Plan to Improve Transportation Connections and Safety in Winters

A Report to the City of Winters

Prepared by

Local Government Commission
Glatting Jackson Kercher Anglin, Inc.
Walkable Communities
Alternate Street Design, P.A.

February 2007

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Funding provided through a California Department of Transportation (Caltrans) Community-Based Transportation Planning Grant.

Views and opinions presented in this report do not necessarily represent the views or opinions of the California Department of Transportation (Caltrans) or the California Business Transportation and Housing Agency.

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Introduction

Project Overview and Objectives

This report summarizes the results of an intensive community-based planning process in Winters called a charrette. A charrette is a series of public involvement events that spans several days or more and culminates in a vision or design.

The Winters charrette was conducted May 2-9, 2006, to identify ways to improve pedestrian, bicycle and vehicle access along the Highway 128/Grant Avenue corridor and to schools in surrounding neighborhoods. These improvements are intended to help reduce the congestion along Grant Avenue and to revitalize the community by making it a safer and more appealing place to walk, shop, gather and do business.

The study area that is the focus of this report spans the 2.2-mile section of Highway 128, known as Grant Avenue, which bisects Winters. Selected areas observed as key opportunities for improving linkages between neighborhoods north and south of Grant Avenue, and schools such as Waggoner Elementary, Rominger Intermediate School, Winters Junior High School and Winters High School are also examined.

This project was made possible through a Caltrans Community-Based Transportation Planning Grant received by the City of Winters in partnership with the Local Government Commission, a Sacramento-based nonprofit organization that works with communities, agencies and elected leaders to create healthy, walkable and resource-efficient communities.

The Local Government Commission assembled a skilled consultant team to conduct charrette activities and prepare the recommendations and designs presented in this report. Team members included walkable communities and public planning facilitation expert Dan Burden of Glatting Jackson Kercher Anglin and traffic engineer Michael Wallwork of Alternate Street Design.

Grant Avenue looking west.

Participants vote on priorities.

Focus meeting with school officials.

Saturday morning walking audit.

Community Engagement

In coordination with the City, the Local Government Commission (LGC) organized a public design charrette process to address the pedestrian, bicycle and vehicle challenges facing the community, especially those associated with the project study area. The process included a multi-day series of meetings, presentations and workshops that engaged residents, businesses, community organizations and local government in a variety of activities designed to elicit their concerns and suggestions, provide information about possible solutions, and foster collaborative development of a community vision.

Walkability and community visioning expert Dan Burden of Glatting Jackson Kercher Anglin facilitated the meetings and workshops. Michael Wallwork of Alternate Street Design prepared plan drawings and conducted the traffic analysis.

Burden and the LGC visited Winters in February 2006 in advance of the charrette. They met with the project's advisory committee to elicit their concerns and suggestions and plan the charrette activities. Burden, the LGC and advisory committee members also toured the study area and surrounding neighborhoods to assess current conditions and further identify issues to address at the charrette.

The charrette was held Tuesday, May 2, through Tuesday, May 9, with workshops at Waggoner Elementary School and the Winters Community Center. Spanish translation was made available to help engage more citizens.

Focus group meetings with members of the Latino community, school officials, students, emergency responders, local businesses, transportation agency officials, City staff and Caltrans representatives were held Tuesday, Thursday and Friday to hear input from a variety of specific interests.

A special session was held with a 5th-grade class at Rominger Intermediate School to garner youth involvement.

The public events kicked off with a Thursday night town meeting. Participants viewed a presentation that showed existing conditions and some potential solutions used in other communities. Burden explained the principles involved in creating walkable, livable places using images to illustrate his points.

5th-graders map out how they get to school.

Residents discuss ideas at design table.

Participants then voted to determine their top priorities to address during the charrette. These included:

- Need for trails
- Lack of accessible sidewalks
- Alternates to using Grant Avenue
- More pedestrian crossings on Grant Avenue
- School traffic
- Grant/Walnut safety
- Merging of traffic at Russell, Railroad Ave. and bridge
- Problem making left turns onto Grant Avenue during evening and morning peaks
- Add roundabouts at Morgan/Grant
- Need sidewalks on Hemenway St. and Railroad Avenue.
- Speeding on Grant Ave. on weekends

The charrette continued with a "walking audit" on Saturday morning followed by a community training and interactive design tables. Residents gathered around maps and developed ideas to improve Winters' streets. General recommendations included:

- Continue Moody Slough all the way around to Highway 128, and make all the appropriate street connections.
- Turn new development around so that it has "eyes on the street" and get rid of the sound walls.
- The new public safety facility should come out onto Main St. instead of Grant Avenue.
- In front of Waggoner Elementary School, redesign the Edwards/Haven intersection where the crossing guard was injured.
- Add angled parking and sidewalks along Hemenway Street.
- Add a roundabout at the intersection of Hemenway St. and Grant Ave. near the high school, or implement traffic calming measures. Also implement traffic calming measures near other schools.
- Add sidewalks and bike trails along Railroad Ave. heading north and Grant Ave. heading east.
- Implement measures to slow traffic coming down from the Putah Creek Bridge.
- Build a new street at Walnut Lane, or close off a portion of East St. at Grant Avenue.
- At the Town and Country Market, extend Colby Lane down to Grant Ave. and connect Broadview Lane with Moody Slough.
- Extend Dutton St. north and also connect it with Walnut Lane.
- Review the Highway 505 intersections.

In the days that followed, the consultant team developed recommendations and drawings based on the public input, field checks and review of planning policies and information. Tuesday evening they presented the design concepts and highlights at a final public meeting of more than 30 people. Participants added closing comments, which can be found in Appendix E.

Following the charrette, the design team refined the recommendations developed during the charrette which are presented in the pages that follow.

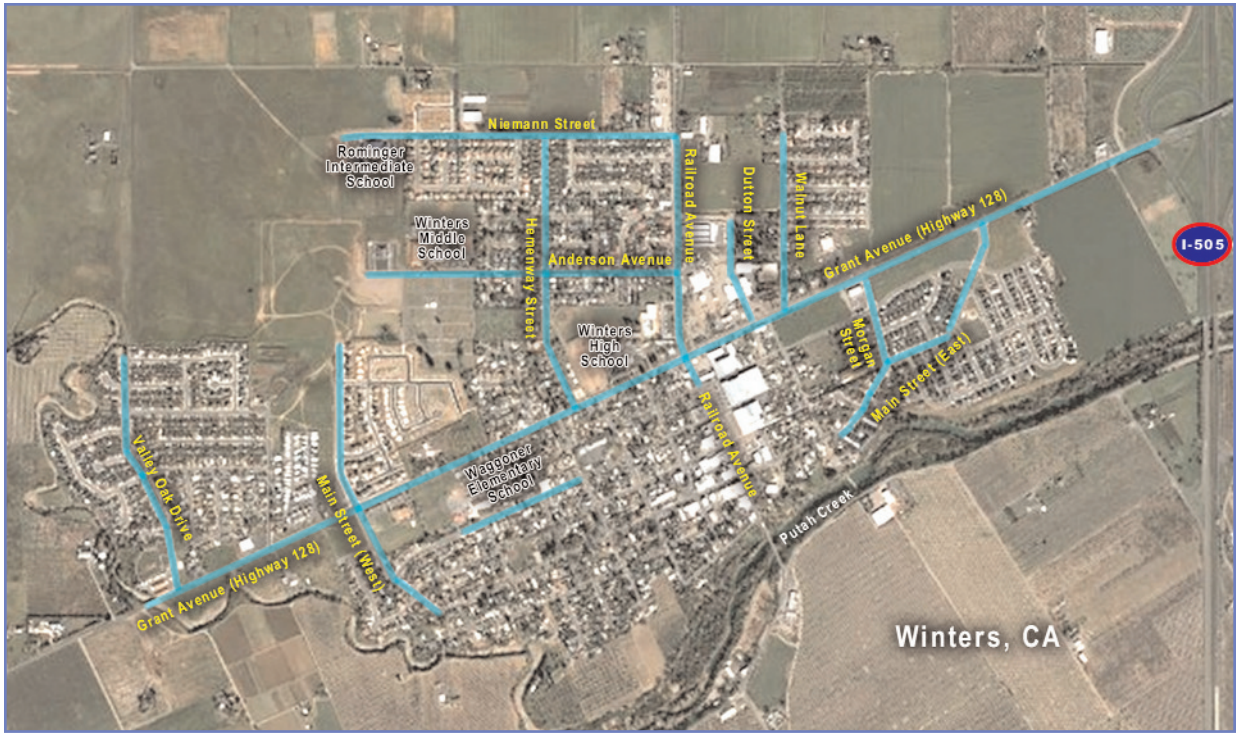
Analysis and Background

Project Area and the Community

Founded in 1875, the historic city of Winters is located along Putah Creek in western Yolo County. Highway 128/Grant Ave. runs east-west through the center of Winters and provides direct access to Lake Berryessa, a major regional attraction located 11 miles west of town. Interstate 505, which runs north-south along the east side of Winters, connects the community to Interstate-5 and Interstate 80.

Grant Ave. is the main arterial roadway through Winters. Most of the traffic congestion along Grant Ave. is from Railroad Ave. to Interstate 505, which is the main exit and entryway for commuters. According to the Winters Circulation Master Plan (1992), the average daily traffic (ADT) was expected to increase up to 26,900 vehicles per day between East Main St. and County Road 90 by 2010. However, there are currently only about 12,000 vehicles per day passing through this section of Grant Ave. (Caltrans). Traffic east of Railroad Ave. on Grant Ave. is also about 12,000 vehicles per day (Caltrans).

Along Railroad Ave. north of Grant Ave., the ADT was expected to increase to approximately 9,000 vehicles per day (Circulation Master Plan). However, there are currently up to 5,500 vehicles per day traveling on Railroad Ave. (Grandy & Associates, Fehr & Peer Associates).

