridor development process. This document sets the groundwork for a Vision that helps to guide the next steps in the project delivery process. Recommendations have been depicted conceptually to illustrate and demonstrate feasibility; prioritized as short-term, medium-term, or long-term depending on their potential implementation time frame; and evaluated to determine projected benefits and estimated costs for construction.



The preliminary engineering and environmental clearance phase of the project, and subsequent detailed design phases for selected segments, will require that additional efforts be taken to coordinate with land owners, businesses, and residents throughout the corridor.

EXISTING CORRIDOR CHARACTERISTICS AND CONSTRAINTS

Airport Boulevard is a 6.5-mile arterial corridor that runs from US 183 at Levander Loop to North Lamar Boulevard. The roadway is controlled by the City of Austin from North Lamar Boulevard south to Manor Road, and controlled by the Texas Department of Transportation from Manor Road south to the interchange with US 183. Most of Airport Boulevard can be described as a four-lane arterial roadway with travel speeds in excess of 40 miles per hour and a continuous two-way left turn lane. A small section, from Manor Road north to I-35, is a median-separated 6-lane roadway that was designed to accommodate significant peak hour traffic near the intersection of Airport and I-35.



The corridor was separated into three zones based on development context, which are described in detail in the report. The zones are as follows:

- Zone 1 – North Lamar to I-35
- Zone 2 – I-35 to MLK
- Zone 3 – MLK to US 183

The entire corridor is designated by the City of Austin as a Core Transit Corridor, which requires the construction of 8-foot sidewalks and a 7-foot buffer whenever new facilities are constructed.

The pavement condition throughout the corridor varies greatly. Some sections have recently been repaved to accommodate bicycle lanes, while other sections are in need of repair and lack amenities for pedestrians or bicyclists. Ultimately, the roadway is best described as a 4-lane suburban arterial that lacks access controls and pedestrian and bicycle facilities for a significant amount of the corridor.

Traffic patterns along Airport Boulevard have experienced significant change over the past decade. In Zone 1, traffic has actually declined over the past ten years. Zone 2 and Zone 3 have experienced an uptick in traffic associated with the Mueller redevelopment, as well as the continued congestion along regional roadways such as I-35 and US 183. Traffic counts collected found that Airport Boulevard traffic ranges from 17,500 to 38,000 vehicles per day.



PROJECT GOALS AND DESIGN CONSIDERATIONS

A common theme that emerged throughout the public meetings and stakeholder discussions along Airport Boulevard was the need for adequate movement of additional automobile traffic, but not in a way that would make pedestrian and bicycle travel unattractive to the average user. The horizon year for our designed assumed a 20% increase in traffic volumes over current levels. This increase is due to anticipate new growth.



A peak-hour traffic simulation was performed using the existing and projected traffic volumes. This analysis was then used to evaluate design alternatives to alleviate congestion within the corridor's bottlenecks and ultimately to develop a list of short, medium, and long term improvement recommendations.

The vision for transportation options throughout the corridor has several common elements. The provision of sidewalks and shared-use facilities throughout the corridor meets the established directive from the Austin City Council regarding proper provision of pedestrian facilities in Core Transit Corridors. Bicycle facilities, such as a potential barrier-separated cycle track, in both directions are also included within each cross-section option for the corridor. Native, drought resistant planted medians and buffers are present within the majority of the cross section options. Providing for medians within the majority of corridor segments will serve to increase traffic throughput while reducing conflict points, therefore improving safety, corridor aesthetics, and environmental sensitivity.

FUTURE CORRIDOR CHARACTERISTICS AND RECOMMENDATIONS

The differences in the future cross-section improvements along Airport Boulevard from Lamar Boulevard to US 183 relate to specific development contexts along these frontages. The Corridor Development Program seeks not only to improve mobility of all modes of transportation along the corridor, but also to create a context for sustainable, mixed-use development at key locations.

SHORT-TERM RECOMMENDATIONS

Quick implementation of improvements within the corridor can help to show progress in the wake of a significant public outreach effort, while also helping traffic flow. Improvements to intersection capacity have been a focus of the Airport Boulevard Corridor Development Program, given the desire of the community to maintain a 4-lane configuration of the roadway.

Many of the short-term recommendations are relatively low-cost solutions that could be accomplished within the existing right-of-way, and that would ultimately establish the transportation patterns desired for the long-term vision for the corridor.



- Airport @ Highland Mall Entry Plaza - Add a Pedestrian Hybrid Beacon
- Airport @ Koenig - Removal of the free right turns at all legs of the intersection to slow traffic in the turns. This will require coordination with TxDOT
- Airport @ 55th - Add a Pedestrian Hybrid Beacon
- Airport @ 53 ½ - Modify signal timing to accommodate traffic patterns
- Airport @ 46th - Add a Pedestrian Hybrid Beacon or full signal
- Airport @ 45th - Implement indirect-left treatment, with left turning restrictions implemented at 45th.
- Airport @ Wilshire/Aldrich – Add a second southbound left turn lane on Airport to eastbound Aldrich and second westbound left turn lane on Aldrich to southbound Airport
- Airport @ 40th - Add a Pedestrian Hybrid Beacon
- Airport @ Zach Scott - Add a Pedestrian Hybrid Beacon
- Airport @ Manor Road - Add an eastbound right turn bay and modify signal timing to accommodate protected permitted left turn movements
- Airport @ MLK Blvd. - Realign northbound and southbound left turn bays; modify signal timing to allow protected permitted left turn movements.
- Airport @ 12th Street - Modify signal timing to allow protected permitted left turns
- Airport @ Location North of Oak Springs Drive - Add a Pedestrian Hybrid Beacon
- Airport @ Springdale Road - Modify intersection to accommodate eastbound shared left and dual-through with a right turn bay, and westbound shared-left and dual through with a shared right and dedicated right. Modify signal timing to match.
- Coordination with TxDOT regarding the pavement markings necessary to denote the shoulder as a bicycle facility from MLK to Levander Loop.
- Sidewalks: There is a corridor-wide need for additional sidewalk improvements.
- Pilot design projects: It is recommended that preliminary and final design of two segments be performed to act as pilot projects for the remainder of the corridor in the near term. These sections include the section near Highland Mall, and the section from 48th Street to Wilshire/Aldrich that crosses under I-35.

MEDIUM/LONG-TERM RECOMMENDATIONS

Medium and Long-Term projects will require significant amounts of coordination, planning, design, and ultimately funding in order to become a reality within the corridor. These improvements will also require associated drainage and stormwater improvements, which will add to the project cost, schedule, and complexity. Redevelopment efforts may create the opportunity to implement regional detention facilities that serve both public and private needs.

Medium-Term

- Design the remaining sections of the corridor, including corridor-wide drainage and stormwater improvements. A “shovel-ready” project has a number of advantages including:
 - The project’s implementation can be easily phased; and
 - The project is a more attractive candidate for future funding because it is already designed.



- Construction of the pilot projects designed in the short-term – the section near Highland Mall, and the section from 48th Street to Wilshire/Aldrich that crosses under I-35.



Long-Term

- Construction of the entire multi-modal corridor in conjunction with the overall vision, in a manner that promotes further involvement of land owners, businesses, and residents.
- Safety improvements such as channelized left turns, innovative intersection alternatives, medians (exact locations of medians should be determined during the design phase in conjunction with adjacent landowners and businesses), and pedestrian and bicycle facilities.
- Removal of the grade-separated pedestrian crossing near the intersection of Goodwin and Airport. In conjunction with the removal, construct high visibility at-grade crossing with signage to indicate a heavy pedestrian crossing location.

OTHER REGIONAL RECOMMENDATIONS

In addition to the improvements to the Airport Boulevard corridor, there are several regional recommendations that should be considered. While not specifically part of the design and construction of Airport Boulevard, they will improve regional mobility, and both air and water quality.

- City of Austin participation with the Mall developers to provide a regional water quality system that treats the greatest upstream area possible.
- Construction of improvements along intersecting and adjacent roadways that will enable Airport Boulevard to be constructed according to the corridor vision. This may include City participation in other regional projects, such as I-35 improvements, that will help to alleviate congestion along Airport Boulevard.
- Implementation of the Urban Rail Program to create a modal shift in the travel patterns of the area, allowing Airport Boulevard to maintain the desired 4-lane configuration.



- Relocate the existing rail station at W Highland Mall Blvd. to be directly across from the proposed, tree lined and main entrance to the Highland Mall Redevelopment. A new transit center will seamlessly integrate the various modes of transportation in the optimal location – across from the Mall promenade.
- Construct a grade-separated rail crossing at Airport and North Lamar. The MetroRail service would be elevated above the intersection, with provisions for cyclists and pedestrians within the elevated structure as well as on the ground. Freight trains would continue to cross the intersection at grade.

BENEFITS AND RESULTS

Several benefits would be derived from the proposed improvements. The main categories of benefits include: improved traffic operations and congestion mitigation, non-motorized and transit travel improvements, safety improvements, catalyst for redevelopment, and improved regional water quality and drainage.

The single largest benefit that will be recognized by a majority of daily corridor users will be the benefit to traffic flow. Around the city, state and nation, pedestrian and bicycle infrastructure has been shown to extend the catchment area of transit service and thereby increase the transit ridership. This can reduce the traffic on Airport Boulevard, which lessens the need to widen the roadway beyond the desired 4-lane proposed configuration.

The improvements would further improve the overall safety of the corridor by minimizing conflict points using medians, improved pedestrian/ bicycle accommodations, and improved transit stops/technology. They would also benefit water quality and have a positive impact downstream. In addition, public sector investment sends a discernible signal to the private sector that investment in the corridor/area will continue to be a priority and that growth and revitalization within the area is envisioned and desired.

IMPROVEMENT IMPLEMENTATION COSTS AND STRATEGIES

The Airport Boulevard corridor project plan costs \$74.4 million. These cost projections (2013 dollars) do not include right-of-way acquisition; generally, sufficient right-of-way exists along Airport Boulevard to implement the identified improvements. The following table provides a summary of the project costs, with additional detail provided in the body of the report.

Airport Boulevard Preliminary Roadway Project Cost Projection



Project Cost Summary:					
Section:	Limits:	Short Term	Mid Term	Long Term	Ultimate Cost
Section 1	Lamar to Denson	\$ -	\$ 835,000	\$ 8,495,000	\$ 9,330,000
Section 2	Highland Mall area	\$ 571,000	\$ 5,249,000	\$ -	\$ 5,820,000
Section 3	Koenig to 53 1/2	\$ 450,000	\$ 452,000	\$ 4,148,000	\$ 5,050,000
Section 4	53 1/2 to 48th	\$ 6,000	\$ 577,000	\$ 5,867,000	\$ 6,450,000
Section 5	48th to I-35	\$ 58,000	\$ 4,702,000	\$ -	\$ 4,760,000
Section 6	I-35 to Aldrich	\$ 426,000	\$ 4,494,000	\$ -	\$ 4,920,000
Section 7	Aldrich to MLK	\$ 285,000	\$ 1,188,000	\$ 11,797,000	\$ 13,270,000
Section 8	MLK to Levander Loop	\$ 100,000	\$ 2,217,000	\$ 22,443,000	\$ 24,760,000
Project Cost TOTAL:		\$ 1,896,000	\$ 19,714,000	\$ 52,750,000	\$ 74,360,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



In today's funding realities it will take several government funding sources for the reinvention of Airport Boulevard. In some cases, when an associated private development project is of a considerable size, some of the public improvements for Airport Boulevard could be combined with private investment. This section explores three of the major funding sources that could be considered for public improvements along the Boulevard.

Bond Program: Based on the scale and scope of the improvements proposed for Airport Boulevard from Lamar Boulevard to US 183, funding the project through the city's general bonding authority is a viable source.

Tax Increment Financing (TIF): In order to take advantage of private development potential at key locations along the corridor and to provide additional funding for project- or area-specific improvements for public infrastructure (including drainage, water quality, and the connecting street network), a tax increment financing district could be a tool for several areas along the corridor.

State and Federal Roadway Funds: A third major funding source would be regionally competitive state and federal funds. Typically, calls for projects in this funding category require local match funding. However, federal agencies have looked much more favorably on transportation projects that have significant private sector or local agency funding, and where the benefits are multimodal focused.

NEXT STEPS

To make the redevelopment of the Airport Boulevard corridor a reality, there a number of steps that must be taken:

- Identify funding sources and opportunities to partner with private redevelopment, including the Form-Based Code initiative for Upper Airport Boulevard.
- Implement the short-term intersection improvements.
- Design and implement the pilot projects (Airport Boulevard near Highland Mall and between 48th Street and Wilshire/Aldrich) to gain momentum for the redevelopment of the remainder of the corridor.
- Design the entire corridor for phased implementation as funding becomes available.
- Coordinate with other agencies on regional opportunities for mobility and water quality improvements.



PROJECT INTRODUCTION



PROJECT PURPOSE AND GOALS

The Airport Boulevard Corridor Development Program has developed a set of recommendations to improve safety, mobility, and quality of life along Airport Boulevard from North Lamar Boulevard to US 183. The scope of the project called for the development of a multi-modal program of improvements that would ultimately meet the needs of all users of the transportation system within and around the corridor. These recommendations have been depicted conceptually to illustrate and demonstrate feasibility; prioritized as short-term, medium-term, or long-term depending on their potential implementation time frame; and evaluated to determine projected benefits and estimated costs for construction. The Corridor Development Program will work in concert with redevelopment initiatives throughout the corridor to ensure the safe, efficient, and multi-modal accessibility that was identified as a priority through public participation in the project.

BACKGROUND

On November 2, 2010, Austin voters approved a \$90 million bond package to fund a variety of road, bicycle, pedestrian and transit improvements throughout Austin. As part of the Austin Strategic Mobility Plan (ASMP), city staff and the ASMP team worked with community members and groups, partner agencies and a council-appointed Citizens Task Force to develop this 2010 Mobility Bond program. Included in the overall bond package were Corridor Development Program projects on five key roadway corridors:

- Airport Boulevard (North Lamar Boulevard to US 183)
- East Riverside Drive (I-35 to US 71)
- FM 969 (US 183 to Webberville)
- North Lamar Boulevard (US 183 to I-35)
- North Burnet Road (Koenig Lane to MoPac)

Studies for the five corridors are being conducted concurrently by the City of Austin. Each corridor incorporates a unique combination of existing roadway, development, and demographic conditions and of desired elements envisioned for the future by the community. Along Airport Boulevard, some of these unique factors include:

- The segment of Airport Boulevard between I-35 and North Lamar Boulevard is also the focus of the Upper Airport Redevelopment Initiative, which has been conducted in tandem with the Corridor Development Program and provides the Airport Boulevard corridor project with an additional level of detail.



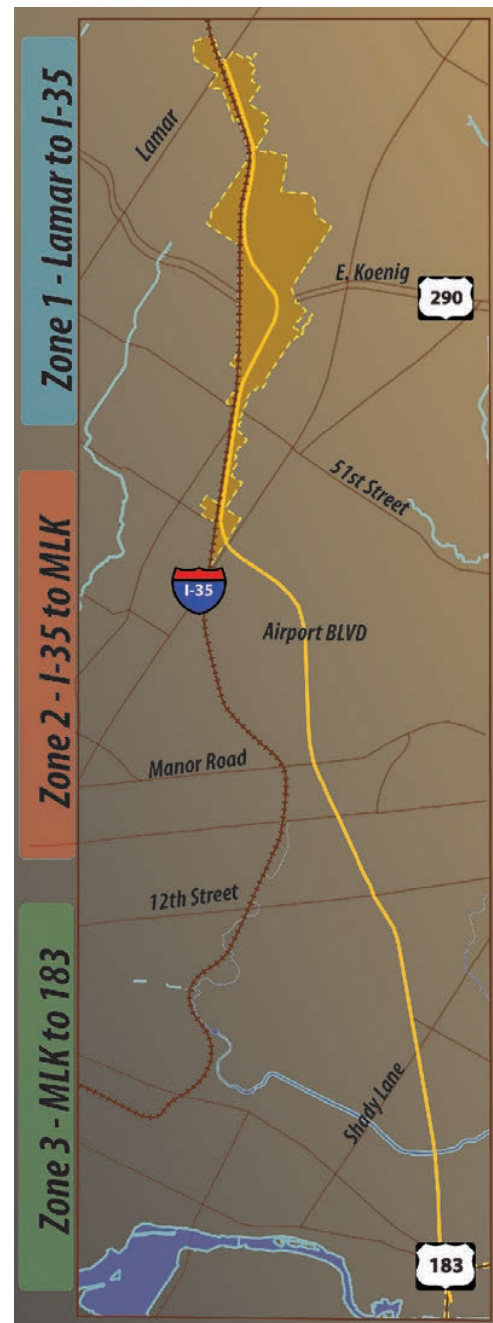
- Drainage within the Airport Boulevard corridor is also a unique challenge given the lack of system-wide drainage options and a need for significant public realm improvements in order to facilitate the redevelopment of the roadway and adjacent properties.
- Finally, the City of Austin has designated the entire Airport Boulevard Corridor as a Core Transit Corridor requiring future roadway improvement projects to implement wider sidewalks and buffers between the roadway and the sidewalk.

Based upon feedback received during several rounds of public outreach, the Airport Boulevard Corridor Development Program also provides a strategy for implementing the proposed long term vision in a manner that promotes further involvement of the land owners, businesses, and residents that are along the corridor.

PROJECT AREA

The Airport Boulevard corridor runs for 7 miles, generally north-south from North Lamar Boulevard to US 183, as shown in Figure 1-1 (at right). Within the project area, this roadway is owned and maintained by the City of Austin from North Lamar to Manor Road and by the Texas Department of Transportation (TxDOT) from Manor Road to US 183. For the purposes of developing a set of transportation options that meets the need of the traveling public, the corridor was analyzed in three context zones.

The first zone follows the boundaries of the planning efforts of the Upper Airport Redevelopment Initiative, from North Lamar to IH-35. The second zone includes the corridor from IH-35 to Martin Luther King, Jr. Boulevard, including the area adjacent to the Mueller redevelopment (Austin’s former municipal airport, from which Airport Boulevard takes its name). The third zone, within which the roadway is entirely controlled by TxDOT, runs from MLK to US 183. Recommended policy revisions are based on considerations specific to each roadway’s section, such as existing policies, proposed revisions to development regulations on a broader scale, and the ideas that have been expressed through the neighborhood planning process.



PROJECT PARTNERS

The City of Austin is funding the Airport Boulevard Corridor Development Program and is working in partnership with the Texas Department of Transportation (TxDOT), Capital Area Metropolitan Planning Organization (CAMPO), Travis County, and Capital Metropolitan Transportation Authority (CapMetro). Another essential project partner is the general public, including residents and business owners throughout the corridor.

PROJECT PROCESS

The City of Austin has undertaken the Airport Boulevard Corridor Development Program in conjunction with the efforts currently being conducted for the Upper Airport Redevelopment Initiative and has engaged interested stakeholders throughout the development of a long term vision for Airport Boulevard.

The project process began in the summer of 2011, when data was collected in order to assess current corridor conditions and needs, as well as the outcomes and recommendations identified in some previous studies. The City and its consultants then undertook targeted outreach opportunities that occurred in September, October, and November 2011. The purpose of each round of public meetings was to gather input about existing conditions, validate the objectives of the project, garner feedback about the design solutions that were ultimately developed, and further explain the reasons for undertaking the project. Other stakeholder meetings occurred on an as-needed basis, including with land owners who expressed concerns or desired additional information about the corridor development process.

The remainder of this document highlights more details about the outreach process, the existing conditions, and the proposed vision for the corridor that was developed throughout the process outlined above. Ultimately, the projects, policy recommendations, and overall vision expressed within this document are intended to evolve through a design process that is needed before the corridor can resemble the vision expressed through this planning effort.



PUBLIC INVOLVEMENT



PUBLIC INVOLVEMENT PHILOSOPHY

The Airport Boulevard corridor project was developed with extensive and robust public input. The Public Involvement Plan for the Airport Boulevard project, and of the Austin Mobility Corridor Development Program as a whole, was designed to:

1. Provide users, neighbors, property owners, and other direct stakeholders with information about the project, process, and progress; collect input to assess current characteristics and conditions, develop a vision for each corridor, and identify corridor enhancement needs; and provide opportunities for public comment, review and feedback on the project's recommendations.
2. Use targeted outreach strategies to ensure that traditionally underrepresented and hard-to-reach populations and groups have sufficient opportunity to engage in the process, including environmental justice populations, small businesses and property owners, nonprofit and faith-based community-serving organizations, and others.
3. Maintain coordinated communications and outreach between the City and its consultants and other transportation providers, government agencies, and key public and private partners; and
4. Communicate and enable opportunities for input for interested citizens throughout the City, including transportation advocates and other communities of interest.

Public engagement activities for the Airport Boulevard project were fully integrated with those of the City's parallel planning initiative for the upper segment of the corridor (between I-35 and Lamar Boulevard), with the two projects introduced to the public as parts of a larger Airport Boulevard Initiative. This allowed the Airport Boulevard corridor



project to reach a substantial audience of interested citizens through coordinated publicity and earned media efforts. The corridor project engaged in additional targeted outreach to ensure awareness and create opportunities for participation and feedback among neighborhoods, business and property owners, and other stakeholders along the southern stretches of the corridor (from I-35 to US 183), outside the boundaries of the planning initiative.



PUBLIC INVOLVEMENT TIMELINE

Public engagement activities for the Airport Boulevard project were fully integrated with those of the City's parallel planning initiative for the upper segment of the corridor (between I-35 and Lamar Boulevard), with the two projects introduced to the public as parts of a larger Airport Boulevard Initiative. This allowed the Airport Boulevard corridor project to reach a substantial audience of interested citizens through coordinated publicity and earned media efforts. The corridor project engaged in additional targeted outreach to ensure awareness and create opportunities for participation and feedback among neighborhoods, business and property owners, and other stakeholders along the southern stretches of the corridor (from I-35 to US 183), outside the boundaries of the planning initiative.

