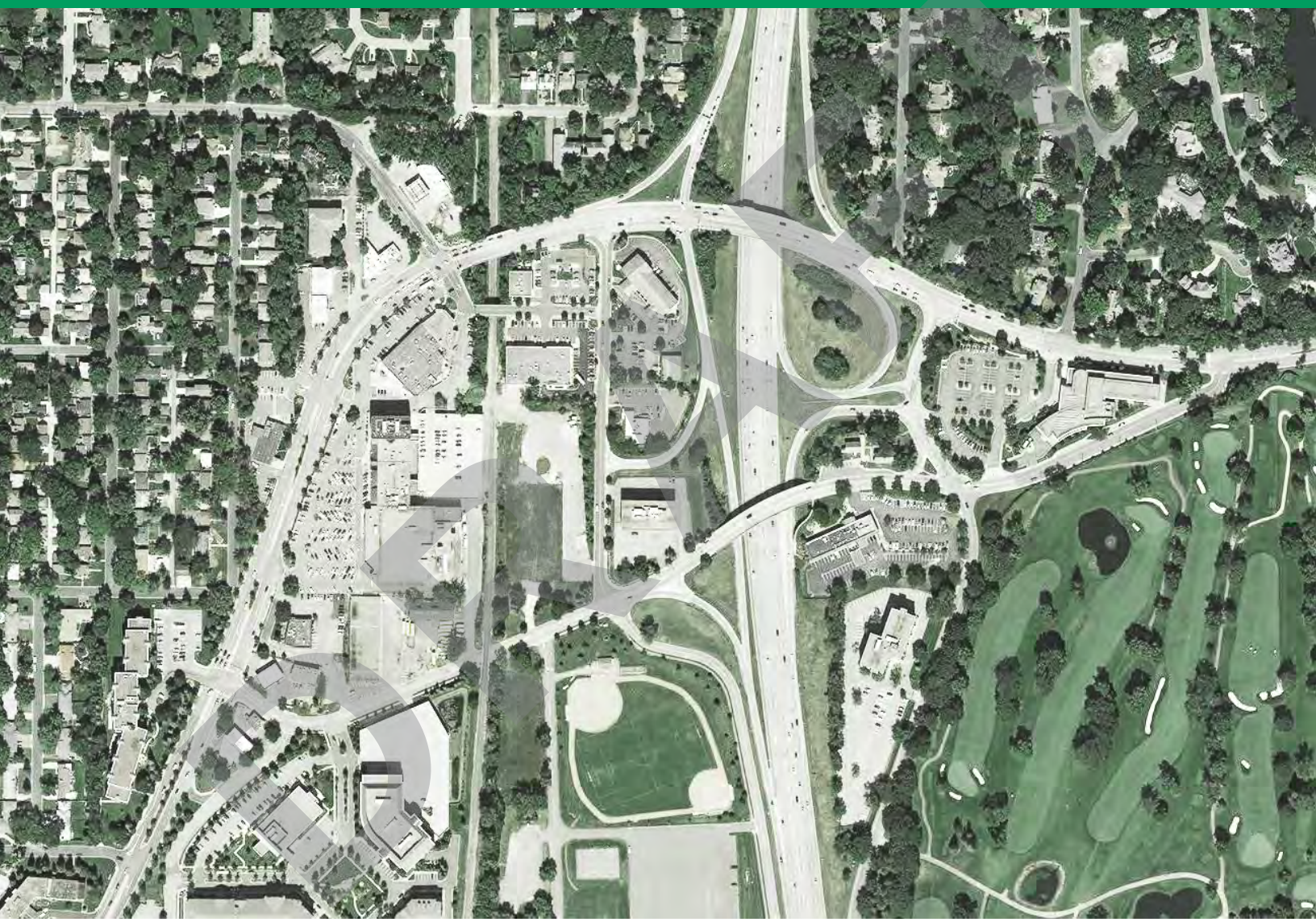
City of Edina

Grandview District

Transportation Study

DRAFT, July 5th, 2016



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alta PLANNING + DESIGN

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City of Edina

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And special thanks to the many Grandview "Alumni" who participated in this and the ongoing planning efforts for this District.

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Figure 1.1 Grandview District aerial view. Photo Credit: MnGeo WMS Service 2012.

CHAPTER 1

Setting + Context

Existing Conditions

Project Process

Goals

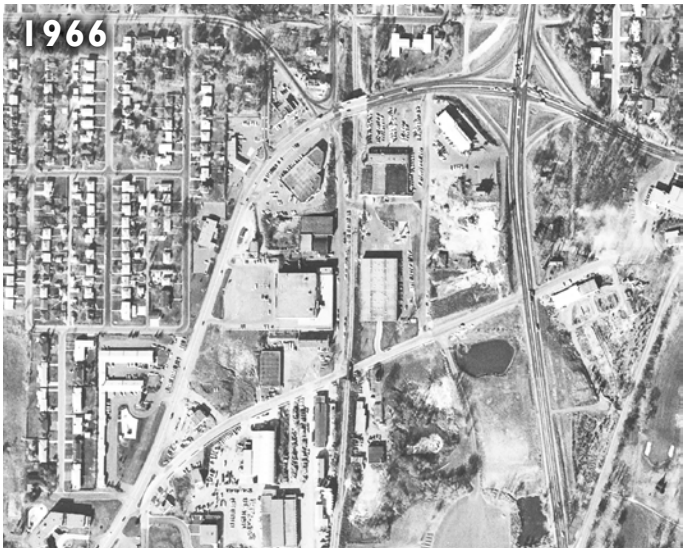
Metrics

Existing Conditions

The Grandview District is an important node of mixed commercial, office, and residential uses between Vernon Avenue and Eden Avenue on either side of Highway 100 (Figure 1.1). It has evolved significantly over its history, from farming to a hub of commercial activity, taking advantage of its access to road and rail transportation networks (Figure 1.2). Formerly, Highway 169 followed the current alignment of Vernon Avenue, making this a critical crossroads of two highways. Even after Highway 169 was realigned, Vernon remained a busy road which has continued to support retail and office uses.

The current character of the Grandview District is described in detail in the Briefing Book (Appendix 1), but a few elements of the transportation system quickly emerged as key to understanding how things work today. First, the District has long been designed for use primarily by automobile traffic. The facilities for bikes and pedestrians are limited, disconnected, uncomfortable, and require safety improvements. In particular, residents are very concerned about the difficulty for crossing Vernon Avenue to get to Jerry's Grocery Store from the neighborhoods to the west, but gaps in the bike and pedestrian network occur throughout the area. This means that even short trips are often conducted by car, rather than by foot or bike, worsening traffic congestion, increasing the need for parking, and decreasing the attractiveness of transit.

Second, there are several areas in the auto transportation network that contribute to difficult circulation patterns. The merge of two on-ramps to southbound Highway 100 has been nicknamed "the death-merge" by motorists. Queuing at Interlachen Boulevard and Vernon Avenue is a source of frustration for motorists and cyclists alike. There are also concerns about speeding traffic on Vernon Avenue, queuing from the drive-through of a coffee shop on Arcadia Avenue, and inadequate or ineffective parking in several locations. In general, there is significant room



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for improvement throughout the system.

Finally, the public transit system is less desirable and useful than it could be. Existing bus routes are not heavily used and those who would use them struggle with access to nearby parking and with safely and comfortably walking to and from stops. There is also significant interest in supporting commuter rail along the existing freight rail line, but many political and logistical hurdles exist for this proposal. At this time, the Edina Transportation Commission (ETC) is exploring the potential of commuter rail as part of a related but separate planning effort.

Additional information on existing conditions is covered in Appendix 1. This Transportation Study document explores solutions to these and other issues through an interconnected set of proposals in the following chapters.

Project Process

The Grandview District Transportation Study process was intended to build on the progress of previous planning studies. As shown in Figure 1.3, there has been substantial planning for the District in the preceding years. In particular, many residents and stakeholders contributed to the recommendations of the Framework Plan. That document both called for the Transportation Study and provided a basis for its assumptions about urban design and redevelopment opportunities. Because of this strong connection, the Transportation Study specifically sought out input from those who had worked on the previous studies, the "Grandview Alumni." Their knowledge and participation formed the core of the public process and was instrumental in the design recommendations made for this report.

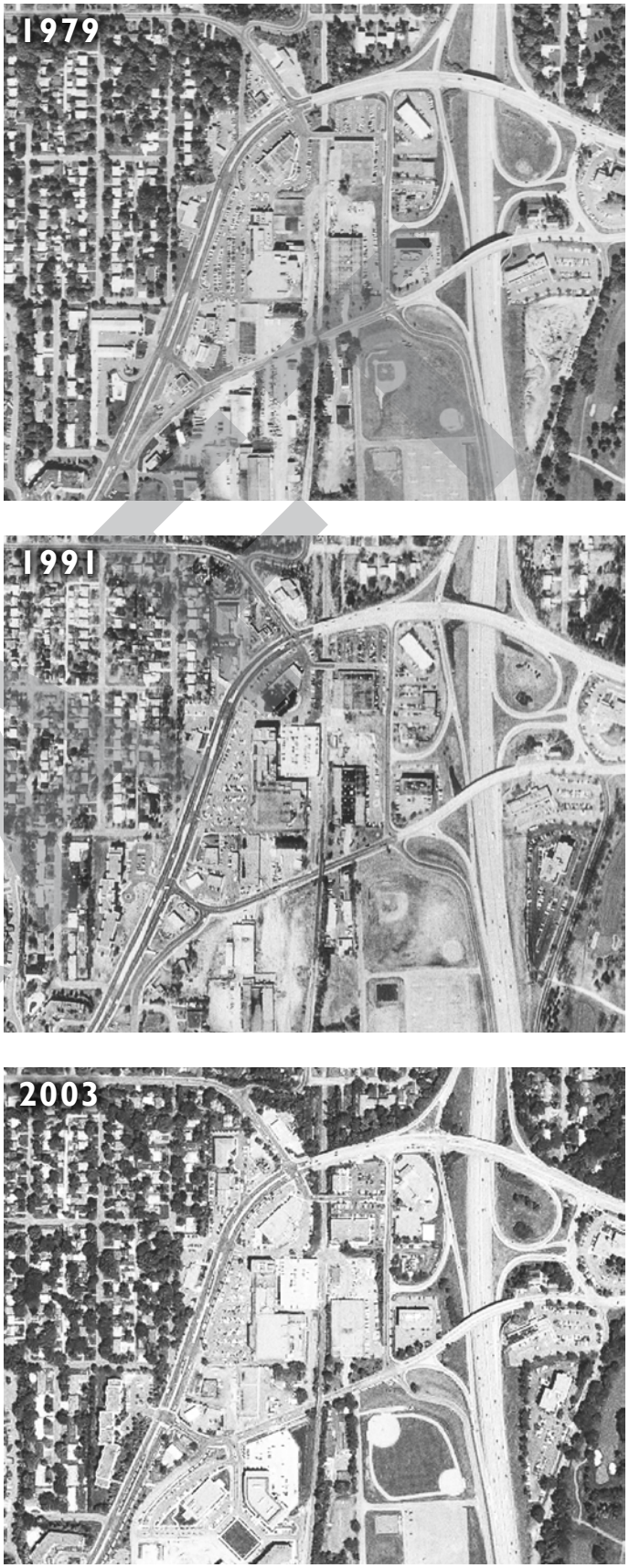

Figure 1.2 Historical aerial photography of the District, from 1947 to 2003. Courtesy of the City of Edina.

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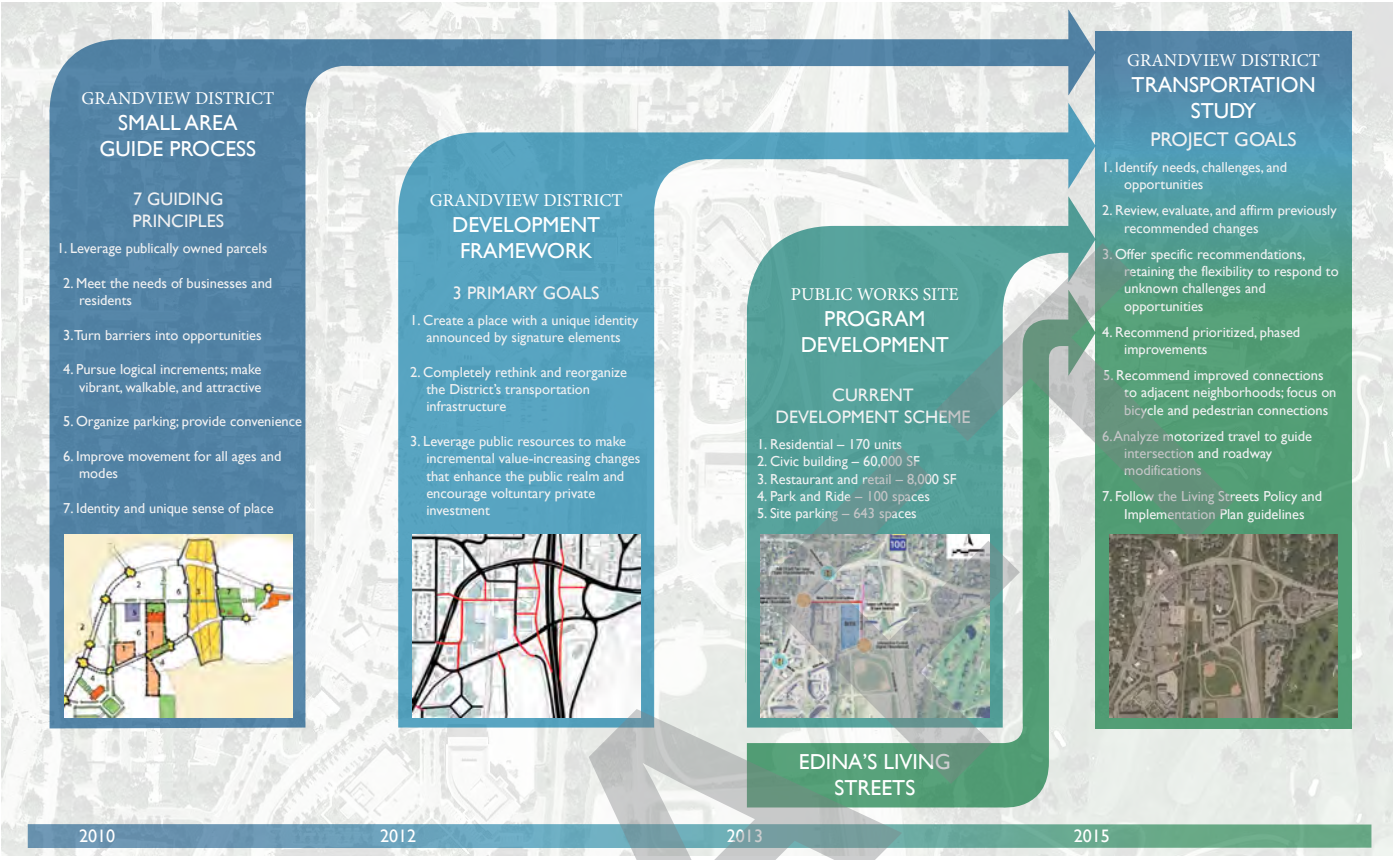

Figure 1.3 Previous planning studies whose results have informed the direction and goals of this transporation study.

The process for the study itself was organized around three phases, each culminating in an intensive week of design and stakeholder engagement. The process was designed to first establish a shared understanding of the project during Convene Week, then explore potential solutions during Imagine Week, and finally review refined solutions during Recommend Week. Each phase and intensive week is described in more detail, below.

Convene Week

During Convene Week, the design team conducted a site tour (Figure 1.4 and Figure 1.5), analyzed existing conditions, refined the goals of the study, held a public meeting and a focus group meeting with local bike and pedestrian advocates, and presented to both the Transportation Commission and the City Council. In particular, the team used field work and background information to assess the existing transportation network, including street design standards, roadway capacity, parking management, traffic management, transit routes, pedestrian linkages, and bicycle connections.

Based on input from City staff, the team developed four scenarios for analysis:

- Existing conditions
- New development at Edina Comprehensive Plan levels
  - 30 housing units per developable acre
  - 1.5 FAR (Floor Area Ratio)
- New development at Grandview Framework levels
  - Incorporates Former Public Works Site development density
  - 60 housing units per developable acre
  - 2.0 FAR
- New development with a Highway 100 Grandview Green (informally referred to as "the Lid")

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- 120 housing units per developable acre

During the public meeting, the team presented the initial analysis, along with background on the earlier work done on planning for the District. The attendees then worked through a number of exercises in small groups, aimed at providing applicable local knowledge and establishing key areas for analysis and design. Participants provided substantial information and input and in particular identified the following priorities:

- Consider all modes of movement
- Incorporate Complete Streets
- Reconnect zones within district for all modes
- Transit
  - Bus routes and access
  - Advocacy for Park and Ride
  - Consider commuter rail
- Pedestrian experience
  - Enhance both safety and routing
  - Improve experience
- Motorists
  - District parking strategy
  - Reorganize highway ramps
  - Explore street and intersection configurations
  - Consider through-traffic and to-traffic

Following the intensive week, the team also met with a group of local business and property owners to ensure that there was a clear understanding of how the transportation system currently and potentially served their properties.

Finally, the team met with a variety of related agencies, such as staff from Hennepin County, the Minnesota Department of Transportation (MnDOT), Minnehaha Creek Watershed District, railroad staff, and others. Complete notes from those meetings are provided in Appendix 2, but the intent in all cases was to understand the related work being done by those agencies and ensure that we understand their requirements for improvements we might propose. This input, along with the project goals, provided a basis for the work done during later phases of the project.

Imagine Week

During Imagine Week, the team held a design charrette to explore solutions, conducted additional field visits, and once again held a public meeting and presented to both the Transporta-

Figure 1.4 Existing condition at the north end of Brookside Avenue by the municipal parking ramp behind Jerry's Foods, and west of the railroad corridor. From the design team's site visit, November 2015.

Figure 1.5 Existing condition of Eden Avenue at Arcadia Avenue, showing a lack of pedestrian crossing and sidewalk facilities. From the design team's site visit, November 2015.

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tion Commission and the City Council. During the charrette, the Study Team developed scenarios for the transportation network (Figure 1.6), including envisioning potential solutions based on work done during the analysis phase. The Study Team then verified solutions in the field to ensure that assumptions were accurate and correct. This work resulted in the phased approach described in this document (Figure 1.7 to Figure 1.9).

At the Imagine Week public meeting, the team presented the analysis work done in the Briefing Book (Appendix 1) and explored the phased approach solutions in both a presentation and question-and-answer pin-up review session. The public was very supportive of the improvements in general, and especially the improvements to bicycle and pedestrian safety and access. There were questions about access to particular properties and

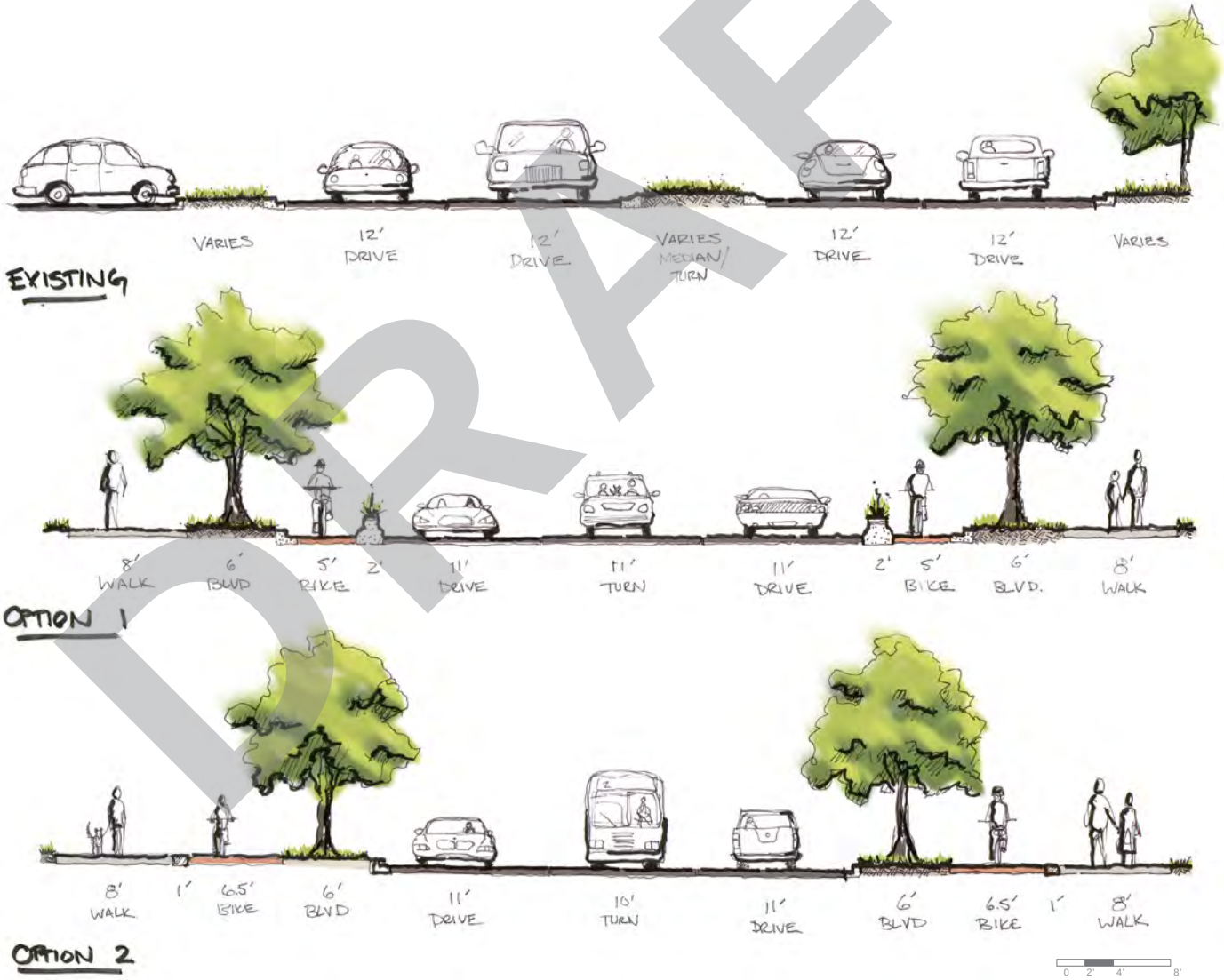

Figure 1.6 Example of proposed solutions and scenarios for Vernon Avenue from Imagine Week design concepts.