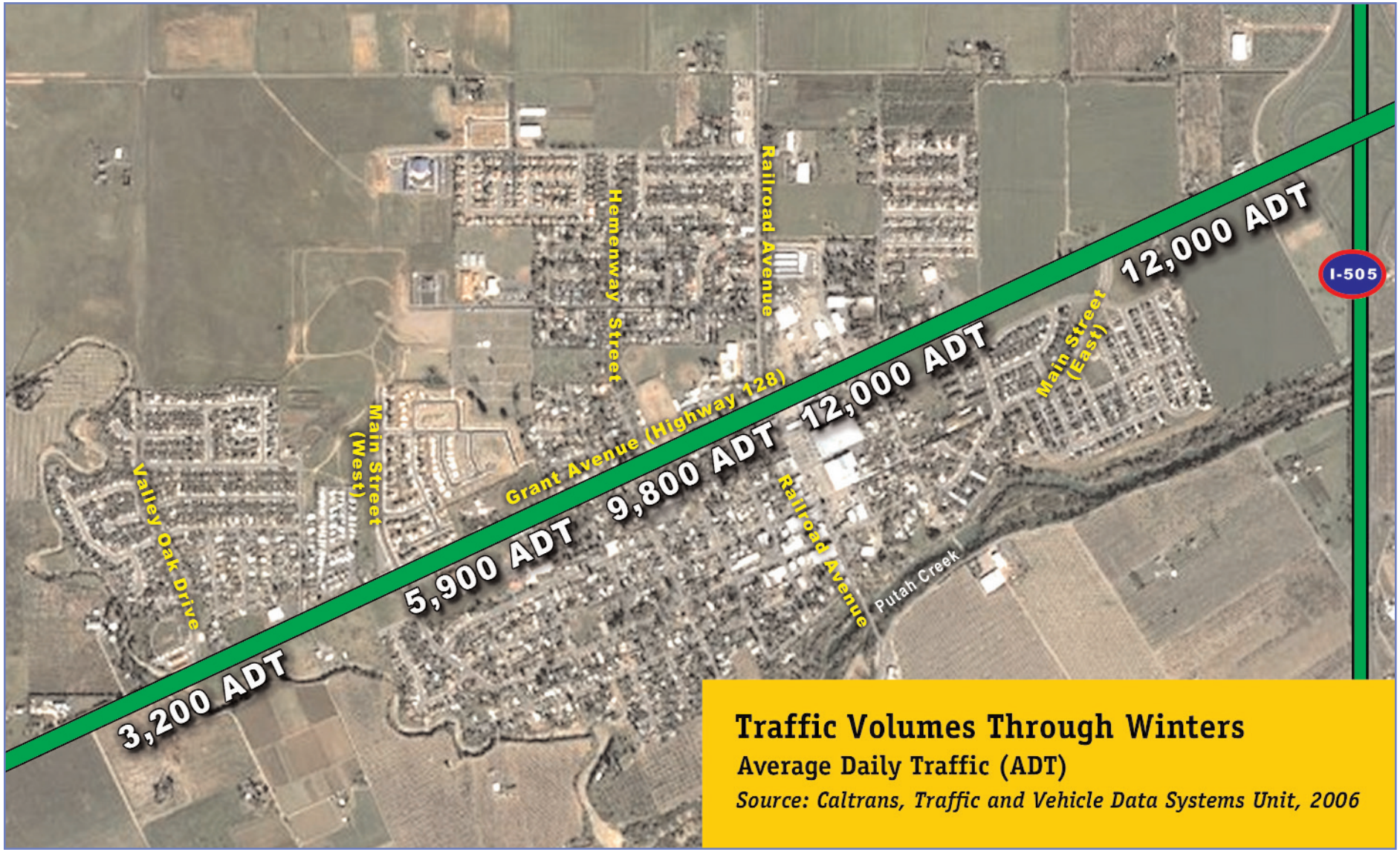


There are about 9,200 vehicles per day traveling on Grant Ave. between the Winters High School and 4th Ave. (Caltrans). While the forecasted ADT was expected to grow to 15,100 vehicles per day to the east of West Main St. on Grant Ave., there are currently up to 6,900 vehicles per day passing through this section of Grant Ave. (Caltrans). At the west end of Winters east of County Road 87E, there are currently about 3,600 vehicles daily (Caltrans).

During the late 1980s, Winters established growth control measures to help contain sprawl and protect its sense of community.

As a result, the city's population increased by less than 5% in the 1990s. However, growth pressures have steadily increased in the region and the City has recently approved new development. As of 2005, Winters' population was 6,764 (U.S. Census) – 44% Latino with whites making up most of the remainder. In the next 10 years, the total population is expected to increase by over 40%.

More than one in five (22%) live on a household income of $25,000 or less. In 2000, the city's per capita income was $17,133, which is $2,232 lower than the Yolo County average and $4,454 lower than the national average.



Traffic Volumes Through Winters

Average Daily Traffic (ADT)

Source: Caltrans, Traffic and Vehicle Data Systems Unit, 2006

Existing Conditions

Grant Avenue

Grant Avenue is currently a two-lane arterial. While Grant is only two lanes, speeds along some sections within the city tend to be higher than the posted speed limits due to wide street sections and a lack of measures to signal to motorists that they are in an urban environment. This is especially true in areas where trees and buildings are set back further from the street.

The Circulation Master Plan proposes increasing Grant Ave. to four lanes. The locations for these changes are for the east end of Grant Ave. from Railroad Ave. to Interstate 505, and on the west end of Grant Ave. from West Main St. to Valley Oak Dr. The Plan also proposes increasing Railroad Ave. north of Grant Ave. from two to four lanes.

Pedestrian conditions on Railroad Avenue

While traffic congestion increases during the morning and afternoon commutes, the worst congestion occurs during the summer months because of travelers heading to Lake Berryessa along Grant Avenue.

Portions of Grant on the west and east ends are without sidewalks, which limits pedestrian activity and access to businesses. The sidewalk along the new development near West Main St. was built with a sound wall separating the new development from Grant Ave. Few people were observed walking on this sidewalk because it is not connected with other sidewalks near the center of town and people don't feel a sense of being watched over since there are no "eyes" on the street.

Grant Ave. east of Railroad Ave. is currently underdeveloped and lacks sidewalks and marked pedestrian crossings. Many residents in the focus groups expressed interest in making this area more pedestrian-friendly.

The design and location of some streets, such as Morgan St. and Walnut Lane at Grant Ave. (the location of the city's main grocery store), create vehicle conflicts at the intersections. During the workshops and focus group sessions, residents mentioned that it is difficult to make left turns onto Grant Ave. during peak times.

These sections of Grant Ave. are also difficult for pedestrians since sidewalks are intermittent, vehicle speeds are high and there is no support for pedestrians to cross the street in the form of curb extensions, crossing islands or well-marked, high-visibility crosswalks.

The Challenges

- Wide intersections
- Fast traffic speeds
- Poor connectivity
- Missing sidewalks
- Sidewalks too narrow
- Difficult access to businesses
- Lack of mixed use
- Loss of vitality, energy
- Multiple property ownership
- Preserving Winters heritage

There is only one traffic signal in Winters, which the City installed at the intersection of Grant Ave. and Railroad Ave. in 2005. The signal has decreased back-ups at this location, but it still includes features that negatively impact traffic safety, walking and bicycling.

While the intersection was designed to support industry and the City yard, it has a large corner radius – increasing the distance pedestrians have to cross and promoting higher

vehicle speeds. Since it is missing a north-south crosswalk on the eastern side of the inter-section, it limits pedestrian access.

Driveways in this area are too close to the intersection, creating vehicle conflicts and impeding the flow of traffic.

Other thoroughfares, such as Railroad Ave., Anderson Ave., Edwards St., Hemenway St., Main St. and Niemann St., lack sidewalks and other infrastructure improvements that accommodate walking and bicycling on some sections. There are poor transitions from rural roads to more urban roads, causing drivers to maintain higher speeds as they enter Winters.

In some areas of the city, sidewalks are in poor condition, too narrow for people with disabilities, and lack enough curb cuts at intersections for the disabled.

Development Patterns

Winters contains a variety of development patterns. The older commercial core south of Grant Ave. and between Railroad Ave. and 4th St. is typical of a traditional walkable town center with a well-connected grid of streets and alleys, sidewalks, and street-facing retail.

While streets are wide, diagonal parking along Main St. helps to lower traffic speeds and create a comfortable environment for pedestrians. This well-connected street network

Grant Avenue

Baker Street

allows for residents to reach destinations without having to use Grant Ave. Short trips can be made easily by walking or bicycling.

This contrasts with some of the newer development north of Grant Ave. that includes disconnected street networks. The lack of street connectivity forces residents to drive on Grant Ave. even when making short trips on the north side of town, and results in increased congestion on Grant Ave. The disconnected street system also increases the distance that families have to travel to reach the three schools located north of Grant Ave. As a result, some trips that could be made by walking or bicycling are shifted to driving.

In parts of the new development north of Grant Ave., streets are wider than they need to be. For example, the new subdivision northeast of Grant Ave. and West Main St. has streets with 6-foot planter strips between the street and sidewalk with bicycle lanes and on-street parking. However, the streets are still overly wide with large curb radius. The standards currently call for 32-foot wide streets.

During the charrette, residents expressed a strong interest in narrower streets and better traffic calming measures, especially on the streets carrying traffic to schools.

They were also interested in encouraging mixed-use development in this area, although participants wanted to insure that new development retains the charm and uniqueness of Winters while still maintaining the downtown as the core economic engine of the town.

Access to Schools

Many students have to cross or use Grant Ave. to get to school. The four schools studied during this community process were Waggoner Elementary, Rominger Intermediate School, Winters Middle School and Winters High School.

Rominger Intermediate School and Winters Middle School are located in the northwest portion of the city. Anderson Ave., Niemann St. and Hemenway St. are the most heavily used routes to these schools.

However, portions of these routes are missing sidewalks, bicycle lanes and high-visibility crosswalks. While many children still walk and bike to school, it was noted during community discussions that more parents are driving their children to schools than in the past, causing congestion in front of the schools.