SUMMER 2011:

- Stakeholder meetings with City of Austin departments, other transportation providers, other public agencies, major landowners, transportation advocates and interest groups, and others.
- Coordinated public engagement with the Airport Boulevard Initiative, including:
 - Development of communications materials, particularly the AirportBoulevard.com website
 - Meetings with the City Council-appointed Airport Boulevard Advisory Group
 - Participation in community outreach activities such as PhotoVoice, a stakeholder-driven visual assessment of current corridor conditions and needs for either preservation or improvement.



AUGUST-SEPTEMBER-OCTOBER 2011:

- Initial public workshop, held on September 13 in conjunction with the Airport Boulevard Initiative's Community Vision Workshop. At this meeting, more than 125 attendees used a variety of input techniques — including direct input on 1:100 scale aerial photos of the entire corridor — to indicate their priorities for corridor enhancement and improvement. Participants also provided input on preferred development typologies for different segments of the corridor and on specific gaps or bottlenecks that needed to be addressed.
- Community outreach to build awareness of and prepare stakeholders to participate in the September 13 workshop, including:
 - Postcards, telephone calls and in-person visits to business and property owners, as well as neighborhood associations and community-service organizations (approximately 100 in total), along Airport Boulevard from I-35 to US 183 (to



ensure coverage of areas not included in the planning portion of the Airport Boulevard Initiative).

- Flyers and push cards distributed widely along the corridor by members of the Airport Boulevard Advisory Group.
- Electronic newsletters distributed to the full Airport Boulevard Initiative interest list (which includes citywide interest groups and stakeholders as well as residents and businesses throughout the corridor)
- Presentations and small-group meetings with approximately two dozen community groups, including neighborhood associations, PTAs, chambers of commerce, churches and faith-based organizations, nonprofits, and others.
- Earned media relations, including approximately one dozen stories in local print and broadcast media as well as the City's own communication channels.



- Stakeholder meetings, including a preliminary Business Open House, held after the September 13 workshop and in conjunction with the Airport Boulevard Initiative's design intensive workshop. This weeklong effort fully incorporated planning and design of corridor roadways and street cross-sections, pedestrian and bicycle facilities, and rail and bus transit services as part of its comprehensive look at redevelopment-oriented design strategies for Airport Boulevard. Participants in these meetings included local businesses and property owners and transportation agencies and advocates.
- Public presentations on October 1 and 3 of initial mobility concepts and corridor assessments as part of the mid- and post-workshop presentation of the illustrative vision for the Airport Boulevard initiative. (The October 1 presentation was also in conjunction with the public release of the Imagine Austin Comprehensive Plan.) Approximately 225 participants took part in these presentations and provided feedback on the initial project work products.



NOVEMBER-DECEMBER 2011

- Public review forum and business stakeholder meeting on November 28 and 29 to present for review and feedback on the project's initial recommendations for corridor cross-sections and short- and medium-term transportation investments. Approximately 80 participants gave feedback on general issues, priorities and concepts and the project's specific recommendations. Outreach for this meeting again included phone and in-person contact with stakeholders as well as electronic newsletters and content on the AirportBoulevard.com website, on which the materials for this round of public engagement were also published and made available.
- Telephone survey of 25 business and property owners along the southern segments of the corridor, again to ensure opportunities to participate for stakeholders outside the boundaries of the planning portion of the Airport Boulevard Initiative. This survey helped gather valuable input from stakeholders who had not otherwise been able to participate in the public engagement process.



SAMPLING OF PUBLIC COMMENTS

The following are representative of the comments that were received on written Comment Cards that were available at several of the meetings. Additionally, they reflect comments that were voiced during the business stakeholder open houses. These comments are not all-inclusive; they have been selected to provide the reader with a range of voices that were heard during the process.

1. *Would like to see greater emphasis on green infrastructure throughout project, to mitigate urban heat island, deal locally with stormwater flows, and generally beautify public/semi-public and ROW areas for walkers/bikers/residents (people not in cars). Use public programs and public-private partnerships with COA to fund rain gardens, urban forest cover, green roofs (big ones), parks, planted trellises, bio-filtration – all Austin appropriate (climate).*
2. *Like the multi-modal lanes BUT: Don't really understand or concur with the efficacy of parallel parking and back-in parking adjacent to vehicle lanes, when someone (me) imagines parking and crossing planted strip, bike lane, and sidewalk to get to retail on street front (or whatever). This seems awkward at best — isn't it safer for*



all to simply scrap the street-edge parking and turn in to a retail block that will need dedicated parking anyway? Thanks. Good work so far.

3. *I have concerns about the implementation of medians along the corridor. It seems that a great deal of focus has gone into the development of a corridor that meets the needs of a population that I currently don't see using Airport very much (i.e. bicycles and pedestrians).*
4. *E. 53rd – south on northbound provide bus stop — back angled parking from intersection/again south of 51st. Anyone considered closing Clarkson south of its intersection with Bruning (Avenue)?*
5. *Pedestrian bridge across Airport at Ridgetop Elementary (between 50th and 51st).*
6. *I would like to see “large” public art placed/installed within this project. The cows and guitars are “cute” scattered around downtown, but are not landmarks. Please install landmark-sized art i.e. St. Louis Arch or Cowboy or Hemisphere Restaurant in S.A. or anything several stories tall. Thank you.*
7. *Allow bikes to go straight across Airport at the Aldrich light — need a simple curb cut on that island.*

A PUBLIC PROCESS FOR PROJECTS IMPLEMENTING THE CORRIDOR VISION

Based on the comments that were received in writing, and voiced throughout the process, this section details a proposed process for any further action that is taken in the design and implementation of the vision set forth by this document.

This document is by no means the last word on constructing and building the transportation facilities presented in later sections of this report. It does, however, set the groundwork for a Vision that helps to guide the next steps in the project delivery process. As such, this outreach and engagement process will help to ensure continuing efforts are made to understand community desires and concerns as segments of this corridor are designed and ultimately built.

The high-level nature of the Corridor Development Program process precluded certain elements from consideration when developing a Vision for the transportation facilities that would ultimately be built within the corridor. Some of these elements include a topographic survey and a boundary survey of the entire corridor.

These two pieces of data will be instrumental to the next steps of any Corridor Development Program, involving the completion of preliminary engineering plans that refine the Vision for the lanes, geometry, and transportation facilities presented in this report. This refinement will be based upon engineering principles that are established throughout the City to ensure that the facilities designed for the corridor are safe, well-constructed, drain properly, and ultimately meet the needs of the traveling public.

The Corridor Development process has used basic engineering principles in developing the Vision; however, more detailed information will be required for any element of the Vision to move forward. The preliminary engineering and environmental clearance phase



of the project, and subsequent detailed design phases for selected segments, will require that additional efforts be taken to coordinate with land owners, businesses, and residents throughout the corridor. There are several discussion topics that should be included within this phase of effort, some of which are governed by local, state, and federal statutes depending upon the segment of the corridor that is being designed.

The governing laws and local regulations that encapsulate the regulatory environment associated with transportation facilities are constantly evolving, as new techniques and information pertaining to a project's impact become available. This document will not attempt to recreate the exact requirements that will be necessary for approvals during the preliminary engineering and environmental clearance phase of the project development process. Rather, this report will highlight additional coordination steps that will help to ensure that there is a common understanding of the benefits and drawbacks associated with the proposed design options. This will also serve to facilitate a discussion about project sequencing and construction.

Some of the Items to be discussed during this phase of the development process include:

- Site Specific design considerations such as Driveway Modifications/Closures
- Drainage and Ponding Considerations
- Median Opening Locations
- Trip Generation and Planned Redevelopment
- Cross and Shared Access Agreements
- Additional Signalized Intersections
- Modifications to the Pedestrian Crossings
- Construction Sequencing

Ultimately, these topics will drive the recommendations that are designed as a part of the final design process, and a review of these elements is critical at each design stage for each segment of the corridor under consideration.

The final design process should take into account specific construction needs and phasing for the corridor, allowing for minimal disruption of local businesses and residents while maintaining a safe construction zone for the traveling public. In most cases, it will not be possible to completely work around the considerations of all of the local businesses. However, efforts to make accommodations should be reasonably attempted in order to minimize the construction impacts upon the local business fabric. Certain times of the year may prove better for construction than others for a significant portion of the corridor, and identifying those construction seasons early in the design process should help to set expectations and define alternatives.



EXISTING CONDITIONS



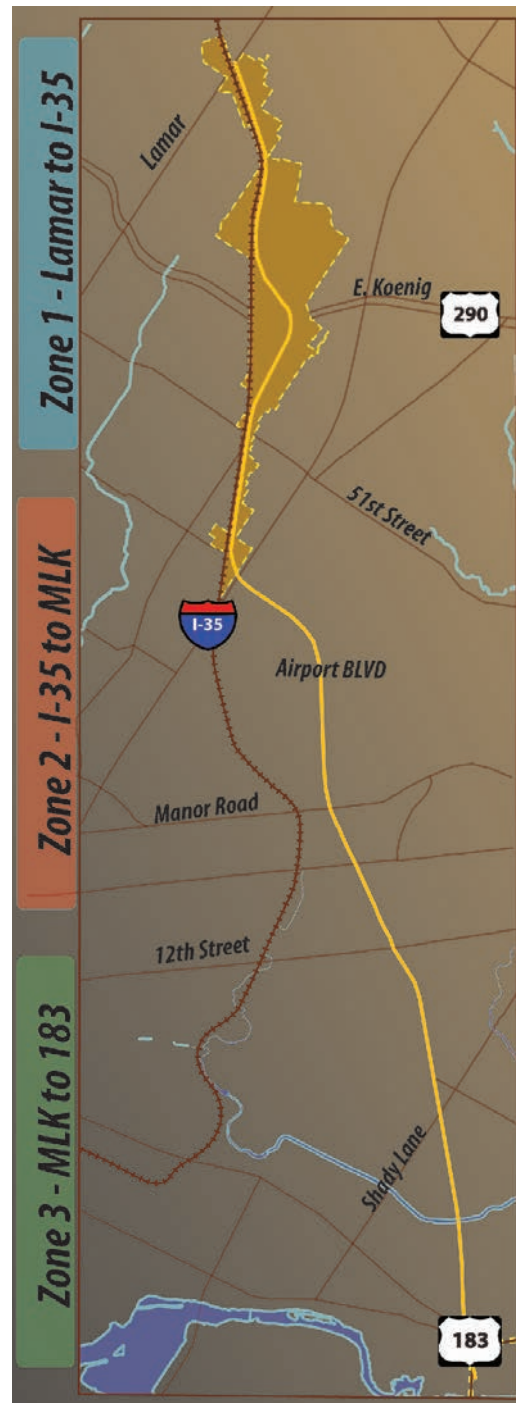
LAND USE AND CHARACTER AREAS

This section evaluates the existing context in terms of land use and character along the entire length of Airport Boulevard. For the purposes of this evaluation, the corridor is divided into three distinct geographic zones — Zone 1 (Airport from Lamar to I-35), Zone 2 (Airport from I-35 to MLK Boulevard), and Zone 3 (Airport from MLK Boulevard to US 183). This classification is depicted in the map at right.

Zone 1 is generally commercial in nature, with Capital MetroRail running parallel to the west of the Boulevard. Within Zone 2, from I-35 to East 38 ½ Street, the corridor is lower in intensity with residential neighborhoods, parks, and landscaped buffers along the roadway, whereas from 38 ½ Street to MLK Boulevard, the corridor is characterized by commercial development that includes auto-oriented, service, and warehouse uses. Zone 3 is fairly varied with commercial uses, residential neighborhoods, some undeveloped property, and redevelopment opportunities. The following provides more detailed information about the existing land use context and development character along Airport Boulevard.

ZONE 1

Zone 1 (Upper Airport Boulevard): A more intense planning effort — the Upper Airport Boulevard Initiative — is currently underway for Zone 1. The goal of this planning initiative is to create a vibrant redevelopment vision building on the assets along this section of the Boulevard and implement that vision with a new regulatory system of a form-based code (FBC).



In general, uses along the corridor are primarily commercial, with residential neighborhoods immediately abutting the commercial lots. This section of Airport Boulevard can generally be categorized into 4 different sections, based upon their typical land-use characteristics.

From Lamar Boulevard to Huntland Drive: This portion of Upper Airport Boulevard is characterized by:

- Industrial warehouse uses east of Lamar Boulevard and south of Airport Boulevard,
- Existing intersection of Lamar and Airport Boulevard, which is operating under significant challenges due to the mix of different modes, including the rail crossing,



- Short blocks and shallow lots,
- Existing enhanced transit station at Lamar/Crestview (north of Lamar Boulevard), and
- Rail line with limited crossing points separating the western portion of the corridor from the Boulevard.



From Huntland Drive to Koenig Lane: This portion of the corridor is characterized by:

- Large blocks and lots,
- Primarily commercial uses east of the Boulevard and industrial uses west of the Boulevard,
- Regional destinations such as Highland Mall and ACC,
- Rail line with limited crossings separating the blocks on the west from the Boulevard,
- Major bus transit hub on Highland Mall Boulevard and transit station at Airport and Highland Mall Boulevard,
- Large areas of surface parking along the roadway frontage, and
- Significant Heritage Trees on the Highland Mall property.



From Koenig Lane to 53 ½ Street:

This section of the corridor is characterized by:

- Significant large parcels and ownership patterns (Travis County, Leif Johnson Ford),
- Significantly underutilized properties with potential for redevelopment,
- Development frontage along both sides of the corridor, and
- Limited neighborhood connectivity to the west of the corridor and rail line.



From 53 ½ Street to I-35: This section of the corridor is characterized by:

- Small, independent, unique local businesses,
- Small lots and triangular blocks that can pose redevelopment challenges,
- Immediate adjacency to residential neighborhoods,
- Limited neighborhood connectivity to the west due to the separation created by the rail line, and
- Lack of pedestrian amenities, with continuous driveways, lay-down curbs and low gutters along the street frontage.



Zone 1 of the Project Area has been highlighted for the redevelopment opportunities that exist there, and the City of Austin has undertaken the Upper Airport Boulevard Initiative to examine ways to strengthen the local businesses and residential areas through targeted redevelopment strategies. There will likely be a completely revised set of zoning regulations within this Zone of the corridor that will have a much greater ability to tie the corridor together with the adjacent land uses. The joint efforts of the Corridor Development Program and the Upper Airport Boulevard Initiative focused closely on developing that logical connection, and the recommendations in this report highlight ways that those connections can accommodate all users of the transportation system.



ZONE 2

This section of Airport Boulevard is bounded by I-35 on the north and MLK Boulevard on the south. From I-35 south to 38 ½ Street, the corridor is characterized by established residential neighborhoods on the west and the new neighborhood of Mueller on the east. From 38 ½ Street south to Manor Road, the corridor has some established commercial uses that are mostly auto-oriented. At Manor Road, the Boulevard changes from a 6-lane divided roadway to a 4-lane roadway with a continuous center left turn lane. From Manor Road to MLK Boulevard, the western side of the Boulevard has established residential neighborhoods, and the eastern side has some older, auto-service related commercial uses.



Several intersections within the project area are currently constructed as a response to prior plans for much larger roadway facilities in a suburban setting that facilitated higher travel speeds. As an example, at the intersections of Airport Boulevard and Manor Road and Airport Boulevard and MLK Boulevard, there are triangular pieces of right-of-way that were previously reserved for future intersection expansion that are currently vacant and which could provide some opportunities for location of intersection treatments. These treatments would be lower- cost options that could nonetheless dramatically improve the connections between the land uses and the travel corridor.



ZONE 3

This stretch of Airport Boulevard is bounded by MLK Boulevard on the north and US 183 on the south. The entirety of the roadway within Zone 3 is currently under the control of the Texas Department of Transportation. Coordination between landowners and TxDOT with regards to the roadway, including any changes to their site access, falls under the guidelines set forth by the Statewide Access Management Manual. These requirements have led to a different way in which development is situated in relation to and gains access to and from Airport Boulevard since the adoption of the State's access policy.

The section from MLK Boulevard south to 12th Street is characterized by older residential neighborhoods on the west and some commercial uses and neighborhoods on the east. Evergreen Cemetery is located at the northeast corner of 12th Street and Airport Boulevard.

A neighborhood-serving commercial center is located at Oak Springs and Airport Boulevard, and the Boulevard is fairly commercial on both sides until it crosses Springdale Road and the rail line to Elgin. At the crossing of the rail line, Airport Boulevard is grade-separated; at three corners of this crossing, there are significant redevelopment opportunities presented by vacant and/or underutilized properties. A conceptual plan for the redevelopment of this area is shown in the Future Characteristics section of this document.

South of Shady Lane/Bolm Road is a significant drainage right-of-way with older industrial uses to the south. There are two mobile home/RV parks also located along this section of the Boulevard, but redevelopment of these areas may be challenging due to floodplain issues.



TRANSPORTATION CHARACTERISTICS

Airport Boulevard is a 6.5-mile corridor that runs from US 183 at Levander Loop to North Lamar Boulevard. Its name comes from its past history as the major roadway serving the former Robert Mueller Municipal Airport, now being redeveloped as the Mueller neighborhood near Airport and Aldrich. The roadway section of the corridor is under the ownership and maintenance of the City of Austin from North Lamar Boulevard south to Manor Road, and the Texas Department of Transportation from Manor Road south to the interchange with US 183. Most of Airport Boulevard can be described as a four-lane arterial roadway with travel speeds in excess of 40 miles per hour and a continuous two-way left turn lane. A small section, from Manor Road north to I-35, is a median-separated 6-lane roadway that was designed to accommodate significant peak hour traffic near the intersection of Airport and I-35. The entire corridor is designated by the City of Austin as a Core Transit Corridor, which requires the construction of 8-foot sidewalks and a 7-foot buffer whenever new facilities are constructed.



The pavement condition throughout the corridor varies greatly. Some sections have recently been repaved and restriped to provide bicycle lanes, while other sections are in need of repair and lack amenities for pedestrians or bicyclists. Ultimately, the roadway is best described as a 4-lane suburban arterial that lacks access controls and pedestrian and bicycle facilities for a significant amount of the corridor.

The text that follows describes relevant features of the various Zones of the Corridor in more detail.

ZONE 1

The section of Airport Boulevard from North Lamar Boulevard to I-35 has undergone significant changes over the past ten years. Traffic volumes in the area have decreased in conjunction with the reduction in trips to Highland Mall, and there are several key crossing locations that do not have sidewalks or clearly defined bicycle facilities. The entirety of Zone 1 can be classified as a



4-lane arterial with a center turn lane, although several of the major intersections within this stretch are very large and uninviting to pedestrians and bicyclists.

Within Zone 1, some sections of Airport Boulevard have bike lanes and existing sidewalks that are clearly differentiated from the remainder of the roadway; others lack provisions for non-motorized modes, including sections where sidewalks are virtually non-existent and where long stretches of driveways and parking areas crowd out the perceived space for pedestrians. Capital Metro has undertaken construction of a multi-use path along the western side of the corridor that extends from the Lamar/Crestview MetroRail Station to the Highland MetroRail Station.



The transit routes within this zone are actually quite conducive to handling additional growth in the share of people using transit. In addition to the two rail stations, a major bus transfer point is located at the Highland Mall property. Within this Zone, Airport Boulevard serves as a significant line-haul bus corridor, with minor stop locations along the corridor and major stop locations located just off of the corridor. However, the bus stops along the corridor tend to be nothing more than a sign and a waiting area for transit users, and the pedestrian facilities to access the stop locations are often lacking.

ZONE 2

The transportation facilities that currently exist within Zone 2 handle a significant volume of traffic that is attempting to access regional routes such as I-35 and MLK Boulevard. The major traffic generators within the area include several established residential subdivisions as well as the redevelopment activity at the former Mueller Municipal Airport site. This section of the corridor is primarily constructed as a six-lane divided facility with a planted median; a small stretch from Manor Road to MLK is constructed as a 4-lane arterial with a center turn lane. This section



differs from others on the corridor by having significantly fewer intersections or points where pedestrians and cyclists could safely cross the corridor.

Sidewalks are currently constructed along both sides of Airport Boulevard for the entirety of this Zone, and adjacent open space features and trails help make this area more conducive to pedestrian and bicycle activity. Bike lanes are not present within this stretch of Airport Boulevard. However, it appears that re-striping could accommodate a minimal bike lane in both directions through the 6-lane section.

Transit service in Zone 2 is limited to Capital Metro bus routes whose stops are located sparsely throughout the Zone. Major stop locations can be found in the residential areas near I-35 and in the commercial areas around MLK Boulevard. The section of Airport Boulevard between I-35 and Aldrich has been examined as part of the City's Urban Rail Feasibility Analysis; one potential routing option to bring Urban Rail to Mueller has been via the inside lanes of Airport Boulevard in either direction.

ZONE 3



As previously stated, Airport Boulevard between MLK Boulevard and the interchange with US 183/Levander Loop is owned and maintained by the Texas Department of Transportation. Airport Boulevard is constructed as a 4-lane arterial with a center turn lane throughout Zone 3, with small exceptions on two bridge sections where no turning accommodation is needed. The pavement within this stretch has recently been resurfaced by TxDOT.