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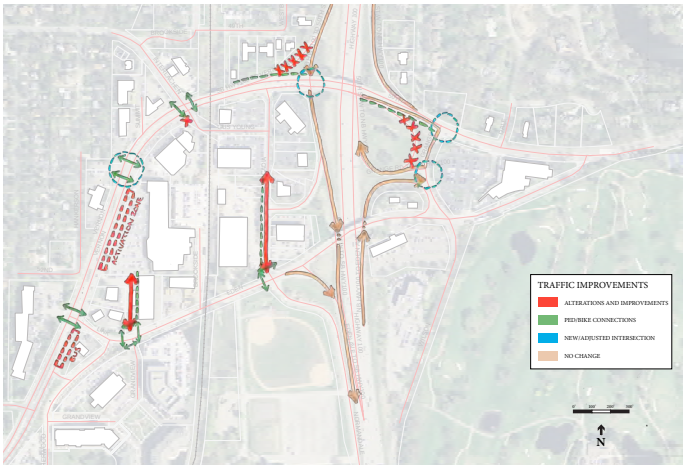

Figure 1.7 Proposed Short Term Changes from Imagine Week.

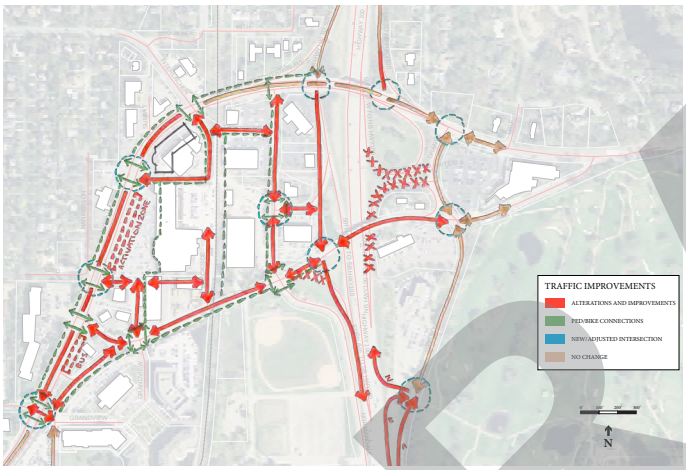

Figure 1.8 Proposed Mid Term Changes from Imagine Week.

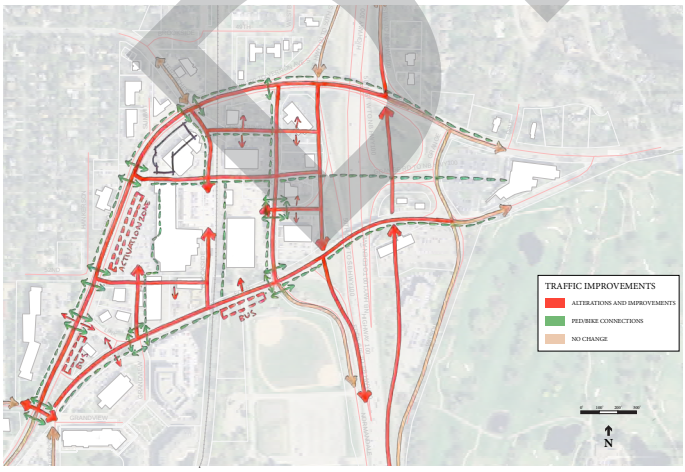

Figure 1.9 Proposed Long Term Changes from Imagine Week.

about the potential for delay with the reconfigured highway on- and off-ramps. Complete notes are provided in Appendix 2.

Following Imagine Week, there were once again meetings with the local business and property owners and with the related agencies. In addition, the phased approach was developed into a board that was used for "intercepts" at the library, Jerry's grocery store, and Our Lady of Grace Catholic Church. Intercepts provided an opportunity for public stakeholders to review the proposed changes at a time and place that was convenient to them and provide feedback by comment card. Responses were generally positive and only minor modifications to the proposals were suggested.

Recommend Week

During the final week of intensive work, the team held a follow-up design charrette to refine recommendations and graphics and once again held a public meeting and presented to both the Transportation Commission and the City Council. The design charrette was primarily aimed at discussing and resolving key areas of concern and areas where feedback received from the intercept events or other input had been provided more recently.

At the Recommend Week public meeting, the team presented the refined phased approach, highlighting areas that had changed since Imagine Week. Questions and input were encouraged throughout the presentation and opportunities to comment directly on the boards with post-it notes and comment cards were provided. Once again, the response was very positive and changes were minor.

Following Recommend Week, there were once again meetings with the local business and property owners and with the related agencies. Because there had been a substantive change

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to the intersections of Vernon Avenue, Eden Avenue, and Sherwood Road, which would affect access for residents in the Richmond Hills neighborhood, and because no residents had been at the public meeting, a special meeting was held just with those residents. Residents were initially very concerned about access to their neighborhood since they only have one access point, but in general seemed more comfortable with the proposed solutions following that discussion. Follow-up meetings were also held with representatives from Edina's emergency services, Jerry's, and Our Lady of Grace to ensure their understanding of the proposed solutions.

Minor modifications were made based on all the feedback received during and after Recommend Week, which is represented in the plans shown in this document.

Metrics

While a more complete discussion of the transportation analysis follows later in Chapter 4, this section describes the Study Team's approach to developing and evaluating the Grandview District scenarios. Since a goal of the transportation study is to determine whether and how well the proposed transportation network could serve the Framework Plan vision, the Study Team outlined a set of goals and evaluation metrics that address multi-modal, and in fact multidisciplinary, evaluation criteria.

The Study Team began by examining the ultimate vision described in the Grandview District Framework Plan, which is intended to unfold over many years. The team also acknowledged, however, that improvements would not unfold all at once, but over time, and are tied to safety, mobility, or development needs

Goals

The role of this Transportation Study was established, based on the Framework Plan recommendations, in advance of the project initiation. The goals were reviewed and were still broadly supported by City staff and stakeholders and therefore were not significantly altered.

The goals of this Transportation Study are to:

- Identify needs, challenges, and opportunities based on variable density scenarios
- Review, evaluate, and affirm recommendations from the Grandview Framework Plan
- Offer specific recommendations, retaining the flexibility to respond to unknown challenges and opportunities
- Recommend prioritized, phased improvements
- Recommend improved connections to adjacent neighborhoods; focus on bicycle and pedestrian connections
- Analyze motorized travel to guide intersection and roadway modifications identified in the Development Framework
- Follow the Living Streets Policy and Implementation Plan guidelines

These goals acted as a framework for decisions that were made throughout the study. More detailed and specific goals became evident for particular aspects of the transportation system and for different focus areas. Those are described in Chapters 2 and 3.

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Scenario	Timeframe	Development Scale
Existing Conditions	Current	Current
Existing Conditions + Early Action Items	0-2 years	Current
Short Term Changes	2-5 years	30 dwelling units per acre
Mid Term Changes	5-15 years	60 dwelling units per acre
Long Term Changes	15-30 years	120 dwelling units per acre

Figure 1.10 Scenarios for analysis in the Grandview District Transportation Study.

Figure 1.11 Example of discontinuous pedestrian facilities and unmarked crosswalks within the District.

Figure 1.12 Vernon Avenue is currently a difficult barrier for pedestrains navigating the District.

(Figure 1.11 and Figure 1.12). The transportation investments recommended in the Framework Plan were supportive of the vision outlined in the Framework document, but needed to be grouped and analyzed in a manner that would facilitate their implementation. With this recognition in mind, it became necessary to develop scenarios that were not necessarily alternatives to one another, but instead that built upon each other cumulatively in order to suggest how they might progress as development advances.

The scenarios were refined during Recommend Week, based on workshops between the team and City staff, considering feedback from the public during Imagine Week and other outreach events. The scenarios for analysis defined by the Study Team are outlined in Figure 1.10.

The transportation improvements outlined and analyzed in this document are intended to support the level of development envisioned in each scenario. It is not necessary to realize the full scale of development envisioned in each scenario; rather, the scenarios offer guidance on the character and level of transportation investment that might be required to support the corresponding level of investment. The following section describes the scenarios, including the scale of development, timeframe for such development, and key enhancements that could be delivered to support such development.

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In developing and evaluating the scenarios, the Study Team sought to incorporate, understand, and address both the technical needs of the network as well as community, stakeholder, and agency concerns. The chosen evaluation metrics are intended to inform a discussion of trade-offs where they exist, so that all involved have an understanding of network performance for all users, rather than prioritizing any one type of travel or development. Finally, the metrics were designed to be measurable across the various scenarios, so that staff and stakeholders could understand how the network would perform and change over time. With all of this information compiled together, the parties could best understand what to expect of the network and assess whether and when to pursue changes.

To this end, the Study Team proposed a combination of metrics that demonstrate changes in safety, mobility, connectivity, and access. The metrics evaluated include:

- Number of vehicle trips (District-wide)
- Average vehicle delay (District-wide, and at key intersections)
- Average vehicle speed (District-wide)
- Access to parking
- Pedestrian connectivity (% of sidewalks that are continuous)
- Pedestrian crossing experience (% of crosswalks that are marked) (Figure 1.13 and Figure 1.14)
- Bicycle connectivity (% of marked routes that are continuous)
- Access to transit

The evaluation includes both qualitative and quantitative measures. The primary sources of data for evaluating performance across these metrics include:

- Trip generation and traffic operations analysis
- Conceptual designs
- Data and case studies of other complete streets projects in similar settings
- Stakeholder and community outreach

There was some discussion as to whether one goal might be more important than others, i.e. pedestrian safety or traffic flow; however, the goal of this effort is to support mobility and development for everyone circulating to, from, and within the Grandview District. No one metric outshined another. As a result no weighting is assigned to individual metrics or modes.

The evaluation of these metrics are described in greater detail in Chapter 4, with a deeper technical discussion of the traffic analysis in Appendix 3. With each scenario and as more projects are implemented, performance of the transportation network would improve, and the network would become increasingly supportive of the type of future envisioned for the Grandview District. A more detailed discussion of the elements included in each scenario are discussed in Chapter 3.

Figure 1.13 Example of an unmarked crosswalk within the District.

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Figure 1.14 Example of discontinuous pedestrian facilities and unmarked crosswalks within the District. Oversized highway on- and off-ramps occupy a large amount of space that could be better utilized if re-allocated into developable parcels.

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Figure 2.1 Long Term Changes Master Plan developed through the Grandview District Transportation Study.

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CHAPTER 2

Timeline for Change

Short Term Changes
Mid Term Changes
Long Term Changes
Far Term Changes

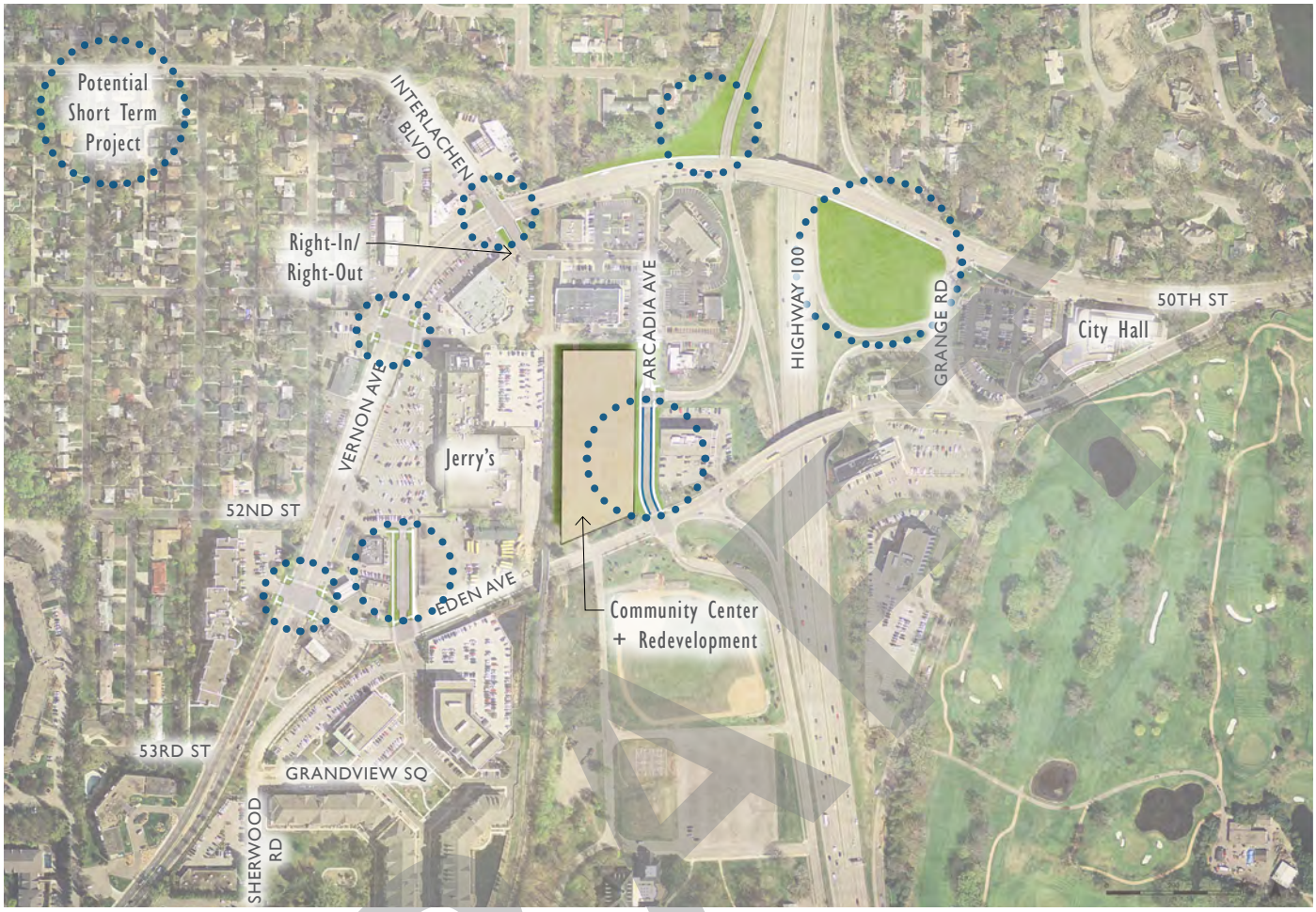

Figure 2.2 Proposed Short Term Changes to the Grandview District transportation network.

Short Term Changes

Changes in the short-term (Figure 2.2) focus on transportation improvements that can be implemented within two to five years, building on early action items already contemplated. Early action items are potential low-cost improvements that could be implemented with minimal construction, permitting, or approval within the next two years. The following items have been identified as potential early action items:

- Begin rationalizing highway on/off ramps:
  - Remove free right from southbound Highway 100 exit onto Vernon Avenue
  - Remove free right to northbound Highway 100 entrance from Vernon Avenue
- New signal at Jerry's to facilitate pedestrian crossings and left-turn movements

These improvements are intended to demonstrate the City's proactive dedication to implementing critical pedestrian safety improvements and to advancing Grandview residents' and businesses' vision of a more connected, accessible District for all travelers, residents, and shoppers.

The short-term improvements target the following changes:

- Continue implementing key pedestrian safety improvements
- Set the stage for mid-term transportation investments

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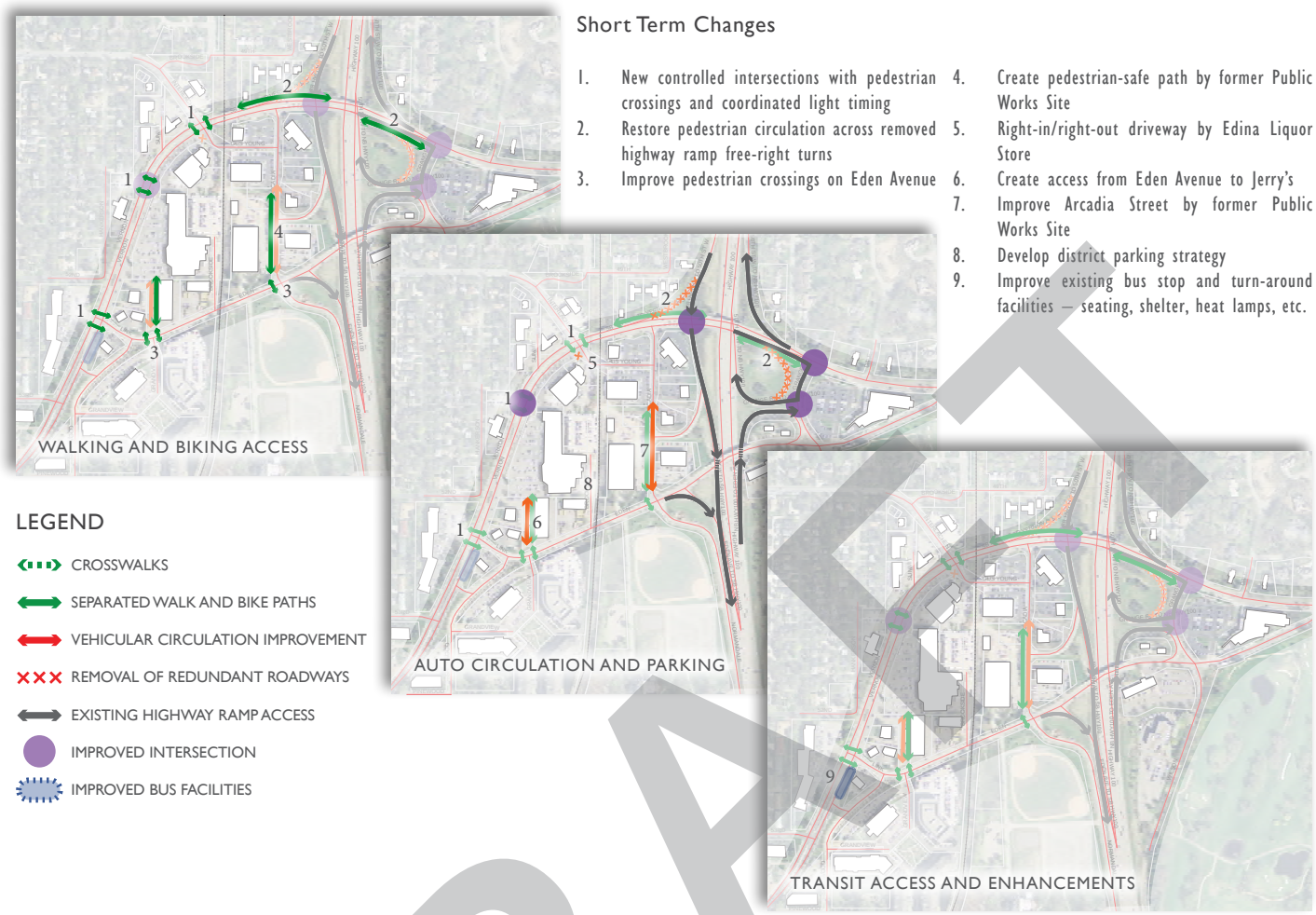

Short Term Changes

1. New controlled intersections with pedestrian crossings and coordinated light timing
2. Restore pedestrian circulation across removed highway ramp free-right turns
3. Improve pedestrian crossings on Eden Avenue
4. Create pedestrian-safe path by former Public Works Site
5. Right-in/right-out driveway by Edina Liquor Store
6. Create access from Eden Avenue to Jerry's
7. Improve Arcadia Street by former Public Works Site
8. Develop district parking strategy
9. Improve existing bus stop and turn-around facilities – seating, shelter, heat lamps, etc.