Posted speed limits are also not always being observed by drivers on these routes, even in the 25-mph zones in front of the schools.

Many students cross Grant Ave. at unmarked locations because the low-visibility crosswalk near the high school offers no refuge to pedestrians crossing the street.

Children were also seen walking in the street, such as along Hemenway. The trail connector to the middle school next to the cemetery provides a well-used alternative route for students.

General Recommendations

This section begins with general recommendations for making the streets in Winters safer for all users including motorists, bicyclists and pedestrians. These recommendations – and the more specific ones that follow – are also aimed at making Winters a more livable, attractive and economically vibrant town. These recommendations can be applied throughout the city. An additional discussion of principles for walkable communities can be found in Appendix A.

Streets are the public realm in our communities and careful attention to their design can help improve the quality of life of residents while creating great places that attract businesses and economic activity.

Creating walkable, bicycle-friendly streets also helps contribute to good health by encouraging residents to lead more active lifestyles and by reducing the use of motor vehicles that contribute to air pollution.

Recommendations for specific streets and intersections follow the general recommendations. All geometric and traffic operation recommendations require additional engineering studies to confirm their impact on traffic level of service, utilities and right-of-way. Appendix C contains a summary of the expected operation for several roundabouts proposed along Grant Ave. based on traffic volumes taken from the Fehrs and Peers Draft Report,"Grant Avenue Access Study" (January 2006).

Overall Road Network

One of the problems raised by participants during the community workshops, was the difficulty in reaching destinations on the north side of the city. Many trips require using Grant Avenue to reach destinations because street connections are lacking north of Grant. The problem is created by two factors: gaps in development in this part of the city and a more suburban pattern of development that relies on cul-de-sac and disconnected streets.

Participants agreed that the City should follow through with plans to complete some of the connections to the north of Grant Ave., such as extending West Main St. and Morgan St. northward. Creating those connections will help alleviate the congestion along Grant Ave. as more arterial and collector streets are opened up to destinations such as the middle and intermediate schools.

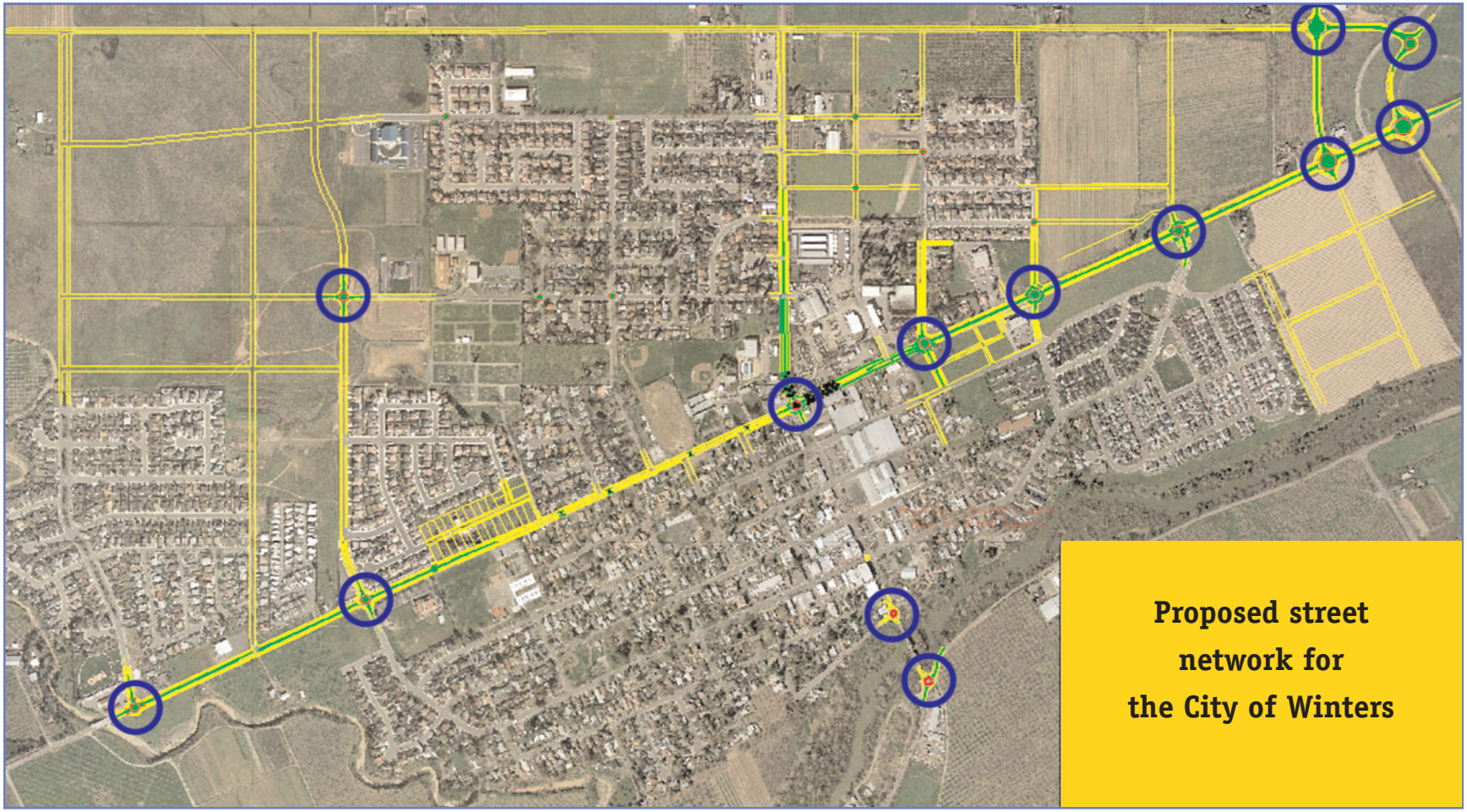
The aerial photograph (next page) shows some of the new roads that can help improve network connectivity. However, in addition to what is shown on the photograph, it is critical that new neighborhoods be designed with a well-connected system of slow, narrow streets and blocks no longer than 500 feet.

This type of grid or modified-grid system with short blocks creates more direct routes between destinations, encourages slower speeds, and provides good connectivity for bicycling and walking.

New development should maintain Winter's historic grid-style development pattern with interconnected streets.

For this system to work, local residential streets need to be designed for slow speed travel in the 20-25 mph range. As Winters builds new neighborhoods, it is important that the City adopt street design standards that are consistent with this approach.

While the following recommendations for street design standards will be easier to apply to new street construction, some of these techniques can also be applied to existing streets as repairs and revitalization takes place. This is especially true of low-cost treatments that rely on paint or on techniques such as crossing islands that do not require moving curbs or drainage.



Proposed street network for the City of Winters

The proposed grid network of streets is designed to help distribute traffic and limit the total volume of vehicle trips on any one street. This shortens the length of trips within the City and makes it easier for residents to make some trips by walking or bicycling. As new land is developed in the northern part of Winters, it is important that the City protect these future linkages from being developed upon. Circled areas on the map indicate locations for potential roundabouts.

Design Standards for New Streets

Short blocks are only one of the ingredients for creating slow, safe, livable streets. Another critical piece is to design and build streets with narrow cross-sections, trees and buildings that help create a sense of enclosure.

The following diagrams show proper street widths for these types of residential streets, lanes and alleys. These street widths are fully supported by "Residential Streets," published jointly by the National Association of Home Builders, the Institute of Traffic Engineers, the Urban Land Institute and the American Society of Civil Engineers.

Public Alleys

Alleys are making a comeback in many cities in the U.S. Alleys make it possible to put garages and utilities in the rear of homes and free up the front of the homes for more friendly designs that include porches and street-facing windows.

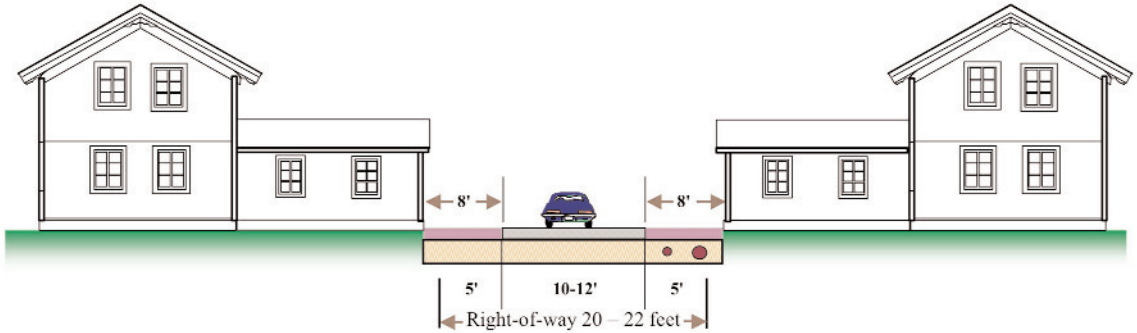
Porches and windows add to a neighborhood's security by putting more "eyes on the street" and on public spaces. They also give emergency responders secondary points of access.

The paved section of the alley (above) can be as narrow as 10 feet as long as the garages are set back 8 feet to allow vehicles to enter and exit.

See Appendix A for other features of good alleys.

Alley

Purpose: Provides access to the rear of the property



Street

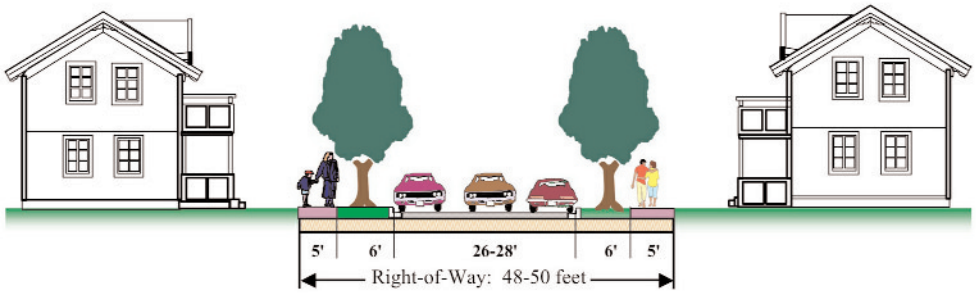
- Speed 5-10 mph
- Requires a 20 foot minimum ROW
- Utility location underground on one side
- Paved width minimum of 10 feet

Buildings & Land Use

- Residential — primarily single family
- Consistent building line recommended
- Provides rear access to garages
- Consider accessory unit above garage
- 8-foot minimum setback of building
- Garage door on track, to reduce outward swing.