Sidewalks within Zone 3 are positioned differently within the right-of-way at different locations. In some instances, the sidewalks are immediately adjacent to the road without any buffer separation. In other locations, the sidewalks are located adjacent to the edge of the right-of-way, which is set back significantly from the roadway. These sections are typically areas where topographic constraints require the use of retaining walls, and the sidewalks are constructed adjacent to adjoining homes rather than along the roadway. Other sections of Zone 3 lack sidewalks entirely. TxDOT is planning on constructing sidewalks along a section of the corridor that runs from 12th Street to Levander Loop in order to provide pedestrian accommodations in areas where there are currently none available.

One additional pedestrian facility of note within Zone 3 is the grade-separated pedestrian crossing that is located near the intersection of Goodwin and Airport. This crossing bridge is heavily underutilized, and children who attend school on the eastern side of the corridor often cross at-grade in less than desired conditions. It is recommended that this grade separated facility be taken down and that accompanying improvements are made to the at-grade crossing.



In conjunction with the resurfacing efforts described above, the vehicular lanes were narrowed slightly which allowed for a shoulder ranging between 4-and-5-feet to be provided. Given that the dimensions of the shoulder meet AASHTO standards for a designated bicycle shoulder, bicycle markings could be added in the short term as a first step towards achieving the cross sections established through this project.

Zone 3 has the highest transit boarding and alighting patterns of any of the Zones, likely due to a regularly spaced block structure, a higher-than-average transit dependency in surrounding neighborhoods, and the commercial and industrial nature of the uses immediately adjacent to the corridor. Transit amenities, however, are lacking, with most bus stops being nothing more than a route sign and waiting area. Significant gaps in the pedestrian realm are also a contributing problem in this Zone, but the planned TxDOT sidewalk project will have a significant effect on minimizing those gaps within Zone 3.

STORM SEWER AND DRAINAGE CHARACTERISTICS — ZONE 1

This portion of the corridor falls in three different watersheds: Tannehill, Boggy and Waller. The existing stormwater system relies on roadway surface flows into drainage ditches, which typically run along the west side of Airport Boulevard. Due to the age of the existing developments which front Airport Boulevard, there are few if any water quality or detention ponds. Existing runoff flows across the surface to intermittent storm sewer crossings of Airport, which direct flow to a drainage ditch on the west side of the roadway. The existing roadway has no water quality treatment.

The proposed roadway section for this portion of Airport Boulevard includes a landscaped median, enhanced bike lanes and pedestrian paths, and some on-street parking. Right-of-way enhancements will include sidewalks, lighting and streetscape landscaping. This new cross section provides an opportunity to provide in-street drainage facilities that also may include water quality treatment options.



REGIONAL WATER QUALITY FOR REDEVELOPMENT

The majority of the parcels along Airport Boulevard are less than one acre in size and generally contains 80 percent or greater existing impervious cover. There are several retail center parcels which are greater than an acre, including the Highland Mall site, currently being planned for major redevelopment by Austin Community College in association with Red Leaf Properties LLC. As the corridor redevelops and comes under current and/or future regulations (such as the proposed form-based code for Upper Airport/Zone 1), many sites will likely see reduced impervious cover due to landscape requirements. If redevelopment instead increases the impervious cover over existing conditions, the site will be required to provide detention or obtain a waiver. Since an overall reduction of impervious cover is expected, and since there are not existing flooding issues in the area, regional detention has not been a focus of this analysis. However, the opportunity exists for regional water quality improvements.

Redevelopment visions for Highland Mall and Upper Airport, as presented by the City's consultant team and the ACC/Red Leaf team, suggest a move towards increased street and pedestrian connectivity within the existing Highland Mall parking lots, as well as increased green space. As the largest redevelopment site in the project area, Highland Mall presents a unique opportunity to accomplish water quality on a regional basis. The mall site owners are exploring the purchase of excess TxDOT property at the grade-separated Koenig Lane intersection with Airport Boulevard. This property, on both sides of Koenig Lane, could be used as a location for regional water quality ponds. Conceptual sizing of ponds indicates that this right-of-way property could provide for ponds large enough to treat the mall site and a greater drainage area within the Tannehill watershed.

It is recommended that a program be developed within the City of Austin to cost-participate with the Mall developers to provide a regional water quality system that treats the greatest upstream area possible. A program for this portion of Airport Boulevard could be developed that allows smaller properties along the corridor — which cannot construct meaningful water-quality treatment systems on site — to satisfy water quality requirements created by future redevelopment. Since some of these tracts are in the Waller and Boggy Creek watersheds rather than Tannehill, it would be appropriate to focus on improved downstream water quality in Lady Bird Lake as a desired outcome. The creation of a regional water quality improvement would help facilitate the redevelopment of the area envisioned by the Upper Airport Boulevard Initiative.

ROADWAY DRAINAGE AND WATER QUALITY SYSTEM

The proposed landscape median within Airport Boulevard could provide surface water quality treatment for the roadway. The landscape in the median could be designed as a bio-filtration system to treat surface runoff, and the design could accommodate both surface drainage into the median and the installation of an underground system to tie into the larger stormwater drainage system off-site. The system would be designed to



route the first-flush water volumes to the bio-filtration system, with a larger storm by-pass which would flow into the storm water system.

ONGOING RELATED DISCUSSIONS

Regional Water Quality Pond Opportunity

As part of the Highland Mall/Upper Airport Redevelopment Initiative the consulting team H. Mau Ownership, and the City's Watershed Protection Department have discussed the desire to implement a regional water quality pond to serve the Upper Airport Redevelopment and other areas within the drainage basin. It was concluded that the potential implementation of a regional water quality pond would require revisions to the City's Environmental Criteria Manual and detailed engineering analysis of the contributing drainage area and sizing of the pond. Timing of the implementation of the pond and how it relates to the redevelopment of parcels along airport Boulevard will also be a major consideration.

STORM SEWER AND DRAINAGE CHARACTERISTICS — ZONES 2 AND 3

Airport Boulevard between I-35 and US 183 was originally constructed by what was then the Texas Department of Highways. It is a 6-lane divided boulevard with median between I-35 and Manor Road, then continuing south to US 183 as a 4-lane roadway with a continuous center turn lane. The roadway does not utilize curb and gutter along its entire length. Instead, roadway drainage is typically provided in open channels along the facility, with driveway culverts and short segments of storm sewer at intersections.

The vast majority of the corridor between I-35 and US 183 is located within the Boggy Creek watershed. Boggy Creek drains an area of approximately six square miles, with its headwaters located along Airport Boulevard near 51st Street. Boggy Creek suffers from extremely eroded banks in many locations. Several miles of the stream have been channelized with concrete and gabions.

Approximately 1500 feet of Airport Boulevard between MLK and East 16th Street is located within the Tannehill Branch watershed. Both Boggy Creek and Tannehill Branch are classified as Urban Watersheds by the City of Austin.

FLOODPLAINS

There are two areas of floodplain along this segment of Airport Boulevard. The roadway crosses Boggy Creek just south of Shady Lane. At this location, the 100-year (1% AEP) floodplain is generally contained within the Boggy Creek channel. Small areas of 500-year (0.2% AEP) floodplain extend beyond the channel walls. The roadway itself is above the flooding elevations. A second area of floodplain is located along the east side of Airport Boulevard near the Springdale Road intersection, along Boggy Creek Tributary 1.



MINOR STREAMS AND LOCAL DRAINAGE

There are approximately fifteen drainage systems along Zones 2 and 3 of the corridor. Travelling from north to south they are as follows:

- Box culvert system of Boggy Creek under I-35 and Airport Boulevard, which discharges at Parkwood Drive.
- 42-inch storm sewer at Airport and Rowood Drive, which discharges into an unnamed tributary of Boggy Creek near Crestwood Road.
- 54-inch storm sewer along the west side of Airport, discharging into an unnamed tributary of Boggy Creek just south of Schieffer Avenue.
- An additional storm sewer outfall along the west side of Airport just north of 40th Street, discharging into the same unnamed tributary.
- 30-inch storm sewer outfall at 38 ½ Street, discharging into the same unnamed tributary.
- 42-inch storm sewer outfall under Manor Road, discharging into Boggy Creek.
- Storm drain outfall at Moss Street into an unnamed tributary of Boggy Creek.
- 24-inch storm sewer outfall under 16th Street, discharging into an unnamed tributary of Tannehill Branch.
- 48-inch storm sewer along Airport, south of 12th Street, crossing under Oak Springs Drive and Tillery Street, discharging into the Oak Springs detention and wet pond.
- 36-inch storm sewer outfall, also discharging into the Oak Springs detention and wet pond.
- 48-inch storm sewer along Airport between Gunter Street and Goodwin Avenue, discharging into an open channel along Airport near Springdale Road.
- 42-inch storm sewer along Airport under Springdale Road, discharging into Boggy Creek Tributary 1.
- 42-inch and 48-inch storm sewers from Thompson Street under Airport, also discharging into Boggy Creek Tributary 1.
- 15-inch storm sewer at Bolm Road, flowing under Bolm Road and Mansell Avenue, discharging into Boggy Creek.
- 18-inch and 24-inch storm sewer culverts along Airport south of Boggy Creek, discharging into Boggy Creek.



WATER AND WASTEWATER CHARACTERISTICS

AUSTIN WATER UTILITY POLICIES

Austin Water Utility (AWU) addresses customer needs when water and wastewater service is being requested and conducts subdivision, site plan, and zoning reviews regarding water and wastewater service. Specific proposed development plans are reviewed to determine if any system improvements are needed to provide the required levels of service for the development. This is done thru the Service Extension Request (SER) process. Austin Water Utility's Capital Improvements Program includes a component aimed at replacing aging pipes that are found to be reaching the end of their useful life.

As projects are planned along the Airport Boulevard Corridor, developers should prepare and submit an SER to Austin Water Utility as early in the process as possible. The SER process will enable AWU to establish any water or wastewater improvements needed in order to serve the proposed development. This is an opportunity to work early in the planning process to inform AWU of the pending development so the utility can best assess service requirements in the area. If any upgrades are found to be needed, this process will help establish whether funding will be required from the private sector, public sector or both.

ZONE 1

Water: Redevelopment of tracts along this stretch could require upgrades to water systems serving the corridor. The area south of Airport Boulevard and west of Guadalupe Street along Canon Street is fed by a 6-inch cast-iron (CI) water line. The surrounding system is well-served, with a 30-inch line to the south in Gaylor Street and a 24-inch line east in Guadalupe Street. Likely the water line in Canon Street would likely need to be upgraded should that area redevelop. Likewise, redevelopment along Middle Fiskville Road south of Airport Boulevard may require upgrades to the 6-inch and 8-inch CI water lines within that street, which are fed by 6-inch and 8-inch lines in the neighborhood to the west. Properties along the east side of Airport Boulevard from Koenig to I-35 are also served by smaller 6-inch and 8-inch lines from the neighborhoods to the east.

Wastewater: Existing wastewater lines along Airport Boulevard are typically 6-inch to 8-inch lines, with some areas having larger 12-inch to 15-inch lines in place. While some of these lines appear from records to be older concrete lines, AWU states none are currently identified as in a condition needing replacement. AWU maps indicate a proposed 18-inch wastewater main west of Airport Boulevard in Guadalupe Street, crossing Airport Boulevard and continuing East along Pampa Dr. as a 12-inch line.



ZONE 2

Water: In general, tracts along this stretch are well served by 12-inch to 24-inch water lines along both sides of Airport Boulevard. In 2012 the City completed a new 24-inch water line along the north side of Airport Boulevard from Parkwood Road to Aldrich Street.

Wastewater: In general, tracts along each side of Airport Boulevard in this stretch are served with typical 6-inch to 8-inch lines, the majority of which flow away from Airport Boulevard. No immediate deficiencies or needed upgrades were noted.

ZONE 3

Water: Water service along this stretch is well-served, including 8-inch to 24-inch water mains running along Airport Boulevard.

Wastewater: In general, tracts along each side of Airport Boulevard in this stretch are served with typical 6-inch to 8-inch lines, the majority of which flow away from Airport Boulevard. No immediate deficiencies or needed upgrades were noted.

KNOWN PROJECTS

Austin Water Utility indicates that no major improvements are known to be needed along the Airport Boulevard corridor to address either current pipe condition or current capacity. AWU will continue to review possible future developments on a case-by-case basis through the SER process to determine future upgrade needs.

CRASH ANALYSIS

The crash data used in the analysis below was received from the Austin Police Department and ranged from January 2009 until June 2011. Over this two-and-a-half year period, there were a total of 662 crashes within the corridor, equating to an average annual crash rate of 265. Annual crash analysis does not specify problem areas when focused on the entire corridor. However, the nature of the accidents can provide some additional information that helps to clarify solutions that might be applicable across the corridor. A more detailed Crash summary is contained within Appendix B.

Of the 662 crashes that occurred, a total of 379 involved injury. Of these, 16 involved a pedestrian while 14 involved a bicycle. Of note, six serious injuries occurred as a result of crashes within the corridor, two which involved a bicycle and a vehicle. One crash occurred in which there was a fatality. This crash involved a pedestrian and a vehicle.

Fully one-third of the crashes can be classified as rear-end- or left-turn-related, which suggest a significant need to address conflict points within the transportation corridor. High concentrations of rear-end and left-turn related crashes throughout commercial



sections of the corridor typically stem from vehicles entering and exiting driveways. Research has suggested that the addition of a median and driveway consolidation measures can greatly reduce the number of rear-end and left-turn related accidents that occur at locations similar to stretches of Airport Boulevard.

The Corridor Development Program seeks to reduce serious and fatal crashes for all of the corridors being studied, including Airport Boulevard. Recommendations for short- and long-term safety improvements within this corridor coincide with that goal, including raised medians, access control and ADA compliant intersection designs. In addition, longer-term policy recommendations for this corridor have been shown elsewhere to reduce crashes, by reducing conflict points and creating predictable behavior patterns for all users of the transportation system.

Within the Airport Boulevard corridor, higher-than-average crash locations include the intersections of Airport Boulevard with Shady Lane and with Koenig Lane/US 290. Other major intersections also have higher-than-average numbers of accidents, but specific safety measures will need to be further examined for implementation at Koenig and at Shady Lane, such as reconfiguring the intersection to slow right-turn traffic, creating right-in/right-out channelization within the areas of Shady and Bolm to simplify the traffic patterns associated with those intersections which occur on a skew, and including provisions for safe pedestrian access to and across the intersection.

INNOVATIVE INTERSECTION TREATMENTS

During the course of this project effort, innovative intersection treatments were proposed for further analysis at several of the high-accident locations discussed above, including potential traffic roundabouts at Koenig Lane, an indirect left-turn treatment at 45th, and modern roundabouts at Manor and MLK. Additionally there is a need to examine the configuration of the intersection with I-35 and some innovative treatments may be warranted to accommodate the crossing of Urban Rail within the intersection on the east side of I-35. Detailed design discussions will be needed for these treatments that go beyond the scope of this project. A broader discussion of the perceived benefits, design constraints, impacts on surrounding redevelopment options, and safe accommodations for all users should be part of developing intersection designs for these high-accident locations.



TRAFFIC VOLUME

Traffic patterns along Airport Boulevard have experienced significant change over the past decade. In Zone 1, traffic has actually declined over the past ten years. Zone 2 and Zone 3 have experienced an uptick in traffic that can generally be associated with new housing within the Mueller redevelopment, as well as the continued congestion along regional roadways such as I-35 and US 183. Traffic counts collected during this project found that Airport Boulevard is handling between 17,500 and 38,000 vehicles per day, depending upon the exact location within the corridor.

Zone 1, the area that coincides with the Upper Airport Boulevard Initiative, ranges between 17,500 and 23,000 vehicles per day, with the northern section near Guadalupe Street averaging 17,500 vehicles, the section near 55th Street reaching 22,000, and the section south of 51st Street carrying 23,000. Zones 2 and 3 generally experience more traffic than Zone 1, given the combined residential and commercial uses that are present along the Boulevard. The southernmost section near Shady Lane currently carries 24,500 vehicles per day, which grows to 37,000 near MLK Boulevard and reaches 38,000 by Aldrich/Wilshire.

Zones 1 and 3 can generally handle the volume of traffic present throughout the day, with congestion occurring near the intersections and freeway interchanges; these can potentially be managed through improvements that add effective capacity, such as signal timing and access controls. Often these small adjustments to the existing intersection controls and access controls can add operating capacity without increasing the overall footprint of the corridor. Even if planning for 20% growth in traffic, Zones 1 and 3 do not need to be constructed with greater capacity than a 4-lane divided arterial; this corresponds to the vision that emerged from public outreach. The projected traffic volumes in Zone 2 are approaching levels that would suggest needing to maintain the 6-lane section that currently exists north of Manor Road, and possible extending this section south to MLK Boulevard. To consider a 4-lane divided arterial within Zone 2 would require design accommodations to support a modal shift that would help to curb peak-hour traffic demand — that is, alternative modes such as transit, cycling, and walking.

TRAFFIC OPERATIONS ANALYSIS

A peak-hour traffic simulation was performed using the existing traffic patterns within the corridor. This analysis was then used to evaluate design alternatives to alleviate congestion within the corridor's bottlenecks and ultimately to develop a list of improvements that could be carried forward as short- and long-term recommendations. This analysis is summarized in the following table. Mitigation strategies and development of specific projects are discussed in the last section of this report under benefits of improvements. Additional information on the Traffic Operations Analysis is contained within Appendix C.



Existing Signalized Intersections Within the Corridor	Existing Conditions Intersection Level of Service	
	AM	PM
Airport Blvd At Lamar Blvd	D	C
Airport Blvd At Guadalupe St	B	B
Airport Blvd At Huntland Dr	A	A
Airport Blvd At Highland Mall	A	A
Airport Blvd At Denson Dr	A	B
Airport Blvd At Koenig Ln Westbound	D	D
Airport Blvd At Koenig Ln Eastbound	B	D
Airport Blvd At 53 1/2 St/ Bruning Ave	C	B
Airport Blvd At 51st St	E	E
Airport Blvd At 45th St	C	D
Airport Blvd At I-35 Southbound	C	C
Airport Blvd At I-35 Northbound	D	F
Airport Blvd At Wilshire Blvd/ Aldrich St	C	C
Airport Blvd At 38 1/2 St	B	B
Airport Blvd At Manor Rd	C	D
Airport Blvd At MLK Blvd	D	D
Airport Blvd At 12th St	B	B
Airport Blvd At Oak Springs Dr	C	C
Airport Blvd At Goodwin Ave	A	A
Airport Blvd At Springdale Rd	C	D
Airport Blvd At Bolm St	B	C
Airport Blvd At Shady Ln	A	A
Airport Blvd At Levander Loop	B	A



MULTI-MODAL LEVEL OF SERVICE

A common theme that emerged throughout the public meetings and stakeholder discussions along Airport Boulevard was the desire to adequately facilitate the movement of additional automobile traffic, but not in a way that would make pedestrian and bicycle travel unattractive to the average user. A threshold of additional traffic was determined to serve as the design volume for which future infrastructure would be developed. In general, that design volume facilitated a 20% increase in traffic volumes over current levels. This consideration allowed for growth to occur within the corridor while balancing the community desire for multiple modes of travel.

In determining appropriate infrastructure revisions for each segment of the corridor, the Project Team utilized various planning-level tools that examined the efficiency of vehicular realm improvements while balancing the needs of the transit patrons, bicyclists, and pedestrians throughout the corridor. Various software platforms including the proposed Highway Capacity Manual's Multi-Modal Level of Service were utilized to determine trade-offs for each infrastructure decision. However, the current versions of these tools do not differentiate between types of bicycle facilities, nor do they recognize the intrinsic value of having consistent facilities throughout an entire corridor; they examine intersections and the segments between them, rather than focusing on the user experience of proposed facilities. In addition, the operating characteristics, in street versus separate guideway, were not factored into the performance metrics of the beta version of the tool. As such, there was not a final calculation that documents future Multi-Modal Level of Service; rather, Airport Boulevard as envisioned through this process can be described as a Corridor that balances the needs of all users of the future corridor and provides access to all modes of travel.



FUTURE CHARACTERISTICS



INTRODUCTION

The differences in the future cross-section improvements along Airport Boulevard from Lamar Boulevard to US 183 relate to specific development contexts along these frontages. The Corridor Development Program seeks not only to improve mobility of all modes of transportation along the corridor but also to create a context for sustainable, mixed-use development at key locations. This chapter explores the different development opportunities along the three distinct geographic zones of the corridor as previously defined. In addition to the information below, Appendix A provides the Conceptual Corridor plans that illustrate the manner in which the facility could be constructed.

The vision for transportation options throughout the corridor has several common elements. The provision of sidewalks and multi-use facilities throughout the corridor meets the established directive from the Austin City Council regarding proper provision of pedestrian facilities in Core Transit Corridors, such as Airport Boulevard. Bicycle facilities, such as a potential barrier-separated cycle track, in both directions are also included within each cross-section option for the corridor. Planted medians and buffers are present within the majority of the cross section options. Median landscaping shall be designed using drought tolerant native plant selections that have low water and maintenance requirements. The provision of a median may not be feasible or desirable in specific segments of the corridor in either the short or long term. However, providing for medians within the majority of corridor segments will serve to increase traffic throughput while reducing conflict points.

A Visioning Workshop held on September 13, 2011 provided extensive public input regarding issues and opportunities for development along the Airport Boulevard corridor. More information about the Visioning Workshop can be found in the Public Involvement section of this report.

A Design Workshop held from September 28 through October 3, 2011 explored design concepts for the redevelopment of the entire corridor. The first day and a half was devoted



to Zones 2 and 3, while the remainder of the workshop was devoted to Zone 1 and the Upper Airport Boulevard Initiative. The design workshop included technical sessions with city staff and other stakeholders, including business owners and property owners. There were two major public sessions held during the Design Workshop — a mid-workshop report-out on October 1 and a Public Review Forum on October 3. Several major development concepts were generated during the workshop.