Figure 2.3 Diagrams of proposed improvements for walking and biking access, auto circulation and parking, and transit access and enhancements. Diagrams were developed during the Imagine Week phase of the Transportation Study.

- Begin to rationalize motorist access points in order to better manage traffic flow
- Improve access to parcels currently in the development pipeline, such as the school bus lot and former Public Works site

Note that each scenario is cumulative, so the Short-Term Changes scenario includes all early action items (Figure 2.3 and Figure 2.4). This provides the greatest flexibility, and allows the City to advance any of these improvements as conditions change or as funding becomes available. Analysis of these improvements and the resulting transportation network performance are further described in Chapter 4, Transportation Analysis.

Development Density	30 dwelling units per acre
Timeline	2-5 years
Key Improvements	• Adjusted signal timing • Access at Interlachen Boulevard and Gus Young Avenue • Intersection improvements at Vernon and Eden Avenues • New connection from Eden Avenue to Jerry's • Reconfigure Arcadia Avenue to incorporate pedestrian and bicycle space

Figure 2.4 Short Term Changes Summary

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Figure 2.5 Proposed Mid Term Changes to the Grandview District transportation network.

Mid Term Changes

In the Short Term Changes scenario, the plan aims to address critical connections, key safety improvements, and simplify motorist access to the local and regional network. Changes in the Mid Term (Figure 2.5), however, focus on transportation improvements that can be implemented in five to 15 years and build on the enhancements made in the Short-Term.

Improvements in the Mid Term Changes scenario are intended to reestablish multi-modal connections and enable development that fits into the local vision for the Grandview District. Though all of the improvements in the Framework Plan are seen as critical, the enhancements in the Mid Term recognize that timeline to assemble adequate funding, to address the required approvals processes, and to coordinate with local, regional, and state agency partners.

The Mid Term improvements target the following changes (Figure 2.6 and Figure 2.7):

- Establish critical, continuous bicycling connections
- Re-establish pedestrian connections
- Continue rationalizing motorist access points in order to better manage traffic flow
- Unlock new parcels for long-term development, open space, or public use
- Set the stage for long-term transportation investments

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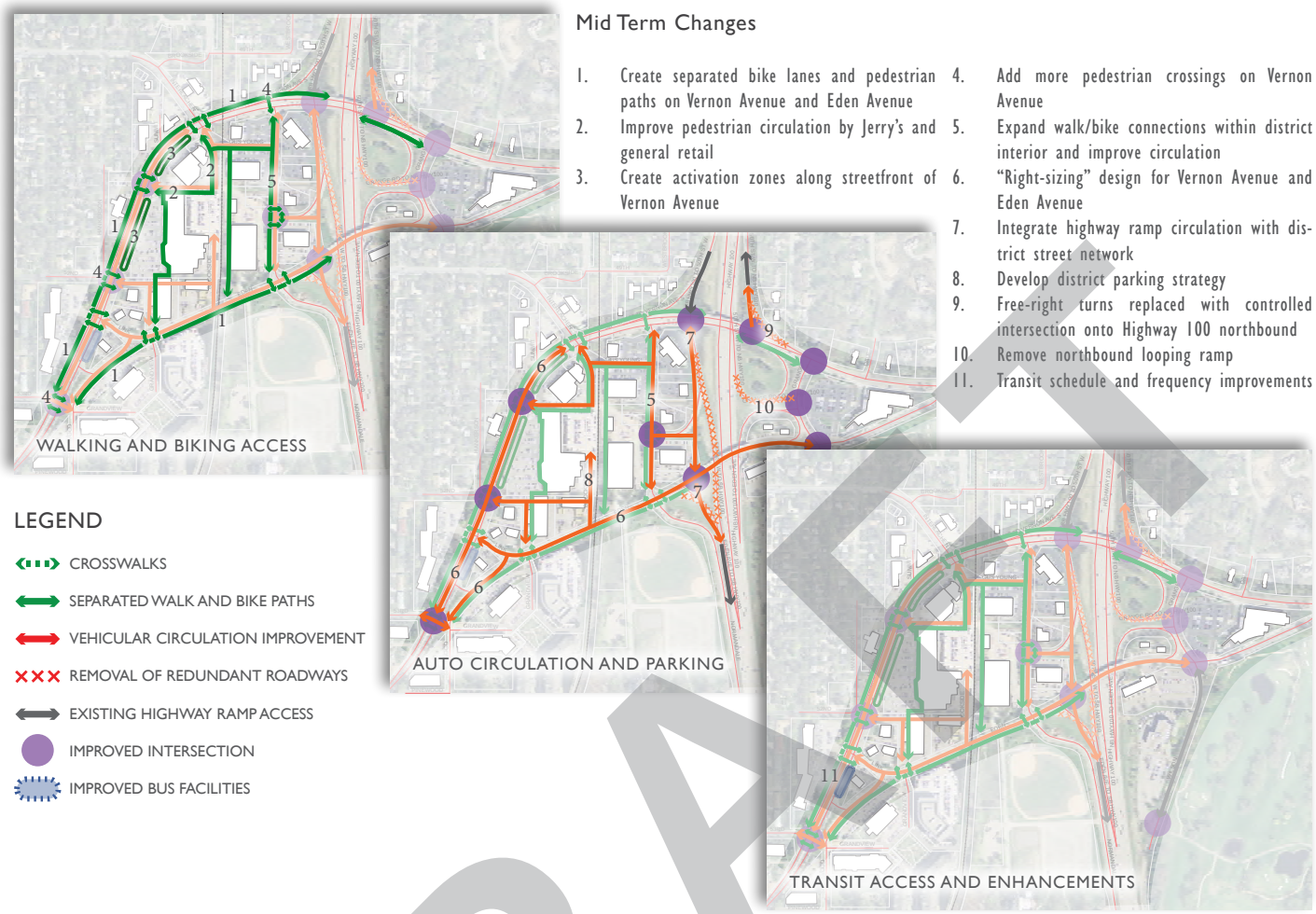

Mid Term Changes

1. Create separated bike lanes and pedestrian paths on Vernon Avenue and Eden Avenue
2. Improve pedestrian circulation by Jerry's and general retail
3. Create activation zones along streetfront of Vernon Avenue
4. Add more pedestrian crossings on Vernon Avenue
5. Expand walk/bike connections within district interior and improve circulation
6. "Right-sizing" design for Vernon Avenue and Eden Avenue
7. Integrate highway ramp circulation with district street network
8. Develop district parking strategy
9. Free-right turns replaced with controlled intersection onto Highway 100 northbound
10. Remove northbound looping ramp
11. Transit schedule and frequency improvements

Figure 2.6 Diagrams of proposed improvements for walking and biking access, auto circulation and parking, and transit access and enhancements. Diagrams were developed during the Imagine Week phase of the Transportation Study.

Note that each scenario is cumulative, so the Mid Term Changes scenario includes all early action items and Short Term improvements. This provides the greatest flexibility, and allows the City to advance any of these improvements as conditions change or as funding becomes available. Analysis of these improvements are further described in Chapter 4, Transportation Analysis.

Development Density	60 dwelling units per acre
Timeline	5-15 years
Key Improvements	• Arcadia Avenue Shared Street • Vernon and Eden Avenue Complete Streets (bike lanes, pedestrian improvements, landscaping, and traffic management) • Eden Avenue bike lane across Highway 100 • Additional simplification of Highway 100 on-ramps; new northbound access at 50th Street • Reopen and signalize intersection at 53rd Street and Vernon Avenue • Enhanced bus stop at Vernon and Eden Avenues • New frontage road providing southbound access to Highway 100 and access to development parcels on west side of Highway 100 • New District parking options at municipal ramp, with associated policy improvements

Figure 2.7 Mid Term Changes Summary

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Figure 2.8 Proposed Long Term Changes to the Grandview District transportation network.

Long Term Changes

These improvements are intended to complete the vision of the Framework Plan, establishing the character and scale for development of the plan and the necessary transportation improvements that can support such development. Though the Long Term Changes scenario envisions a grand scale of development over several decades, it also describes the requisite transportation investments that should be in place when that level of development is pursued (Figure 2.8).

The Long Term improvements target the following changes:

- Complete key pedestrian and bicycle connections
- Complete simplification of highway access
- Facilitate high-capacity transit connections
- Support delivery of the Framework Plan
- Outline character of ongoing development and transportation improvements

The Long Term Changes scenario (Figure 2.9 and Figure 2.10) delivers on the vision for the Grandview District described in the Framework Plan. It envisions all major components of the Framework Plan in a way that respects its setting within Edina, and allows for safe multi-modal connections to, through, and within the District. The transportation improvements envisioned and analyzed in this document are intended to support the level of development envisioned in each scenario. They are

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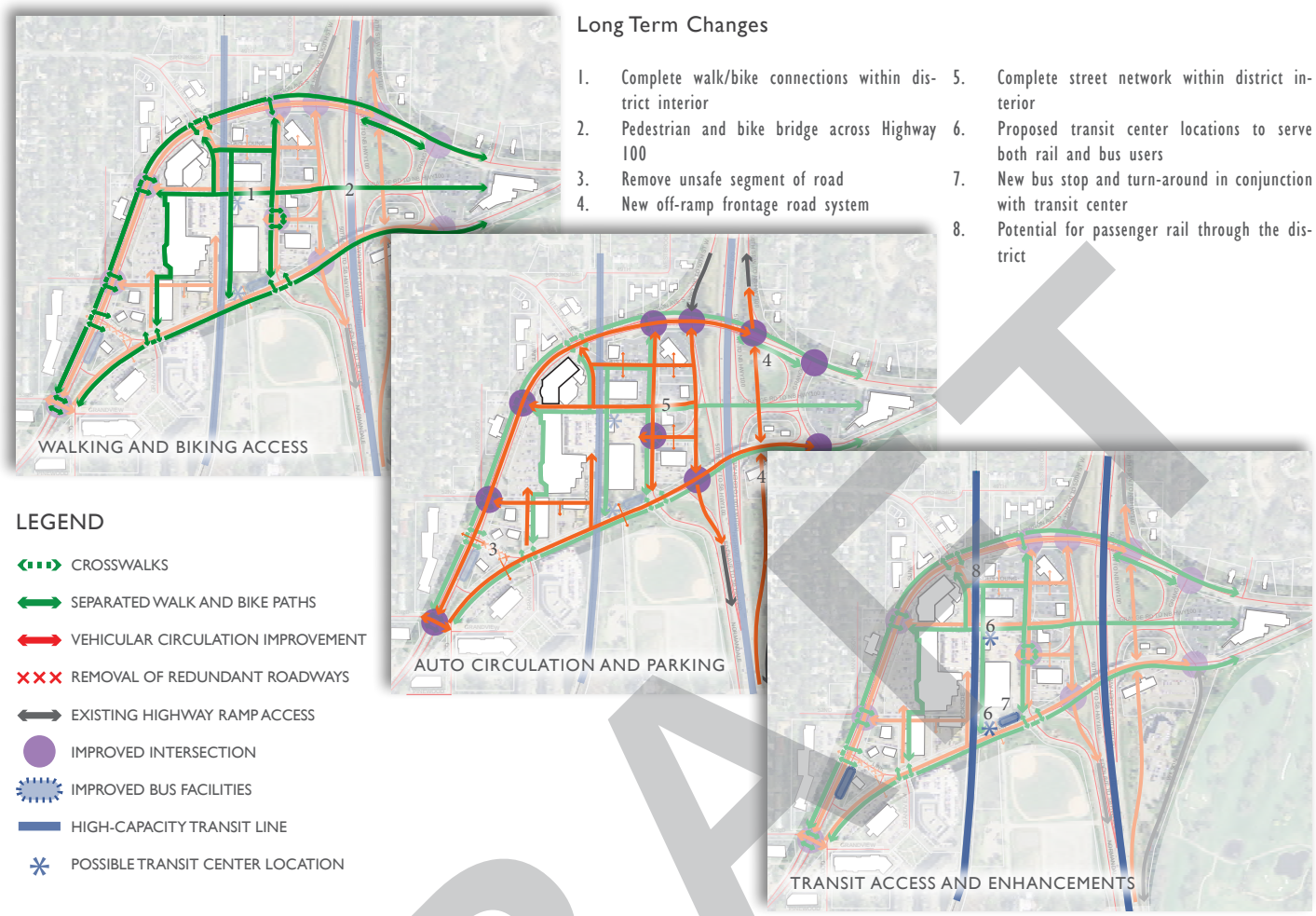

Long Term Changes

1. Complete walk/bike connections within district interior
2. Pedestrian and bike bridge across Highway 100
3. Remove unsafe segment of road
4. New off-ramp frontage road system
5. Complete street network within district interior
6. Proposed transit center locations to serve both rail and bus users
7. New bus stop and turn-around in conjunction with transit center
8. Potential for passenger rail through the district

Figure 2.9 Diagrams of proposed improvements for walking and biking access, auto circulation and parking, and transit access and enhancements. Diagrams were developed during the Imagine Week phase of the Transportation Study.

also intended to denote a level of transportation investment that will support and facilitate the scale of development considered in the Framework Plan. Analysis of the performance of these improvements are further described in Chapter 4.

The Long Term Changes scenario is the culmination of that vision in many ways, though it is not necessarily the end game. Each scenario takes a substantial step towards the Long Term goal for the Grandview District and sets up the ability grow beyond this scenario, within key parameters. The next section of this chapter describes additional infrastructure and land use improvements for the District. These are more substantial than what might be delivered in the readily foreseeable future. However, the community acknowledges that such a future exists. The Far Term Changes scenario therefore describes the District vision in the event that more substantial funding becomes available or more intense, more rapid development occurs, and sets the tone for improvements that may be beyond the scope of this analysis.

Development Density	120 dwelling units per acre
Timeline	15-30 years
Key Improvements	• Complete pedestrian and bicycle connection along 50th Street, across Highway 100 • New pedestrian and cyclist connection across Highway 100 to City Hall • New frontage road providing northbound access to Highway 100 and access to development parcels on east side of Highway 100 • Direct connection for high-capacity transit line at a new transit hub on the former Public Works development site • New District parking options incorporated into the former Public Works site, with associated parking policy • Unlock additional parcels for Far Term development, including a potential lid over Highway 100

Figure 2.10 Far Term Changes Summary

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Figure 2.11 Possible Far Term Changes to the Grandview District and transportation network.

Far Term Changes

The concept sketch plan, above (Figure 2.11), suggests a Far Term future characterized by full district build-out through the strategic, phased development of vacant, underutilized, or newly available property along both sides of the Highway 100 corridor. Generally, a thoughtful evaluation of this scenario indicated that several significant elements would have to occur, perhaps simultaneously, in order for this, or similar outcomes, to be realized including:

- Reconfigured and/or eliminated redundancies in the Highway 100 and Vernon Avenue interchange ramps, setting the stage for a feasible real estate transaction (land deal) that would ensure adjacent properties are available for future development;
- Construction of a "Grandview Crossing" (defined in the 2012 Framework Plan), a proposed connection over Highway 100, with design ideas ranging from a simple, but spacious, pedestrian and bicycle bridge, to a "Freeway Lid" spanning between Vernon and Eden Avenues;
- Realization of enhanced transit serving this district, including additional local and regional service related to Highway 100 (perhaps BRT), but also taking advantage of the existing rail corridor pursuing either Light Rail or Modern Streetcar options.

Completion of these three major influences would signal the re-

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start of focused debate and pursuit of detailed district planning strategies that promote and accept increased density as a desired outcome. Positive change over a much longer time frame, i.e. the "Far Term," would not only be measured in additional housing units, but would also provide opportunities to implement the following district-wide improvements (and much else):

- A connected public realm on both sides of Highway 100, including additional green space with an emphasis on pedestrian and bicycle amenities;
- An innovative, multi-system, stacked infrastructure with emphasis on long term cost savings and sustainability;
- A greater mix of local service and convenience venues with emphasis on unique district character and nearby neighborhood needs;
- And an exemplary precedent-setting, district-scale redevelopment approach with emphasis on 21st Century city-building principles and City of Edina objectives.

This study acknowledges the complexities, and unpredictability, of long range strategic thinking, but chooses to include this simple diagram as a means to keep broader concepts on the radar as many of the Short Term planning objectives take center-stage in the next phases of district development.

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Figure 3.1 Long Term Changes Master Plan showing Focus Areas throughout the Grandview District and beyond.

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CHAPTER 3

Focus Areas

Introduction

1 – Jerry's Connection from Eden

2 – Arcadia + Public Works Site

3 – School Bus Site + New Ramp

4 – Vernon Avenue

5 – Interlachen Boulevard

6 – Eden Avenue

7 – Richmond Hills Neighborhood

8 – Highway Access

9 – Highway 100 Ped/Bike Bridge

10 – Transit Center

11 – Our Lady of Grace

12 – Beyond Study Area

Introduction

Within the overall framework of the phased implementation approach described in the previous chapter, there are many areas of specific interest. They can't be considered as separate projects, because the function of the system depends on an interconnected set of improvements, but they do deserve specific attention in order to fully explore their intention and detail in the larger context.

Just as the system is interconnected, all of the projects have impacts on multiple modes of travel, though some might appear to be street or transit oriented. For instance, the pedestrian bridge over Highway 100 does not just act as a walkway. It also encourages the perception of comfort and safety for pedestrians in the District to intentionally shift use from autos to pedestrians and bikes. This study did not assume a change in behavior from autos to other modes in order to "solve" the traffic issues, but it intended to complement conservative traffic estimates with substantive improvements to the experience of those other modes so that actual performance would exceed modeled expectations.

Because of this multi-modal, interconnected approach, the focus areas described in this chapter may seem numerous or even scattered. They are therefore organized by anticipated timeline, rather than mode or geography. The Study Team explored known opportunities for improvements or redevelopment in order to approximate time frames, as shown in the previous chapters. This chapter perpetuates that time-based approach, even though it is subject to the ever-changing winds of political and economic change. If opportunities arise earlier than anticipated, our analysis shows that there is very rarely, if ever, a reason to hold back a project to fit this timeline, though there may be good reasons to move a project forward. In almost every case, momentum towards positive change is the primary incentive for investment.

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Figure 3.2 Existing connection from Eden Avenue to Jerry's Foods, looking north from Eden Avenue.

Figure 3.3 Existing connection from Eden Avenue to Jerry's Foods.

1 – Jerry's Connection from Eden

The current connection from Eden Avenue to Jerry's Foods is a space that is poorly defined and unwelcoming to people wishing to access the commercial area from the south (Figure 3.2 and Figure 3.3). Because the Edina Senior Center, Edina Library, and the Grandview Square offices and residences are located directly south of Eden Avenue, a low-stress and legible route to and from this shopping destination is important to the overall connectivity of the Grandview District.

Presently, people walking or on bicycles who approach Jerry's from the south must cross Eden Avenue at an intersection that is poorly seen by eastbound motorists due to the curve in Link Road. Once across Eden, people are required to walk or ride a bicycle through two parking lots currently lacking sidewalks and a clearly-defined streetscape before reaching Jerry's (Figure 3.2).

A new connection, shown in Figure 3.4, is recommended to improve accessibility and safety for this corridor. The cross section in Figure 3.5 illustrates the allocation of shared space for motorists and bicyclists, while providing off-street sidewalks for people walking separated by a planted boulevard. On-street parking is shown on both sides of the new connection. (Figure 3.5)

Figure 3.4 Plan of a new pedestrian and vehicular connection from Eden Avenue to Jerry's; 1" = 200'.

At the intersections along the corridor, high-visibility continental crosswalks are recommended to improve this connection for those who walk along this corridor. In addition, curb extensions (bulb-outs) are proposed to increase pedestrian visibility and shorten the distance a person must walk between sidewalks. Further discussed on page 41, it is proposed that, in the future, a small portion of Link Road between Grandview and Vernon (between the Super America and BP service stations) be eliminated and Eden Avenue be straightened, helping to improve the sight lines for eastbound automobile traffic on Eden.