Street

Purpose: Provides access to single-family homes.



Street

- Street width 26-28 feet with curb, gutter and informal parking
- Planting strips 6 feet
- Sidewalks 5 feet on each side
- Average speed 20 mph
- Requires a 48-foot ROW
- Utility location — Underground or alley
- Drainage — Curb and gutter
- Two to six blocks long

Buildings & Land Use

- Residential — many residential types
- Residences brought close to sidewalk
- Consistent building line recommended
- Front porches encouraged

Local Residential Streets

The City's current standards call for 32-foot wide residential streets. Residential streets should be no wider than 28 feet with parking on both sides. Wider streets encourage motorists to drive at high speeds and create an uncomfortable situation for motorists, bicyclists and pedestrians.

Studies have found that as streets get wider the number of crashes goes up. ("Residential Street Typology and Injury Accident Frequency," Swift and Associates, 1998)

This assumes that on-street parking will be moderate. If parking is saturated, curb extensions or inset parking will need to be used to ensure there are locations where a motorist traveling in one direction can yield to a motorist going in the opposite direction. These types of yield streets work well when volumes are below 800 vehicles per day. As the diagram to the left notes, sidewalks with planter strips should always be included on both sides of the street.

Street intersections should be designed with smaller corner radii to slow turning speeds. A conventional 30- to 36-foot wide street, with 30-foot corner turning radii, will allow motorists to turn 12-20 mph or faster. These higher turning speeds reduce the likelihood that motorists will yield to pedestrians. According to AASHTO standards, the minimum curb radius should be 15 feet. (Street Design Guidelines for Healthy Neighborhoods, 2002)

The curb radius for this intersection on Main St. is currently 35 feet and it takes a pedestrian 21 seconds to cross the 78 feet at the intersection. The curb radius can be reduced to 15 feet.

This residential street in Seattle WA, has a much tighter corner radius and curb extension on one side which slows down vehicles and reduces the amount of time it takes a pedestrian to cross the street to about 7 seconds.

Other Street Features

Streets should also be designed with other features that moderate vehicle speeds and that make them comfortable for walking and bicycling.

Vertical instead of rolled curbs

Vertical curbs keep vehicles from parking on the sidewalk and clearly delineate the pedestrian from the automobile zone. Streets with rolled curbs encourage motorists to park on the sidewalk and create additional obstacles for pedestrians.

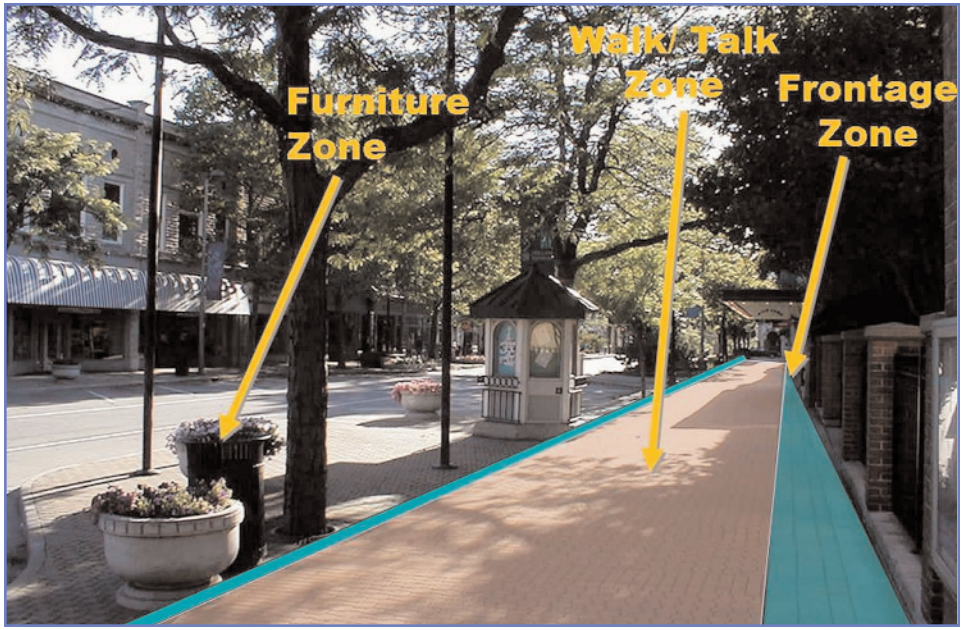
Landscaping between sidewalk and street

On residential streets the best design for all users is to include a 6-foot landscape strip between the street and sidewalk. This traditional street design approach – seen in many older neighborhoods – has many benefits. It provides a buffer for pedestrians, makes it possible to plant trees along the street which helps slow vehicle speeds, and provides much-needed shade to the street and sidewalk.

Studies have found that well-shaded streets are less expensive to maintain and that trees add significant value to properties. ("Tree Guidelines for San Joaquin Valley Communities," Western Center for Urban Forest Research, 2000; "Effects of Street Tree Shade on Asphalt Concrete Pavement Performance," McPherson and Muchnick, Journal of Arboriculture, Nov. 2005)

Planting strips also provide the ideal location for placing the slope change for a driveway without sloping the sidewalk – a violation of ADA design guidelines.

In commercial areas, the continuous landscape strip is replaced by the "furniture zone," which is the proper location for trees, signs, lighting, benches, trash receptacles, hydrants, transit stops and other "street furniture" elements.



Ample sidewalks

In residential neighborhoods sidewalks should be at least 5 feet wide, enough space to allow two people to walk side-by-side. In front of schools, sidewalks should be at least 8 feet wide.

Sidewalk width in commercial areas will vary depending on a number of factors but sufficient space should be allocated to accommodate the three pedestrian zones shown in the diagram to the left.

Bicycle lanes

Marked Class II bicycle lanes should only be added to streets that are expected to carry more than 1,500 vehicles per day. Well-designed, narrow streets with short blocks that encourage slow speeds in the 25-mph range can accommodate bicyclists without too much trouble since vehicle volumes are low and cars are moving at speeds that are comfortable for bicyclists.

Adding bicycle lanes to low-volume residential streets results in a wider street on which vehicles are likely to travel at higher speeds. However, bicycle lanes should be included on higher-volume collector and arterial roadways where speeds are likely to be in the 35-mph range.

Curb extensions

On streets with parking, curbs should be extended out into the street the width of the parking lane at intersections and mid-block crossings.

Medians and crossing islands make it much easier for pedestrians to cross the street. The pedestrian only has to deal with traffic moving in one direction and has a location to pause and get out of the street while finding a gap to cross the second leg.

Curb extensions have many benefits: they shorten the distance pedestrians have to cross; they make it easier for motorists to see pedestrians (and vice versa); they help locate traffic signs where they are more visible; and they have a traffic-calming effect by narrowing down the road.

Pedestrian crossings

Whether driving, walking, or biking, people prefer to take the shortest, safest and most convenient route to a destination. Walkers and bicyclists are especially vulnerable to vehicles, so they spend as little time as possible in the roadway or crossing it. When marked crosswalks are excessively long, inconvenient or require long waits, pedestrians often seek a different crossing point.

Pedestrians need well-designed and well-marked locations to cross streets. In locations with high traffic volumes or high speeds, additional tools need to be used to create a safe crossing.

A study conducted by Charles Zegeer et al. at the University of North Carolina provides the most up-to-date information on locations where providing a marked crosswalk alone is not sufficient and might actually have a negative effect. ("Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations," 1996-2001)

Techniques to be considered include: high-visibility, ladder-style crosswalk markings; raised medians or crossing islands; curb extensions; tighter turning radii; traffic calming measures; nighttime lighting; and pedestrian warning lights.

Compact, well-designed intersections benefit all roadway users. Less time is needed for pedestrians, bicyclists, and vehicles to cross the intersection, turning speeds are reduced, and pedestrians have less exposure to moving traffic. (Appendix B contains guidelines for installing crosswalks.)

Intersection Recommendations

- ✔ Use 10-foot minimum crosswalk widths.
- ✔ Use enhanced markings.
- ✔ Grind and insert markings.
- ✔ Use 24-inch stop lines.
- ✔ Move stop lines back 8-12 feet.
- ✔ Keep ramp openings to full width of crosswalk, when possible.
- ✔ Consider inset concrete or other distinct materials that are easy to maintain.
- ✔ Use median noses when feasible.

Lane Reductions

Lane diets are recommended where the width of streets in Winters are greater than needed. A lane "diet" means eliminating unnecessary lane width on roadways. Twelve-foot lanes are common on freeways, but most arterial streets can safely use lanes as narrow as 10 feet.

The space gained from reducing the number and width of lanes is used to provide on-street parking, bike lanes, raised medians, and even wider sidewalks. The parking area can include tree wells, which help beautify the street.

Curb ramps

Instead of placing a single ramp at each corner of an intersection, ADA guidelines currently support placing two ramps at each corner with a vertical curb from the sidewalk to street curb preferred over a flared curb design.

The single ramp in the middle of the corner (bottom left) sends the wheelchair user into the middle of the street. Two ramps at each corner (bottom right) allow wheelchair users and people with visual disabilities to orient themselves to the correct alignment of the street. Two ramps should be required at all intersections, including T-intersections.

Two ramps are currently supported in the Winters Downtown Master Plan. For examples, see Core Block A, page 22, and Main and Railroad Intersection Plan, page 25.