This section summarizes the development context along the three different zones of the Airport Boulevard corridor. For Zone 1, a building- and block-level master plan was developed with more detail on the development context, in conjunction with the parallel planning work of the Upper Airport Boulevard Initiative. Zones 2 and 3 include two sites where redevelopment opportunities were evaluated, as well as aesthetic treatments for major intersections such as MLK and Manor Road.

Zone 1: The development vision for Upper Airport Boulevard leverages the Capital MetroRail route that runs parallel to the Boulevard on the west. In addition, two projects already in progress have the ability to greatly transform the character of Zone 1 — the Highland Mall redevelopment envisioned by Austin Community College and Red Leaf Properties LLC, and the build out of the Travis County North Campus.

One of the main goals of the Upper Airport Boulevard Initiative, and of its development of a form-based code, is to “Set the Stage for Reinvestment in Public Infrastructure and Economic Development.” The new vision is to design a complete street that accommodates all users. The shift in thinking embraces the idea that an acceptable level-of-service for the automobile can be provided by focusing attention on the bottleneck points (typically intersections) without the need to expand the roadway beyond its current 4-lane width. Just as important in the vision is that the non-automobile users need to be provided with a first class mobility experience.

CHARACTERISTICS OF ZONE 1

Based on the existing context and future development opportunities, five distinct sectors were envisioned within Zone 1, corresponding with areas of emphasis of the Upper Airport Boulevard Initiative. Each sector has a corresponding transportation vision that is depicted through the images included here. A full catalog of the proposed cross-sections is contained at the end of this section.

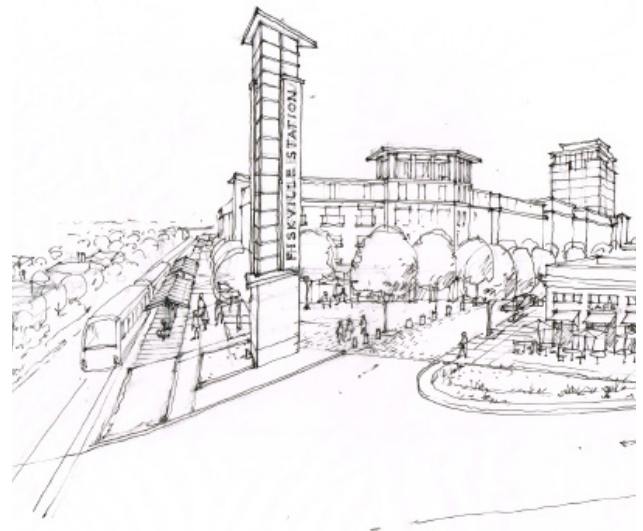
- 1. Highland Mall Redevelopment/Austin Community College:** This section of the Boulevard extends from Huntland Drive to Koenig Lane and includes properties on



both the east (to I-35) and west sides of the corridor. The vision for the redevelopment of Highland Mall would accommodate the needs of ACC and current tenants within the footprint of the current mall structure, with long-term phased infill of the surrounding parking lots to create a mixed-use neighborhood served by the Highland MetroRail Station. The existing rail station is proposed to be moved south across from the main Highland Mall entrance, where a tree lined promenade (that might resemble UT's West Mall) and a completely redesigned street intersection at Airport Boulevard and Denson Drive would complement the mixed-use destination. The industrial/warehouse area west of Highland Mall, flanking the MetroRail line, is also envisioned to be redeveloped into a mix of higher intensity uses, with appropriate transitions to the neighborhoods to the west and south.

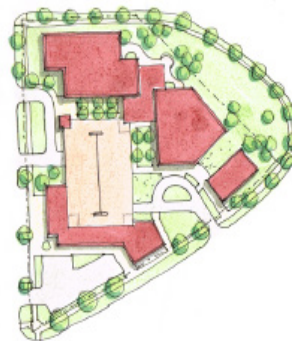
2. Fiskville TOD/Travis County North Campus:

South of Koenig Lane, Travis County owns significant property on the east side of Airport Boulevard and has plans to redevelop this North Campus location and add significantly to the employment base along the corridor. The Leif Johnson Ford dealership located south of Koenig and west of Airport Boulevard has been identified as a potential location for a future TOD on the MetroRail line. This stop, named Fiskville Station by the Upper Airport project team, can be redeveloped into a true urban village and transform this section of Airport Boulevard. A new traffic light may be installed (short-term recommendations call for a pedestrian hybrid beacon which could be modified based on future development needs) at the intersection of 55th Street and Airport Boulevard, which would become the main gateway into the TOD to the west and into the Travis County North Campus to the east.



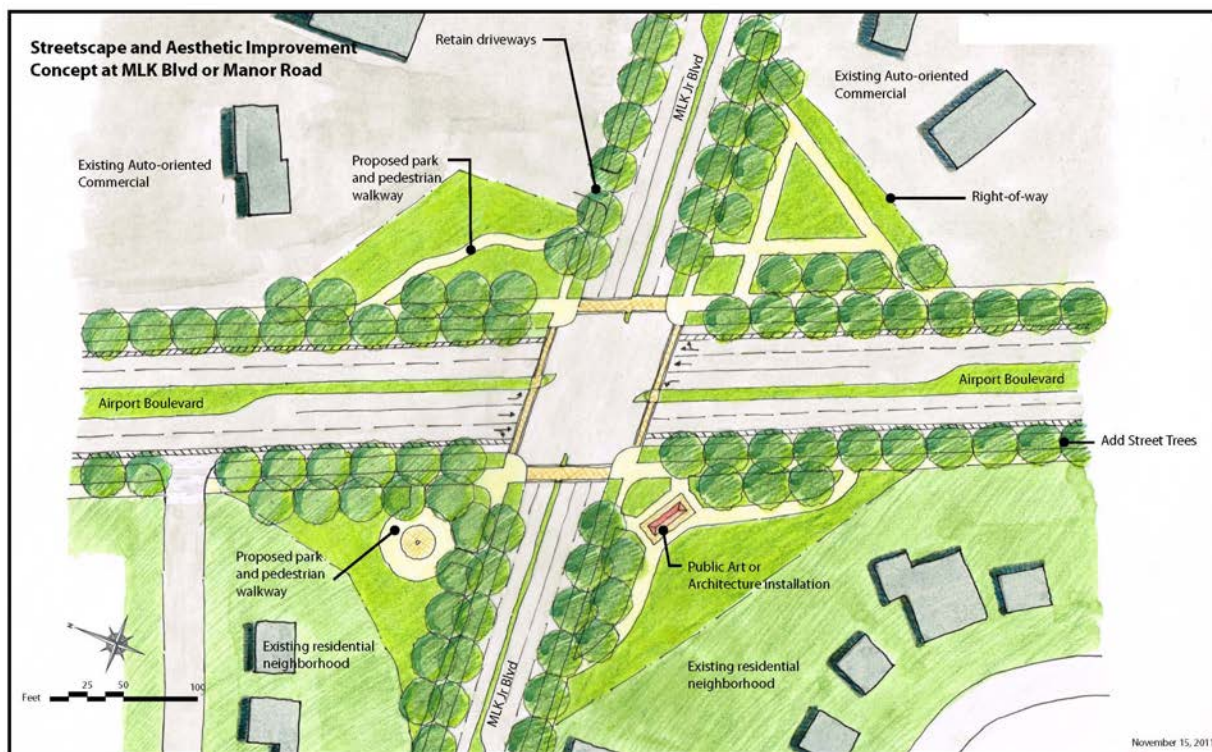
3. Independent Business Area: This section of the corridor lies east of the boulevard and between 53 ½ Street and I-35; it is characterized by shallow commercial lots that directly back up to residential neighborhoods. The vision for this section of the corridor encourages the gradual retrofitting or redevelopment of these properties with small commercial or mixed-use buildings that are closer to the street, with parking in the middle of the block. Another key idea is to formalize and separate the pedestrian and parking realms by relocating existing head-in parking along the Airport Boulevard frontage to be within the ROW as reverse-angle parking. In addition, bicycle facilities have been accommodated in the right-of-way between the motor vehicle travel lanes and reverse-angle parking.

4. Neighborhood Transition Area/ Ridgetop Neighborhood: The Upper Airport Boulevard Initiative includes vision and design concepts to produce appropriate transitions with live-work and townhome building types between the commercial lots on the Boulevard and the adjacent neighborhood.



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5. Upper Airport Gateway: This block is at the southern end of the Upper Airport plan area at the intersection of I-35. This block is highly underutilized and could become a major development node with office towers and mixed uses as a gateway into the Upper Airport corridor.



CHARACTERISTICS OF ZONE 2

The vision for Zone 2 from I-35 to 38 ½ Street is to preserve the character of the roadway and the adjoining neighborhoods, with landscape and streetscape enhancements and pedestrian connectivity between the neighborhoods, the Boulevard, and major destinations along this section of the corridor. South of 38 ½ Street, design concepts for intersection improvements were developed for the two major intersections at Manor Road and MLK Boulevard.



These design alternatives respond to community desires to make these intersections feel smaller and more pedestrian/bicycle friendly. They also work to improve the aesthetic quality of the intersection and to define the different Zones of the corridor in different ways. Ultimately a specific design exercise will be needed for several of the intersections within Zone 2, given the need to further evaluate Innovative Intersection Treatments. However, these concepts provide a frame of reference for the urban design elements that would help make the intersections less daunting to navigate for drivers, bicyclists and pedestrians alike.

The transportation facilities throughout this section are designed with multi-modal flexibility in mind. Throughout Zone 2, large volumes of traffic currently use this section of the corridor; there is a need to provide for alternate modes of transportation to accommodate the growth in traffic that is likely to occur. Additionally, there is a need to increase the number of locations at which cyclists and pedestrians can cross the corridor. Within the short-term this is accomplished through the installation of Pedestrian Hybrid Beacons at key locations along Airport Boulevard. Conceptually, these beacons could be installed at Zach Scott in order to break Airport Boulevard into navigable segments for pedestrians and cyclists that need to cross.



This section of Airport Boulevard has also been proposed as an alternative alignment for Urban Rail service into Mueller. In order to accommodate this infrastructure need, Airport Boulevard could function as a 4-lane divided arterial roadway from I-35 to Aldrich, provided that appropriate intersection improvements are made and that non-automobile travel provisions such as transit, cycle tracks, and sidewalks help to reduce the need for peak-hour capacity. There is a need to create a small reduction in peak-hour demand to accommodate the 4-lane configuration of Airport Boulevard in this area and the non-vehicular improvements can help meet that need.

CHARACTERISTICS OF ZONE 3

The existing context along Airport Boulevard south of MLK includes some underutilized properties in close proximity to Capital Metro's rail line to Elgin. During the Design Workshop, mixed-use concepts for that area were developed to show the impacts that major redevelopment within Zone 3 could have on the aesthetics and context of the roadway. The vision for Zone 3 maintains sections that are more industrial in nature



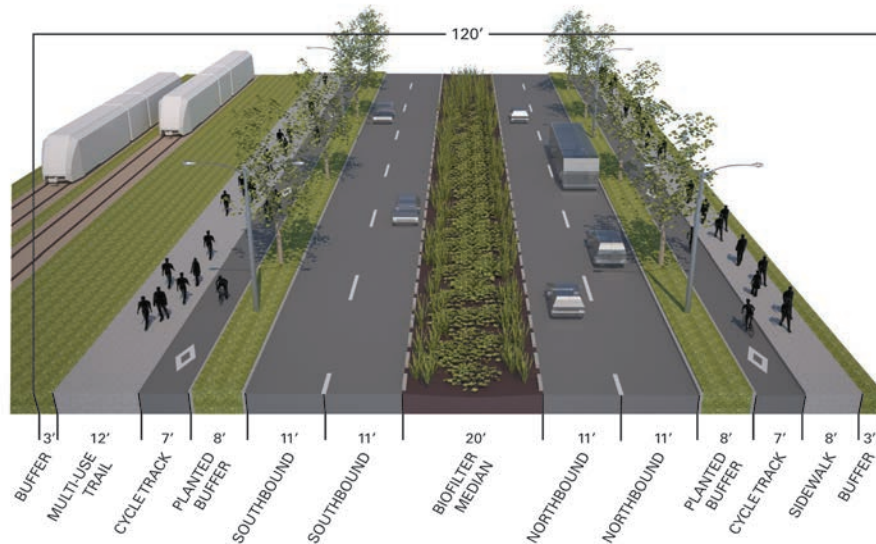
and the cross-section alternatives correspond to that context by omitting the median treatments and focusing on aesthetics for the various users that traverse this section of Airport Boulevard.

Conceptual Redevelopment Plan near Manor Rail Station Area



PROPOSED CROSS-SECTIONS ALONG AIRPORT BOULEVARD

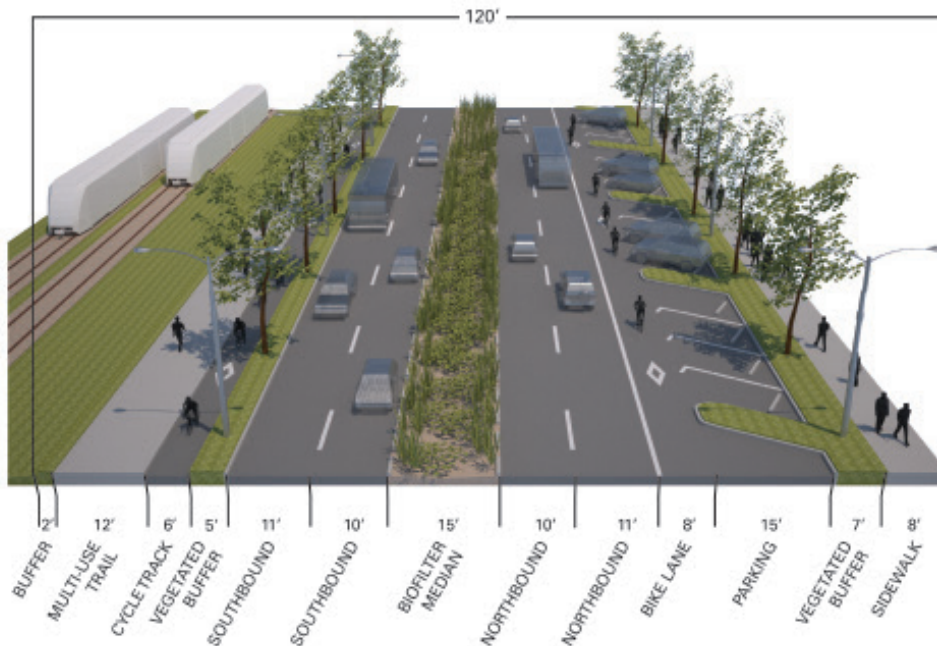
airport blvd I-35 to 48th Street



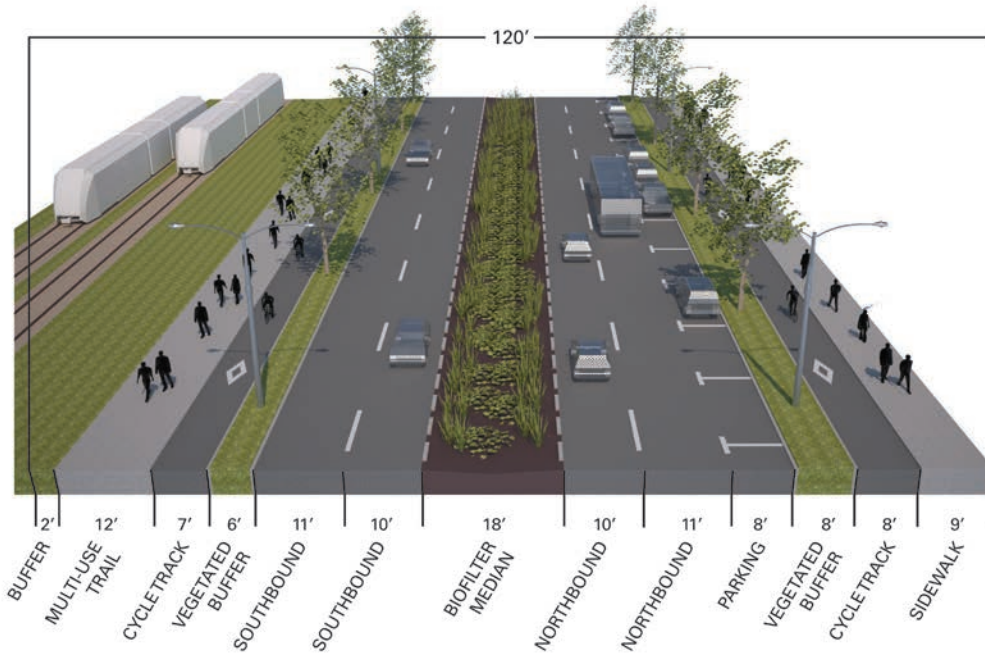
The cross-section shown above is the typical section for Zone 1 and the basis of design for the corridor. Alterations to this typical section occur to respond to the development context adjacent to the roadway in several instances such as the image below.

The two Highland Mall cross-sections differ slightly in their use of the space within the right-of-way. Design alternatives for further consideration may further deviate from these cross-sections, given the desire to protect Heritage Trees contained within the Highland Mall site; those concepts should keep the original intent of the community's vision in mind as they are further developed.

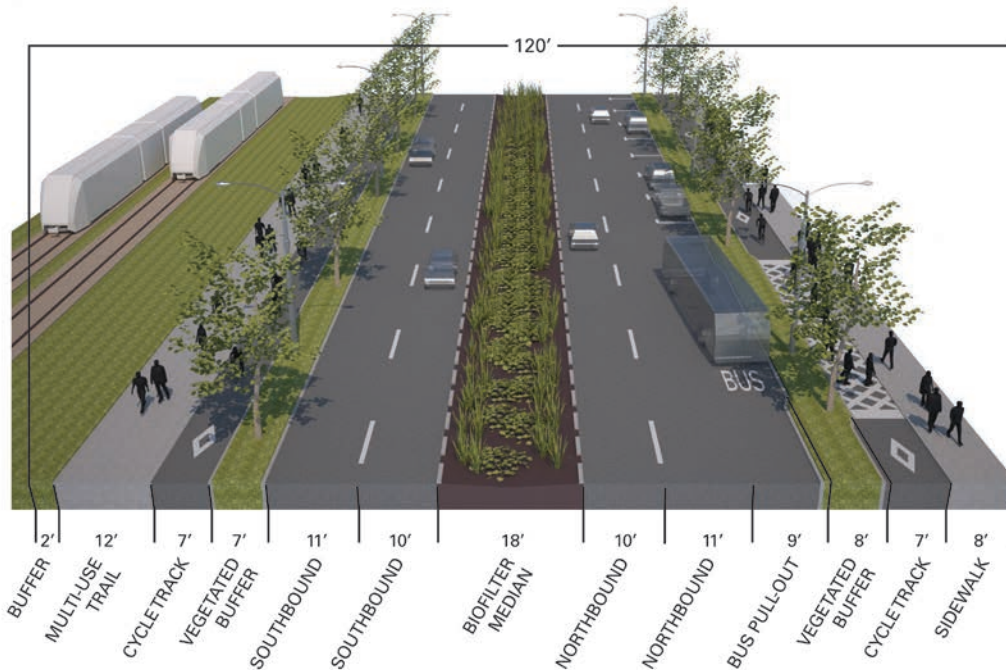
airport blvd 48th to 53-1/2 Streets



airport blvd Highland Mall



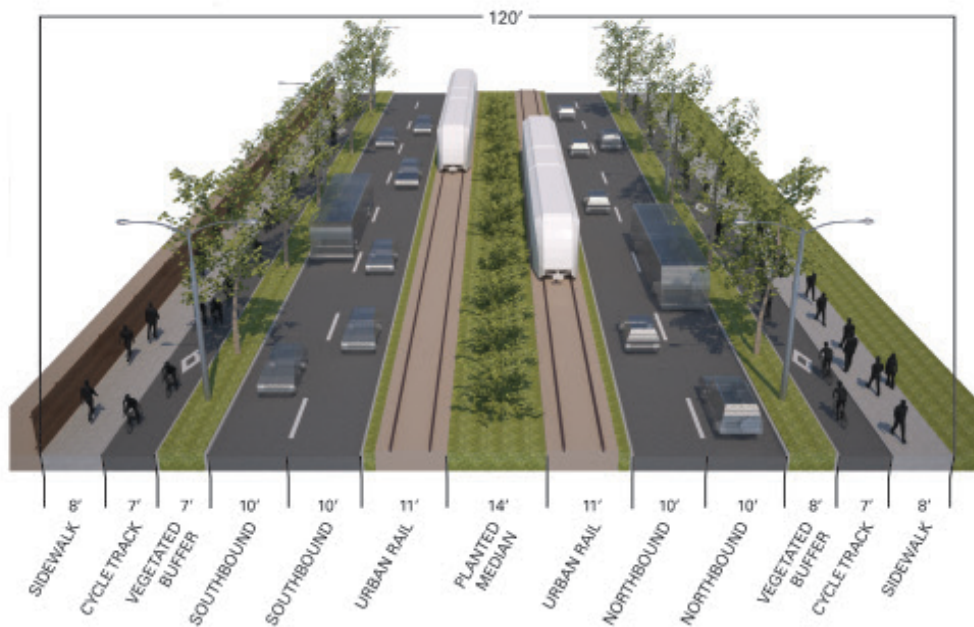
airport blvd Highland Mall bus pull-out



Additionally, the implementation of on-street parking within this area of the corridor will need to be done in conjunction with existing City ordinances that require the provision of a buffer when travel speeds exceed 35 mph. If travel speeds were witnessed to be lower within the corridor, this design consideration could be mitigated.