Figure 3.5 Section A: Typical Internal Street Section

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2 – Arcadia + Public Works Site

The former Public Works site at the intersection of Eden Avenue and Arcadia Street has been proposed for a variety of uses since the City moved the Public Works operations from the site to the Cahill Industrial Park in 2010 and demolished the old building in 2013. The Grandview Framework Plan imagined a mix of public and private uses on the site. The primary uses consisted of housing and a community center and incorporated an outdoor plaza, all on top of multiple layers of parking, taking advantage of the existing topography.

In 2014 and 2015, the City partnered with Frauenshuh Commercial Real Estate to determine how a mix of public and private uses could fit on the site. Most recently, the City Council initiated a community center study that determined a more defined program and conceptual layout for the community center component of the site. The community center design team from HGA worked closely with the Grandview District Transportation Study Team in an effort to coordinate transportation elements with the community center program.

HGA's concept for the community center was used as a basis for understanding the potential transportation system impacts of the redevelopment, with the understanding that it represents the current thinking of the time and not necessarily the final

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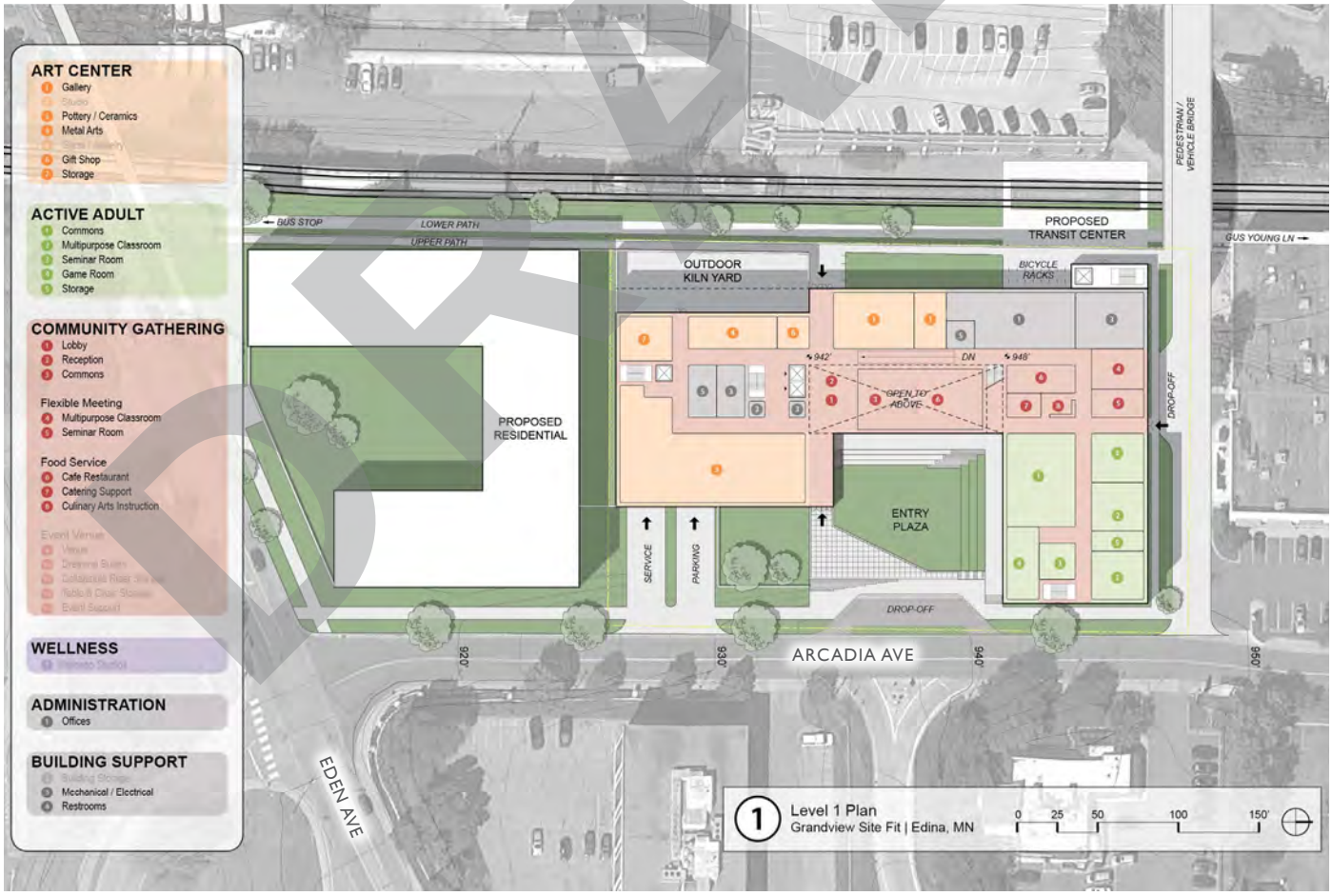

Figure 3.6 Concept plan for Community Center and proposed residential development. Image credit: HGA Architects and Engineers.

design of the project (Figure 3.6).

The Transportation Study anticipates rebuilding Arcadia Avenue in the Short Term from the frontage road access south to Eden Avenue as part of the construction of the community center project (Figures 3.7 and 3.8). In that stretch, Arcadia would have one 10' travel lane in each direction with separated bike lanes and sidewalks on both sides of the street (See Figures 3.9 and 3.11). This would support the vehicular traffic needing to access parking as part of the redevelopment, as well as deliveries and other heavier traffic, while supporting bike and pedestrian connectivity along Arcadia.

In the longer term, Arcadia Street north of the frontage road intersection would be the first leg of a "four-legged" shared street (Figure 3.9 and 3.10), at its intersection with a new east-west connection through the District. A shared street allows for the movement of vehicles, but importantly encouraging pedestrian movement and offering opportunities for public gatherings (Figures 3.12 and 3.13). This shared street intersection would form a new, pedestrian-oriented core for the commercial zone at the center of the Grandview District.

The new east-west connector street that forms the other part of that shared street intersection, will be built on the north side of the former Public Works site, crossing over the railroad tracks, providing a critical link between Vernon Avenue on the west (just south of the Walgreens site) and the new frontage road on the west side of Highway 100. Over time, this Study

Figure 3.7 Arcadia Avenue steeply rising on right, adjacent to the former Public Works site.

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anticipates the properties along the north side of this street to redevelop with buildings facing the street.

The new east-west connector street will be built at an elevation that matches the current elevation of Arcadia Avenue and the upper entrance to the public parking ramp behind Jerry's office building. The lower level entrance to the public ramp will need to be blocked off, with a new lower level entrance planned from the south side along Brookside Avenue (see the School District Site + New Ramp focus area section for more information).

Figure 3.8 Approximate location of future Community Center entrance, on right.

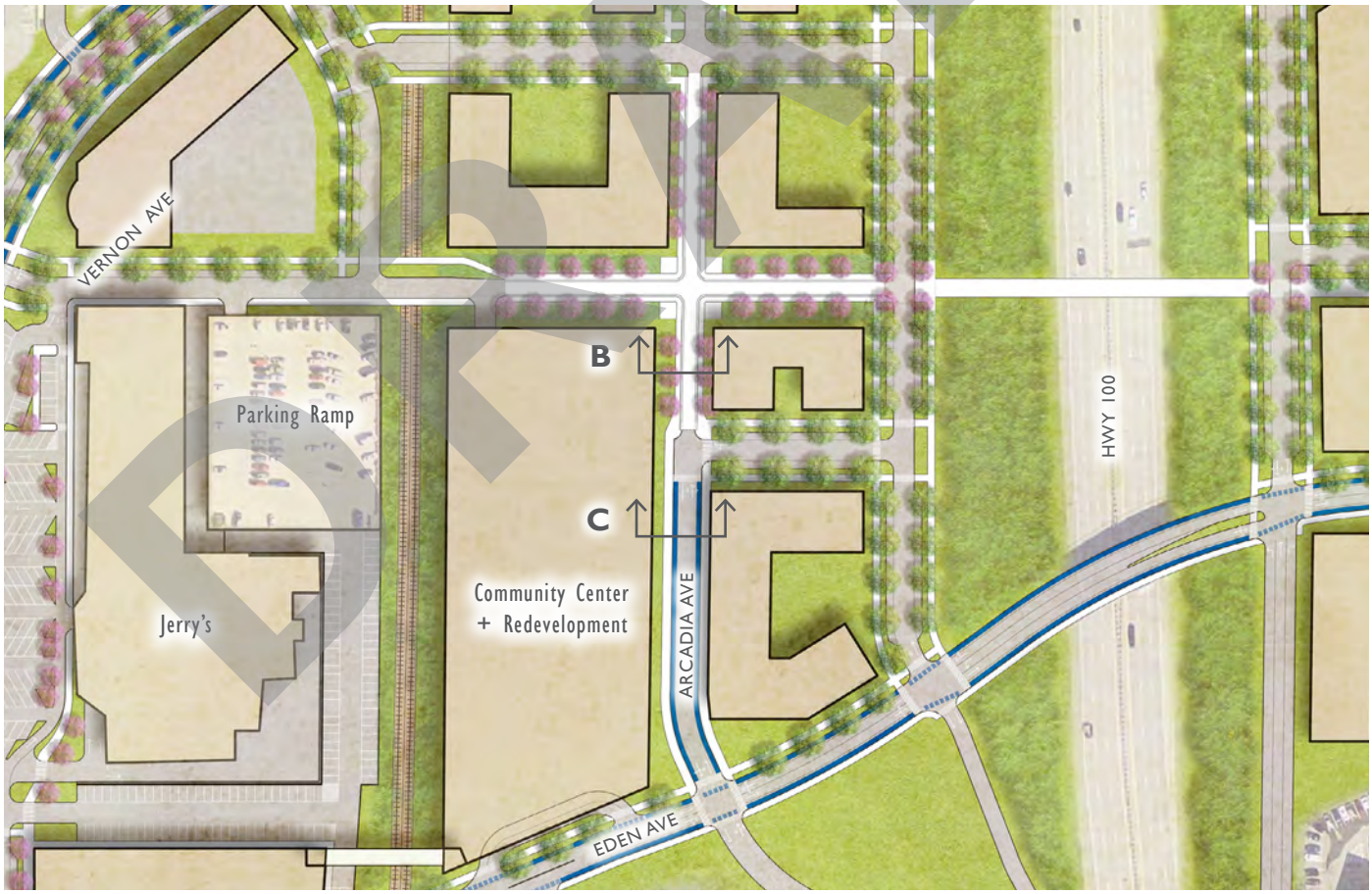

Figure 3.9 Plan of the new proposed Community Center and redevelopment on the former Public Works site, with a shared street along Arcadia Avenue and the new east/west pedestrian and vehicular connection north of the site; 1" = 200'.

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Figure 3.10 Section B: Shared Street on Arcadia Avenue.

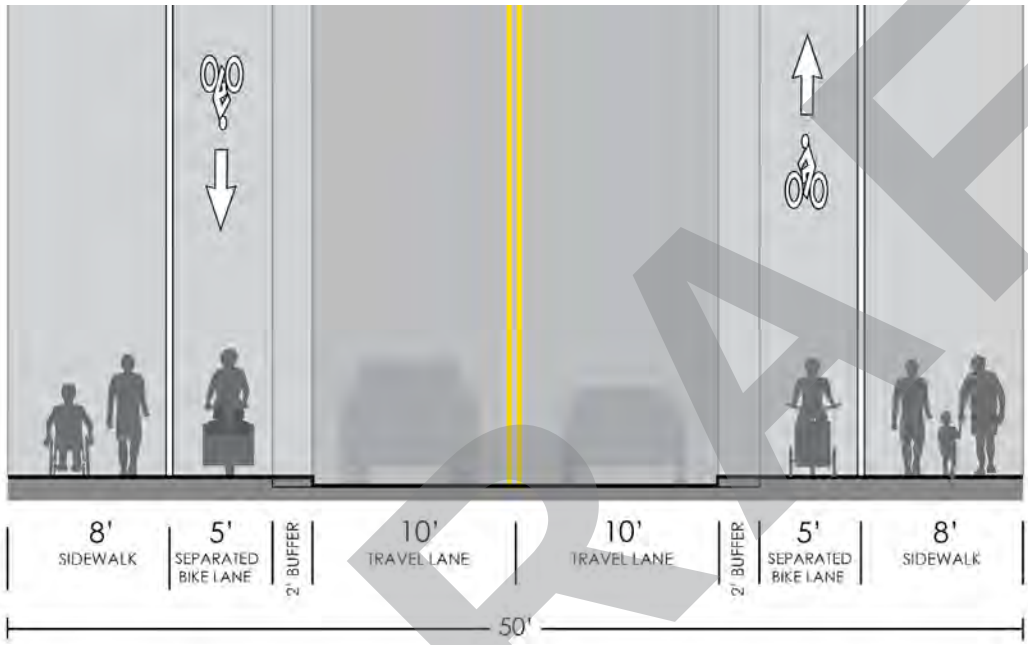

Figure 3.11 Section C: Street Section for southern end of Arcadia Avenue.

Figure 3.12 Example of a shared street. Photo credit: http://nacto.org/publication/urban-street-design-guide/streets/commercial-shared-street/

Figure 3.13 Example of a shared street. Photo credit: https://voakl.net/2013/11/21/fort-street-transformation/

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3 – School Bus Site + New Ramp

As mentioned in the Arcadia focus area section, the new east-west connector street on the north side of the former Public Works site will be built at an elevation that matches the current elevation of Arcadia Avenue and the upper entrance to the public parking ramp behind Jerry's office building (Figure 3.16). This allows enough clearance to cross the railroad right-of-way (ROW), but eliminates the ability to access the lower level entrance to the public ramp.

The proposed solution to access the lower level of the public ramp is part of a circulation and parking strategy which will create a continuous loop from the south side of Jerry's along the new 52nd Street connection, across the top level of a new parking ramp on the north side of the School District property (Figure 3.14 to Figure 3.16). That drive then continues at an upper level above Brookside Avenue directly into the lower level of the existing public parking ramp. A new speed ramp above the loading area between Jerry's and the public ramp will provide a more direct connection between the two ramp levels, allowing vehicles to circulate continuously from the new east-west connector street to the new 52nd Street elevations.

The topography on the School Bus site drops enough to allow a lower level exit from the new parking structure onto Brookside Avenue with direct access to Eden Avenue (Figure 3.16). All of the existing truck access to Jerry's loading docks and the City water treatment plant remain in place under the new second level circulation route. Currently, there is a conflict between some of the large pipes and ducts under the ramp and the maneuvering space for large trucks, but early investigations suggest that those conflicts can be resolved.

This parking and circulation strategy places a significant number of parking spots (276 existing / 229 additional / 505 total public parking spaces) in close proximity to Jerry's businesses and to future development opportunities. It might also serve to relieve pressure from transit and employee parking for existing nearby businesses. This solution will require the cooperation and dedication of some property from the City, the School District (or its potential future owner), and Jerry's Enterprises, but will be a net gain for all three parties in terms of efficient use of land to gain significant parking and circulation improvements. For example, the School District property could potentially have a much higher development density with this shared parking strategy than it could ever achieve on one stand-alone parcel.

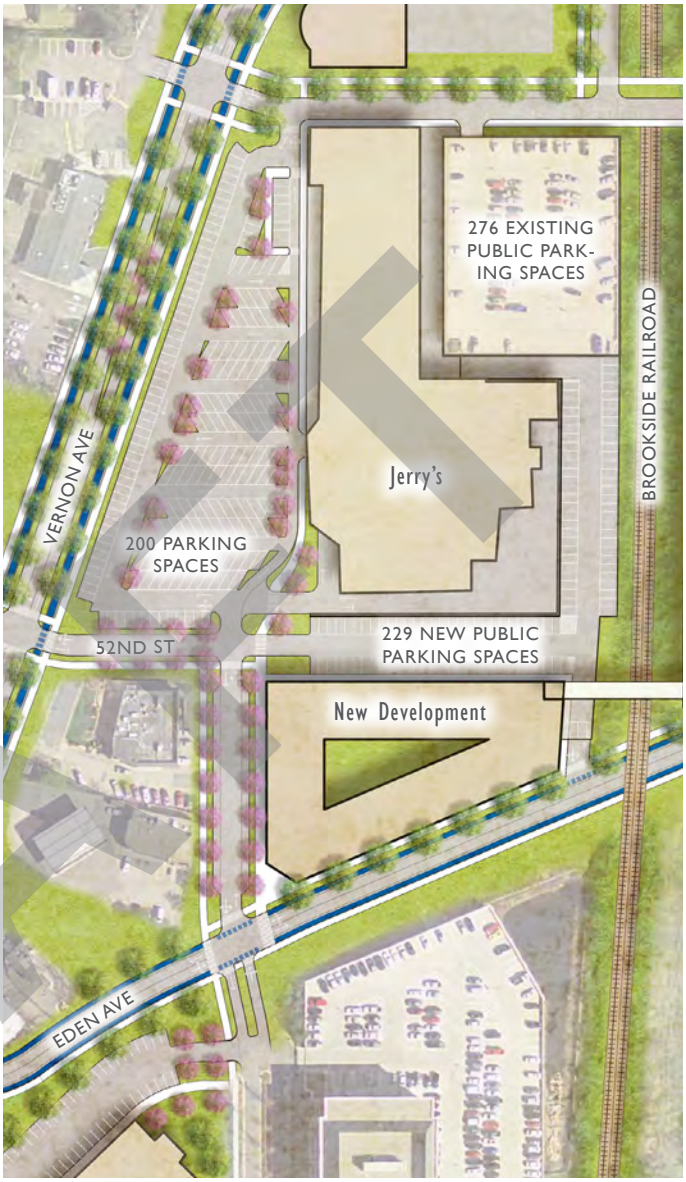

Figure 3.14 Plan of a new district parking network around and behind Jerry's; 1" = 200'.

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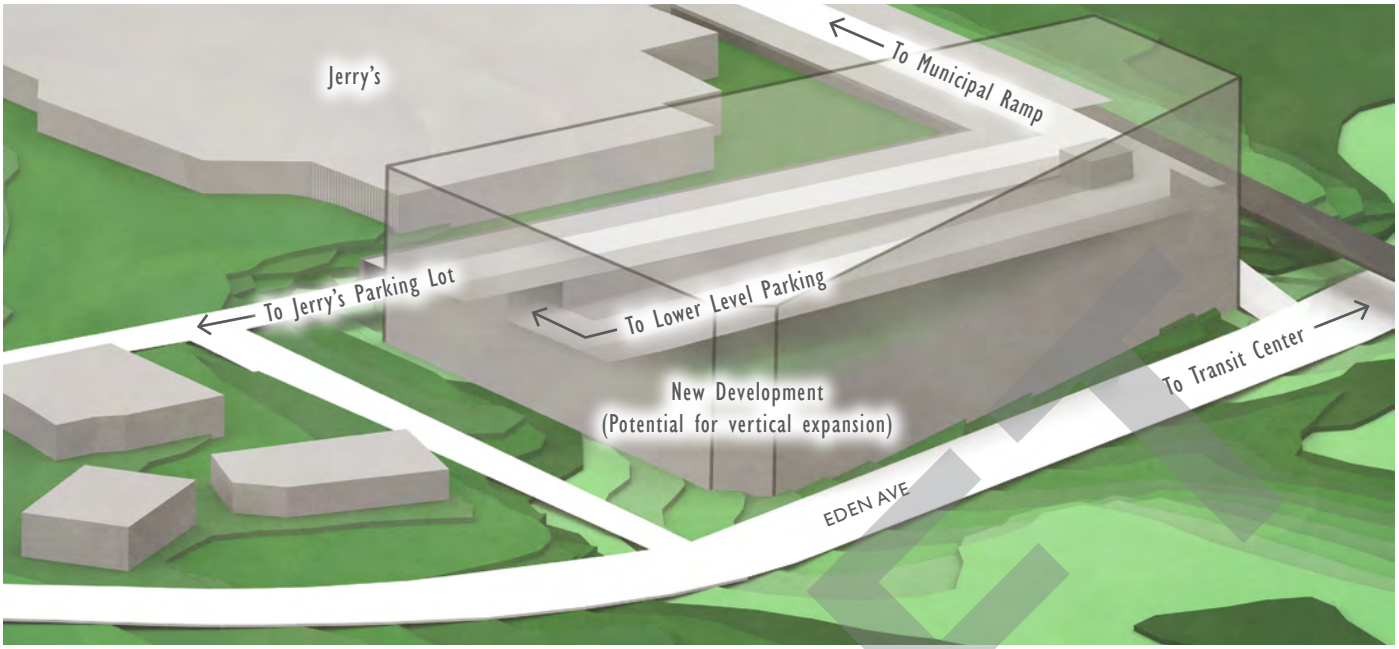

Figure 3.15 3D model of district parking ramp south and east of Jerry's.