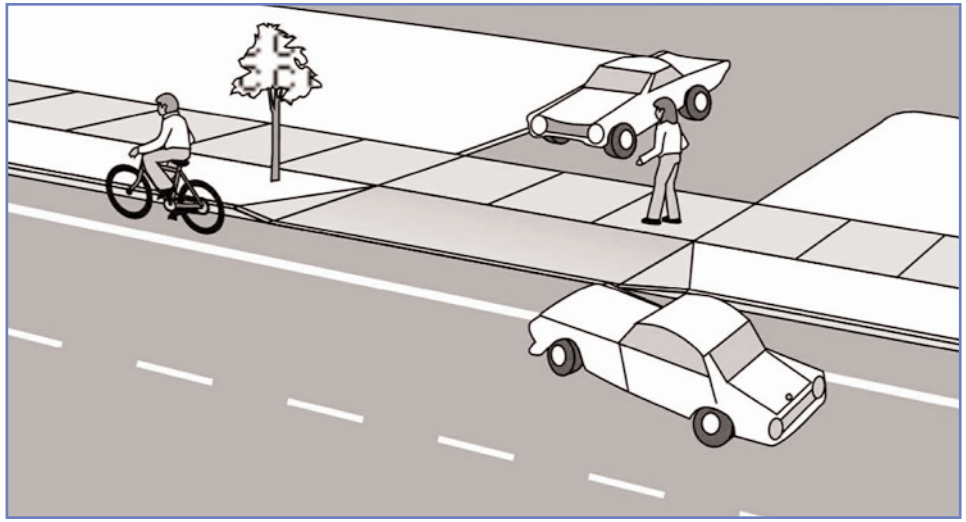
Driveways

To reduce conflicts between vehicles and pedestrians, the City should work with property owners to limit the number of driveways along Grant Ave. and other main arterial streets.

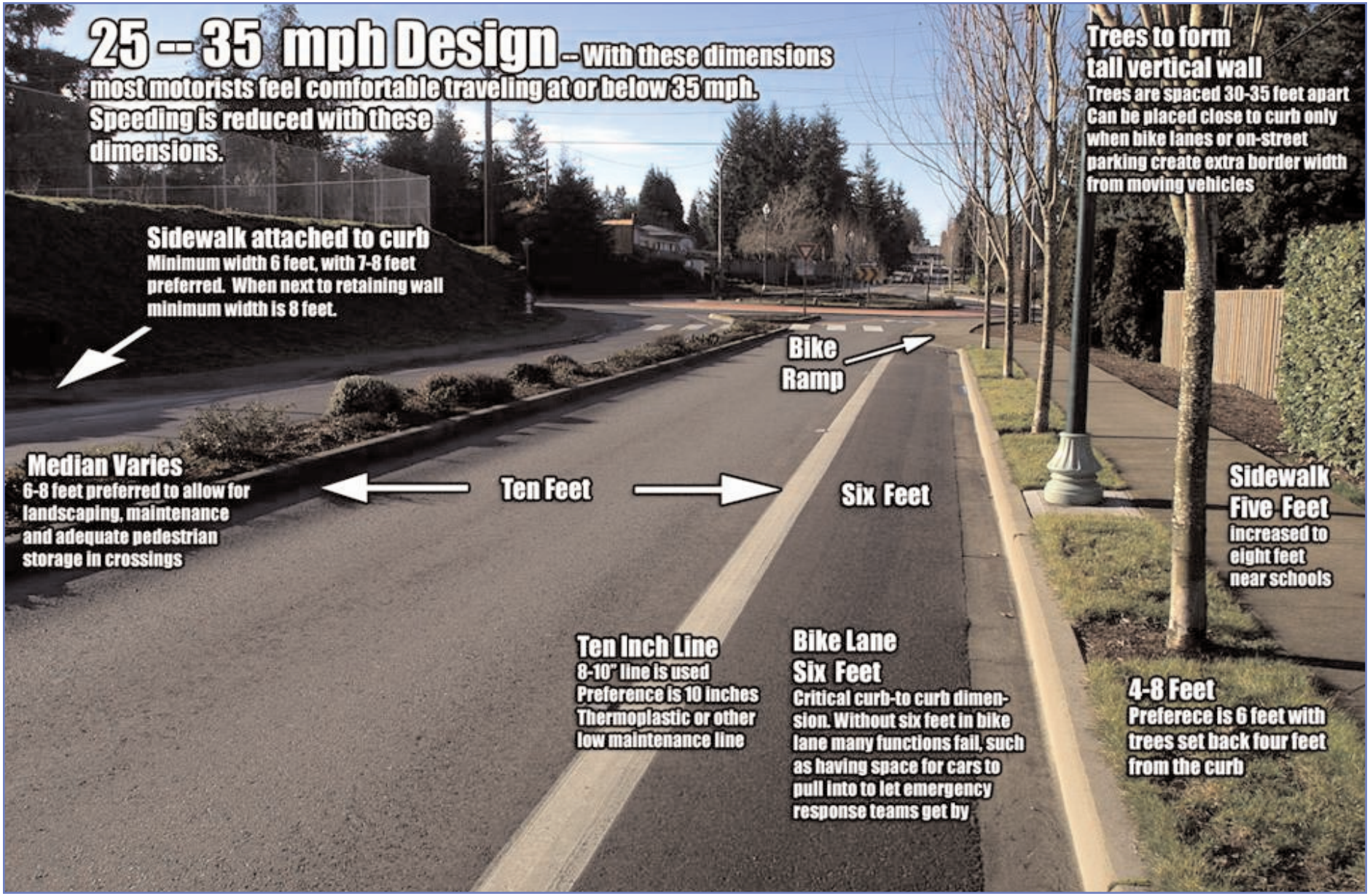
Consolidating driveway entries into commercial parking lots can help increase the number of parking spaces without restricting vehicle access.

Driveways should also be designed so that motorists understand that they are crossing the pedestrian realm. This can be accomplished by using contrasting materials and ensuring that the material used for the sidewalk continues across the driveway. Use an increased pitch to help slow down cars as they enter the driveway. The slope should be placed outside the sidewalk surface to assist wheelchair users in crossing the driveway so they don't have to contend with the slope.

Driveways should also be kept away from intersections to avoid additional vehicle to vehicle conflicts.



Proper configuration of a driveway (top) with the slope outside the sidewalk surface. Moving the driveway away from the intersection of Railroad and Grant (above) reduces vehicle conflicts and improves the safety of the intersection without reducing access to current businesses.



How a street can be designed using some of the previously mentioned tools to keep speeds at a moderate level.

Roundabouts

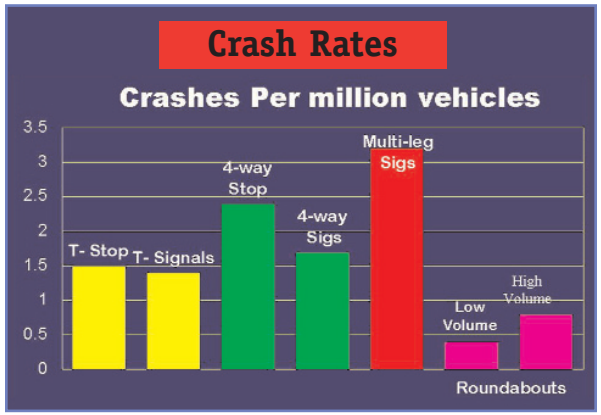
Roundabouts are un-signalized intersections in which traffic circulates around a raised center island. They are a safe and efficient form of traffic control.

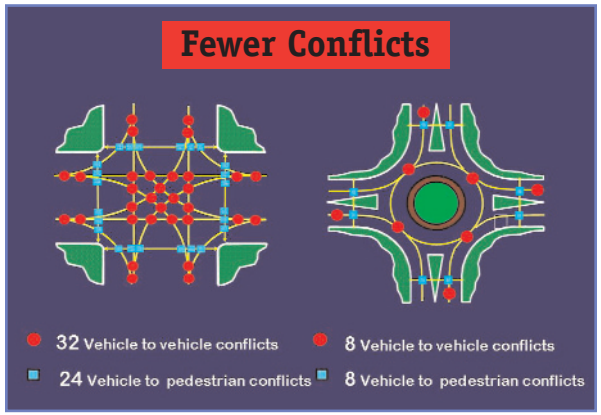
A major advantage of roundabouts for Winters is that it will permit the construction of roads with fewer lanes and have lower construction and resurfacing costs. ("Crash Reductions Following Installation of Roundabouts in the United States," B. Persaud et al., Insurance Institute for Highway Safety, March 2000.)

The use of roundabouts along Grant Ave. will provide a gateway into Winters, slow traffic, and make pedestrian crossings safer and easier than signalized intersections.

Based on data from the National Highway Traffic and Safety Administration, signalized intersections are dangerous for pedestrians, with thousands killed and injured each year at signalized intersections. Fatal crashes can be reduced up to 90% with the use of roundabouts. They result in 76% fewer injury crashes and 39% fewer pedestrian crashes. (Insurance Institute for Highway Safety, Status Report, May 2000.)

Roundabouts are safer because they have 75% fewer conflict points than four-way intersections and slower design vehicle speeds (<25 mph). Drivers have more reaction time for other cars and pedestrians, leading to increased safety for older and novice drivers, reductions in severe crashes, and keeping pedestrians safer. ("Roundabouts: An Informational Guide," U.S. Dept. of Transportation, Federal Highway Administration, FHWA-RD-00-067, June 2000.)





Roundabouts would need to be designed to accommodate large trucks and vehicles towing boats with a width up to 102 inches and a maximum allowable length of up to 65 feet (California Vehicle Code, Section 35100-35111). The roundabout (below) can accommodate a wheel base up to 65 feet.

It is highly recommended that planners, engineers and ADA representatives visit a well-designed, slow-speed (15-20 mph) roundabout and a signalized intersection with comparable traffic to assess the advantages of roundabouts as a pedestrian crossing and traffic calming option. It is critical that planners work with ADA representatives in the initial design process to support the safety and access needs of all pedestrians.

This report makes recommendations for roundabouts at several locations along Grant Ave. More details are provided in the following section on specific recommendations.