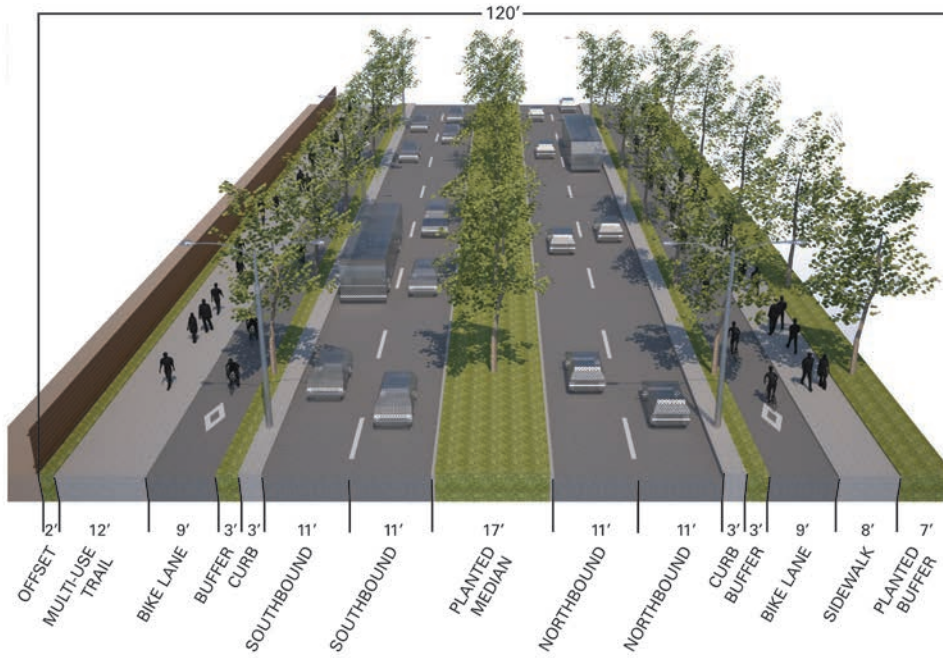
The section of the corridor between I-35 and Aldrich is currently envisioned as a potential route for Urban Rail service into Mueller. The exact details of the alignment, aesthetic treatments, and corridor configuration have not been finalized, given that there has not been a determination of the Preferred Alignment for Urban Rail. Additional efforts are needed to finalize any proposed reduction of travel lane capacity within this section of the corridor, and as such, the rendering here depicts rail very generally. It was expressed throughout the outreach efforts that this section would be best as a 4-lane divided arterial. In order to maintain a level of service that is acceptable to all users throughout the day. The provision of rail transit would be required in order to take automobile capacity from this section of the corridor.

airport blvd I-35 to Aldrich Street

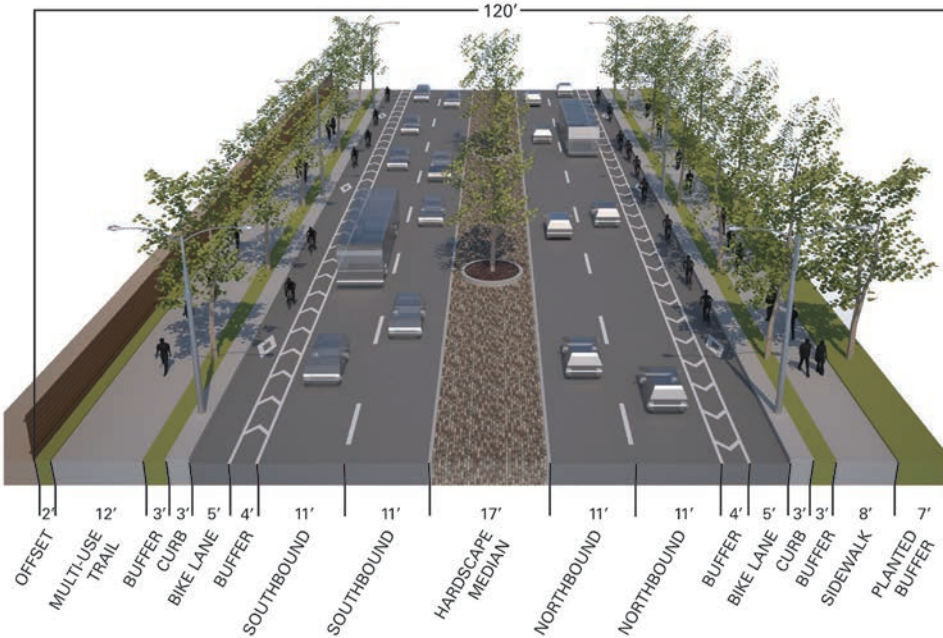


The remainder of the corridor has been envisioned with one of two typical cross-sections. Some segments of the corridor may not allow for the implementation of medians because of roadway geometry constraints, insufficient vehicle storage areas, and maintenance concerns pertaining to the mix of vehicles and the nature of adjacent development, or a desire on the part of the residents and business owners for different corridor treatments. The alternative cross-section that does not provide for medians may be a design alternative that is examined for other select sections of the corridor, again based on the areas of concerns listed above. It should be noted, however, that the median treatment helps to increase vehicular capacity within the 4-lane configuration of the road and is the most desired long-term solution for the corridor as it is often a safer design alternative that provides space for pedestrians and bicyclists without the need to cross a 6-lane facility.

airport blvd South Option 1 (planted median)



airport blvd South Option 2 (hardscape median)



Another consideration for the future design and construction of the Airport Boulevard Corridor relates to the placement of utilities within the ultimate design. Segments of the corridor may find that there is private sector interest in relocating the current overhead utilities into below ground structures. This is not envisioned through the entire corridor given the cost prohibitive nature of this type of enhancement. However, selective applications may make sense where private interests are willing to bear the cost burden. In general, the overhead utilities would likely stay overhead throughout the corridor and although not depicted in the previous images, these facilities would need to be coordinated within the existing Right-of-Way.

THE LEGACY OF PREVIOUS PLANNING EFFORTS ON THIS PLAN

Several previous planning efforts have been conducted within the Airport Boulevard corridor under the auspices of the City's Neighborhood Planning program. Some of these plans were conducted for smaller areas, such as the Lamar/Crestview TOD plan — which highlights intersection treatments for cyclists and pedestrians that are still valid and that fit within the long-term vision of a multi-modal corridor. Other planning efforts were larger in scale, like the Upper Boggy Creek Neighborhood Plan. Regardless of the scale of the planning effort, some of the ideals expressed by resident and business owners are very similar for the entire corridor.

One of these consistent ideals is to maintain a 4-lane configuration of Airport Boulevard within the existing right-of-way. By maintaining the configuration of a 4-Lane facility rather than a 6-lane divided arterial, the corridor development program avoids the need for large amounts of right-of-way to be taken. There may be instances where in order to accommodate intersection improvements right-of-way may be required; however, given the lack of a boundary survey those instances are not specified at this time. Another consideration of the 4-lane configuration is the reduced amount of impervious cover within the corridor than might otherwise be required.

This provides opportunities to minimize the impacts to water quality and drainage as the corridor is reconstructed. The idea of a 4-lane arterial was often coupled with a desire for increased pedestrian amenities and for logical ways to create connections to routes identified in the citywide Bicycle Master Plan. Some plans suggest limiting vehicular access to specific points of entry into neighborhoods, and those ideas were largely incorporated into the concepts presented within Appendix A of this report.

Some prior planning efforts prescribe intersection improvements that would have an effect on vehicular level of service; many of those initial concepts are incorporated into the recommendations here. These include entry and exit modifications to the Wilshire Woods and Delwood I neighborhoods at Parkwood; restrictions to vehicular access across Airport Boulevard at Aldrich/Wilshire; construction of sidewalks throughout the corridor; and provision of mid-block pedestrian crossings that include signalization through Pedestrian Hybrid Beacons.



IMPROVEMENTS TOOLBOX



INTRODUCTION

A multi-modal transportation system is defined as “a network of facilities designed for joint use with connections between two or more modes of transportation.” This document proposes a policy for developing livable multi-modal facilities to realize the goals of this project and of the other studies that have been conducted throughout the Airport Boulevard corridor. This toolbox utilizes concepts that were presented within the Austin Strategic Mobility Plan and a host of other research and policy documents that have been developed across the state and nation.

Certain segments of the corridor, most notably within Zone 3, will need to comply with certain TxDOT policies for developing multi-modal corridors. However, greater flexibility has been recently provided in that regard through the adoption of the ITE Manual on Context Sensitive Solutions: Designing Walkable Urban Thoroughfares into the TxDOT project development process.

Additionally, Zone 1 will have design considerations that extend beyond the right-of-way and address network connections that serve all modes of transport, based upon the policy recommendations of the Upper Airport Boulevard Initiative.

This toolbox is not all-encompassing. As new techniques or design treatments become more widely used throughout the City, the merits of specific design alternatives and treatments should be balanced with the overall intent of the vision established as a part of this document.

INTERSECTIONS

Intersections are one of the most significant factors that determine a corridor’s mobility. The interaction between the main roadway and its cross-streets can impede travel, increase accidents, and hinder access to adjacent properties. Properly planned intersections, along with the type of intersection control, will assist in maintaining desired levels of service for multiple travel modes throughout the corridor. Improvements to intersections have been a key focus of the Airport Boulevard Corridor Development Program, given the desire of the community to maintain the 4-lane configuration of the roadway throughout the corridor.

Intersections accommodating major arterials and collectors tend to be four-way and can have a number of different configurations, using traffic signals and their timings as the main form of traffic control. Signal timing is the sequence and duration of each phase of a traffic signal. Advanced traffic signal controllers provide greater flexibility in controlling



the flow of traffic through an intersection. Coordinated signal timing along a corridor can increase the efficiency of the street by allowing the highest possible number of vehicles to pass in the shortest time span. Signal timing can also positively affect air quality when travel time and idling are reduced. This technique can be used to increase capacity on corridors and is a less expensive option than adding lanes.

Intersections accommodating minor arterials, minor collectors, and local streets can be controlled or uncontrolled depending on traffic volume.

Another form of intersection treatment that is currently being examined throughout the City of Austin is the implementation of modern roundabouts. Roundabouts have been used throughout the world as a way to accommodate a traffic control



mechanism without the use of a traffic signal. There may be applications throughout the Airport Corridor that would benefit from the implementation of a roundabout. Both turning movement counts and existing ROW should be analyzed to better determine an appropriate intersection traffic control type.

INTERSECTION ACCESS

Because connectivity is a key factor allowing people to walk or bike between neighborhoods and communities, street connectivity requirements are potentially important at the neighborhood level. An interconnected local street system is necessary to promote orderly and safe development with streets functioning in an interdependent manner, to provide adequate access for emergency and service vehicles, to enhance access through connected transportation routes, and to provide continuous and comprehensible traffic routes.

Maintaining connectivity within the Airport Boulevard corridor is important to provide multi-modal accessibility. Sustainable networks require local streets to be highly connected with the arterial system, which represents a cost-effective alternative to expensive grade separations, interchanges, and right-of-way purchases. This connectivity of sustainable networks increases opportunities for and performance of other modes of travel such as walking, bicycling, and transit, as well as improving emergency response times. Sustainable networks take a greater level of planning and creative design to build; however, their result is sustainable in terms of capital and

maintenance costs. This can be achieved across a large portion of the corridor; however the existing MetroRail does present some barriers to full implementation of a well connected local and arterial network within Zone 1.

While unconventional, this project examined the potential closure of local streets that currently access Airport Boulevard. The closure of the vehicular access at 46th Street helps to accommodate a safer and more efficient condition for 45th Street while improving the Bicycle and Pedestrian Connectivity across Airport Boulevard because of the additional signal that will be required at 46th Street. This closure also removes conflicts with the at-grade rail crossing. There may be some mechanism to use this closure to gain an at-grade crossing at another location within the City as needed.

DRIVEWAY ACCESS STANDARDS

Consolidating the number of driveways along a street can have positive benefits for both the traveling public and property owners. Fewer driveways reduce the number of conflict points along the street, thereby increasing safety. In many commercial areas, the length of frontage available to each property owner is limited, which makes it difficult to provide properly designed driveways. Often, the result is a continuous driveway that is unpredictable and less safe for non-motorized users of the roadway. Eliminating driveways and sharing access can improve overall access and increase the available area for parking and deliveries. Reducing access locations is difficult because many property owners assume that the loss of access will result in a loss of customers. However, cross-access (the movement of vehicles between two adjacent sites without having to enter the public street system) can be implemented via modifications to the access policies that apply along the Airport Boulevard corridor as redevelopment continues to occur. The phased implementation of cross-access and shared access driveways within the corridor, in conjunction with new parking options for segments of the corridor where driveways are very tightly spaced and the opportunities for redevelopment are limited by the depth of parcels, can help to improve the operations of the corridor for all users. A policy recommendation has been included here, but context-specific considerations should ultimately determine which elements of this policy are put into place.



MEDIANS

Medians are typically used in urban settings to provide a positive separation between opposing traffic streams and to restrict the number of opportunities for left turns between intersections. Therefore, medians reduce conflict points. Locations where left turns are permitted can be channelized to include a left-turn bay where turning vehicles are protected and removed from the traffic stream. Including left-turn bays increases the efficiency of the travel lanes. Also, adding median treatments to corridors has been shown to reduce crashes and increase safety.

Medians can be landscaped to enhance the aesthetics of the corridor. Given the need for drainage and water quality infrastructure throughout the Airport Boulevard corridor, the design concept proposed for medians includes a bio-filtration area to enhance water quality, provide much needed drainage within the corridor, and be used to aesthetically enhance the corridor.



CORRIDOR LIGHTING

Pedestrian and street lighting can increase visibility and safety for users after dark. Standardized light fixtures also help establish a design theme by providing a consistent architectural element that can be repeated throughout the corridor. Attachments such as seasonal banners or hanging baskets can be added to poles to highlight a special event or area.

LANDSCAPING ELEMENTS

Landscaping and street trees can enhance a neighborhood's identity by establishing a consistent aesthetic for the corridor and increasing visibility of significant elements such as monuments, major intersections, or plazas. Street trees can also aid in traffic calming by framing the roadway to encourage lower speeds and driver awareness of space beyond the vehicular realm. Additionally, street trees make for a more pleasant pedestrian experience by providing shade for sidewalks and a physical separation between pedestrians and moving traffic. Due to historical droughts seen in central Texas, landscaping shall be designed using drought tolerant native plant selections that have low water and maintenance requirements.

PEDESTRIAN AMENITIES

Pedestrian amenities are valuable in giving any street a "sense of place" while creating aesthetics that are pleasing. They allow for certain areas to become pedestrian-friendly,



which in turn increases social interaction in public spaces. These amenities can be visual, textural or both.

There are many amenities to choose from, ranging from informational to practical, and the number of combinations are limitless. Examples include bollards, planters, decorative sidewalk paving, public rest rooms, telephone booths, waste receptacles, clocks, benches, picnic tables, and water fountains.



Studies have shown that when amenities are properly planned and implemented, people will use them, which is ideal for redevelopment and revitalization projects in high-traffic areas such as Airport Boulevard. In addition, the wider sidewalks required along Airport Boulevard as a Core Transit Corridor allow for these amenities to be placed where pedestrians and other users of the corridor expect to find them, creating predictability throughout the corridor when and where vehicles need to pass through the pedestrian realm to access their ultimate destination.



PEDESTRIAN / BICYCLE MOBILITY AND LINKAGES

PEDESTRIAN ENHANCEMENTS

Pedestrian enhancements connect all travel modes and introduce walking as a viable form of transportation, which is essential to the success of many of the other strategies identified for corridors such as Airport Boulevard, including mixed-use development opportunities, increased transit use, main streets, and “park-once” districts offering walkable access to community parking serving multiple businesses and destinations.

A sidewalk without curb ramps is useless to someone using a wheelchair. A street with an awkwardly placed transit stop without safe crossings is dangerous for transit riders. Conversely, a road with heavy freight traffic must be planned with those vehicles in mind, and pedestrian access should be limited. Each of these principles applies at different points throughout the corridor, and at various points in time as the corridor reinvents itself.

The future use of pedestrian enhancements will focus on improving non-vehicular access to new development and existing destinations and neighborhoods. Priority locations for enhancements should be transit stations and stops, routes from neighborhoods to schools, and along multi-modal corridors and main streets. These enhancements involve coordination between public works and private developers to create a cohesive pedestrian environment with a connected sidewalk network, reduced neighborhood street speeds via traffic calming and lower design speeds, and improved location and coordination of transit stops.

BICYCLE ENHANCEMENTS

Bicycle enhancements help provide a viable alternative to driving for the commuter cyclist and facilitate travel for the recreational cyclist. Successful enhancements emphasize adequate, well-maintained, continuous, and secure facilities that are connected to other modes of transportation.

The City of Austin has developed a Bicycle plan that establishes a wide-reaching network of non-motorized transportation options to create regional creativity. The implementation of corridors with multimodal elements such as cycling amenities is essential to the implementation of the Bicycle plan. As such, the



construction of Airport Boulevard in the manner envisioned through this process is essential to meeting the overarching goals established within the City's Bicycle plan as well as the goals envisioned for this corridor. The vision for the corridor is to create a multimodal corridor safe for all users, bike lanes and bicycle accommodations only further accomplishes this vision.

Many bicycle facilities, especially separated facilities, have multiple commuter and recreational users and should be designed as such. A bicycle-friendly environment consists of significant regional trails linked to a network of major streets with separated/striped bicycle lanes and / or signed bicycle routes. This kind of system maximizes connections to other modes (such as pedestrian routes and transit) and minimizes unsafe interactions with auto traffic at intersections. It also has the ability to reinforce the awareness of other modes as travelers approach intersections.

Benefits of bicycling include:

- Fewer vehicle miles traveled and less environmental pollution
- Reduced land and financial resources devoted to vehicle parking and travel lanes
- Improved health through exercise and stress reduction
- Reduced individual travel costs (auto maintenance, parking, fuel)

PARKING TYPES

On-street parking is typically provided in business districts where commercial establishments are constructed on low-speed neighborhood-scale streets. On-street parking can provide greater accessibility for patrons using commercial districts and can be designed as angled or parallel parking. Redeveloping areas into walkable communities has re-established the desire for on-street parallel parking as part of the street design. The introduction of on-street parking helps facilitate multi-modal mobility by encouraging more pedestrian activity.



A small segment of Airport Boulevard has been envisioned to include on-street parking at some point in the future. Primarily, this option within the right-of-way allows for the continuation of parking access, while consolidating access points to multiple businesses and creating opportunities for redevelopment of parcels with shallow depths.

PLACEMAKING ELEMENTS

GENERAL MIX OF USES

A general mix of uses refers to making sure there is a healthy balance between residential, commercial, industrial, office, institutional, or other land uses. Having a balance offers convenience for the public by allowing for a certain component of the daily trip patterns to be accomplished within walking or cycling distance at home. Additionally, a mix-of-uses promotes a healthier live-work balance which can help alleviate the need for peak hour automobile trips that would otherwise utilize Airport Boulevard. Studies have shown that this “internal capture” component can substantially curb the need for peak hour trips in urban areas.

DEVELOPMENT ORIENTATION

The direction in which a development or project is oriented can affect potential solar gain. It also affects light penetration into the development as well as solar exposure for outdoor areas in the vicinity.

SCALE / INTENSITY (BUILDING HEIGHTS)

Scale and intensity present planning and design issues in a variety of situations: creating economically feasible development plans; developing zoning for a new district; guiding development in a historic district; evaluating shadow, wind, and other potential impacts; and reviewing development proposals for consistency with community goals or compatibility with adjacent buildings or open space.



PEDESTRIAN ACCOMMODATION

A sidewalk is a path for pedestrians that is situated alongside a road or (as a footpath) through a park. A sidewalk may accommodate moderate changes in grade. The City of Austin has designated Airport Boulevard as a Core Transit Corridor; as such, the sidewalks proposed here are a minimum of 8 feet in width, with full Americans with Disabilities Act compliance required as future detailed design ensues.



BICYCLE ACCOMMODATION

The vision for the corridor calls for Airport Boulevard to be usable by cyclists of all ages and skill levels. One way to achieve this vision is for a separated cycle track to be constructed along both sides of the corridor. Typically, cycle tracks are 7 or 8 feet in width and allow for cyclists to have their own space that is separated from the automobile traffic on the street.



Bike lanes can help connect cyclists with important destinations and transit facilities before the construction of cycle tracks occurs. Bike lanes are typically not separated, with the exception of striping, from automobiles on the corridor. They are typically 5 or 6 feet wide and are located along the outside edge of the pavement. The City has currently developed a practice of re-striping corridors during overlay treatments to provide for this interim step where the pavement and current corridor design will allow slight modifications to accommodate this space. This has not been completed along Airport Boulevard.

SHARED ACCOMMODATIONS

A multi-use path can be constructed on right-of-way provided for that purpose. Multi-use paths should be constructed a minimum of 10 feet wide, with a desired width of 12 feet, and most are hard-surfaced to facilitate their variety of uses. Signed and striped to ensure they operate as designed, multiuse paths are used by walkers, joggers, and bicyclists. Properly designed and maintained paths will provide a safe, efficient place for travel and recreation. Currently, plans are in place for the provision of a shared-use path along the west side of Airport Boulevard from North Lamar Boulevard to Highland Mall Boulevard (between the Crestview and Highland MetroRail stations). The ultimate vision for Airport Boulevard calls for a shared-use path to be constructed along the western side of the entire corridor.



NEIGHBORHOOD LINKAGES

Bringing two or more neighborhoods together to interact with one another can be accomplished with bike trails, sidewalks, and adjoining community parks. At access points to neighborhoods, pedestrian crossing signals are used along major roadways.