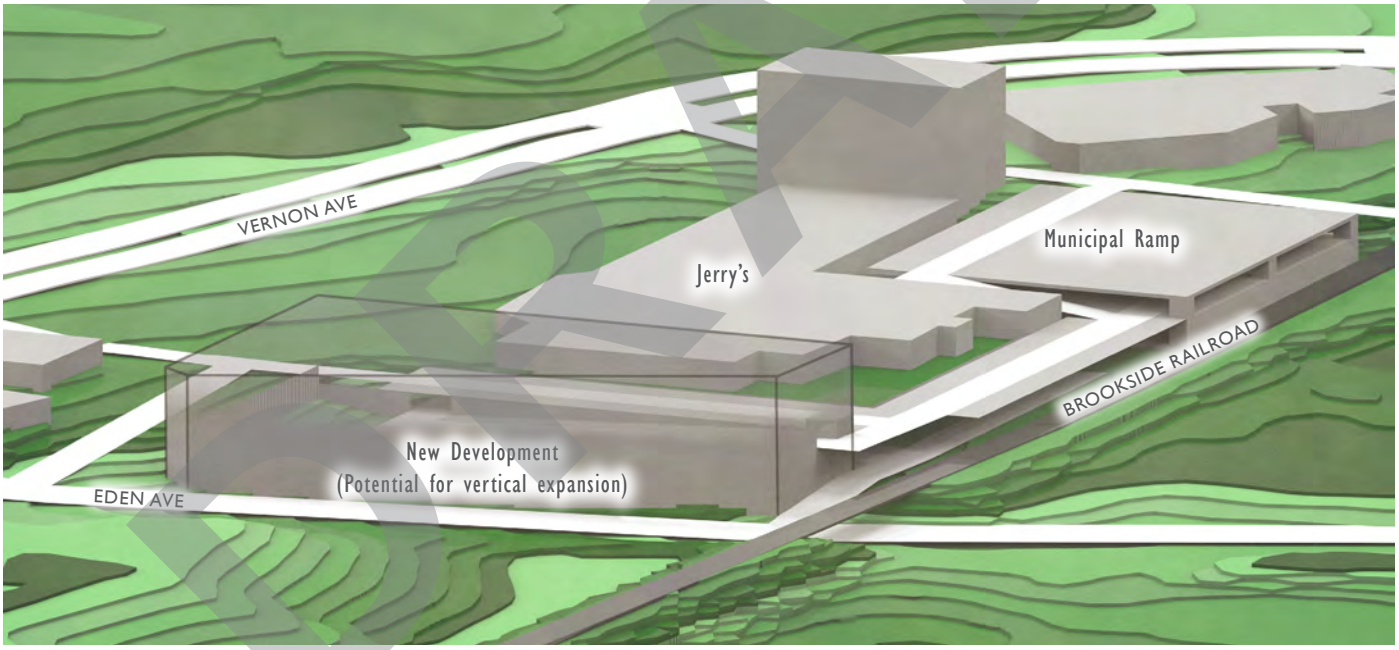

Figure 3.16 3D model of district parking ramp south and east of Jerry's.

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4 – Vernon Avenue

Travel along Vernon Avenue varies, depending on your vantage point. As the years have progressed, spot treatments to address a variety of different issues have left travelers feeling that the street, much like the District, has lost its character. The pedestrian experience is marked by narrow or discontinuous sidewalks (Figure 3.18), and wide or difficult crossings (Figure 3.19). In addition, there are fewer pedestrian crossing opportunities along Vernon Avenue, which encourages unsafe jaywalking and discourages pedestrians from taking otherwise short trips to shop for groceries at Jerry's or travel to bingo at the Senior Center. Though there are bike lanes just south of the area, this route is unmarked within the District, offering little connectivity or protection from traffic. Depending on the time of day, motorists experience comfortable, unimpeded travel (sometimes even excessively fast) or slow-moving congestion. These variations can cause challenging traffic patterns, particularly during peak times or at turn locations.

The Grandview District Framework Plan contemplates a "complete streets" treatment on Vernon Avenue, where all modes of travel are safely accommodated along the roadway. In order to accomplish this goal, the Framework envisioned a "road diet" on Vernon Avenue, but was somewhat silent on the likely configuration for narrowing the roadway. Traffic volumes vary along the route, from under 15,000 vehicles/day southwest of Interlachen to over 20,000 vehicles/day east of Interlachen, where it transitions to 50th Street with highway-bound traffic. Nonetheless, these volumes can typically be accommodated in one lane of travel, with special attention to peak-hour volumes and turn-

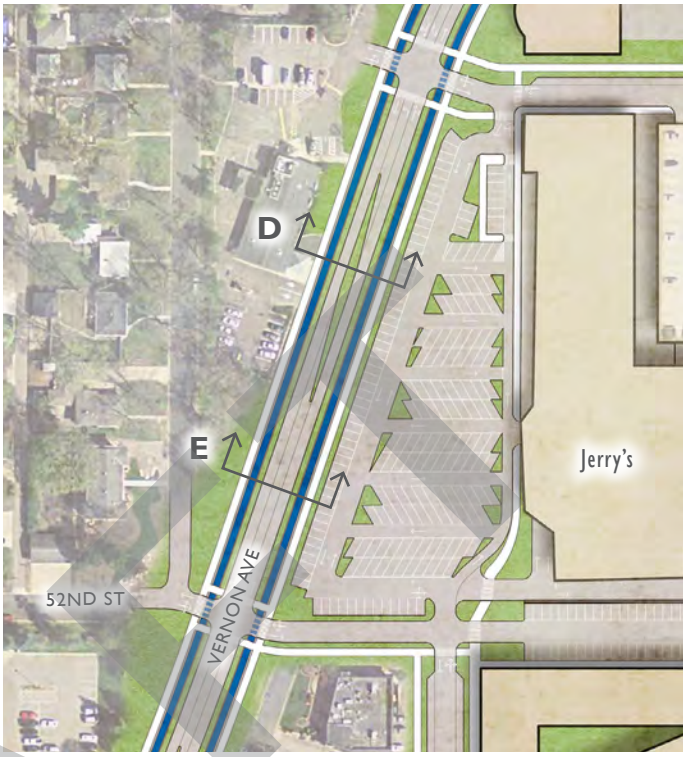

Figure 3.17 Plan of a reconfigured Vernon Avenue; 1" = 200'.

Figure 3.18 Narrow, unbuffered sidewalk along Vernon Avenue.

Figure 3.19 Vernon Avenue acts as a barrier for non-motorized mobility.

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Figure 3.20 Section D: Vernon Avenue with median.

Figure 3.21 Section E: Vernon Avenue without median.

ing movements that might otherwise slow down through traffic, hinder transit operations, or introduce conflicts with crossing pedestrians or cyclists.

With this in mind, the Study Team developed two options that convert the existing 4-lane cross section (2 lanes in each direction) to a 2-lane cross section with an alternating median (Figure 3.17). This is typically considered a 4-to-3 conversion, since the median (Figure 3.20) can act as a two-way-left-turn-lane where warranted (Figure 3.21). With heavier volumes east of Interlachen, there would be a transition to 4 travel lanes approaching this intersection.

These cross sections show how the 4-to-3 conversion would create space for a one-way separated bike lane in each direction, as well as additional sidewalk width for pedestrians. This configuration of Vernon would also offer sufficient space for a landscaped strip that would return some greenery to the corridor, provide some protection from the elements, and act as a snow storage zone in winter months. Together all of these

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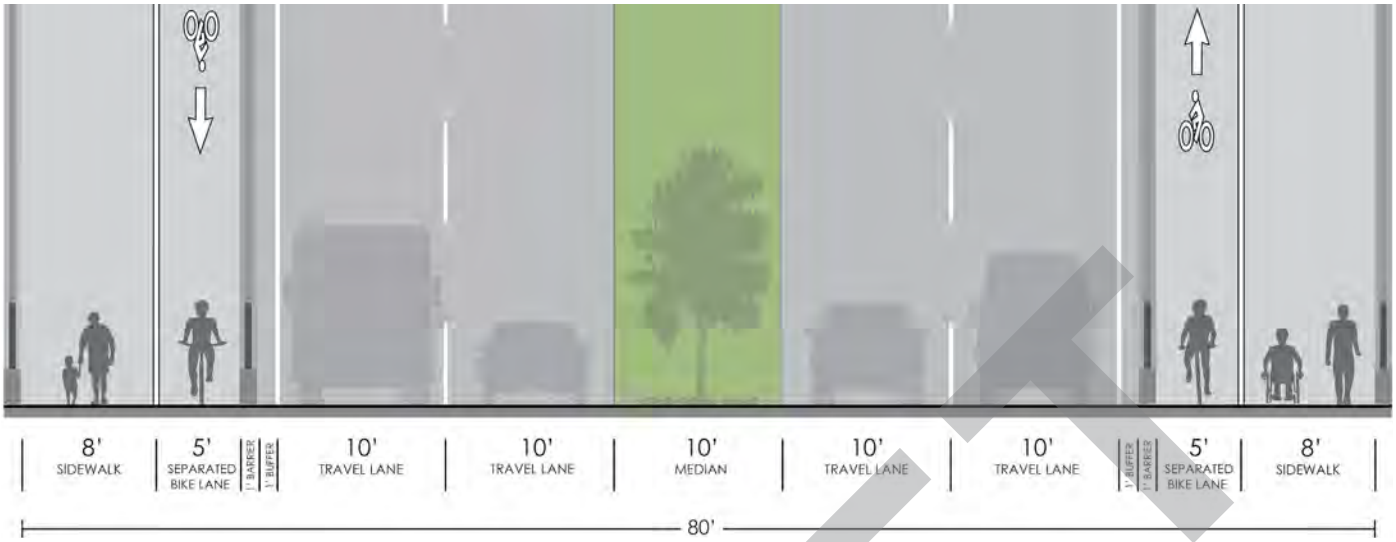

Figure 3.22 Section F: Vernon Avenue/50th Street, 5-lane confirguration.

elements would improve pedestrian and cyclist safety and comfort, maintain safe traffic operations along Vernon, and provide opportunities for landscaping elements that would make Vernon a more comfortable, inviting place to traverse and visit.

These changes would likely require a combination of detailed engineering and design, permitting, restriping, and the construction of medians, raised bike lanes, and curbs. It will also require coordination with agency partners, including Hennepin County. Analysis of the complete streets reconfiguration of Vernon Avenue is included in the Mid Term Changes scenario (5-15 years). We anticipate that it could occur on the earlier end of that timeline, if not sooner. This element of the Framework Plan also continues the existing bike lanes south of Sherwood/53rd Street north to Interlachen, and sets the stage for further continuity along 50th Street in the Long Term.

East of Interlachen, traffic volumes require five traffic lanes — two through-lanes in each direction and a center turn lane which can also be utilized as a median (Figure 3.22 and Figure 3.23). This expanded section is shown in the Long Term scenario, since it requires replacing the existing bridge with a wider one. The wider bridge will accommodate the desired bike and pedestrian connections, complementing the pedestrian/bike bridge and Eden Avenue connections to create a complete network.

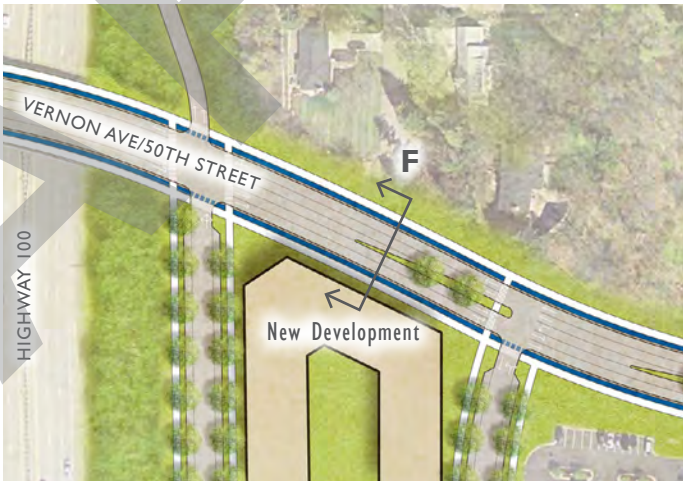

Figure 3.23 Plan of Vernon Avenue/50th Street reconfiguration; 1" = 200'.

Figure 3.24 Example of a cycle track. Photo credit: http://www.cambridgema.gov/CDD/Transportation/design/bicycling/cycletracks.

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5 – Interlachen Boulevard

The Interlachen Boulevard intersection serves as the primary access to the Grandview District and Highway 100 for residents of Hilldale and the Highlands and other neighborhoods to the west. This one lane road with bike lanes widens to 2 lanes and a turn lane at the intersection with Vernon Avenue (Figure 3.26 and Figure 3.27). It is the only marked crossing for pedestrians for several blocks, and acts as a connection for cyclists, despite the lack of bike lanes to receive them once they cross to Gus Young or turn along Vernon Avenue / 50th Street.

In recent months and years, the City has made ongoing improvements to Interlachen, including extending the bike lanes and sidewalk treatment to the edge of the intersection (Figure 3.25). The intersection at Interlachen Boulevard and Vernon Avenue/50th Street carries the highest traffic volumes in the district, save for the Highway 100 interchanges. Modest changes in signal timing and access to Gus Young, coupled with improvements at nearby intersections, can help manage traffic flow or at least reduce the frustration that some drivers feel as they traverse the Interlachen intersection. As the District grows, it may be tempting to reconstruct this intersection entirely—a substantial investment in budget, time, and impact—however the team first sought to understand how this intersection is used and how traffic patterns flow to and through the District via Interlachen.

Figure 3.25 Plan of Vernon Avenue and Interlachen Boulevard intersection, showing redeveloped parcels on the northwest and northeast corners; 1" = 200'.

Traffic flow at Interlachen can be improved by noting the origins and ultimate destination of travelers in the area. Improvements

Figure 3.26 Intersection of Vernon Avenue and Interlachen Boulevard, looking north.

Figure 3.27 Bike facilities on Interlachen Boulevard are not clearly marked.

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that will benefit this intersection include:

- Retiming the signal at Interlachen to shift more green time to movements between Interlachen and 50th Street. Implementing the complete streets project on Vernon will help in this regard, as it will shorten the crossing distance, returning valuable seconds to other necessary movements. Analysis of this intervention is included in the early action items and Short Term Changes scenario.
- Creating a new signal at Jerry's, with a dedicated signal phase and turn pocket. This will encourage southbound left-turning vehicles to use that new intersection, rather than slowing down thru-traffic waiting behind them, creating queues at the Interlachen intersection. Analysis of this improvement is included in the early action items and Short Term Changes scenario.
- Reopening additional routes (52nd St), and improving the operations of their intersection with Vernon (53rd St). Lack of alternate access/egress for neighborhoods west of Vernon forces drivers to use Interlachen in greater numbers than they might otherwise do. Analysis of this improvement is included in the Mid Term Changes scenario.
- New crossings and bicycle facilities along Vernon (Figure 3.28 and Figure 3.29). Lack of pedestrian access across Vernon, and bicycle access along it, forces shoppers to drive to locations like Jerry's, Starbucks, etc. Providing alternatives to driving to nearby locations will help encourage some travelers to leave their cars behind when they can. Analysis of this improvement is included in Mid Term Changes.

The changes at Interlachen should be seen as a suite of interventions. No single intervention will create a substantial improvement in intersection operations for this location by itself; this is a case where the whole is greater than the sum of its parts. Separately these changes have a small, though contributing impact on the function of this intersection. When all of these interventions are implemented, the synergy created would be substantial enough that it could likely delay reconstruction of the intersection by many years, if not decades, depending on the pace of development and the neighborhood's tolerance of the trade offs. Reconstruction of the Interlachen/50th/Vernon

Figure 3.28 Example of a pedestrian-friendly crosswalk. Photo credit: Carl Sundstrom.

Figure 3.29 Example of a pedestrian-friendly crosswalk. Photo credit: NACTO.

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intersection, for example, would be a costly endeavor lasting many months or more, and may not be necessary as these other improvements are pursued.

Over time, however, it may become necessary to consider reconstruction of the intersection at Interlachen/50th/Vernon. Development beyond the District may impact traffic patterns in this area, or land uses on the existing corner parcels may change in the future. At present, Interlachen Boulevard widens at the intersection, in order to accommodate a turn lane in the eastbound direction. If the intersection were reconstructed to alleviate future congestion, the greatest need is likely an additional left-turn lane, allowing two dedicated left-turn lanes.

However, the project must also consider how and where to transition to the typical one-lane cross section. Moreover, such an investment should also consider the need for wider, more comfortable bike lanes and improved pedestrian connections. The combination of all these factors could add 28 feet or more to the right of way for a turn lane (10'), bike lanes (6' each), plus additional sidewalk space and landscaping (and additional 6' or more). The right of way is not sufficient to accommodate additional lanes without acquiring additional land from neighboring parcels. Rather than initiating such a change, reconstruction might instead be timed with any potential plans for redevelopment of parcels at this intersection, if pursued.

Additional improvements in the vicinity of this intersection include:

- Short Term: Rationalizing access to customer parking for Walgreens/Edina Liquor. This can be accomplished through delineators on Gus Young Lane that restrict left turns into and out of the parking area. This will reinforce right-in/right-out movements, reduce queuing, and further encourage use of other intersections. This intervention could also be implemented as an early action item if there is a desire to do so.
- Long Term: Redevelopment of the corner parcel. The Framework Plan contemplates a new street grid in the District, with a new street from Vernon Avenue to Arcadia Avenue between the existing Jerry's and Walgreens parcels. Unfortunately, the physical space is not quite wide enough to accommodate a typical, vehicular street. Redeveloping this parcel, when the time is right, would create an opportunity to establish internal circulation connected to existing streets. This would also enable more active frontage on Vernon, which is a core principle of good urban design and a strong pedestrian environment.

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6 – Eden Avenue

As one of the primary corridors connecting Grandview to the surrounding neighborhoods, Eden Avenue plays a significant role in the overall transportation network in Edina.

Currently, the design of Eden Avenue prioritizes motorized vehicle movement; there are no bicycle facilities and the corridor has limited sidewalk space (Figure 3.30 and Figure 3.31). In addition, there are several intersections that are uncomfortable for people to cross by foot due to high speeds of turning vehicles and faded or unmarked crosswalks. The crossing shown in Figure 3.31 requires people walking or biking to navigate multiple lanes of high-speed traffic entering the Highway 100 southbound ramp.

As shown in Figure 3.30, the existing condition under the railroad bridge is not pedestrian-friendly. Figure 3.34 shows a proposed cross-section of Eden Avenue that includes space for people walking, bicycling, and driving. People on bikes riding

Figure 3.30 There is a complete lack of pedestrian facilities on the north side of Eden Avenue, looking east toward railroad bridge.

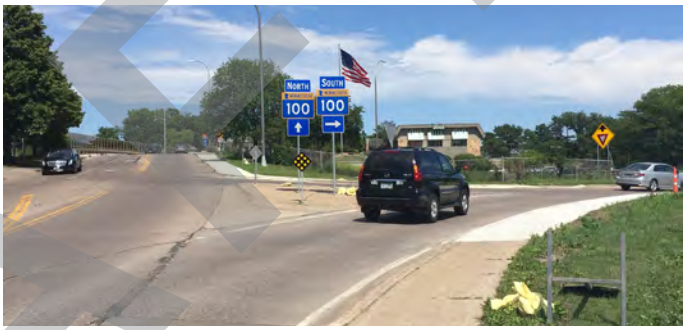

Figure 3.31 Existing pedestrian crossing at Eden Avenue and the southbound Highway 100 entrance ramp.