Specific Improvements

The recommendations in this section are for specific locations within the study area. They include recommendations for:

- Waggoner Elementary, Rominger Intermediate and Winters Middle Schools
- Hemenway Street
- Grant Avenue / Highway 128
- East Grant Avenue Corridor
- Other selected streets

Schools

According to the General Plan Circulation Element, it is City policy that "All schools should be easily accessible from pedestrian and bicycle routes." During the course of the design workshops, special attention was given to reviewing conditions around several schools in order to recommend changes that can make it easier and safer for children to walk and bicycle to and from school. The following are specific recommendations for Waggoner Elementary, Rominger Intermediate and Winters Middle Schools.

Waggoner Elementary School

Participants in the charrette and members of the design team expressed concern with the following conditions at Waggoner Elementary School:

- High speeds on Edwards St. resulting from the fact that the road is overly wide.

- Exposure of children crossing Edwards and Haven Streets due to very wide streets.
- Continuation of crosswalk crossing Edwards St. through driveway where vehicles are exiting the drop-off area.
- Stacking of vehicles on Edwards St. due to limited amount of space for drop-off.

The design team recommended several changes in the short, medium and long term to improve the conditions at Waggoner Elementary School:

SHORT-TERM RECOMMENDATIONS

- Add high-visibility, ladder-style markings at all crosswalks near the school, such as at the intersections of Edwards St. and Haven St., and Edwards St. and 4th St.
- Build a raised curb at the west end of the drop-off area to prevent vehicles from driving through the crossing area in front of children that are going north in the crosswalk (see image above).
- Add a gate on the northwest corner facing Grant Ave., across from the existing crossing, that can be open during arrival and departure times that children walking or bicycling from the north can use.

MEDIUM-TERM RECOMMENDATIONS

- Narrow the street by adding on-street, back-in, diagonal parking along the portion of Edwards to the west of the school entrance.
- Add curb extensions to delineate the area for diagonal parking on the north side of Edwards Street.
- Use newly created on-street diagonal parking for staff parking.
- Convert existing staff parking to visitor parking and for use as an off-street drop-off and pick-up area.

LONG-TERM RECOMMENDATIONS

- Add curb extensions on all the corners at the intersection of Edwards St. and Haven St. to slow speed of vehicles and reduce distance pedestrians have to cross.
- Install a mini-circle at the intersection of Edwards St. and 4th St.

Recommended Changes

- ✔ Use enhanced crosswalks
- ✔ Use curb extensions
- ✔ Separate school bus movements
- ✔ Move staff parking to street location
- ✔ Neck down school crossing to 20 feet
- ✔ Neck down Haven St. entry to 14 feet
- ✔ Use back-in angled parking and curb extensions to narrow street, reduce speed and maximize use of space
- ✔ Create new entry from Grant Ave. at crossing

Map of recommended changes for streets around Waggoner Elementary School

Winters Middle School and Rominger Intermediate School

Both the Winters Middle School and Rominger Intermediate School are currently isolated in the northeast part of Winters. Access to these schools is provided by Anderson Ave. and Niemann St. with no outlets to the west. This causes traffic to return in the same direction on those streets, causing congestion and pedestrian conflicts at the current dropoff zones.

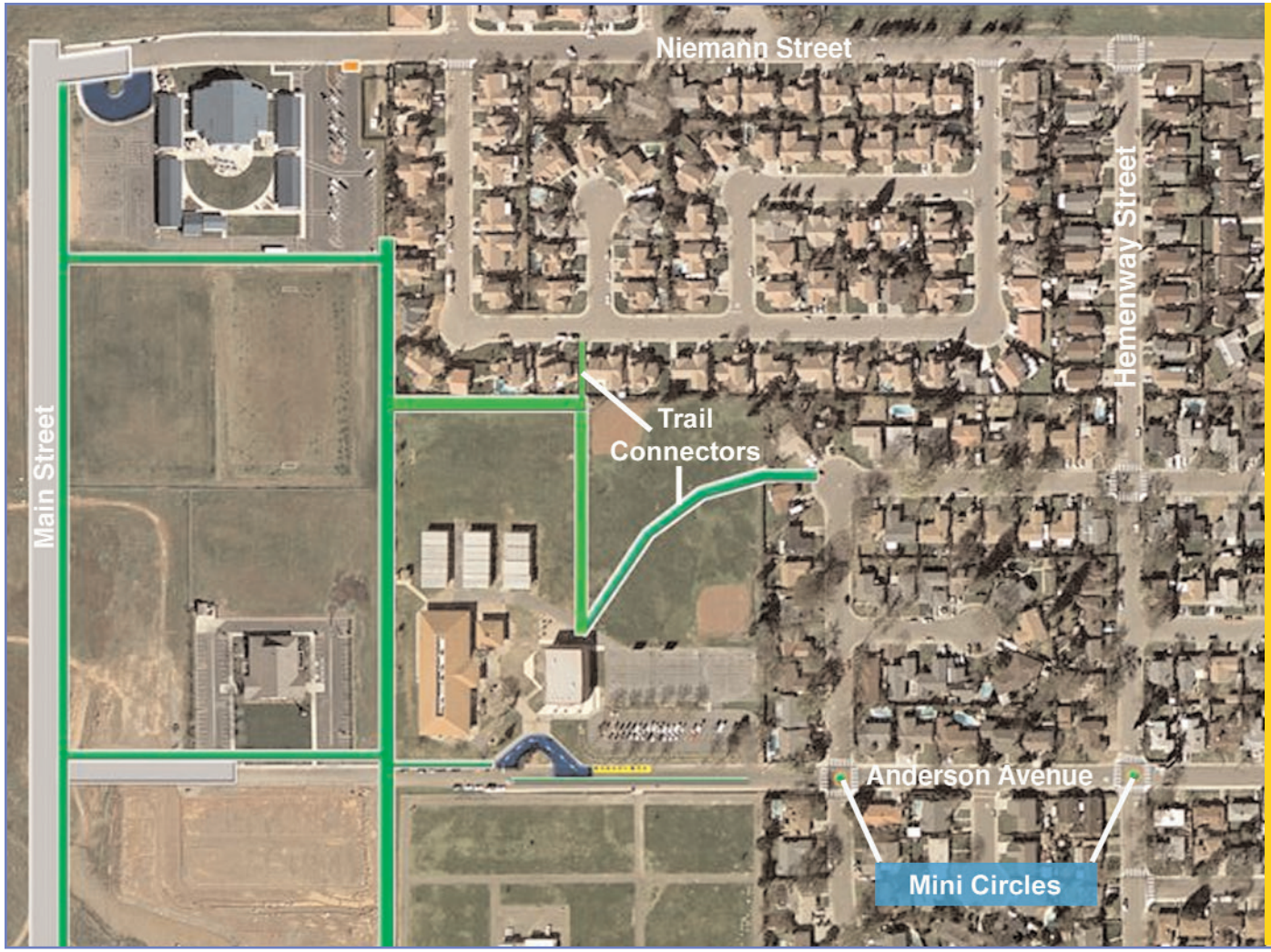
The design team recommended the following changes to improve access to these schools:

SHORT-TERM RECOMMENDATIONS

- The pedestrian/bicycle trail adjacent to the Winters Cemetery provides an important connector to the Middle School. However, the trail is currently stark and unattractive. The chain-link fence should be lowered to 4 feet and trees and low vegetation should be added to screen the fence. The gravel trail should also be filled in with a material to provide a more stable surface for pedestrians and bicyclists. (See before-and-after photos above)
- Add high-visibility, ladder-style markings at all crosswalks near the school. Good locations for these markings would be at major intersections along Hemenway St., Anderson Ave. and Niemann St.
- Create new drop-off zones in front of the schools to provide shelter for the students. At Rominger Intermediate School, move the dropoff zone on Niemann St. from the entrance of the parking lot to the northwest corner of the school.
- Improving the existing connectors to the schools, and adding new ones, will provide more opportunities for students to walk and bike to these schools.

LONG-TERM RECOMMENDATIONS

- Add two mini-circles on Anderson at the intersections of Apricot Ave. and Hemenway St. to calm traffic.
- To reduce pedestrian and vehicle conflicts in front of the school, add a median on Anderson Ave. in front of the middle school and extend it beyond the school dropoff zone to prevent U-turns. (See pge 26 for a map of these recommendations.)
- As shown in the Circulation Element, extend Main St. northward and complete the connections to Anderson Ave. and Niemann St. Also add new sidewalks along these streets.



Recommendations

- ✔ Add enhanced crosswalks
- ✔ Create new dropoff zones
- ✔ Move school bus dropoff
- ✔ Add two mini circles
- ✔ Add new sidewalks as shown
- ✔ Add new streets as shown
- ✔ Add new connectors as shown
- ✔ Improve existing connectors

Map of recommendations for north schools – Winters Middle School and Rominger Intermediate School

Traffic Calming on Anderson Avenue

Because of its connections to Winters Middle School, Rominger Intermediate, and future development in the north, traffic on West Main St. will increase when it is eventually extended northward towards Anderson Ave. The installation of a roundabout at this location, in conjunction with traffic calming measures, such as mini circles along Anderson Ave. will increase the efficiency of the street and help reduce vehicle speeds.

Traffic calming mini-circles as proposed for Anderson Ave. replace current four-way stop controls on local streets.

Traffic calming mini-circles consist of a raised island located in the center of an unsignalized intersection. Drivers maneuver around the central island rather than proceeding straight. Seattle, WA, reports intersection crash reductions of 93% following installation of these treatments.

Engineering recommendations are only one aspect of enhancing the school trip for students. Education, encouragement and enforcement are key components of a successful program.

While the City has received Safe Routes to School funding for physical enhancements in the past, the City should become involved in Safe Routes to School programs and develop a systematic approach to improving student walking and bicycling routes.

Potential traffic calming on Anderson Ave. with the use of mini circles and a roundabout at a future Main St. intersection.

For more information about Safe Routes to School programs:

www.dot.ca.gov/hq/LocalPrograms/saferoute2.htm

www.dhs.ca.gov/routes2school

Mini-circles are used to slow traffic on both approach streets. Although not shown in this photo, crosswalks should be marked and curb ramps provided on all four corners.