A new variation now being deployed in Austin is the Pedestrian Hybrid Beacon (previously referred to as HAWK Signals — button activated pedestrian and bicycle only signals that stop vehicular traffic), which has been proposed to provide safe crossing zones at several locations along the corridor. In some instances the Pedestrian Hybrid Beacon may be a precursor to a fully signalized intersection; however, until such time that signal warrants can be met, they provide a safer option for crossing the corridor as a pedestrian or cyclist.



OPEN / CIVIC SPACE

Open and civic spaces are public spaces meant to be enjoyed by the public. Open space broadly includes woodlands, fields, wetlands, stream banks, floodplains, and unique geologic formations. Alternatively, civic spaces are open areas within an urban setting, such as inner city parks, plazas, and outdoor auditoriums.

The Airport Boulevard corridor has a significant amount of open space within certain areas, notably public park amenities located at and near Mueller in Zone 2 and nearby Govalle Park in Zone 3. However, there are significant opportunities to create civic space at locations throughout the corridor, including retrofit treatments of the intersections at Koenig, Manor, and MLK. Examples of such treatments are provided in the Future Characteristics section of this report.

RECOMMENDATIONS



INTRODUCTION

The focus of this planning effort has been to create a long-term vision for the corridor. However, the outcomes of this document go beyond defining a vision by establishing a program of recommended improvements and policy revisions that make incremental steps towards achieving the overall vision. The following section includes both short- and medium/long-term recommendations for consideration as future funding opportunities arise, whether local, regional, or national.

SHORT-TERM RECOMMENDATIONS

Quick implementation of improvements within the corridor can help to show progress in the wake of a significant public outreach effort, while also helping to move traffic in a more efficient manner throughout the corridor. Since intersections are one of the most significant factors controlling a corridor's overall mobility, properly planned intersections and evaluation of new types of intersection control will assist in making incremental steps toward the ultimate vision for the corridor. Improvements to intersections have been a focus of the Airport Boulevard Corridor Development Program, given the desire of the community to maintain a 4-lane configuration of the roadway.

In defining projects that could be implemented within the near term, the Project Team focused on relatively low-cost solutions that could be accomplished within the existing right-of-way, that would help move all users more efficiently through and across the corridor, and that would ultimately establish the transportation patterns desired for the long-term vision for the corridor. Each of these projects would need to meet the standards set forth within the City's signal Warrant Analysis and should be examined within that framework before modifications/additions are made. The Project Team also recommends preliminary and final design in the short term at two segments along Airport Boulevard to act as pilot projects for the remainder of the corridor — the section near Highland Mall, and the section from 46th Street to Wilshire/Aldrich that crosses under I-35.

- Airport @ Highland Mall Entry Plaza — Add a Pedestrian Hybrid Beacon
- Airport @ Koenig — Removal of the free right turns at all legs of the intersection to slow traffic in the turns and improve the predictability of traffic movements for pedestrians and cyclists. This recommendation also improves pedestrian and bicycle safety in crossing the combined intersections. This will require coordination with TxDOT.



- Airport @ 55th — Add a Pedestrian Hybrid Beacon (Full Signal in Long-Term)
- Airport @ 53 ½ — Modify signal timing to accommodate traffic patterns
- Airport @ 51st — Replace Signal Controller Cabinet for improved coordination with transit considerations. This improvement has been completed.
- 51st @ Clarkson — Remove Signal. This improvement has been completed.
- Airport @ 46th — Add a Pedestrian Hybrid Beacon or full signal
- Airport @ 45th — Implement indirect-left treatment, with left turning restrictions implemented at 45th.
- Airport @ Wilshire/Aldrich – Add a second southbound left turn lane on Airport to eastbound Aldrich and second westbound left turn lane on Aldrich to southbound Airport
- Airport @ 40th — Add a Pedestrian Hybrid Beacon
- Airport @ Zach Scott — Add a Pedestrian Hybrid Beacon for increased pedestrian and bicycle connectivity across Airport Boulevard. (Full Signal in Long-Term)
- Airport @ Manor Road — Add an eastbound right turn bay and modify signal timing to accommodate protected permitted left turn movements
- Airport @ MLK Boulevard — Realign northbound and southbound left turn bays while adding a second southbound left turn lane; modify signal timing to allow protected permitted left turn movements to improve peak hour LOS.
- Airport @ 12th Street — Modify signal timing to allow protected permitted left turn movements
- Airport @ Location North of Oak Springs Drive — Add a Pedestrian Hybrid Beacon at this high pedestrian crossing location
- Airport @ Springdale Road — Modify intersection to accommodate eastbound shared left and dual-through with a right turn bay, and westbound shared-left and dual through with a shared right and dedicated right. Modify signal timing to accommodate this proposed intersection geometry.
- Coordination with TxDOT regarding the pavement markings necessary to denote the shoulder as a bicycle facility from MLK to Levander Loop.
- Sidewalks: There is a corridor-wide need for additional sidewalk improvements at selected locations. When the above intersection improvements are designed, additional field information regarding presence and condition of sidewalks should be used in determining the approach to meeting this need. Additionally, TxDOT is planning on constructing sidewalks along a section of the corridor that runs from 12th Street to Levander Loop in order to provide pedestrian accommodations in areas where there are currently none available. This project is currently planned for the 2013 Fiscal year, which indicates that funding is available.



MEDIUM/LONG-TERM RECOMMENDATIONS

Medium and Long-Term projects will require significant amounts of coordination, planning, design, and ultimately funding in order to become a reality within the corridor. Construction of new bicycle and pedestrian improvements, as well as implementation of the roadway vision established for the corridor, will also require associated drainage and stormwater improvements, which will add to project lead times and require additional planning, engineering and design. Planning for these drainage solutions in conjunction with redevelopment efforts may create the opportunity for the creation of regional detention facilities that meet public and private needs.

Medium and Long-Term projects are distinguished from each other by funding availability and by balancing the priorities established as a part of the Austin Strategic Mobility Plan related to: corresponding changes in the development pattern; dual purpose projects that would require construction within the corridor's cross-section such as Urban Rail or major utility work; and targeted locations for reinvestment that are established as pilot projects by the City. Funding for further engineering and design of selected sections could be included in future calls for projects or bond program development, to allow for these improvements to be shovel-ready once a viable source of funding is present. Engineering plans for all sections of the corridor are included here as medium-term recommendations. Engineering for the section near Highland Mall (included as part of the Upper Airport Boulevard initiative) and the section from 46th Street to Wilshire/Aldrich that crosses under I-35 (which is also addressed as part of the I-35 Corridor Development Program) can be accomplished with high priority to support the redevelopment of Highland Mall.

MEDIUM TERM

- Design the remaining sections of the corridor, including corridor-wide drainage and stormwater improvements. A “shovel-ready” project has a number of advantages including:
 - The project's implementation can be easily phased; and
 - The project is a more attractive candidate for future funding because it is already designed.
- Construction of the pilot projects designed in the short-term – the section near Highland Mall, and the section from 48th Street to Wilshire/Aldrich that crosses under I-35.



LONG-TERM

- Construction of the entire multi-modal corridor in conjunction with the overall vision, in a manner that promotes further involvement of land owners, businesses, and residents.
- Safety improvements such as channelized left turns, innovative intersection alternatives, medians (exact locations of medians should be determined during the design phase in conjunction with adjacent landowners and businesses), and pedestrian and bicycle facilities.
- Removal of the grade-separated pedestrian crossing near the intersection of Goodwin and Airport. In conjunction with the removal, construct high visibility at-grade crossing with signage to indicate a heavy pedestrian crossing location.

OTHER REGIONAL RECOMMENDATIONS

In addition to the improvements to the Airport Boulevard corridor, there are several regional recommendations that should be considered. While not specifically part of the design and construction of Airport Boulevard, they will improve regional mobility, and both air and water quality.

- City of Austin participation with the Mall developers to provide a regional water quality system that treats the greatest upstream area possible.
- Construction of improvements along intersecting and adjacent roadways that will enable Airport Boulevard to be constructed according to the corridor vision. This may include City participation in other regional projects, such as I-35 improvements, that will help to alleviate congestion along Airport Boulevard.
- Implementation of the Urban Rail Program to create a modal shift in the travel patterns of the area, allowing Airport Boulevard to maintain the desired 4-lane configuration.
- Relocate the existing rail station at W Highland Mall Blvd. to be directly across from the proposed, tree lined and main entrance to the Highland Mall Redevelopment. A new transit center will seamlessly integrate the various modes of transportation in the optimal location – across from the Mall promenade.
- Construct a grade-separated rail crossing at Airport and North Lamar. The MetroRail service would be elevated above the intersection, with provisions for cyclists and pedestrians within the elevated structure as well as on the ground. Freight trains would continue to cross the intersection at grade.



IMPLEMENTATION



INTRODUCTION

The overall program of projects recommended here will require several steps forward in order to be implemented. This section attempts to highlight those necessary steps, funding and implementation partners, and other considerations that should ultimately be considered when choosing how to achieve the vision set forth for Airport Boulevard.

COST ESTIMATES

The project cost totals \$74.4 million. Much of this cost can be associated with a few key elements that are related to transportation, along with some that are not transportation projects. The following provides a summary of the project cost sheets, which are contained in more detail on the next several pages.

These cost estimates do not include right-of-way acquisition; generally, sufficient right-of-way exists along Airport Boulevard to implement the identified improvements. However, based on topographic and boundary survey information that will be collected during the engineering phase of each project, there may be a need for a consideration of different design options based upon localized right-of-way constraints. Design options may also be influenced by other considerations, such as existing Heritage Trees and community feedback upon the specific design solutions for that segment of the corridor. The cost estimates attached are in 2013 dollars which includes a 5% inflation factor as well as a 20% contingency.



BENEFITS OF IMPROVEMENTS

Several benefits would be derived from the improvements included here. The main categories of benefits include: Traffic Operations and Congestion Mitigation, Non-Motorized and Transit Travel Improvements, Safety Improvements, Catalyst for Redevelopment, and Regional Water Quality and Drainage.

TRAFFIC OPERATIONS AND CONGESTION MITIGATION

The single largest benefit that will be recognized by a majority of daily corridor users will be the benefit to traffic flow. For most of the corridor, the recommended Short-Term operations modeling indicates that a peak-hour level of service better than LOS “D,” with only the intersections of Lamar, Koenig, 51st, Manor, and MLK reporting a LOS “D” in either the AM or PM Peak. Without the proposed modifications, 51st is expected to reach an LOS “E” in the PM Peak, and the delay at Lamar, Manor, and MLK will increase in comparison to current conditions. A table summarizing the level of service for the base condition and the short/long-term improvements can be found on the following pages. A summary of the concept of level of service can be found on the following page. Additionally, a detailed analysis of the traffic operations analysis can be found in the Appendix.

Over the long term, the 2030 scenario sees significant growth in traffic at the intersections. The intersection designs recommended here were able to accommodate 20% growth in traffic in this modeling, but unlike the existing mitigated conditions described above, many intersections would continue to experience a Level of Service “D” during one of the peak periods, and the intersections of 45th, I-35, MLK, and Springdale would each experience Level of Service “E” conditions during one of the peak periods. However, the corridor would experience delays that are significantly worse than this *without* the proposed improvements.

NON-MOTORIZED AND TRANSIT TRAVEL IMPROVEMENTS

Project concepts proposed here would close several existing sidewalk gaps within the corridor. The proposed improvements would also significantly increase the perceived attractiveness of bicycle travel within the corridor, by providing physically separated facilities that would be accessible to riders of all comfort levels. Additionally, the provision of a two-way shared-use path along Zone 1 of the corridor would substantially complete the regional Red Line Trail. Around the city, state and nation, pedestrian and bicycle infrastructure has been shown to extend the catchment area of transit service and thereby increase the transit modal split, which will reduce the need to widen the Airport Boulevard roadway beyond the desired 4-lane proposed configuration.



EXISTING CONDITIONS TRAFFIC OPERATIONS ANALYSIS RESULTS

INTERSECTION	2011		2011		2011		2011	
	AM Peak Hour Existing Condition		PM Peak Hour Existing Condition		AM Peak Hour Short Term Improvements		PM Peak Hour Short Term Improvements	
	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS
SIGNALIZED INTERSECTIONS								
	29.6	C	31.3	C	-	-	-	-
Airport Blvd @ Guadalupe St	11.6	B	19.8	B	-	-	-	-
Airport Blvd @ Highland Mall	6.0	A	8.1	A	-	-	-	-
Airport Blvd @ Denson Dr	10.0	B	11.8	B	-	-	-	-
Airport Blvd @ Koenig Ln Westbound	43.8	D	53.3	D	-	-	-	-
Airport Blvd @ Koenig Ln Eastbound	23.3	C	46.2	D	-	-	-	-
Airport Blvd @ 53rd 1/2 St (Bruning Ave)	16.2	B	15.8	B	18.4	B	17.3	B
Airport Blvd @ 51st St	62.2	E	97.0	F	38.9	D	38.0	D
Airport Blvd @ 46th St	-	-	-	-	-	-	-	-
Airport Blvd @ 45th St	28.2	C	35.6	D	-	-	-	-
Airport Blvd @ I-35 SB	22.9	C	22.5	C	-	-	-	-
Airport Blvd @ I-35 NB	24.5	C	16.3	B	-	-	-	-
Airport Blvd @ Wilshire Blvd/ Aldrich St	21.9	C	28.1	C	14.6	B	18.6	B
Airport Blvd @ 38 1/2 St	19.8	B	16.7	B	-	-	-	-
Airport Blvd @ Manor Rd	22.3	C	38.8	D	18.6	B	32.3	C
Airport Blvd @ MLK Blvd	46.7	D	44.7	D	42.5	D	36.5	D
Airport Blvd @ 12th St	16.7	B	19.7	B	15.7	B	19.2	B
Airport Blvd @ Oak Springs Dr	26.3	C	23.2	C	-	-	-	-
Airport Blvd @ Goodwin Ave	5.6	A	3.8	A	-	-	-	-
Airport Blvd @ Springdale Rd	31.9	C	40.4	D	30.2	C	37.1	D
Airport Blvd @ Bolm St	17.1	B	21.8	C	-	-	-	-
Airport Blvd @ Shady Ln	6.5	A	3.9	A	-	-	-	-
Airport Blvd @ Levander Loop	10.4	B	6.9	A	-	-	-	-



FUTURE CONDITIONS TRAFFIC OPERATIONS ANALYSIS RESULTS

INTERSECTION	2030		2030		2030		2030		2030		2030	
	AM Peak Hour Without Improvements		PM Peak Hour Without Improvements		AM Peak Hour With Short Term Improvements		PM Peak Hour With Short Term Improvements		AM Peak Hour With Long Term Improvements		PM Peak Hour With Long Term Improvements	
	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS	DELAY (SEC/VEH)	LOS
SIGNALIZED INTERSECTIONS												
	25.5	C	36.7	D	-	-	-	-	-	-	-	-
Airport Blvd @ Guadalupe St	11.4	B	22.7	C	-	-	-	-	-	-	-	-
Airport Blvd @ Highland Mall	6.4	A	8.7	A	-	-	-	-	-	-	-	-
Airport Blvd @ Denson Dr	14.2	B	16.6	B	-	-	-	-	15.7	B	17.8	B
Airport Blvd @ Koenig Ln Westbound	62.3	E	75.2	E	-	-	-	-	-	-	-	-
Airport Blvd @ Koenig Ln Eastbound	26.9	C	61.1	E	-	-	-	-	-	-	-	-
Airport Blvd @ 53rd 1/2 St (Bruning Ave)	18.0	B	18.3	B	20.7	C	21.5	C			-	-
Airport Blvd @ 51st St	106.2	F	154.2	F	51.8	D	50.0	D	41.9	D	42.2	D
Airport Blvd @ 46th St	-	-	-	-	-	-	-	-	7.4	A	16.0	B
Airport Blvd @ 45th St	38.9	D	53.0	D	-	-	-	-	14.7	B	22.5	C
Airport Blvd @ I-35 SB	38.1	D	26.7	C	-	-	-	-	-	-	-	-
Airport Blvd @ I-35 NB	32.7	C	18.9	B	-	-	-	-	-	-	-	-
Airport Blvd @ Wilshire Blvd/ Aldrich St	26.4	C	32.7	C	17.0	B	20.1	C	26.5	C	22.3	C
Airport Blvd @ 38 1/2 St	20.4	C	17.6	B	-	-	-	-				
Airport Blvd @ Manor Rd	27.0	C	60.3	E	21.9	C	50.1	D	21.3	C	37.3	D
Airport Blvd @ MLK Blvd	78.0	E	65.6	E	73.8	E	54.1	D	49.6	D	42.3	D
Airport Blvd @ 12th St	18.9	B	23.7	C	19.1	B	21.4	C				
Airport Blvd @ Oak Springs Dr	33.8	C	33.3	C	-	-	-	-	30.3	C	25.4	C
Airport Blvd @ Goodwin Ave	6.6	A	5.1	A	-	-	-	-	-	-	-	-
Airport Blvd @ Springdale Rd	37.0	D	56.2	E	35.1	D	50.9	D	31.4	C	40.9	D
Airport Blvd @ Bolm St	23.0	C	24.5	C	-	-	-	-	-	-	-	-
Airport Blvd @ Shady Ln	6.9	A	4.2	A	-	-	-	-	-	-	-	-
Airport Blvd @ Levander Loop	12.1	B	7.8	A	-	-	-	-	-	-	-	-



SAFETY IMPROVEMENTS

Solutions that help to minimize the occurrence and severity of crashes within the corridor can achieve a better balance in terms of non-motorized modal split and help Airport Boulevard become a more vibrant destination and desirable place within the City. The improvements suggested for short-term implementation would help to mitigate conflict points between cyclists/pedestrians and vehicles by promoting clearly marked and well defined crossing areas. These improvements would also serve to increase the carrying capacity of the corridor and may have an effect on the travel speeds and reliability of travel.

The medium/long-term improvements offer the greatest opportunity to improve the overall safety of the corridor by taking further steps to minimize conflict points associated with turning traffic, implementing innovative intersection treatments that can help to move traffic more efficiently, and providing all users of the corridor a clearly defined space in which to operate.

CATALYST FOR REDEVELOPMENT

Designing roadway alternatives that correspond to the surrounding development patterns — that is, Context Sensitive Design — has recently become the state of the practice for corridor development programs. This is based on the fundamental link between transportation and land use that has been well documented throughout history. The latest literature suggests that appropriate investment in transportation options of all types can catalyze and strengthen redevelopment opportunities within a corridor. Public sector investment sends a discernible signal to the private sector that investment in the corridor/area will continue to be a priority and that growth and revitalization within the area is envisioned and desired. This was the basis for the coupling of corridor development efforts in Zone 1 with the Upper Airport Boulevard Initiative; it also provides the basis for the recommendations regarding Urban Rail and Mueller along Airport Boulevard between I-35 and Aldrich/Wilshire.

REGIONAL WATER QUALITY AND DRAINAGE

Large-scale redevelopment initiatives such the current efforts at Highland Mall provide opportunities to design and implement drainage improvements for Airport Boulevard, but the corridor itself should also be designed and constructed with appropriate drainage and water quality considerations as the implementation process moves forward. Combining transportation and drainage efforts recognizes that infrastructure can be placed within sections of Airport Boulevard and that outfalls and water quality benefits extend beyond the corridor itself. The drainage and water quality issues raised along the corridor will have a significant impact on the ability to realize the vision for the corridor through investments in transportation infrastructure.



FUNDING SOURCES

In today's funding realities it will take several government funding sources for the reinvention of Airport Boulevard. In some cases, when an associated private development project is of a considerable size, some of the public improvements for Airport Boulevard could be combined with private investment. However, no one property owner will be able to bring the required resources to complete the entire project. This section explores three of the major funding sources that could be considered for public improvements along the Boulevard.

Bond Program: Based on the scale and scope of the improvements proposed for Airport Boulevard from Lamar Boulevard to US 183, funding the project through the city's general bonding authority is a viable source. The benefits from the proposed improvements will be regional and go beyond the corridor itself. The improvements funded through the bond program would include all the improvements proposed within the right-of-way of Airport Boulevard.

Tax Increment Financing (TIF): In order to take advantage of private development potential at key locations along the corridor and to provide additional funding for project- or area-specific improvements for public infrastructure (including drainage, water quality, and the connecting street network), a tax increment financing district could be a tool for several areas along the corridor.

Due to the additional planning and redevelopment efforts currently underway within Zone 1, this area is a prime candidate for the creation of a TIF district. Achieving the full potential for redevelopment along Upper Airport will only be possible if other infrastructure needs such as drainage/detention, water quality, pedestrian and transit connectivity, and open space provision are all met.

Future increases in tax revenues to the City can be reinvested into the corridor through the creation of a TIF district and its associated financing and infrastructure program. A list of prioritized catalytic infrastructure projects should be identified for advance funding through the TIF; in other words, if an infrastructure project provides benefits to multiple property owners or cannot be undertaken by any one property owner, it should be undertaken with up-front TIF funding (via revenue bonds).

There will be corridor improvements that can be undertaken by or combined with individual redevelopment projects to gain economies of scale. Such projects may be funded by private investment that is later reimbursed through the TIF based on development performance. Any TIF that is created should have clear policy recommendations for how projects are evaluated and prioritized for funding on an on-going basis. This approach is also recommended for other major redevelopment projects within Zones 2 and 3. (Infrastructure improvements at Mueller are already being partially funded via TIF financing.)