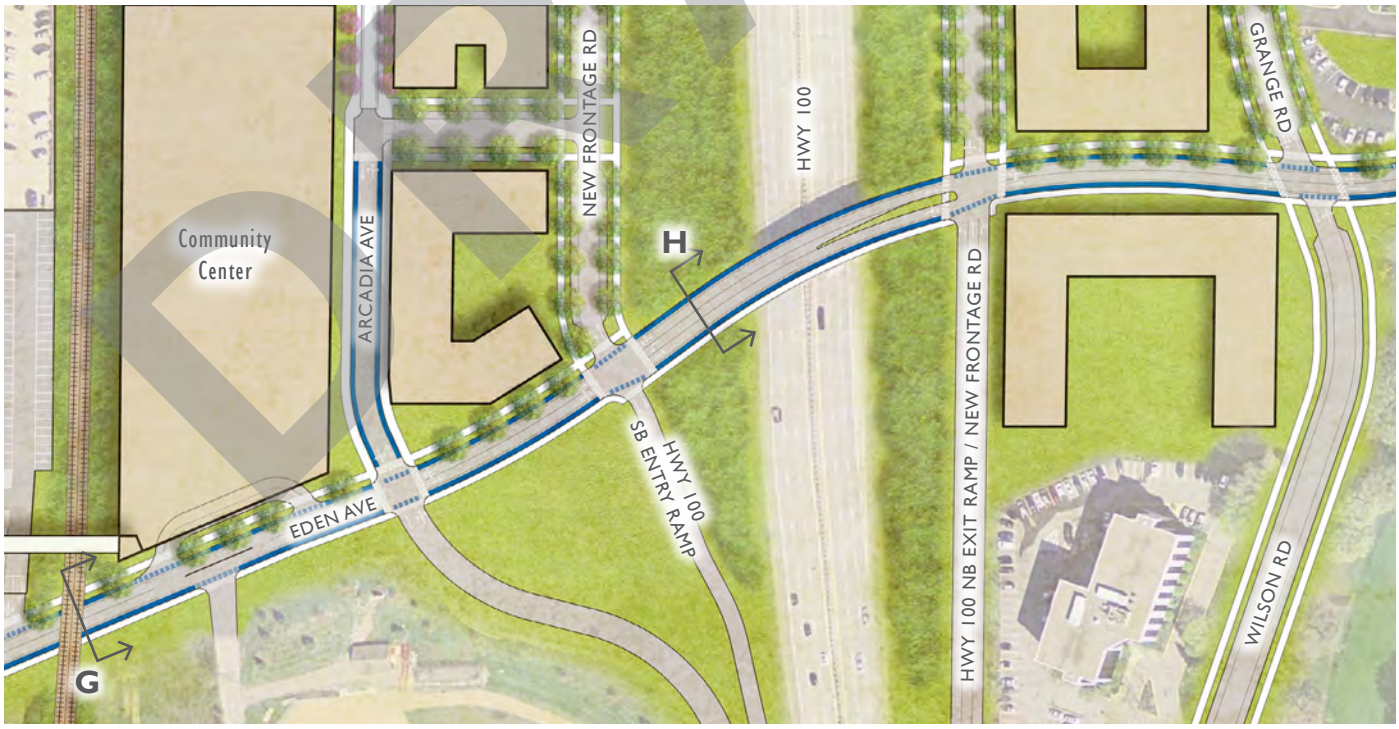

Figure 3.32 Proposed plan of Eden Avenue; 1" = 200'.

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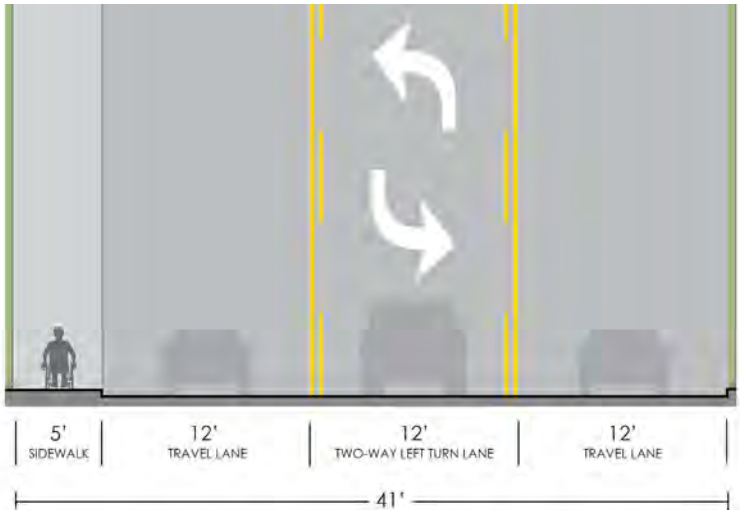

Figure 3.33 Section G -- Existing: Existing Eden Avenue cross-section under the railroad bridge.

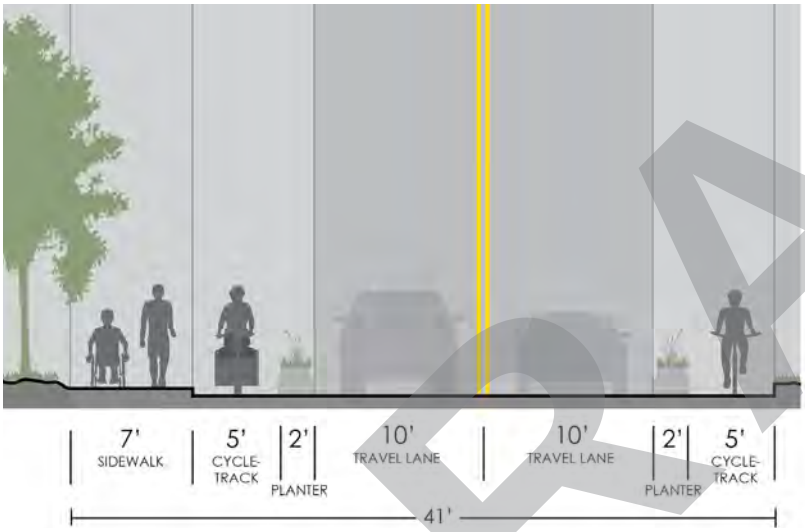

Figure 3.34 Section G -- Proposed: Roadway design on Eden Avenue, shown at the most constricted location under the railroad bridge.

Figure 3.35 Section H: Proposed Eden Avenue bridge over Highway 100, with added space for bicyclists and pedestrians.

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in either direction would have low-stress, dedicated on-street space, separated from moving vehicle traffic by a physical barrier. The center lane—currently used for turning movements—is eliminated based on low traffic volumes and turning movements.

An alternative design for Eden includes a shared-use path on the south side of the street. Sidewalk development on the north side of Eden is recommended as properties, such as the School District's bus site and the former Public Works site, are redeveloped.

Further east from the intersection of Eden and the Highway 100 entrance ramp, right-of-way is restricted on the bridge passing over the highway. The bridge deck has limited space for motorists and bicycles to share and no horizontal buffer between pedestrians and moving traffic. A shared-use path is proposed as a retrofit to the existing bridge, which would create dedicated space for non-motorized modes (Figure 3.35 to Figure 3.37).

The intersection of Eden Avenue and Highway 100 will be reconstructed over time as highway access is reconfigured throughout the entire study area. As shown in Figure 3.32, redesigned access to and from Highway 100 is proposed to increase safety and legibility for all users; this is discussed further in the Highway Access section.

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Figure 3.36 Example of a multi-use path. Photo credit: http://www.aviewfromthecyclepath.com/

Figure 3.37 Example of a multi-use path. Photo credit: https://commons.wikimedia.org/wiki/File:Queens_Quay,_Toronto,_bikeway.jpg

7 – Richmond Hills Neighborhood

In this focus area, the realignment of Eden Avenue and the addition of a controlled intersection at 53rd Street provide an opportunity to space intersections more logically along Vernon Avenue. It also creates an opportunity for a more appealing and safe bus stop location on Vernon with a strong pedestrian and visual connection to the Library/Senior Center building.

A new controlled intersection at 53rd Street would allow safer and easier access to the Richmond Hills neighborhood to the south via Sherwood Road, by car, by bike, and on foot. This intersection also allows residents from the west of Vernon Avenue to access the library more easily and safely by any mode. Neighbors can also drive through the Grandview Square area to access Eden Avenue.

With Eden Avenue shifted slightly to the north, the properties on either side can function much better, with more logical parcel size, access, and parking configurations. It is important, however, that those parking areas do not simply become another sea of asphalt parking along Vernon Avenue. For instance, the new library parking area nearer to Vernon could be a convertible plaza area that can be opened for parking only as needed (Figure 3.39 and Figure 3.40). In addition, a strong new pedestrian connection from Vernon to the library's front door gives this civic building an "address" on Vernon, as noted in the earlier work of the Framework planning process. Parking in this area can be time-limited as well, to prioritize its use for library and senior center visitors rather than commuters. This might be considered as new municipal ramps or shared parking solutions are implemented around the District

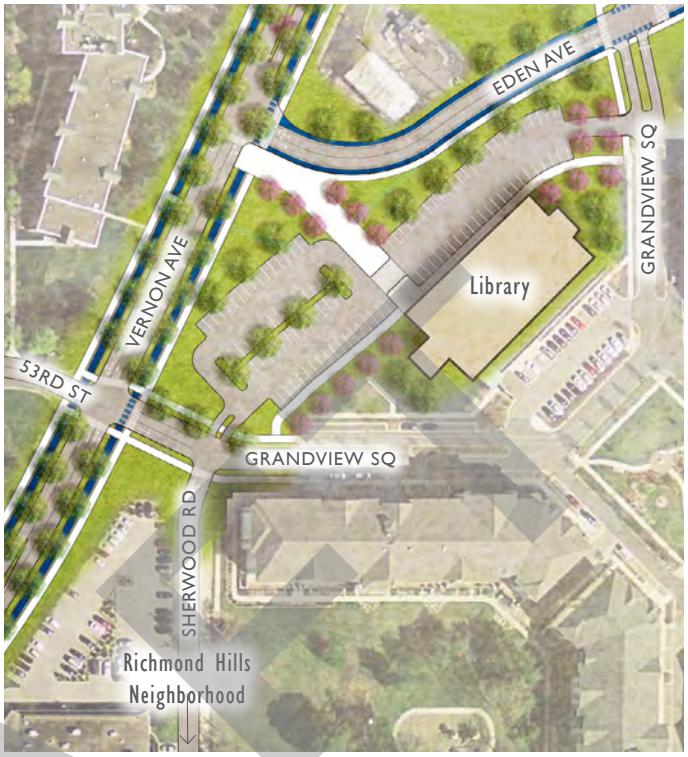

Figure 3.38 Plan of 53rd Street, Vernon Avenue and Eden Avenue, showing access to the Sherwood Neighborhood; 1" = 200'.

Figure 3.39 Example of a parking lot that can be utilized as flex-space for daily activities and seasonal special events. Photo credit: Close Landscape Architecture photo archive.

Figure 3.40 Example of a parking lot that can support multi-layered infrastructure and public green space including stormwater filtration, district heating/cooling, and urban food production. Photo credit: Close Landscape Architecture photo archive.

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8 – Highway Access

Highway 100 plays a significant role in the Grandview District providing access to and from regional routes by intersecting with 50th Street and Eden Avenue in a combined diamond/cloverleaf intersection configuration. In order for the development of the District to be fully implemented, access to and from Highway 100 remains an important element of the transportation system, but it is also acknowledged that the existing interchange severely limits pedestrian and bicycle connections on either side of the Highway (Figure 3.41 & Figure 3.42).

The proposed reconfiguration of the Highway 100 interchange at both 50th Street and Eden Avenue would facilitate enhanced pedestrian and bicycle access while increasing safety as well as enabling developable parcels adjacent to the highway.

Figure 3.43 shows the proposed west side configuration at both 50th Street and Eden Avenue. At 50th Street the signalized intersection with Highway 100 remains with the addition of a southbound right turn lane which replaces the free-right turn ramp that forces pedestrians and bicyclists to cross wide ramps with fast-moving vehicles. The eastbound free right turn lane to the southbound frontage is also removed to be replaced by a shared through/right-turn lane. The removal of these "free" right turn movements enables a continuous sidewalk with crosswalks to be implemented on both the north and south sides of 50th Street. A new intersection at Eden Avenue is created with the frontage road meeting Eden Avenue at grade at a signalized intersection. The existing southbound ramp from Eden Avenue which currently merges with the frontage road ramp is replaced by a single ramp to remove the merging area that is an existing safety concern. The new west side frontage road provides opportunities for not only vehicular access to the Grandview District and Highway 100 but also for an enhanced multi-modal experience with sidewalks and bicycle facilities.

On the east side of Highway 100 (Figure 3.43), the cloverleaf ramps are removed to enable development parcels to be created adjacent to the Highway with access provided by a frontage road mimicking the configuration on the west side. Access to northbound Highway 100 from 50th Street is provided from both eastbound and westbound 50th Street at a signalized intersection which enables the intersection footprint to be narrowed from the existing ramps with associated safety improvements for pedestrians and bicyclists. Access from northbound Highway 100 is enabled by a reconfigured ramp at Eden Avenue leading to the frontage road which also provides access to Grange Avenue and City Hall.

Figure 3.41 Existing off ramp and under-utilized space on west side of Highway 100.

Figure 3.42 Existing redundant ramps and under-utilized space on east side of Highway 100.

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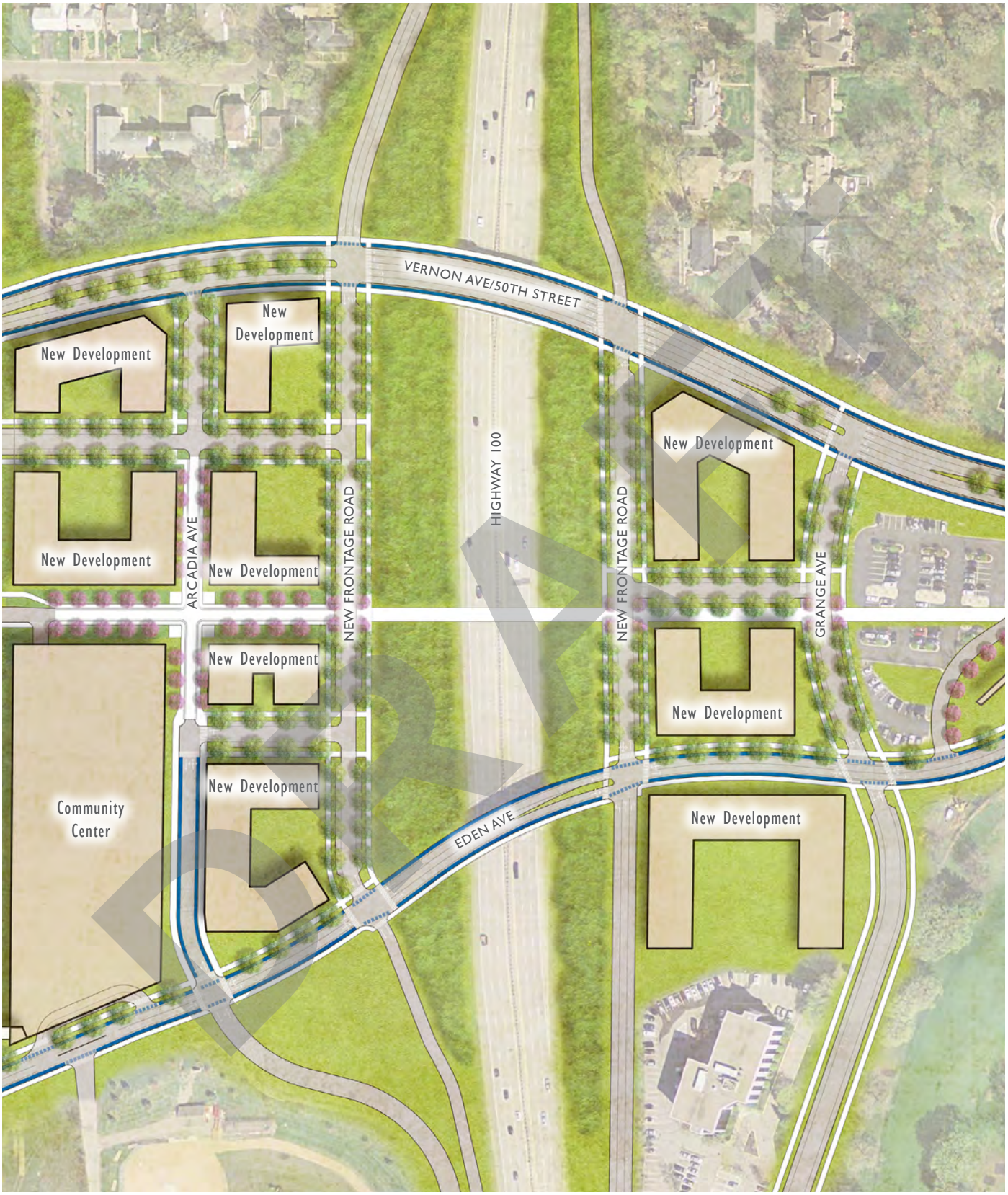

Figure 3.43 Plan of the new ramp configuration on the west and east sides of Highway 100, showing the integration of the ramp system with the District road network, servicing new developable parcels; 1" = 200'.

9 – Highway 100 Ped/Bike Bridge

With the goal of celebrating more non-motorized transportation users in the Grandview area, convenient connections for people walking and biking across Highway 100 are important for the District and the City of Edina as a whole.

Currently, travel in the Grandview District by bike or foot requires the use of Vernon Avenue/50th Street or Eden Avenue. While there are plans to make walking and biking more comfortable on these corridors, both would require substantial investments to either retrofit or replace the current bridges over Highway 100.

A bridge in the center of the study area for the exclusive use of non-motorized traffic would connect Edina City Hall with the central commercial area around Jerry's Foods. As development continues on the land between Jerry's and City Hall, this bicycle and pedestrian connection will further enhance the walking and biking network in the District.

Figure 3.44 shows the proposed location for the non-motorized bridge over Highway 100 connecting the east and west sides of the study area. The span would provide a direct connection for those traveling on foot or by bike within the District.

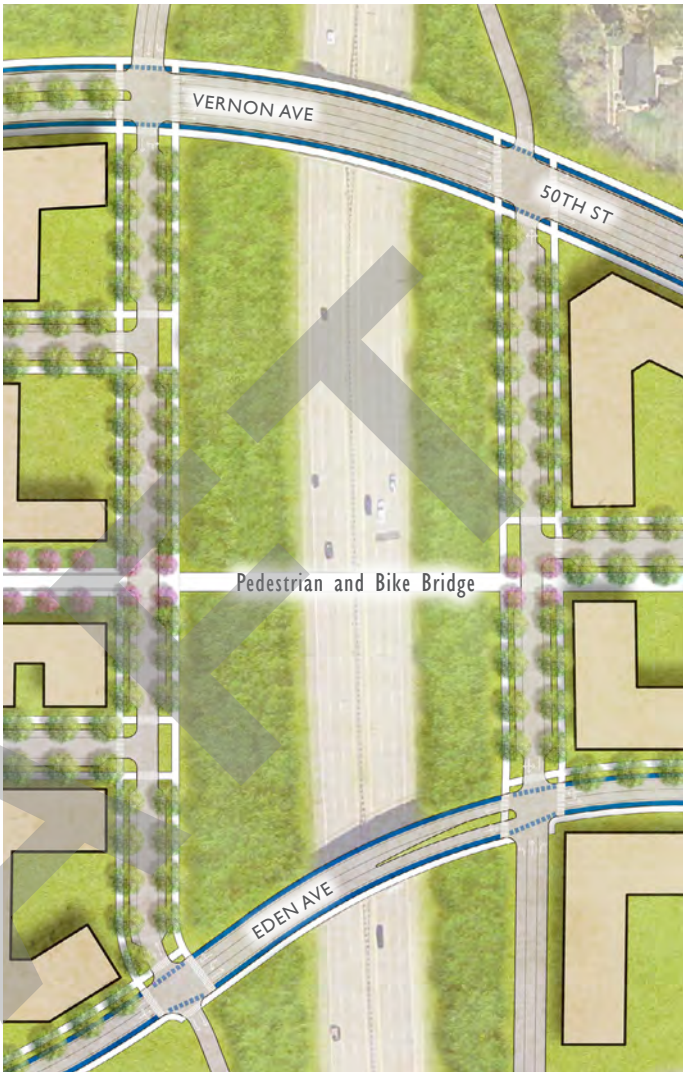

Figure 3.44 Plan of a pedestrian/bike bridge over Highway 100, between Vernon and Eden Avenues; 1" = 200'.

Figure 3.45 Panoramic view of the proposed pedestrian and bike bridge area, looking east. Vernon Avenue is on the left, and Eden Avenue is on the right.

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Figure 3.45 shows the existing space the bridge would occupy, looking east over Highway 100.

The bridge itself would serve as a place for people within the District—more than simply an accommodation for crossing the highway. The bridge would provide a connection between the east and west portions of the Grandview area, but it would also serve as a community asset: a platform for resting, socializing, or enjoying the view. A combination of human-scaled design features, which may include lighting and public art, is recommended for this bridge. It is important to note that the width of the bridge is intended to be the same width—at a minimum—as the curb-to-curb width of the adjoining street (Figure 3.46 to Figure 3.49) .