Hemenway Street

Hemenway St. is heavily used by students and parents for access to the middle and intermediate schools in the north of Winters. However, the eastern side of this street does not have sidewalks up to the northern end of the high school fields near Mermod Rd. As a result, students and other residents have been observed walking in the street.

To improve this connection to the schools in the north, the design team recommended:

- ➢ Adding a trail for bicyclists and pedestrians along the eastern side of the street from Grant Avenue. Trees along Hemenway St. adjacent to the high school may require re-location. There is enough room to provide an 8-foot trail and replace the current trees with a stand of medium-to-large canopied trees.
- ➢ The street can then be designed for two 12-foot lanes and 6 feet of indented parking on each side of the street.
- ➢ Add 5-foot sidewalks on the west side of the street with vertical curbs instead of the current rolled curbs

Before and After: New trail along eastern side of Hemenway St.

Grant Avenue / Highway 128

Grant Avenue is the main corridor through Winters, and many residents must use it to get to schools, work, retail and services in the community. The following recommendations are targeted at improving traffic flow through the city and the safety for all users of Grant Avenue.

Before and After: Improved student crossing near the intersection of West Main St. and Grant Ave.

General recommendations for Grant Avenue

A two-lane road with free-flow traffic can theoretically carry 36,000 vehicles per day. Intersections that restrict free-flow conditions reduce the capacity on a 2-lane road to approximately 20,000 vehicles per day – well above the current ADT of 12,000 vehicles per day for Grant Ave. Traffic along Grant Ave. can be managed with two lanes and medians to control left-hand turning movements that can interrupt the flow of traffic.

The addition of the roundabouts proposed in the following sections will also increase the capacity of Grant Ave.

Different sections of Grant Ave. have different dimensions, so there are varying options available for improvements.

The City's current Design Guidelines call for 12-foot lanes on arterials such as Grant Ave. If slower speeds are desired along Grant Ave., lanes could be resized down to 10 feet with colorized bike lanes, while still leaving room for trucks and vehicles hauling big boats. While this may not comply with typical Caltrans standards for a road such as Grant Ave., there is growing research showing this is a safer alternative.

Parking along portions of Grant Ave. can be maintained with the use of 6-foot parking bays, a valley gutter, then a 6-foot bike lane. The addition of bike lanes will also make it safer for people getting out of parked cars.

There are several locations along the east and west ends of Grant Ave. lacking sidewalks. As a result, there is limited pedestrian access to current or future businesses. Completing these sidewalks will provide support for future development, such as along the commercial corridor on the eastern end of Grant Ave.

Various techniques should be used to make the pedestrian crossings along Grant Ave. more visible to motorists. They include adding curb extensions, high-visibility crosswalk markings, in-pavement flashing lights and better lighting.

Grant Avenue and Valley Oak Drive intersection

The T-intersection at Valley Oak Dr. would be a good location for a roundabout. A roundabout would serve as a gateway into town and would slow drivers as they enter Winters from the higher speed rural areas. Medians should be inserted as shown (next page), and high-visibility crosswalk markings used.

The City should also reconsider the recommendation in the Circulation Master Plan to widen Grant Ave. to four lanes between Valley Oak Dr. and West Main St.

Under the worst-case scenario the forecasted traffic on this section of Grant Ave. is not expected to exceed 5,800 vehicles per day, which can easily be handled with two lanes. Widening the street to four lanes will only result in higher speeds and a more hostile environment for pedestrians and bicyclists.

Grant Avenue and Main Street (West) intersection

At the student crossing west of the Grant Ave. and Main St. intersection, steps could be taken to make the crossing more noticeable to vehicles. A raised crossing island should be added to provide a refuge for pedestrians and the crosswalk should be painted with higher-visibility vertical ladder-style markings.

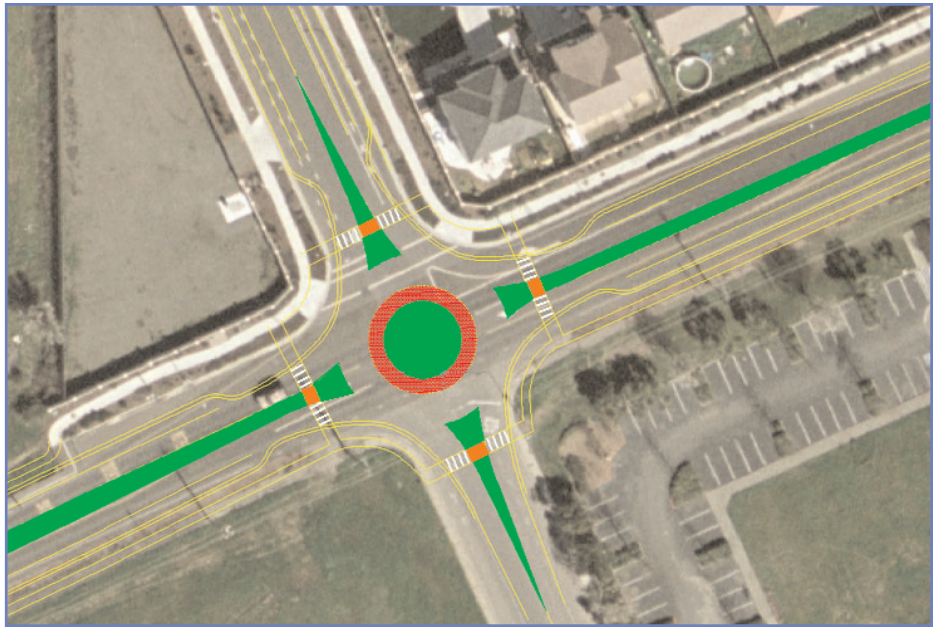
Over time, a sidewalk should be built on the south side of Grant Ave. so that students walking or bicycling to Waggoner Elementary School don't have to walk on the shoulder.

LONG-TERM RECOMMENDATIONS

Currently, Grant Ave. at the intersection of West Main St. widens to 84 feet. However, given that the street is only two lanes wide just east and west of this intersection, it would be more appropriate to keep the roadway compact and maintain the efficiency of the intersection with a roundabout.

A roundabout offers safety advantages over a signalized intersection and would be less costly to install. It would also slow vehicles at a point where children cross to go to school on either side of Grant Ave. It would beautify an otherwise wide-asphalt intersection, as well as provide emergency vehicles with a greater level of service. Medians and curb extensions should be inserted as shown (bottom right), with high-visibility crosswalk markings.

Roundabout for Valley Oak Drive



Roundabout for West Main Street

Before and After: Grant near Fourth St. (top); crosswalk near the high school (middle); Railroad Ave. intersection (bottom).

West of Winters High School (Hemenway Street to Cemetery Drive)

The section of Grant Ave. west of the high school has single-family homes facing the street. Given the presence of homes and high school students, this section of Grant Avenue should be designed to bring speeds down to 25 mph.

This can be accomplished by using curb extensions at intersections and by adding colorized bicycle lanes set off with a wide 8-inch white line as shown here. Travel lanes should be striped at 11 feet, bicycle lanes at 6 feet, and parking lanes at 7 feet.

A colorized bicycle lane will help reduce speeds by a few miles per hour by making the roadway seem narrower but without reducing the street's operational width.

In front of Winters High School

Many students cross the street in front of the high school at undesignated crossings. To improve their safety, all crossings near the high school should be built with well-marked crossings, curb extensions and medians.

This portion of Grant Ave. is constrained by a curb-to-curb width of only 40 feet. If the community wishes to add bicycle lanes in this area, it would require removing parking on one side of the street. If most of the parking is for school purposes, then parking should be removed from the south side of the street. This decision would need to be based on having sufficient parking on side streets.

Grant Avenue and Railroad Avenue intersection

Many participants at the charrette were concerned about the width of the intersection at Grant Ave. and Railroad Ave. Since it provides an entrance to Winter's downtown, provides access to industrial facilities, and is near the high school, this intersection is heavily used.

The design team made the following recommendations:

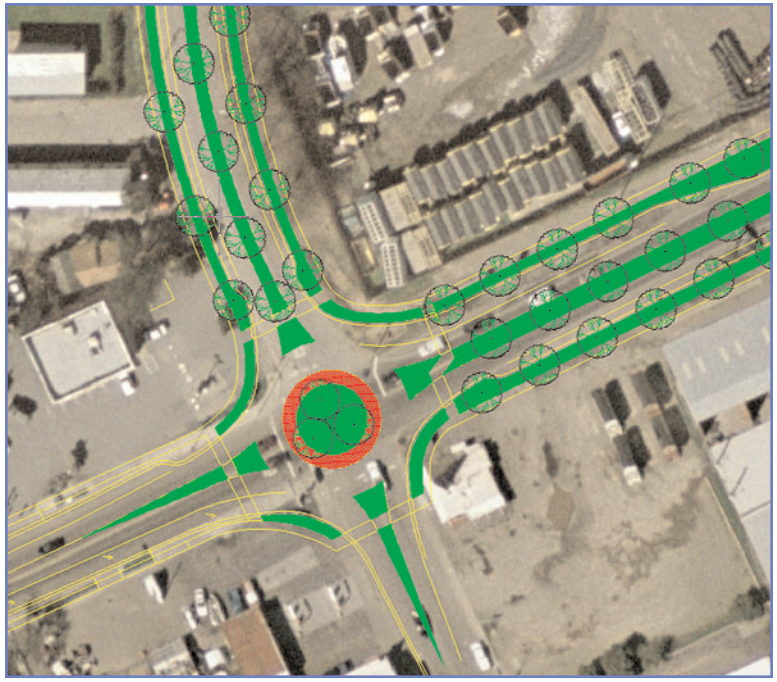
- The City should reexamine the recommended widening of Railroad Ave. to four lanes north of Grant Ave. in the Circulation Element. Under the worst-case scenario, the forecasted traffic is not expected to exceed 9,100 vehicles per day. This volume can easily be handled with two lanes.
- Also, the proposed widening of Grant Ave. east of Railroad Ave. should be reexamined based on the proposal to add road connections north of Grant Ave.