State and Federal Roadway Funds: A third major funding source would be regionally competitive state and federal funds. The future vision for Airport Boulevard is consistent with the region's desire to create multi-modal urban streets that connect emerging and developed activity centers (including the Lamar/Crestview TOD, the Highland Mall/ACC redevelopment, and Mueller). Typically, calls for projects in this funding category require additional local match funding. However, federal agencies have looked much more favorably on transportation projects that have significant private sector involvement and where the benefits are not focused solely on the provisions for automobile traffic, but rather examine multi-modalism and the relationship between redevelopment initiatives and a reinvented roadway. Examples of this funding category include TIGER IV funding and the recent CAMPO call for STP-MM Projects.



Airport Boulevard
Preliminary Roadway Project Cost Projection



Project Cost Summary:					
Section:	Limits:	Short Term	Mid Term	Long Term	Ultimate Cost
Section 1	Lamar to Denson	\$ -	\$ 835,000	\$ 8,495,000	\$ 9,330,000
Section 2	Highland Mall area	\$ 571,000	\$ 5,249,000	\$ -	\$ 5,820,000
Section 3	Koenig to 53 1/2	\$ 450,000	\$ 452,000	\$ 4,148,000	\$ 5,050,000
Section 4	53 1/2 to 48th	\$ 6,000	\$ 577,000	\$ 5,867,000	\$ 6,450,000
Section 5	48th to I-35	\$ 58,000	\$ 4,702,000	\$ -	\$ 4,760,000
Section 6	I-35 to Aldrich	\$ 426,000	\$ 4,494,000	\$ -	\$ 4,920,000
Section 7	Aldrich to MLK	\$ 285,000	\$ 1,188,000	\$ 11,797,000	\$ 13,270,000
Section 8	MLK to Levander Loop	\$ 100,000	\$ 2,217,000	\$ 22,443,000	\$ 24,760,000
Project Cost TOTAL:		\$ 1,896,000	\$ 19,714,000	\$ 52,750,000	\$ 74,360,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



Airport Boulevard
Preliminary Roadway Project Cost Projection



Kimley-Horn
 and Associates, Inc.

Project Information:		Description:	Feb. 08, 2012
Name:	Airport Boulevard	4-Lane Divided Roadway with Biofilter Median, 2-7' Cycle	
Limits:	Lamar to Denson	Tracks, 8' Sidewalk, and 12' Multi-Use Trail	
Length (lf):	4,100		

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Street Excavation	36,444	CY	\$ 8.00	\$ 291,556
2	10" Lime Treated Subgrade	29,611	SY	\$ 6.00	\$ 177,667
3	8" Flexible Base	5,291	CY	\$ 40.00	\$ 211,621
4	6" Hot Mix Asphaltic Concrete Pvmnt 6"	21,639	SY	\$ 20.00	\$ 432,778
5	6" Concrete Drive Approach	30	EA	\$ 6,000.00	\$ 180,000
6	6" Concrete Curb and 18" Gutter	8,200	LF	\$ 15.00	\$ 123,000
7	6" Concrete Curb and 18" Gutter (Sawtooth)	8,200	LF	\$ 17.00	\$ 139,400
8	5" Concrete Cycle Track with Integral Curb	7,289	SY	\$ 35.00	\$ 255,111
9	8" Lime Treated Subgrade	9,111	SY	\$ 5.00	\$ 45,556
10	4" Concrete Sidewalk	3,644	SY	\$ 25.00	\$ 91,111
11	5" Concrete Multi-Use Trail	5,467	SY	\$ 30.00	\$ 164,000

Paving Subtotal: \$ 2,111,799

Major Construction Component Allowances:

Item Description	Notes:	Allowance	Item Cost
<input checked="" type="checkbox"/> Traffic Control	Existing roadway corridor	15%	\$ 316,770
<input checked="" type="checkbox"/> Drainage	New inlets, mains, and outfalls (5-yr inlets)	30%	\$ 633,540
<input checked="" type="checkbox"/> Traffic Signals	Guadalupe, Huntland, E Highland Mall, Denson	\$150,000/EA	\$ 600,000
<input checked="" type="checkbox"/> Pavement Markers/Markings	Including Signage	5%	\$ 105,590
<input checked="" type="checkbox"/> Landscape (Parkways)	Topsoil, Seed, Trees, and Shrubs	15%	\$ 316,770
<input checked="" type="checkbox"/> Landscape (Median)	Biofilter	5%	\$ 105,590
<input type="checkbox"/> Hardscape	None Anticipated		
<input type="checkbox"/> Irrigation	None Anticipated		
<input checked="" type="checkbox"/> Illumination	Double head, ornamental, ea pkwy, 100' spacing	\$6000/EA	\$ 492,000
<input checked="" type="checkbox"/> Water	16" Water Line	\$60/LF	\$ 246,000
<input checked="" type="checkbox"/> Sewer	Minor Adjustments	1%	\$ 21,118
<input checked="" type="checkbox"/> Erosion Control	Standard inlet protection, silt fences, check dams	1%	\$ 21,118
<input type="checkbox"/> Other			\$ -

Allowance Subtotal: \$ 2,858,495

Paving and Allowance Subtotal: \$ 4,970,293			
Mobilization:		5%	\$ 248,515
Prep ROW:		10%	\$ 497,029
Construction Contingency:		20%	\$ 994,059
Inflation Contingency:	Start Year: 2013	5%	\$ 248,515

Construction Cost TOTAL: \$ 6,959,000

Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction Cost TOTAL:			\$ 6,959,000
Engineering/Survey:	Engineering/Surveying/Environmental	12%	\$ 835,080
Agency Project Management:		15%	\$ 1,043,850
Inspection and Testing:		5%	\$ 347,950
Franchise Utility Relocations:		2%	\$ 139,180
ROW/Easement Acquisition:	None Anticipated		
Project Cost TOTAL:			\$ 9,330,000

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Airport Boulevard
Preliminary Roadway Project Cost Projection



Kimley-Horn
 and Associates, Inc.

Project Information:		Description:	Feb. 08, 2012
Name:	Airport Boulevard	4-Lane Divided Roadway with Biofilter Median, Parallel Parking, 2-7' Cycle Tracks, 8' Sidewalk, and 12' Multi-Use Trail	
Limits:	Denson to Koenig		
Length (lf):	2,650		

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Street Excavation	23,556	CY	\$ 8.00	\$ 188,444
2	10" Lime Treated Subgrade	19,384	SY	\$ 6.00	\$ 116,306
3	8" Flexible Base	3,463	CY	\$ 40.00	\$ 138,533
4	6" Hot Mix Asphaltic Concrete Pvmnt 6"	14,231	SY	\$ 20.00	\$ 284,630
5	6" Concrete Drive Approach	30	EA	\$ 6,000.00	\$ 180,000
6	6" Concrete Curb and 18" Gutter	5,300	LF	\$ 15.00	\$ 79,500
7	6" Concrete Curb and 18" Gutter (Sawtooth)	5,300	LF	\$ 17.00	\$ 90,100
8	5" Concrete Cycle Track with Integral Curb	4,711	SY	\$ 35.00	\$ 164,889
9	8" Lime Treated Subgrade	5,889	SY	\$ 5.00	\$ 29,444
10	4" Concrete Sidewalk	2,356	SY	\$ 25.00	\$ 58,889
11	5" Concrete Multi-Use Trail	3,533	SY	\$ 30.00	\$ 106,000

Paving Subtotal: \$ 1,436,735

Major Construction Component Allowances:

Item Description	Notes:	Allowance	Item Cost
<input checked="" type="checkbox"/> Traffic Control	Existing roadway corridor	15%	\$ 215,510
<input checked="" type="checkbox"/> Drainage	New inlets, mains, and outfalls (5-yr inlets)	30%	\$ 431,020
<input checked="" type="checkbox"/> Traffic Signals	Mall Entrance	\$150,000/EA	\$ 150,000
<input checked="" type="checkbox"/> Pavement Markers/Markings	Including Signage	5%	\$ 71,837
<input checked="" type="checkbox"/> Landscape (Parkways)	Topsoil, Seed, Trees, and Shrubs	15%	\$ 215,510
<input checked="" type="checkbox"/> Landscape (Median)	Biofilter	5%	\$ 71,837
<input type="checkbox"/> Hardscape	None Anticipated		
<input type="checkbox"/> Irrigation	None Anticipated		
<input checked="" type="checkbox"/> Illumination	Double head, ornamental, ea pkwy, 100' spacing	\$6000/EA	\$ 318,000
<input checked="" type="checkbox"/> Water	16" Water Line	\$60/LF	\$ 159,000
<input checked="" type="checkbox"/> Sewer	Minor Adjustments	1%	\$ 14,367
<input checked="" type="checkbox"/> Erosion Control	Standard inlet protection, silt fences, check dams	1%	\$ 14,367
<input type="checkbox"/> Other			\$ -

Allowance Subtotal: \$ 1,661,449

Paving and Allowance Subtotal: \$ 3,098,184

Mobilization:	5%	\$ 154,909
Prep ROW:	10%	\$ 309,818
Construction Contingency:	20%	\$ 619,637
Inflation Contingency:	5%	\$ 154,909

Start Year: 2013

Construction Cost TOTAL: \$ 4,338,000

Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction Cost TOTAL:			\$ 4,338,000
Engineering/Survey:	Engineering/Surveying/Environmental	12%	\$ 520,560
Agency Project Management:		15%	\$ 650,700
Inspection and Testing:		5%	\$ 216,900
Franchise Utility Relocations:		2%	\$ 86,760
ROW/Easement Acquisition:	None Anticipated		

Project Cost TOTAL: \$ 5,820,000

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Airport Boulevard
Preliminary Roadway Project Cost Projection



Project Information:		Description:	Feb. 08, 2012
Name:	Airport Boulevard	4-Lane Divided Roadway with Biofilter Median, 2-7' Cycle	
Limits:	Koenig to 53 1/2	Tracks, 8' Sidewalk, and 12' Multi-Use Trail	
Length (lf):	2,150		

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Street Excavation	19,111	CY	\$ 8.00	\$ 152,889
2	10" Lime Treated Subgrade	15,528	SY	\$ 6.00	\$ 93,167
3	8" Flexible Base	2,774	CY	\$ 40.00	\$ 110,972
4	6" Hot Mix Asphaltic Concrete Pvmnt 6"	11,347	SY	\$ 20.00	\$ 226,944
5	6" Concrete Drive Approach	25	EA	\$ 6,000.00	\$ 150,000
6	6" Concrete Curb and 18" Gutter	4,300	LF	\$ 15.00	\$ 64,500
7	6" Concrete Curb and 18" Gutter (Sawtooth)	4,300	LF	\$ 17.00	\$ 73,100
8	5" Concrete Cycle Track with Integral Curb	3,822	SY	\$ 35.00	\$ 133,778
9	8" Lime Treated Subgrade	4,778	SY	\$ 5.00	\$ 23,889
10	4" Concrete Sidewalk	1,911	SY	\$ 25.00	\$ 47,778
11	5" Concrete Multi-Use Trail	2,867	SY	\$ 30.00	\$ 86,000

Paving Subtotal: \$ 1,163,016

Major Construction Component Allowances:

Item Description	Notes:	Allowance	Item Cost
<input checked="" type="checkbox"/> Traffic Control	Existing roadway corridor	15%	\$ 174,452
<input checked="" type="checkbox"/> Drainage	New inlets, mains, and outfalls (5-yr inlets)	30%	\$ 348,905
<input checked="" type="checkbox"/> Traffic Signals	55th, 53 1/2	\$150,000/EA	\$ 300,000
<input checked="" type="checkbox"/> Pavement Markers/Markings	Including Signage	5%	\$ 58,151
<input checked="" type="checkbox"/> Landscape (Parkways)	Topsoil, Seed, Trees, and Shrubs	15%	\$ 174,452
<input checked="" type="checkbox"/> Landscape (Median)	Biofilter	5%	\$ 58,151
<input type="checkbox"/> Hardscape	None Anticipated		
<input type="checkbox"/> Irrigation	None Anticipated		
<input checked="" type="checkbox"/> Illumination	Double head, ornamental , ea pkwy, 100' spacing	\$6000/EA	\$ 258,000
<input checked="" type="checkbox"/> Water	16" Water Line	\$60/LF	\$ 129,000
<input checked="" type="checkbox"/> Sewer	Minor Adjustments	1%	\$ 11,630
<input checked="" type="checkbox"/> Erosion Control	Standard inlet protection, silt fences, check dams	1%	\$ 11,630
<input type="checkbox"/> Other			\$ -

Allowance Subtotal: \$ 1,524,372

	Paving and Allowance Subtotal:		\$ 2,687,388
Mobilization:		5%	\$ 134,369
Prep ROW:		10%	\$ 268,739
Construction Contingency:		20%	\$ 537,478
Inflation Contingency:	Start Year: 2013	5%	\$ 134,369

Construction Cost TOTAL: \$ 3,763,000

Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction Cost TOTAL:			\$ 3,763,000
Engineering/Survey:	Engineering/Surveying/Environmental	12%	\$ 451,560
Agency Project Management:		15%	\$ 564,450
Inspection and Testing:		5%	\$ 188,150
Franchise Utility Relocations:		2%	\$ 75,260
ROW/Easement Acquisition:	None Anticipated		

Project Cost TOTAL: \$ 5,050,000

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Airport Boulevard
Preliminary Roadway Project Cost Projection



Kimley-Horn
 and Associates, Inc.

Project Information:		Description:	Feb. 08, 2012
Name:	Airport Boulevard	4-Lane Divided Roadway with Biofilter Median, Angled Parking, 2-7' Cycle Tracks, 8' Sidewalk, and 12' Multi-Use Trail	
Limits:	53 1/2 to 48th		
Length (lf):	2,700		

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Street Excavation	24,000	CY	\$ 8.00	\$ 192,000
2	10" Lime Treated Subgrade	26,250	SY	\$ 6.00	\$ 157,500
3	8" Flexible Base	4,690	CY	\$ 40.00	\$ 187,600
4	6" Hot Mix Asphaltic Concrete Pvmnt 6"	21,000	SY	\$ 20.00	\$ 420,000
5	6" Concrete Drive Approach	15	EA	\$ 6,000.00	\$ 90,000
6	6" Concrete Curb and 18" Gutter	5,400	LF	\$ 15.00	\$ 81,000
7	6" Concrete Curb and 18" Gutter (Sawtooth)	5,400	LF	\$ 17.00	\$ 91,800
8	5" Concrete Cycle Track with Integral Curb	4,800	SY	\$ 35.00	\$ 168,000
9	8" Lime Treated Subgrade	6,000	SY	\$ 5.00	\$ 30,000
10	4" Concrete Sidewalk	2,400	SY	\$ 25.00	\$ 60,000
11	5" Concrete Multi-Use Trail	3,600	SY	\$ 30.00	\$ 108,000

Paving Subtotal: \$ 1,585,900

Major Construction Component Allowances:

Item Description	Notes:	Allowance	Item Cost
<input checked="" type="checkbox"/> Traffic Control	Existing roadway corridor	15%	\$ 237,885
<input checked="" type="checkbox"/> Drainage	New inlets, mains, and outfalls (5-yr inlets)	30%	\$ 475,770
<input checked="" type="checkbox"/> Traffic Signals	51st	\$150,000/EA	\$ 150,000
<input checked="" type="checkbox"/> Pavement Markers/Markings	Including Signage	5%	\$ 79,295
<input checked="" type="checkbox"/> Landscape (Parkways)	Topsoil, Seed, Trees, and Shrubs	15%	\$ 237,885
<input checked="" type="checkbox"/> Landscape (Median)	Biofilter	5%	\$ 79,295
<input type="checkbox"/> Hardscape	None Anticipated		
<input type="checkbox"/> Irrigation	None Anticipated		
<input checked="" type="checkbox"/> Illumination	Double head, ornamental, ea pkwy, 100' spacing	\$6000/EA	\$ 324,000
<input checked="" type="checkbox"/> Water	16" Water Line	\$60/LF	\$ 162,000
<input checked="" type="checkbox"/> Sewer	Minor Adjustments	1%	\$ 15,859
<input checked="" type="checkbox"/> Erosion Control	Standard inlet protection, silt fences, check dams	1%	\$ 15,859
<input checked="" type="checkbox"/> Other	Pedestrian Beacon		\$ 70,000

Allowance Subtotal: \$ 1,847,848

	Paving and Allowance Subtotal:		\$ 3,433,748
Mobilization:		5%	\$ 171,687
Prep ROW:		10%	\$ 343,375
Construction Contingency:		20%	\$ 686,750
Inflation Contingency:	Start Year: 2013	5%	\$ 171,687

Construction Cost TOTAL: \$ 4,808,000

Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction Cost TOTAL:			\$ 4,808,000
Engineering/Survey:	Engineering/Surveying/Environmental	12%	\$ 576,960
Agency Project Management:		15%	\$ 721,200
Inspection and Testing:		5%	\$ 240,400
Franchise Utility Relocations:		2%	\$ 96,160
ROW/Easement Acquisition:	None Anticipated		

Project Cost TOTAL: \$ 6,450,000

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Airport Boulevard
Preliminary Roadway Project Cost Projection



Kimley-Horn
 and Associates, Inc.

Project Information:		Description:	Feb. 08, 2012
Name:	Airport Boulevard	4-Lane Divided Roadway with Biofilter Median, 2-7' Cycle Tracks, 8' Sidewalk, and 12' Multi-Use Trail	
Limits:	48th to IH-35		
Length (lf):	2,150		

Roadway Construction Cost Projection

No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Street Excavation	19,111	CY	\$ 8.00	\$ 152,889
2	10" Lime Treated Subgrade	15,528	SY	\$ 6.00	\$ 93,167
3	8" Flexible Base	2,774	CY	\$ 40.00	\$ 110,972
4	6" Hot Mix Asphaltic Concrete Pvmnt 6"	11,347	SY	\$ 20.00	\$ 226,944
5	6" Concrete Drive Approach	10	EA	\$ 6,000.00	\$ 60,000
6	6" Concrete Curb and 18" Gutter	4,300	LF	\$ 15.00	\$ 64,500
7	6" Concrete Curb and 18" Gutter (Sawtooth)	4,300	LF	\$ 17.00	\$ 73,100
8	5" Concrete Cycle Track with Integral Curb	3,822	SY	\$ 35.00	\$ 133,778
9	8" Lime Treated Subgrade	4,778	SY	\$ 5.00	\$ 23,889
10	4" Concrete Sidewalk	1,911	SY	\$ 25.00	\$ 47,778
11	5" Concrete Multi-Use Trail	2,867	SY	\$ 30.00	\$ 86,000

Paving Subtotal: \$ 1,073,016

Major Construction Component Allowances:

Item Description	Notes:	Allowance	Item Cost
<input checked="" type="checkbox"/> Traffic Control	Existing roadway corridor	15%	\$ 160,952
<input checked="" type="checkbox"/> Drainage	New inlets, mains, and outfalls (5-yr inlets)	30%	\$ 321,905
<input checked="" type="checkbox"/> Traffic Signals	46th, 45th	\$150,000/EA	\$ 300,000
<input checked="" type="checkbox"/> Pavement Markers/Markings	Including Signage	5%	\$ 53,651
<input checked="" type="checkbox"/> Landscape (Parkways)	Topsoil, Seed, Trees, and Shrubs	15%	\$ 160,952
<input checked="" type="checkbox"/> Landscape (Median)	Biofilter	5%	\$ 53,651
<input type="checkbox"/> Hardscape	None Anticipated		
<input type="checkbox"/> Irrigation	None Anticipated		
<input checked="" type="checkbox"/> Illumination	Double head, ornamental , ea pkwy, 100' spacing	\$6000/EA	\$ 258,000
<input checked="" type="checkbox"/> Water	16" Water Line	\$60/LF	\$ 129,000
<input checked="" type="checkbox"/> Sewer	Minor Adjustments	1%	\$ 10,730
<input checked="" type="checkbox"/> Erosion Control	Standard inlet protection, silt fences, check dams	1%	\$ 10,730
<input type="checkbox"/> Other			\$ -

Allowance Subtotal: \$ 1,459,572

	Paving and Allowance Subtotal:	\$ 2,532,588
Mobilization:	5%	\$ 126,629
Prep ROW:	10%	\$ 253,259
Construction Contingency:	20%	\$ 506,518
Inflation Contingency:	Start Year: 2013 5%	\$ 126,629

Construction Cost TOTAL: \$ 3,546,000

Project Cost Summary

Item Description	Notes:	Allowance	Item Cost
Construction Cost TOTAL:			\$ 3,546,000
Engineering/Survey:	Engineering/Surveying/Environmental	12%	\$ 425,920
Agency Project Management:		15%	\$ 531,900
Inspection and Testing:		5%	\$ 177,300
Franchise Utility Relocations:		2%	\$ 70,920
ROW/Easement Acquisition:	None Anticipated		

Project Cost TOTAL: \$ 4,760,000

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Airport Boulevard
Preliminary Roadway Project Cost Projection



Kimley-Horn
 and Associates, Inc.