Figure 3.46 Example of a pedestrian/bike bridge. Photo credit: https://www.pittsburghglasscenter.org/pages/eastside-pedestrian-bridge

Figure 3.47 Example of a pedestrian/bike bridge. Photo credit: http://progressiveengineer.blogspot.com/2012/08/a-visit-to-worlds-longest-pedestrian.html

Figure 3.48 Example of a pedestrian/bike bridge. Photo credit: http://www.gcpvd.org/2015/06/22/news-on-the-providence-river-pedestrian-bridge/

Figure 3.49 Example of a pedestrian/bike bridge. Photo credit: http://melsnaps.blogspot.com/2012/11/yarra-bridges.html

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10 – Transit Center

Existing Location with Improvements

The Grandview District is currently served by a number of local and express bus routes. These routes provide access to and from neighborhoods in Edina, as well as commute, school, and leisure destinations in St. Louis Park and Minneapolis. Most buses circulate through the District and layover at the existing stop on Vernon Avenue at Eden Avenue, however riders have noted that there are few amenities at this location. In addition, the discontinuous sidewalks, unmarked crosswalks, and uninviting walk environment make it difficult for pedestrians to access the stops on Vernon (Figure 3.50).

Complete streets treatments along Vernon Ave will begin to address some of these issues, by shortening crossing distances and adding more opportunities to cross Vernon. In addition, this Plan recommends transit amenities at the stop, including a heated shelter, real-time information when available, and other transit improvements (Figure 3.51). Most of these improvements are included in the Short Term Changes scenario.

Proposed Location(s) adjacent to Rail Line

Currently, there is no passenger rail serving the Grandview District. However, there is substantial community interest in high capacity north-south transit, which could perhaps be installed within the existing freight rail line. Implementing passenger rail service would require upgrades within the corridor, requiring time for planning, funding, and construction of improvements to the line. More recently, it has also been suggested that Bus Rapid Transit (BRT) might be installed along Highway 100, much like BRT and Express services in Minneapolis along Interstate 35W. In either case, the Framework Plan contemplates access improvements that would welcome or even encourage the location of high capacity transit within the District.

Figure 3.50 Existing transit facilities on Vernon Avenue by the Super America north of Link Road.

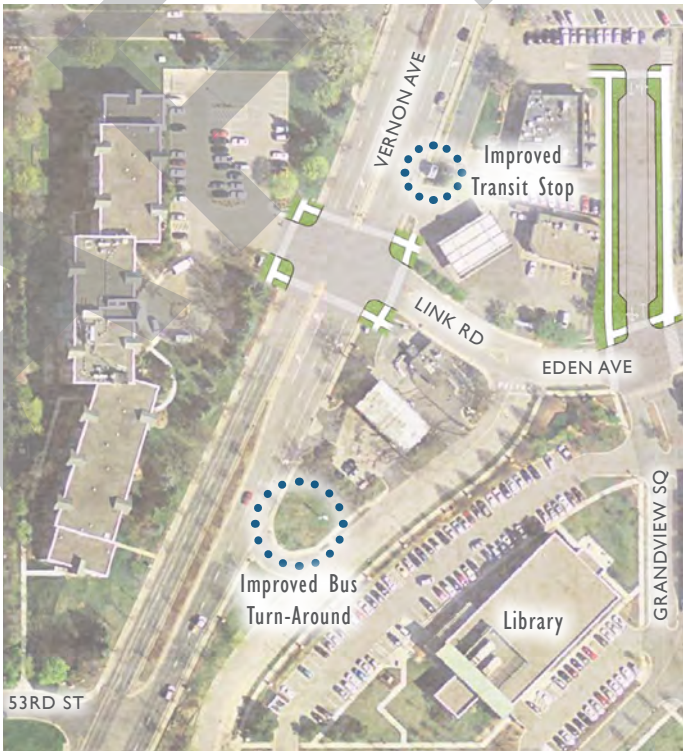

Figure 3.51 Diagram of proposed improvements to the transit system in the Short Term; 1" = 200'.

The Study Team evaluated locations for a transit center within the District, considering transit operations, access to the station, and proximity to the existing rail line. The Framework Plan contemplates a transit center on Eden Avenue, just opposite the existing freight rail line. Described below are options for a transit hub, including supportive parking policy to support access to bus and rail services that would serve such a facility.

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The preferred transit location (Option B) would be on the north side of Eden Avenue, within the former Public Works site (Figure 3.52). This location would enable direct connections for feeder services to high capacity transit as well as access for pedestrians and cyclists making use of the new connections along Eden and incorporated into a new railway crossing, linking the 505 public parking spaces west of the tracks with the transit hub. Park and ride facilities could be shared or incorporated into a new garage facility contemplated for the former Public Works site, or could utilize the newly created parking ramp directly behind Jerry's grocery store (east side). The pedestrian crossing over the railroad tracks could eventually become a rail platform for future rail transit. This location would also benefit bus operations, providing ready access to a pull-in or layover location on Eden and allowing vehicles to continue traveling routes to and from Highway 100 and Edina neighborhoods.

Option A, at the northern edge of the former Public Works site, would also offer connections to park and ride facilities, as well as pedestrians and cyclists within the District. Given the topography of the area, a direct, at grade connection could be negotiated for pedestrian access across the rail line. While this location is central to the District, it would require both drivers and, more importantly, transit vehicles to travel along Arcadia Avenue and potentially Gus Young Lane to access the transit center. This may impact the character of these streets, as well as transit operations and travel times.

Establishing a more robust transit center within the District is included in the Long Term Changes scenario, since it would likely coincide with implementation of a high-capacity transit line. Option B provides the most flexibility for coordination with land use developments, access to high capacity transit routes in the form of both rail and bus, and ongoing transit operations. However, as development of the former Public Works site progresses, as well as analysis of long term high capacity transit options, it may become necessary to contemplate other locations.

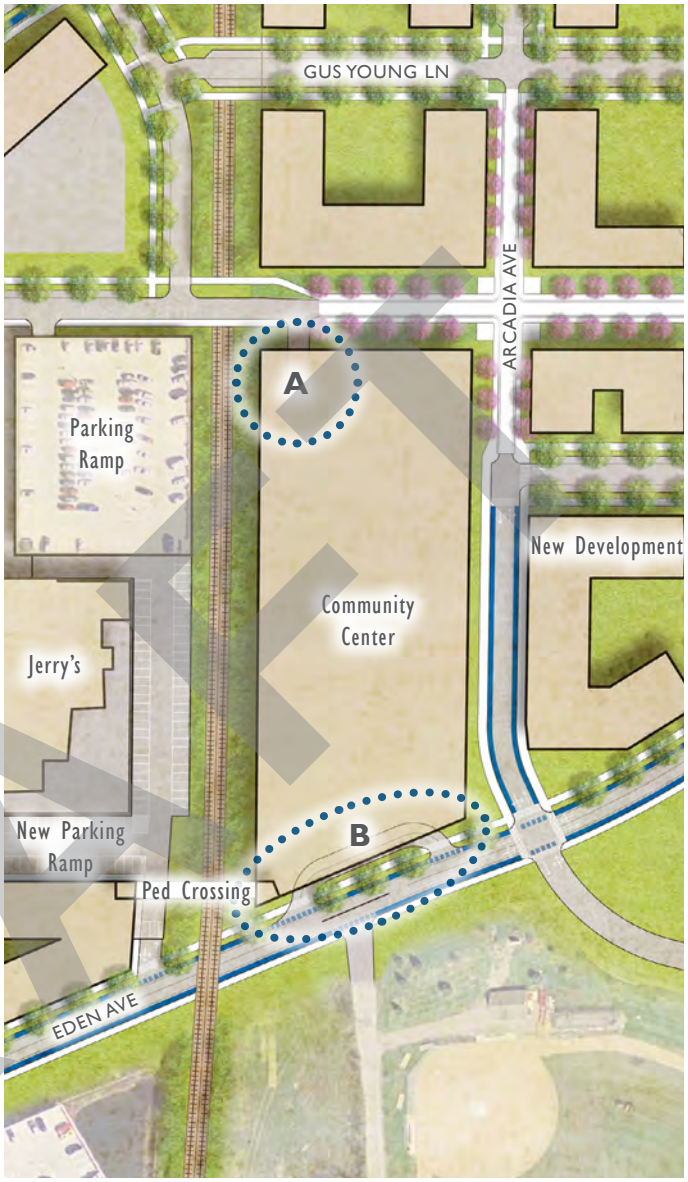

Figure 3.52 Plan of a pedestrian/bike bridge over Highway 100, between Vernon and Eden Avenues; 1" = 200'.

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11 – Our Lady of Grace

We do not anticipate significant changes to the Our Lady of Grace (OLG) property during the short term. Currently, the Edina School District does utilize the OLG parking lot for staging buses in the mornings and it is likely that will change as the School District relocates its facility to the Cahill Industrial Park area of Edina. This will result in less bus traffic on and around the OLG property, alleviating some morning congestion on Eden Avenue.

The biggest change for OLG will come in the mid-term with the redesign of Eden Avenue. It is anticipated that the entrance drive from OLG to Eden Avenue (Figure 3.53) will be reconfigured as a "right-in, right-out" intersection to alleviate site line problems from the railroad crossing to the west and to encourage the use of the controlled intersections at Arcadia Avenue and the new frontage road (Figure 3.54).

Figure 3.53 Existing northern entrance/exit to OLG off of Eden Avenue, showing a completely uncontrolled intersection condition and oversized vehicular facilities for average traffic needs.

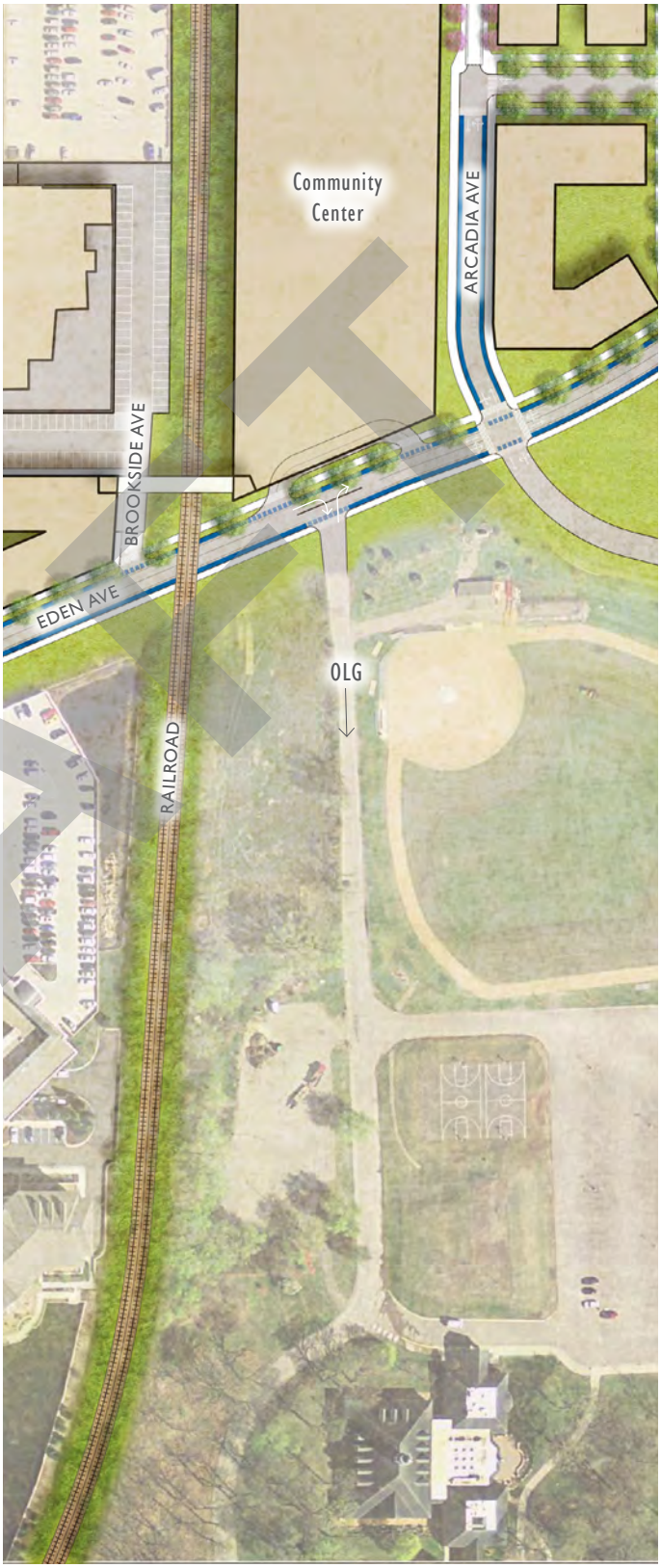

Figure 3.54 Plan of a right-in, right-out condition at the north entrance of OLG, to control traffic during peak hours; 1" = 200'.

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12 – Beyond Study Area

Grandview does not exist in isolation, of course. Its importance as a commercial and business node directly reflects the availability of both historic and current access from Highway 100 and Vernon Avenue/50th Street. Therefore, it is not surprising that there are several possible improvements that were noted that are outside the boundaries of this project. In particular, two nearby areas were noted by residents or staff as being critically important to the function of Grandview (Figure 3.55).

First, the next exit off Highway 100 to the south of Grandview, Benton Avenue, currently operates as a difficult on-off pair of four-way stop signs on either side of the highway. Upgrading this area to controlled (signalized) intersections would increase their capacity and perception of safety for both vehicular and non-motorized traffic. This would help relieve pressure on the exit at Grandview and improve traffic flow on Highway 100.

Second, the intersection of Brookside Road and Interlachen Boulevard north of Vernon Avenue currently experiences congestion as it acts as a link to the neighborhoods to the north. In part, this could be resolved through the proposed improvements to the intersection of Interlachen and Vernon, but in the Long Term, this intersection is likely to require additional study and reconfiguration.

There are likely to be other improvements needed outside of the district that will support the goals within it. As Highway 100 evolves, transit access increases, or changes happen in the surrounding areas, Grandview will also see change and improvement.

Figure 3.55 Benton Avenue and Highway 100 intersection and Brookside Avenue locations, relative to Transportation Study area and ; 1" = 1200'.

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Figure 4.1 Midday weekday traffic on Highway 100. Photo Credit: Colin Harris, Alta Planning and Design.

CHAPTER 4
Transportation Analysis

Assumptions
Existing Conditions
Short Term Changes
Mid Term Changes
Long Term Changes

Assumptions

Transportation Analysis Context

Based on the transportation principles and priorities identified through the study process, three scenarios for changes to the transportation network through and around the Grandview District were evaluated. This was intended to be a conservative analysis and therefore even though substantial improvements are suggested for the pedestrian, bicycle, and transit systems, it was assumed that this did not reduce auto travel.

Traffic Evaluation Assumptions

The following outlines the assumptions included for evaluating changes to transportation operations within the Grandview District based on current and variations for future conditions.

Traffic Data

- All traffic data counts included: vehicles, heavy vehicles, pedestrians, and bicycles
- New traffic data counts were not undertaken for this evaluation. The Study Team utilized existing counts and available data from the City of Edina and MnDOT, because nothing has significantly changed in this area since the last set of data was collected in 2013.

Synchro Modeling

The following settings and assumptions were used for traffic evaluation using Synchro Version 9:

- For future analysis, the peak hour factor was set in Synchro as per the existing intersection approaches for all future scenarios.
- Synchro enables multiple signal timing optimizations; for existing conditions, signal timings were provided by the City. For future scenarios, signal timings were optimized as appropriate and will be field adjusted by the City upon build out.
- Since this analysis is for the area in and around Grandview District, the "CBD area type" for "central business district" was not deemed appropriate under existing or future scenarios.
- Pedestrian and bicycle volumes from the traffic counts were included as "conflicting pedestrians/bicycles" volumes in the model.
- Traffic volumes entering the study area were based on existing counts for future scenarios
- The baseline Synchro model was provided by the City of Edina.
- Future scenario's utilized Synchro's Traffic Impact Analysis module to generate routes (into and out of a proposed developments) and calculate for Trip Assignments and Distributions.

Trip Generation

- Each of the parcels (that had potential for change) was assigned a land-use composed primarily of either housing (apartments) or office. For parcels that were assigned mixed uses it was assumed that any existing trips to those parcels would attribute for the associated retail element of the future use.
- For retail and office uses a square footage (retail) or number of employees (office) was associated for each parcel. A 50 employee/acre and 30 dwelling units/acre were deemed appropriate for the short-term scenario with retail uses based on a simple SF/acre calculation.
- Institute of Transportation Engineers Trip Generation Manual (9th Edition) trips rates were calculated for each poten-

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tial parcel yield in the AM and PM peak hour. The Short-Term scenario (30DU/Acre) was the base scenario with the 60 & 120 DU/Acre scenarios being multipliers of those trip rates.

- Trips were assigned to the network based on the existing trip patterns within the Synchro model.

Data Collection: Vehicle, Pedestrian, and Bicycle Counts

The transportation modeling included analysis of 8 intersections, primarily those on the major roadway thoroughfares within the District, as they have the greatest potential to be changed due to street and transit modifications.

Existing data counts were utilized from prior City of Edina studies and current MnDOT projects. The following conditions were recorded during the AM and PM peak periods:

- Vehicles volumes and turn movements;
- Vehicle classification;
- Pedestrian and bicycle volumes; and
- Determination of the peak hour and average daily volumes.

Evaluated Intersections
A. 50th Street at southbound Highway 100
B. Vernon Avenue / 50th Street at Interlachen Boulevard
C. Vernon Avenue at Jerry's Site Access
D. Vernon Avenue at Eden Avenue
E. Eden Avenue at Sherwood Road
F. Eden Avenue at Arcadia Avenue / Normandale Avenue
G. 50th Street at Grange Road
H. Grange Road at northbound Hwy 100

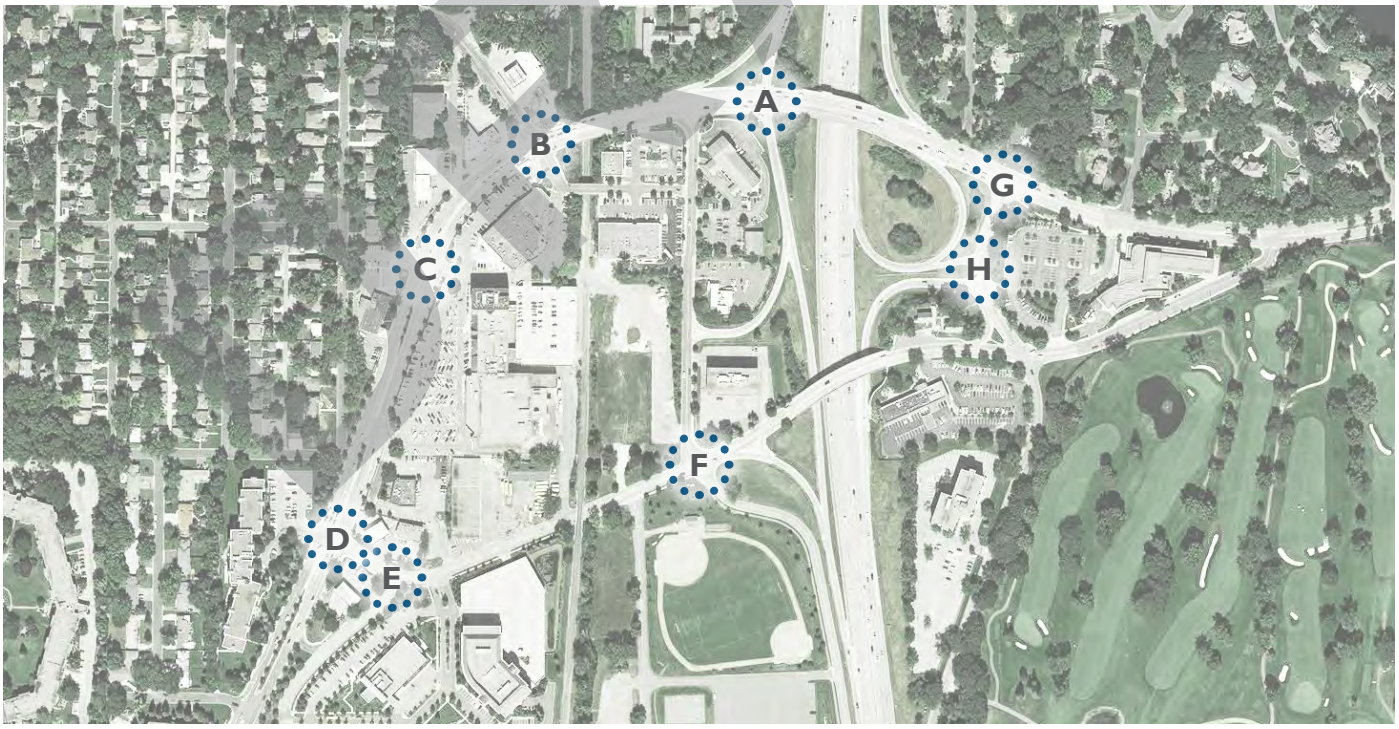

Figure 4.2 Intersections included in the traffic modeling analysis.

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Existing Conditions

Utilizing the traffic count data, the existing signal timing data, and the modeling assumptions, a Synchro model was developed for existing conditions of the study area. The Synchro results for the existing conditions are shown in Figure 4.3.

The key indicator used to analyze the road network is Level of Service (LOS). The analysis also enabled review of queue lengths and volume to capacity ratios. Under existing conditions, drivers around Grandview currently experience minimal delays with some exceptions at the intersection of Vernon Avenue / Interlachen Boulevard in both the AM and PM peak periods (Figure 4.4).

Under existing conditions other key indicators include the average vehicle speed and average vehicle delay throughout the network as well as a multi-modal analysis such as crosswalk experience and bicycle connectivity (Figure 4.5).

Intersection	Intersection LOS (AM)	Average Signal Delay (Seconds; AM)	Intersection LOS (PM)	Average Signal Delay (Seconds; PM)
50th Street at southbound Highway 100 off-ramp	B	17	B	19
Vernon Avenue / 50th Street at Interlachen Boulevard	C	28.5	D	53.7
Vernon Avenue at Jerry's Site Access	A	1.3	C	22
Vernon Avenue at Eden Avenue	B	13	B	12.4
Eden Avenue at Sherwood Road	A	2.9	A	2.7
Eden Avenue at Arcadia Avenue / Normandale Avenue	B	12.3	C	24.4
50th Street at Grange Road	B	13	C	22.9
Grange Road at northbound Highway 100 off-ramp	A	8.7	A	8.9

Figure 4.3 Existing Conditions Level of Service and Delay

District Summary	AM Peak Hour	PM Peak Hour
Average Vehicle Speed	15 mph	11 mph
Average Vehicle Delay	42 secs	86 secs
Crossing Experience (% of crosswalks marked)	19%	
Pedestrian Connectivity (% sidewalks continuous)	25%	
Bicycle Connectivity (% routes continuous)	0%	

Figure 4.4 Existing Conditions Average Vehicle Speeds, Delays, and Multi-modal Analysis

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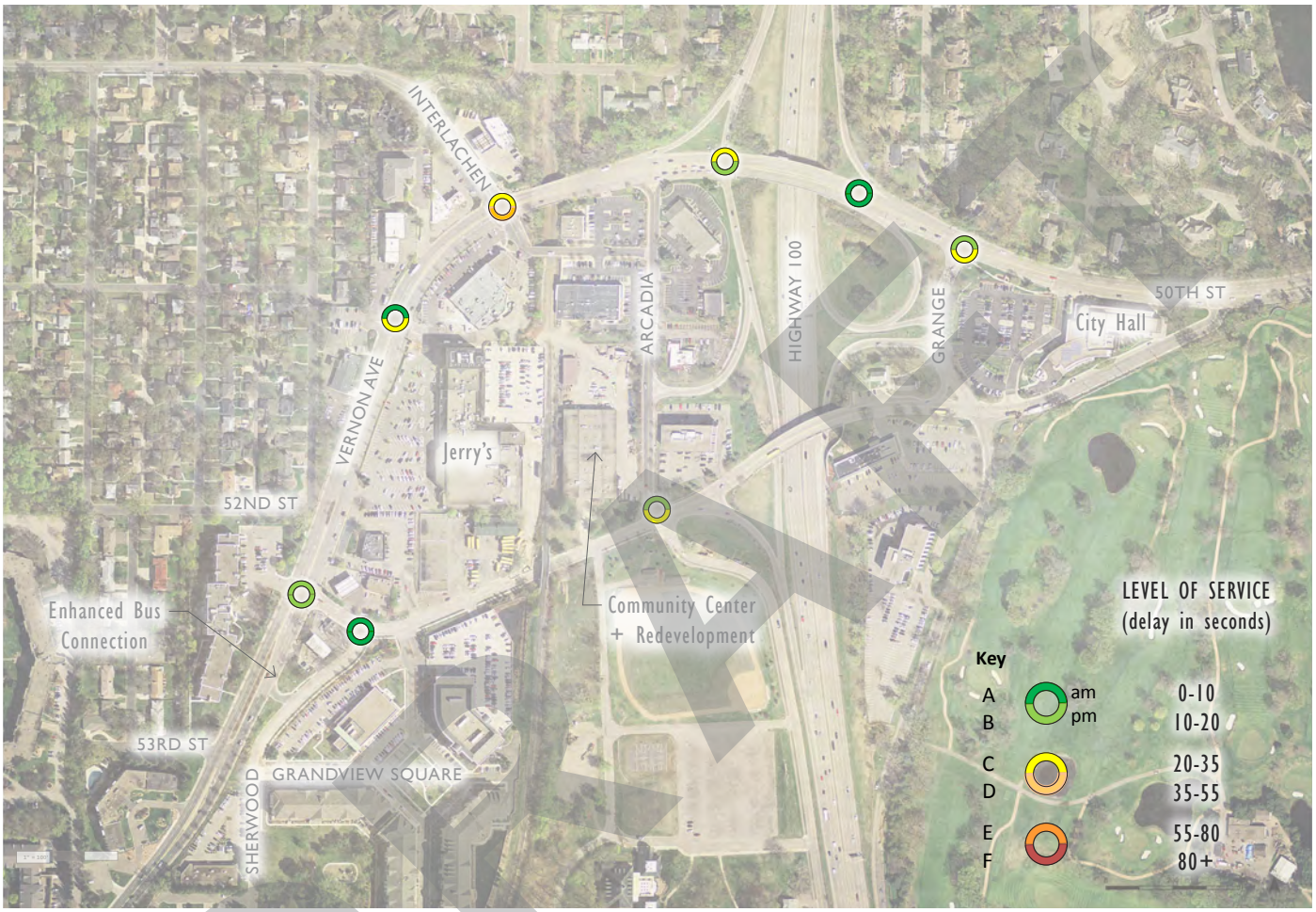

Figure 4.5 Diagram of wait-times for traffic flow through district for the current Existing Condition of the transporation network. Level of Service delays are shown for signalized intersections. A "D" Level of Service is typically considered acceptable in an urban condition like the Grandview District.

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Short Term Changes

To assess future conditions within the Grandview study area under the Short-Term scenario, the Synchro model was modified to reflect the proposed changes with the District (Figure 4.6). Under the short-term scenario, it was assumed that there would be growth within the District on parcels deemed to have potential to change as outlined in Chapter 4, Section 1, Assumptions. These development parcels would lead to a growth of 416 AM peak hour vehicle trips and 723 PM peak hour vehicle trips, a 10% and 17% in overall vehicle growth respectively (Figure 4.7).

Traffic volumes were assigned to the network utilizing the Synchro Traffic Impact Analysis module enabling trips to be distributed using future patterns based on changes in roadway connections and volumes (Figure 4.8).

Intersection	Intersection LOS (AM)	Average Signal Delay (Seconds; AM)	Intersection LOS (PM)	Average Signal Delay (Seconds; PM)
50th Street at southbound Highway 100 off-ramp	B	16.8	C	22.5
Vernon Avenue / 50th Street at Interlachen Boulevard	C	30.4	F	80.8
Vernon Avenue at Jerry's Site Access	A	4.2	B	12.5
Vernon Avenue at Eden Avenue	B	17.1	B	19.4
Eden Avenue at Sherwood Road	A	3.1	A	3.6
Eden Avenue at Arcadia Avenue / Normandale Avenue	C	18.2	E	44
50th Street at Grange Road	B	11.9	D	40.2
Grange Road at northbound Highway 100 off-ramp	A	8.6	A	8.9

Figure 4.6 Short Term Conditions Level of Service and Delay

District Summary	AM Peak Hour	PM Peak Hour
Average Vehicle Speed	13 mph	8 mph
Average Vehicle Delay	41 secs	114 secs
Crossing Experience (% of crosswalks marked)	38%	
Pedestrian Connectivity (% sidewalks continuous)	25%	
Bicycle Connectivity (% routes continuous)	0%	

Figure 4.7 Existing Conditions Average Vehicle Speeds, Delays, and Multimodal Analysis

Under the short-term scenario, drivers around Grandview would experience additional delays related to the increase in development and associated vehicle trips. Within this time frame, many of the proposed transportation changes would include traffic signal and access modifications including an increase in multimodal connectivity leading to better crosswalk experiences.

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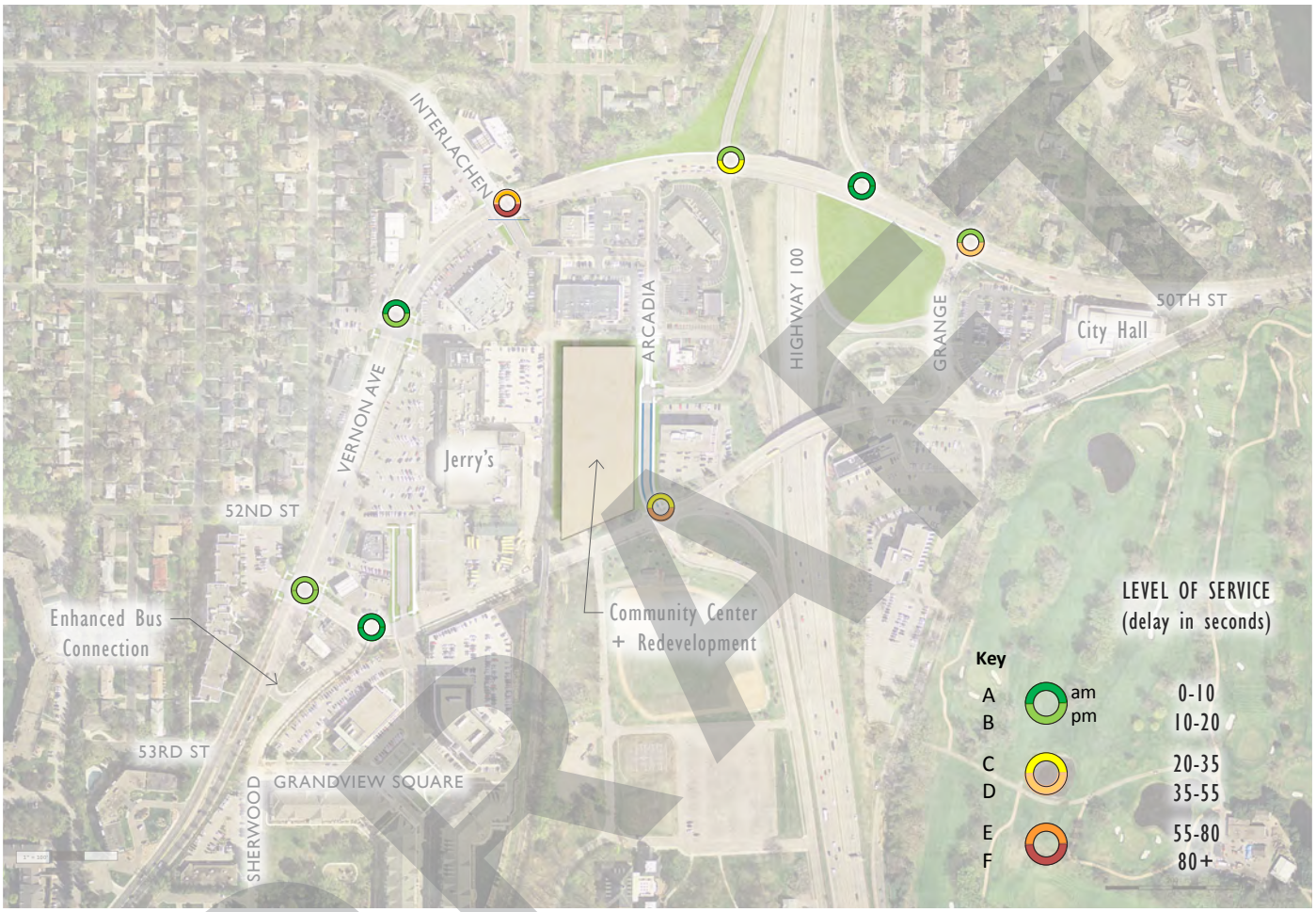

Figure 4.8 Diagram of wait-time impacts to traffic flow through district intersections in the Short Term Changes scheme. Level of Service delays are shown for signalized intersections. A "D" Level of Service is typically considered acceptable in an urban condition like the Grandview District.

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Mid Term Changes

As per the Short-Term scenario, to assess future conditions within the Grandview study area under the Mid-Term scenario, the Synchro model was modified to reflect the proposed changes with the District (Figure 4.9). Under the mid-term scenario, it was assumed that there would be growth within the District on parcels deemed to have potential to change as outlined in Chapter 4, Section 1, Assumptions. These development parcels would lead to a growth of 832 AM peak hour vehicle trips and 1446 PM peak hour vehicle trips, a 20% and 34% in overall vehicle growth respectively.

Traffic volumes were assigned to the network utilizing the Synchro Traffic Impact Analysis module enabling trips to be distributed using future patterns based on changes in roadway connections and volumes.

The mid-term scenario incorporates major roadway and network connectivity enhancements. As shown in Figure 4.11, the AM peak hour would experience additional vehicle delay over the short-term scenario but the PM peak hour due to the changes in the network would be able to offset the trip increases with a slight decrease in overall delay.

With the mid-term scenario spanning the 5-15 year time frame, significant improvements to the multi-modal network would enable the percentage of crosswalks marked to approach 100% and over two-thirds of the sidewalks and bicycle routes would be connected within the District (Figure 4.10).

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Intersection	Intersection LOS (AM)	Average Signal Delay (Seconds; AM)	Intersection LOS (PM)	Average Signal Delay (Seconds; PM)
50th Street at southbound Highway 100 off-ramp	D	39.4	C	22.4
Vernon Avenue / 50th Street at Interlachen Boulevard	D	53.8	E	77.2
Vernon Avenue at Jerry's Site Access	A	6.7	B	11.4
Vernon Avenue at Eden Avenue	C	21.1	C	27.7
Eden Avenue at Sherwood Road	A	2.9	A	4.9
Eden Avenue at Arcadia Avenue / Normandale Avenue	B	11.8	C	28.3
50th Street at Grange Road	B	11.6	C	28.9
Vernon Avenue at 53rd Street / Grandview Avenue	A	5.3	B	10.1
Frontage Road (West) at southbound Hwy 100 ramp	C	27.3	D	47.4
Grange Road at northbound Highway 100 off-ramp	A	6.6	B	15.5

Figure 4.9 Mid Term Conditions Level of Service and Delay

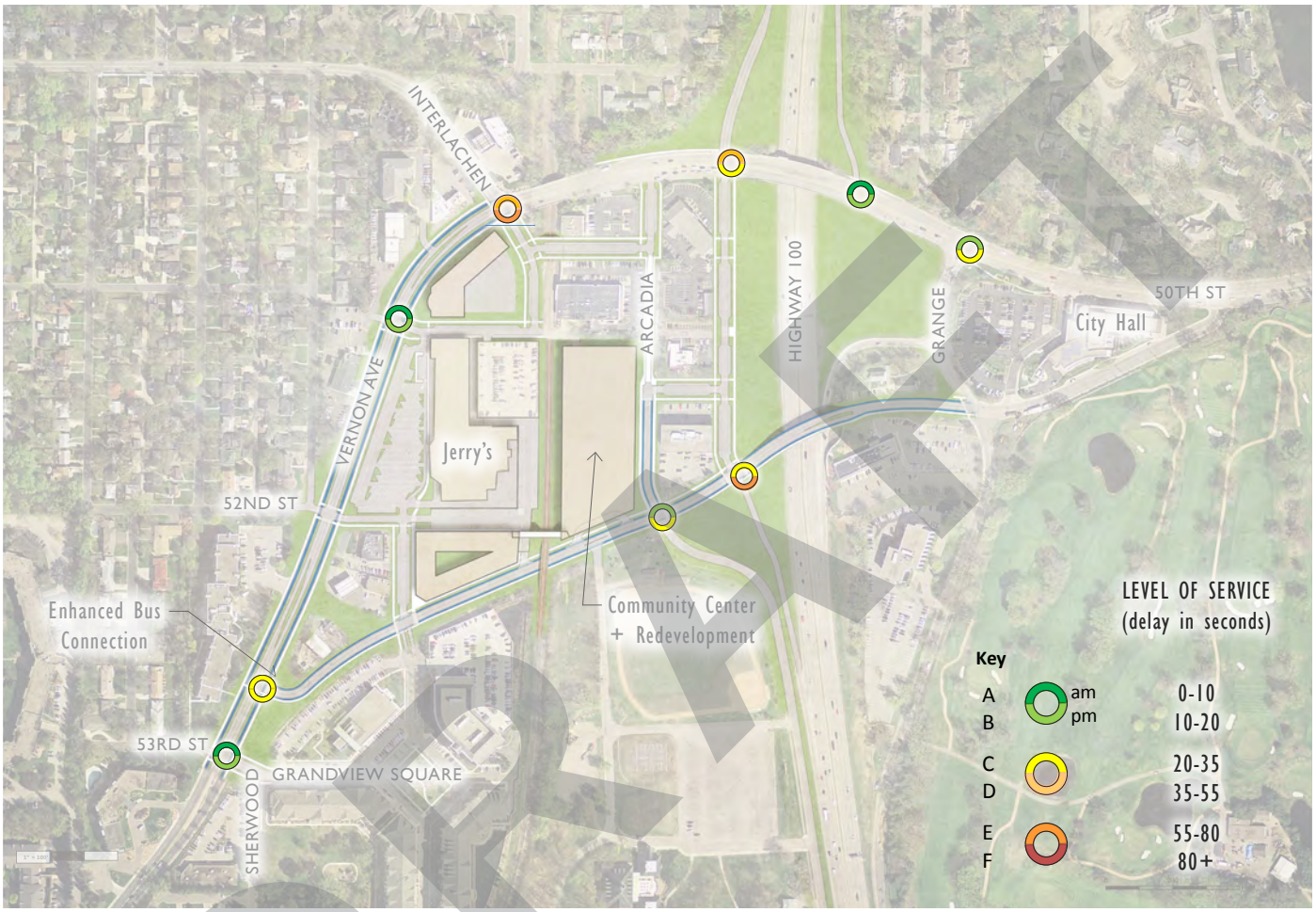

Figure 4.10 Diagram of wait-time impacts to traffic flow through district intersections in the Mid Term Changes scheme. Level of Service delays are shown for signalized intersections. A "D" Level of Service is typically considered acceptable in an urban condition like the Grandview District.

District Summary	AM Peak Hour	PM Peak Hour
Average Vehicle Speed	**11 mph**	**9 mph**
Average Vehicle Delay	**82 secs**	**107 secs**
Crossing Experience (% of crosswalks marked)	**91%**	
Pedestrian Connectivity (% sidewalks continuous)	**66%**	
Bicycle Connectivity (% routes continuous)	**66%**	

Figure 4.11 Existing Conditions Average Vehicle Speeds, Delays, and Multi-modal Analysis

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Long Term Changes

The Long Term scenario and solutions are planned for the 15-30 year timeframe, which is based upon recommendations that would dramatically change the district both in terms of its overall transportation system and land-use development patterns. In this regard, the evaluation of the transportation system is beyond the horizon of the current modeling effort. As such, the Synchro model was not developed for the long-term scenario and will be further evaluated as the District grows in the coming years to account for increased pedestrian and bicycles trips, enhanced transit services and a decrease in dependency on single occupancy vehicle trips.

The transportation system would, however, include a fully completed multi-modal network enabling connections throughout the District, to premium transit and the multi-modal bridge across Highway 100 (Figure 4.12).

	Existing Conditions	Short Term (30 units/ac)	Mid Term (60 units/ac)	Long Term (120 units/ac)
Vehicle Trips • AM • PM	4048 4197	+10% +17%	+20% +34%	+40% +68%
Average Auto Delay • AM • PM	42 secs 86 secs	41 secs 114 secs	82 secs 107 secs	
Average Auto Speed • AM • PM	15 mph 11 mph	13 mph 8 mph	10 mph 9 mph	
Pedestrian Connectivity* (% sidewalks continuous)	v	25%	66%	100%
Crossing Experience* (% crosswalks marked)	19%	38%	91%	100%
Bicycle Connectivity (% routes continuous)	0%	0%	66%	100%
Access to Transit	○	○	◔	●
Access to Parking	○	○	◔	●

* LONG TERM ANALYSIS RESULTS NOT SHOWN BECAUSE THEY EXCEED THE DETAILED MODELING TIME HORIZON.

Figure 4.12 Summary of traffic modeling analyses throughout the project timeframe for development for the Grandview District.

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Appendix I
Briefing Book

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Appendix 2
Meeting Notes

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Appendix 3
Traffic Model Data