Project Information:		Description:	Feb. 08, 2012
Name:	Airport Boulevard	4-Lane Divided Roadway with Biofilter Median, 2-7' Cycle Tracks, and 8' Sidewalks	
Limits:	IH-35 to Aldrich		
Length (lf):	2,550		

Roadway Construction Cost Projection					
No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Street Excavation	22,667	CY	\$ 8.00	\$ 181,333
2	10" Lime Treated Subgrade	17,000	SY	\$ 6.00	\$ 102,000
3	8" Flexible Base	3,037	CY	\$ 40.00	\$ 121,493
4	6" Hot Mix Asphaltic Concrete Pvmnt 6"	12,042	SY	\$ 20.00	\$ 240,833
5	6" Concrete Drive Approach	10	EA	\$ 6,000.00	\$ 60,000
6	6" Concrete Curb and 18" Gutter	5,100	LF	\$ 15.00	\$ 76,500
7	6" Concrete Curb and 18" Gutter (Sawtooth)	5,100	LF	\$ 17.00	\$ 86,700
8	5" Concrete Cycle Track with Integral Curb	4,533	SY	\$ 35.00	\$ 158,667
9	8" Lime Treated Subgrade	5,667	SY	\$ 5.00	\$ 28,333
10	4" Concrete Sidewalk	4,533	SY	\$ 25.00	\$ 113,333
11	5" Concrete Multi-Use Trail	0	SY	\$ 30.00	\$ -
Paving Subtotal:					\$ 1,169,193
Major Construction Component Allowances:					
	Item Description	Notes:	Allowance		Item Cost
<input checked="" type="checkbox"/>	Traffic Control	Existing roadway corridor	15%		\$ 175,379
<input checked="" type="checkbox"/>	Drainage	New inlets, mains, and outfalls (5-yr inlets)	30%		\$ 350,758
<input checked="" type="checkbox"/>	Traffic Signals	Aldrich	\$150,000/EA		\$ 150,000
<input checked="" type="checkbox"/>	Pavement Markers/Markings	Including Signage	5%		\$ 58,460
<input checked="" type="checkbox"/>	Landscape (Parkways)	Topsoil, Seed, Trees, and Shrubs	15%		\$ 175,379
<input checked="" type="checkbox"/>	Landscape (Median)	Topsoil, Seed, and Trees	5%		\$ 58,460
<input type="checkbox"/>	Hardscape	None Anticipated			
<input type="checkbox"/>	Irrigation	None Anticipated			
<input checked="" type="checkbox"/>	Illumination	Double head, ornamental, ea pkwy, 100' spacing	\$6000/EA		\$ 306,000
<input checked="" type="checkbox"/>	Water	16" Water Line	\$60/LF		\$ 153,000
<input checked="" type="checkbox"/>	Sewer	Minor Adjustments	1%		\$ 11,692
<input checked="" type="checkbox"/>	Erosion Control	Standard inlet protection, silt fences, check dams	1%		\$ 11,692
<input type="checkbox"/>	Other				\$ -
Allowance Subtotal:					\$ 1,450,819
Paving and Allowance Subtotal:					\$ 2,620,013
	Mobilization:		5%		\$ 131,001
	Prep ROW:		10%		\$ 262,001
	Construction Contingency:		20%		\$ 524,003
	Inflation Contingency:	Start Year: 2013	5%		\$ 131,001
Construction Cost TOTAL:					\$ 3,669,000

Project Cost Summary			
Item Description	Notes:	Allowance	Item Cost
Construction Cost TOTAL:			\$ 3,669,000
Engineering/Survey:	Engineering/Surveying/Environmental	12%	\$ 440,280
Agency Project Management:		15%	\$ 550,350
Inspection and Testing:		5%	\$ 183,450
Franchise Utility Relocations:		2%	\$ 73,380
ROW/Easement Acquisition:	None Anticipated		
Project Cost TOTAL:			\$ 4,920,000

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Airport Boulevard
Preliminary Roadway Project Cost Projection



Project Information:		Description:	Feb. 08, 2012
Name:	Airport Boulevard	4-Lane Divided Roadway with Raised Median, 2-9' Bike Lanes, 8' Sidewalk, and 12' Multi-Use Trail	
Limits:	Aldrich to MLK		
Length (lf):	5,840		

Roadway Construction Cost Projection					
No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Street Excavation	51,911	CY	\$ 8.00	\$ 415,289
2	10" Lime Treated Subgrade	42,178	SY	\$ 6.00	\$ 253,067
3	8" Flexible Base	7,536	CY	\$ 40.00	\$ 301,431
4	6" Hot Mix Asphaltic Concrete Pvmnt 6"	30,822	SY	\$ 20.00	\$ 616,444
5	6" Concrete Drive Approach	35	EA	\$ 6,000.00	\$ 210,000
6	6" Concrete Curb and 18" Gutter	11,680	LF	\$ 15.00	\$ 175,200
7	6" Concrete Curb and 18" Gutter (Sawtooth)	11,680	LF	\$ 17.00	\$ 198,560
8	5" Concrete Bike Lane	11,680	SY	\$ 35.00	\$ 408,800
9	8" Lime Treated Subgrade	14,276	SY	\$ 5.00	\$ 71,378
10	4" Concrete Sidewalk	5,191	SY	\$ 25.00	\$ 129,778
11	5" Concrete Multi-Use Trail	7,787	SY	\$ 30.00	\$ 233,600
12	4" Concrete Buffer (3' Wide)	3,893	SY	\$ 25.00	\$ 97,333

Paving Subtotal: \$ 3,110,879

Major Construction Component Allowances:			
Item Description	Notes:	Allowance	Item Cost
<input checked="" type="checkbox"/> Traffic Control	Existing roadway corridor	15%	\$ 466,632
<input checked="" type="checkbox"/> Drainage	New inlets, mains, and outfalls (5-yr inlets)	30%	\$ 933,264
<input checked="" type="checkbox"/> Traffic Signals	Schieffer, 38 1/2, Manor, MLK	\$150,000/EA	\$ 600,000
<input checked="" type="checkbox"/> Pavement Markers/Markings	Including Signage	5%	\$ 155,544
<input checked="" type="checkbox"/> Landscape (Parkways)	Topsoil, Seed, Trees, and Shrubs	15%	\$ 466,632
<input checked="" type="checkbox"/> Landscape (Median)	Topsoil, Seed, and Trees	5%	\$ 155,544
<input type="checkbox"/> Hardscape	None Anticipated		
<input type="checkbox"/> Irrigation	None Anticipated		
<input checked="" type="checkbox"/> Illumination	Double head, ornamental, ea pkwy, 100' spacing	\$6000/EA	\$ 700,800
<input checked="" type="checkbox"/> Water	16" Water Line	\$60/LF	\$ 350,400
<input checked="" type="checkbox"/> Sewer	Minor Adjustments	1%	\$ 31,109
<input checked="" type="checkbox"/> Erosion Control	Standard inlet protection, silt fences, check dams	1%	\$ 31,109
<input checked="" type="checkbox"/> Other	Pedestrian Beacon		\$ 70,000

Allowance Subtotal: \$ 3,961,033

		Paving and Allowance Subtotal:	\$ 7,071,913
Mobilization:		5%	\$ 353,596
Prep ROW:		10%	\$ 707,191
Construction Contingency:		20%	\$ 1,414,383
Inflation Contingency:	Start Year: 2013	5%	\$ 353,596

Construction Cost TOTAL: \$ 9,901,000

Project Cost Summary			
Item Description	Notes:	Allowance	Item Cost
Construction Cost TOTAL:			\$ 9,901,000
Engineering/Survey:	Engineering/Surveying/Environmental	12%	\$ 1,188,120
Agency Project Management:		15%	\$ 1,485,150
Inspection and Testing:		5%	\$ 495,050
Franchise Utility Relocations:		2%	\$ 198,020
ROW/Easement Acquisition:	None Anticipated		

Project Cost TOTAL: \$ 13,270,000

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Airport Boulevard
Preliminary Roadway Project Cost Projection



Kimley-Horn
 and Associates, Inc.

Project Information:		Description:	Feb. 08, 2012
Name:	Airport Boulevard	4-Lane Divided Roadway with Raised Median, 2-9' Bike Lanes, 8' Sidewalk, and 12' Multi-Use Trail	
Limits:	MLK to Levander Loop		
Length (lf):	11,300		

Roadway Construction Cost Projection					
No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Street Excavation	100,444	CY	\$ 8.00	\$ 803,556
2	10" Lime Treated Subgrade	81,611	SY	\$ 6.00	\$ 489,667
3	8" Flexible Base	14,581	CY	\$ 40.00	\$ 583,247
4	6" Hot Mix Asphaltic Concrete Pvmt 6"	59,639	SY	\$ 20.00	\$ 1,192,778
5	6" Concrete Drive Approach	60	EA	\$ 6,000.00	\$ 360,000
6	6" Concrete Curb and 18" Gutter	22,600	LF	\$ 15.00	\$ 339,000
7	6" Concrete Curb and 18" Gutter (Sawtooth)	22,600	LF	\$ 17.00	\$ 384,200
8	5" Concrete Bike Lane	22,600	SY	\$ 35.00	\$ 791,000
9	8" Lime Treated Subgrade	27,622	SY	\$ 5.00	\$ 138,111
10	4" Concrete Sidewalk	10,044	SY	\$ 25.00	\$ 251,111
11	5" Concrete Multi-Use Trail	15,067	SY	\$ 30.00	\$ 452,000
12	4" Concrete Buffer (3' Wide)	7,533	SY	\$ 25.00	\$ 188,333
Paving Subtotal:					\$ 5,973,003
Major Construction Component Allowances:					
	Item Description	Notes:	Allowance	Item Cost	
<input checked="" type="checkbox"/>	Traffic Control	Existing roadway corridor	15%	\$ 895,950	
<input checked="" type="checkbox"/>	Drainage	New inlets, mains, and outfalls (5-yr inlets)	30%	\$ 1,791,901	
<input checked="" type="checkbox"/>	Traffic Signals	12th, Oak Springs, Goodwin, Springdale, Bolm	\$150,000/EA	\$ 750,000	
<input checked="" type="checkbox"/>	Pavement Markers/Markings	Including Signage	5%	\$ 298,650	
<input checked="" type="checkbox"/>	Landscape (Parkways)	Topsoil, Seed, Trees, and Shrubs	15%	\$ 895,950	
<input checked="" type="checkbox"/>	Landscape (Median)	Topsoil, Seed, and Trees	5%	\$ 298,650	
<input type="checkbox"/>	Hardscape	None Anticipated			
<input type="checkbox"/>	Irrigation	None Anticipated			
<input checked="" type="checkbox"/>	Illumination	Double head, ornamental, ea pkwy, 100' spacing	\$6000/EA	\$ 1,356,000	
<input checked="" type="checkbox"/>	Water	16" Water Line	\$60/LF	\$ 678,000	
<input checked="" type="checkbox"/>	Sewer	Minor Adjustments	1%	\$ 59,730	
<input checked="" type="checkbox"/>	Erosion Control	Standard inlet protection, silt fences, check dams	1%	\$ 59,730	
<input checked="" type="checkbox"/>	Other	Pedestrian Beacon (2)		\$ 140,000	
Allowance Subtotal:					\$ 7,224,562
Paving and Allowance Subtotal:					\$ 13,197,565
Mobilization:			5%	\$ 659,878	
Prep ROW:			10%	\$ 1,319,757	
Construction Contingency:			20%	\$ 2,639,513	
Inflation Contingency:		Start Year: 2013	5%	\$ 659,878	
Construction Cost TOTAL:					\$ 18,477,000

Project Cost Summary				
	Item Description	Notes:	Allowance	Item Cost
Construction Cost TOTAL:				\$ 18,477,000
Engineering/Survey:		Engineering/Surveying/Environmental	12%	\$ 2,217,240
Agency Project Management:			15%	\$ 2,771,550
Inspection and Testing:			5%	\$ 923,850
Franchise Utility Relocations:			2%	\$ 369,540
ROW/Easement Acquisition:		None Anticipated		
Project Cost TOTAL:				\$ 24,760,000

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FUTURE CORRIDOR STRATEGIES AND NEXT STEPS



INTRODUCTION

Planning efforts such as the Airport Boulevard Corridor Development Program often focus on recommended infrastructure improvements as their sole outcome. However, those investments can be lost and wasted without proper policies in place to ensure that they achieve maximum effectiveness. The following section outlines the likely needs within the corridor over the next twenty years, and suggests policy revisions and implementation strategies that can help achieve the vision set forth while meeting the projected needs within the corridor.

FUTURE NEEDS

Airport Boulevard will continue to evolve over the next twenty years. That evolution and reinvention can bring about great change in terms of placemaking and the context of the roadway, but it can also add additional traffic and related congestion if the corridor is not developed properly. Policies need to be in place to help shape the manner in which new developments interact with the corridor. The Upper Airport Boulevard Initiative is taking a step, with the creation of a form-based code, towards shaping several aspects of how future development is oriented to and interacts with Airport Boulevard, which will have a great impact on achieving the ultimate vision for the corridor.

The boundaries of those code revisions will likely be limited, at least in the near term, to Zone 1. To apply these revisions throughout the corridor will take a significant amount of time to correctly calibrate the code to the actual conditions adjacent to the roadway. Therefore, there is a need for near-term policies that govern interaction between development and the corridor.

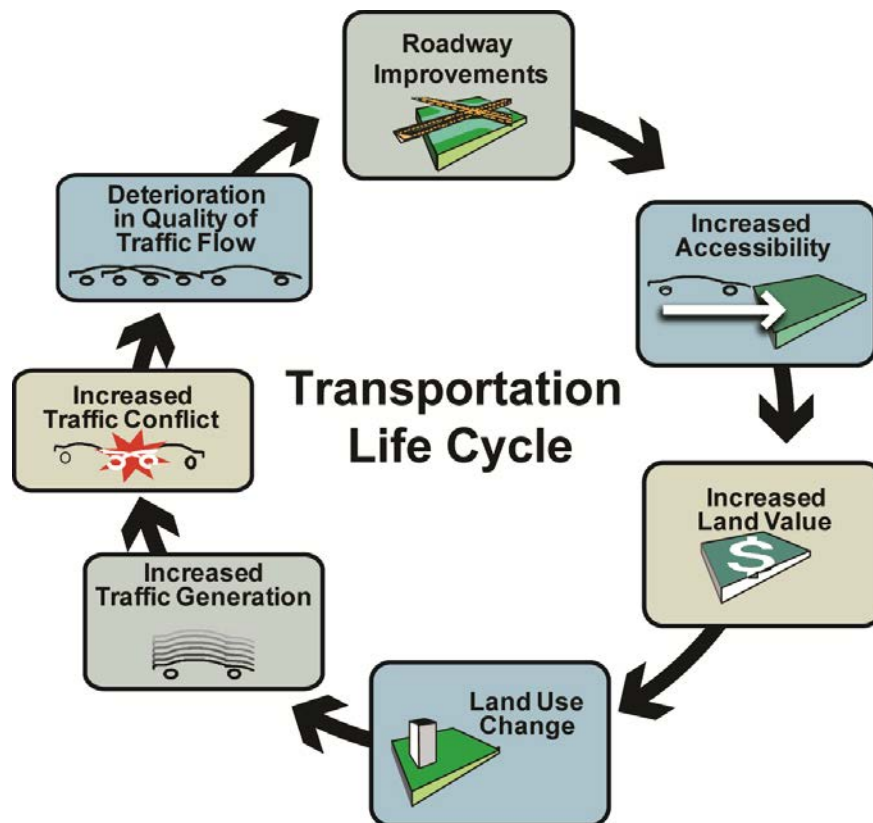
EXAMPLES OF POLICIES

Certain policies are already in place that will help to achieve the desired cross-section and roadway characteristics for the corridor. The designation of Airport Boulevard as a Core Transit Corridor creates requirements for sidewalks and buffers between the roadway and pedestrian realms, which is a significant step forward. In addition, the requirements currently enforced by TxDOT within Zone 3, which is still within its jurisdiction, provide a basic framework for controlling access points and reducing the number of conflict points along the corridor as development occurs. These policies, when combined with a corridor-wide strategy, will greatly impact the ability to meet the vision of this planning effort.



EXAMPLE POLICY LANGUAGE

The following is an example of a potential policy and decision-making process for determining access to Airport Boulevard. Access management involves the planning and coordination of the location, number, spacing and design of access points from a roadway to adjacent land. Historically, transportation and access management plans have concentrated primarily on efficiently controlling the movement of vehicles, by seeking to reduce conflicts and maximizing the traffic capacity of a roadway. However, recent planning efforts recognize that transportation is inextricably linked to land use decisions and that sprawl and inefficient land use policies create congestion, auto dependence, and pollution.



The "Transportation/Land Use Cycle" involves a sequence of events in which improvements are made to the transportation network that lead to new land use development, which generates additional traffic and the need for further roadway improvements. It is possible to stop this cycle with proper management of access and network design.

The following policy establishes the idea that one standard does not fit all. The spacing and design standards for the roadway should accommodate varying land development types with flexible standards. The result will be a roadway that maintains a high level of mobility while supporting wise land development patterns.

Development Context	Median Opening Spacing	Full Access Spacing	Partial Access Spacing	Shared Access	Reciprocal Easement Agreement	Shared Access Lanes	Street Connectivity Minimum	Signal Spacing
Sub-Urban – Single Use	800 ft min	800 ft min	150 ft min	Required	Recommended	N/A	1.40	½ Mile
Urban – Mixed-Use	600 ft	600 ft min	100 ft min	Required	N/A	N/A	1.50	¼ Mile

Accordingly, this policy varies according to the area through which the roadway passes and the function of the roadway itself. The land development context of Airport Boulevard in both its current and envisioned state varies from suburban to urban. This policy seeks to balance the access requirements for each of these development contexts with the desire to maintain the mobility function of this arterial road. The chart on this page should be referred to during planning and designing of this roadway.

Median Opening Spacing: Openings should only be provided for street intersections or at intervals designated by the above Access Standards. Spacing between median openings must be adequate to allow for introduction of left turns with proper deceleration and storage lengths.

Full Access Spacing: In concert with median openings, full access space openings are allowed. These driveways or private streets provide all turning movements from them and must meet the design requirements dictated by the City.

Partial Access Spacing: Right-in and right-out driveway or private-street access locations seek to create mid-block ingress and egress to parking areas. These access points are defined by a split or T design that restricts full access. They are not associated with a median access opening.

Shared Access: Parcels are required to share all full-access and some partial-access locations through agreement. When possible, shared access should be accomplished through placement of access connections on shared parcel lines or through private drives, streets and stub-outs.

Reciprocal Easement Agreement: When applicable, owners and permittees of parcels may enter into an agreement for reasonable access, ingress and egress between property lines for the purpose of paved driveways, roadways and/or walkways.

Shared Access Lanes: Similar to off-site access roadways, shared access lanes establish the shared access easements for landowners to connect to the city street system. They can be established along shared parcel lines or at the discretion of the city.

Signal Spacing: Properly spaced signals have the ability to maintain corridor progression, increase level of service for all users, allow for connections across the corridor, and provide connections into neighborhoods adjacent to the corridor.

Street Connectivity: Street connectivity requirements are essential to maintaining the long-term mobility of a corridor and will potentially be very important at the local neighborhood level, since connectivity is a key factor in ensuring that people can walk or bike between neighborhoods and communities. An interconnected street system is necessary in order to promote orderly and safe development by ensuring that streets



function in an interdependent manner, provide adequate access for emergency and service vehicles, enhance access by ensuring connected transportation routes, and provide continuous and comprehensible traffic routes.

Connectivity shall be defined by the ratio of links to nodes in any subdivision.

- A. The connectivity ratio shall be the number of street links divided by the number of nodes or end links, including cul-de-sac heads.
- B. A link shall be any portion of a street, other than an alley, defined by a node at either end. Stub-outs to adjacent property shall be considered links. For the purpose of determining the number of links in a development, boulevards, median-divided roadways, and divided entrances shall be treated the same as conventional two-way roadways. A pathway between neighborhoods for walking, bicycling and emergency access shall be counted as a link.
- C. A node shall be the terminus of a street or the intersection of two or more streets.
 - 1. Any curve or bend of a street that exceeds 75 degrees shall receive credit as a node. Any curve or bend of a street that does not exceed 75 degrees shall not be considered a node.
 - 2. A divided entrance shall only count once.

Required Ratio

- A. Street Network
 - 1. The street network for any subdivision with internal roads or access to any public road shall achieve a connectivity ratio of not less than 1.50 in the Urban Context Zone and 1.40 in the Sub-Urban Context Zone.
- B. Street links and nodes along a collector or arterial street providing access to a proposed subdivision shall not be considered in computing the connectivity ratio.
- C. Stub-outs shall be considered as being present as a link at the ratio of one link per side as provided for purposes of determining if the required ratio has been met.
- D. Trail connections out of the subdivision shall be considered as being present as a link at the ratio of one link per side as provided for purposes of determining if the required ratio has been met.

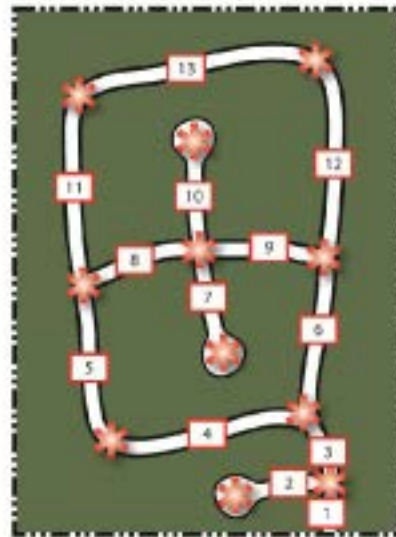
Addition of Pedestrian Connection



Base Design



13 Links / 11 Nodes = 1.18



Node Link

Improved Design



16 Links / 11 Nodes = 1.45



Node Link New External Links

NEXT STEPS

To make the redevelopment of the Airport Boulevard corridor a reality, there a number of steps that must be taken:

- Identify funding sources and opportunities to partner with private redevelopment, including the Form-Based Code initiative for Upper Airport Boulevard.
- Implement the short-term intersection improvements as recommended in the report.
- Design and implement the pilot projects (Airport Boulevard near Highland Mall and between 48th Street and Wilshire/Aldrich) to gain momentum for the redevelopment of the remainder of the corridor.
- Design the entire corridor for phased implementation as funding becomes available.
- Coordinate with other agencies on regional opportunities for mobility and water quality improvements.



AIRPORT BOULEVARD CORRIDOR DEVELOPMENT PROGRAM

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