SHORT-TERM RECOMMENDATIONS

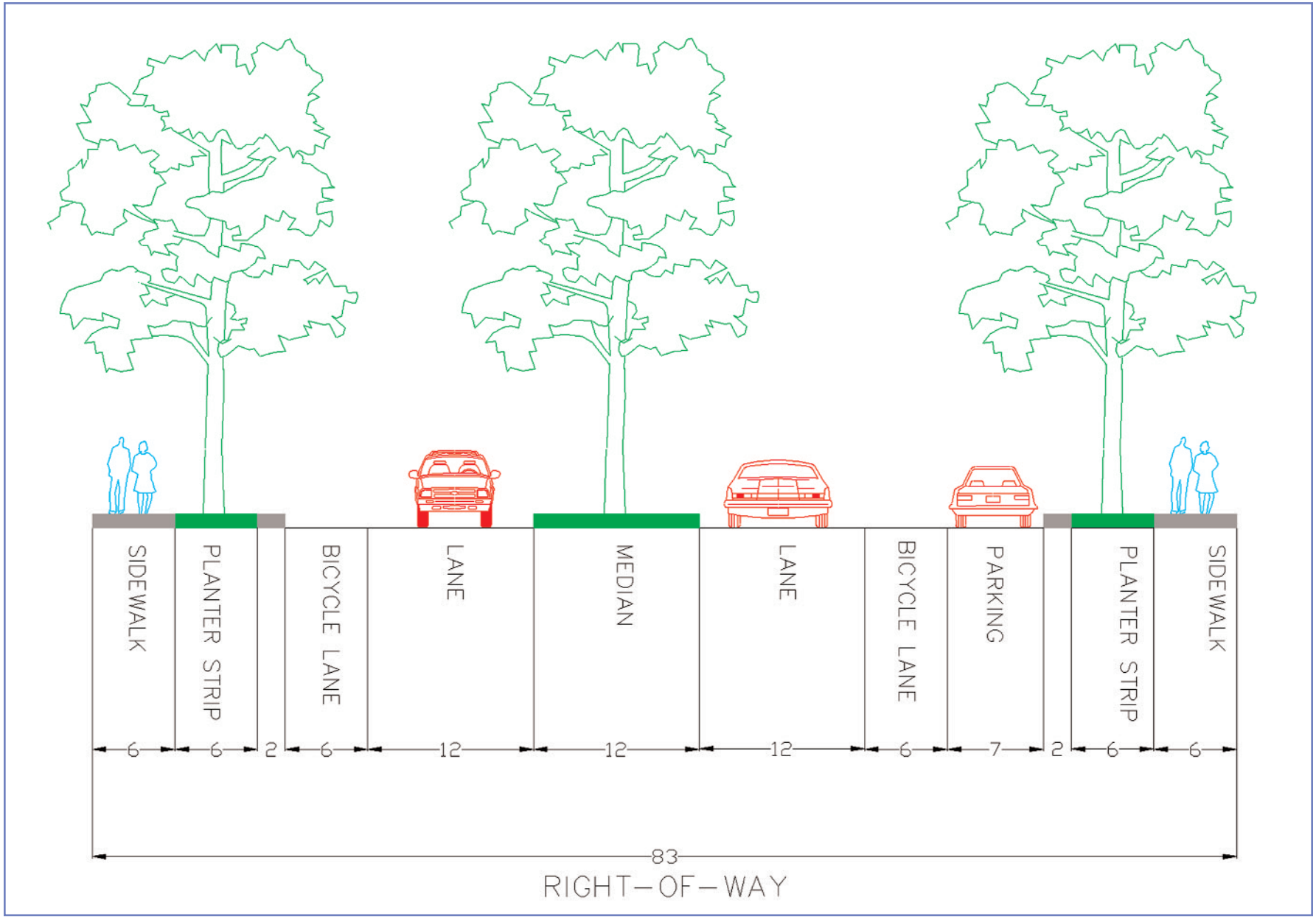
- Maintain Railroad Ave. as a two-lane arterial with a median and bike lanes. The predicted traffic volume in the future is only 9,100 vehicles per day, which requires only two lanes. A two-lane road can carry up to 20,000 vehicles per day if a center-turn lane and/or right-turn lanes are provided. The cross-section on the next page offers two options for Railroad Ave. north of Grant Ave.
- The intersection can be improved in the short-term for all users by adding pork chop islands on the northeast and southeast corners (previous page). Pork chop islands take space not needed by motor vehicles while helping to create a much safer crossing for pedestrians.
- The pork chop islands also make it possible to move the crosswalks out so they are in line with the sidewalks, making pedestrians more visible to motorists.
- While a roundabout would provide the best solution for this intersection, the design team recognized that the recent addition of a traffic signal in 2005 makes it unlikely that it would be replaced in the short term.

LONG-TERM RECOMMENDATIONS

- Eventually, the signal at the intersection of Grant Ave. and Railroad Ave. could be replaced with a roundabout with additional right-turn lanes to separate right-turn movements onto Railroad Ave.
- Planted medians should be added on east Grant Ave. and along the northern portion of Railroad Ave.



Potential roundabout design for Railroad and Grant Avenues. Notice how easily trees can be incorporated into the design.



This diagram provides two options for Railroad Avenue. Either option can work, although the option to the right of the median, with on-street parking, would be more appropriate if retail uses will be located along the street.

East Grant Avenue Corridor

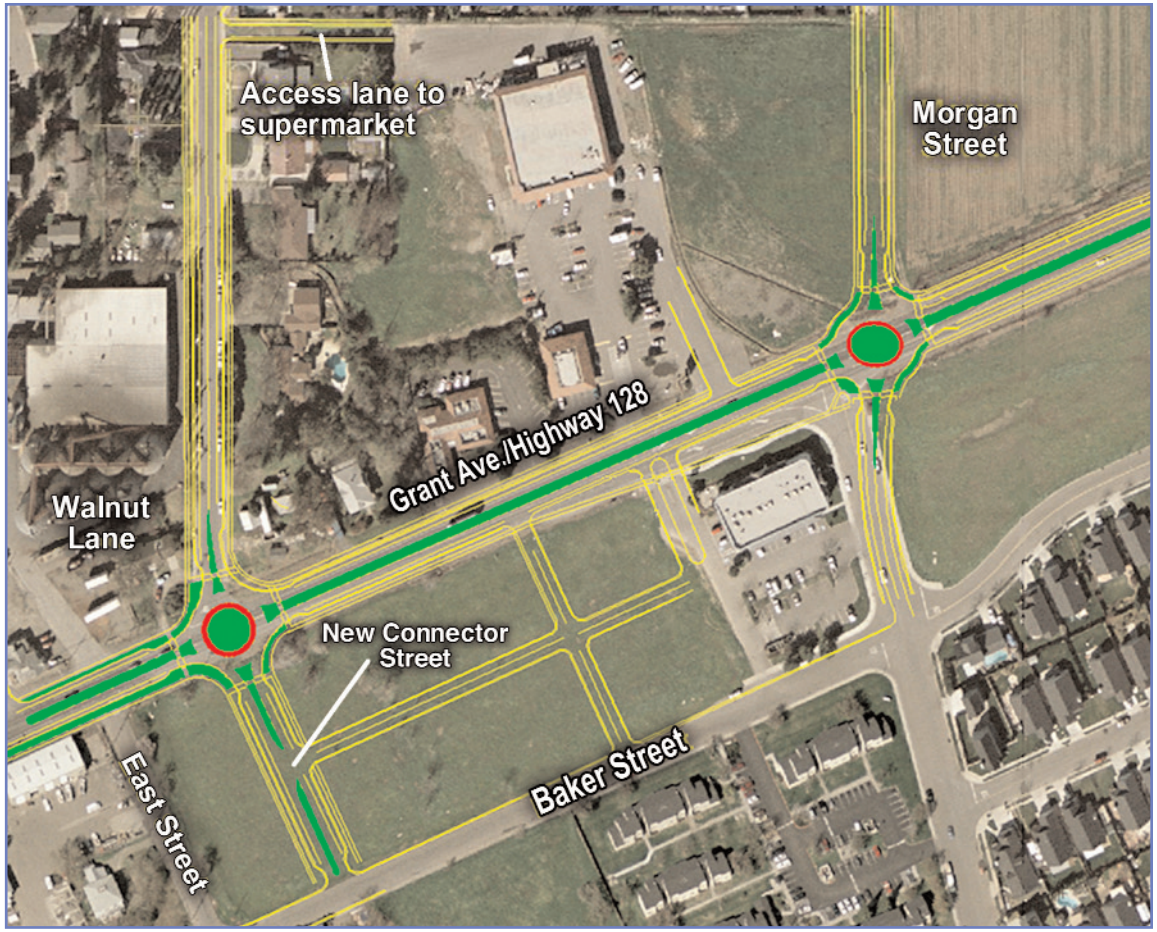
Many participants in the charrette were concerned with the high speeds and lack of pedestrian crossings along the eastern portion of Grant Ave. If residents would like this to be a walkable and vibrant commercial corridor, the following recommendations will help improve traffic flow, provide vehicle and pedestrian access to support new development and increase the overall safety of Grant Ave.

Grant Avenue at Walnut Lane

Walnut Lane is a great location for a roundabout that would reduce crashes and also provide the developer on the southeast corner of the intersection with a gateway to any new development on that site. The new retail project could have a driveway on the roundabout and would provide better access than a signalized intersection.

A new connector street would need to be built between the roundabout on Grant Ave. and Baker St. This connector will provide access to any new development in this area. New streets in this development should follow the traditional grid-pattern.

On Walnut Lane, a new connector street should be built just north of the Town and Country Supermarket to provide greater access to this location.



Concept for Walnut Lane and Morgan St. roundabouts on Grant Ave. with a suggested street layout for the development area in between.

Grant Avenue at Morgan Street

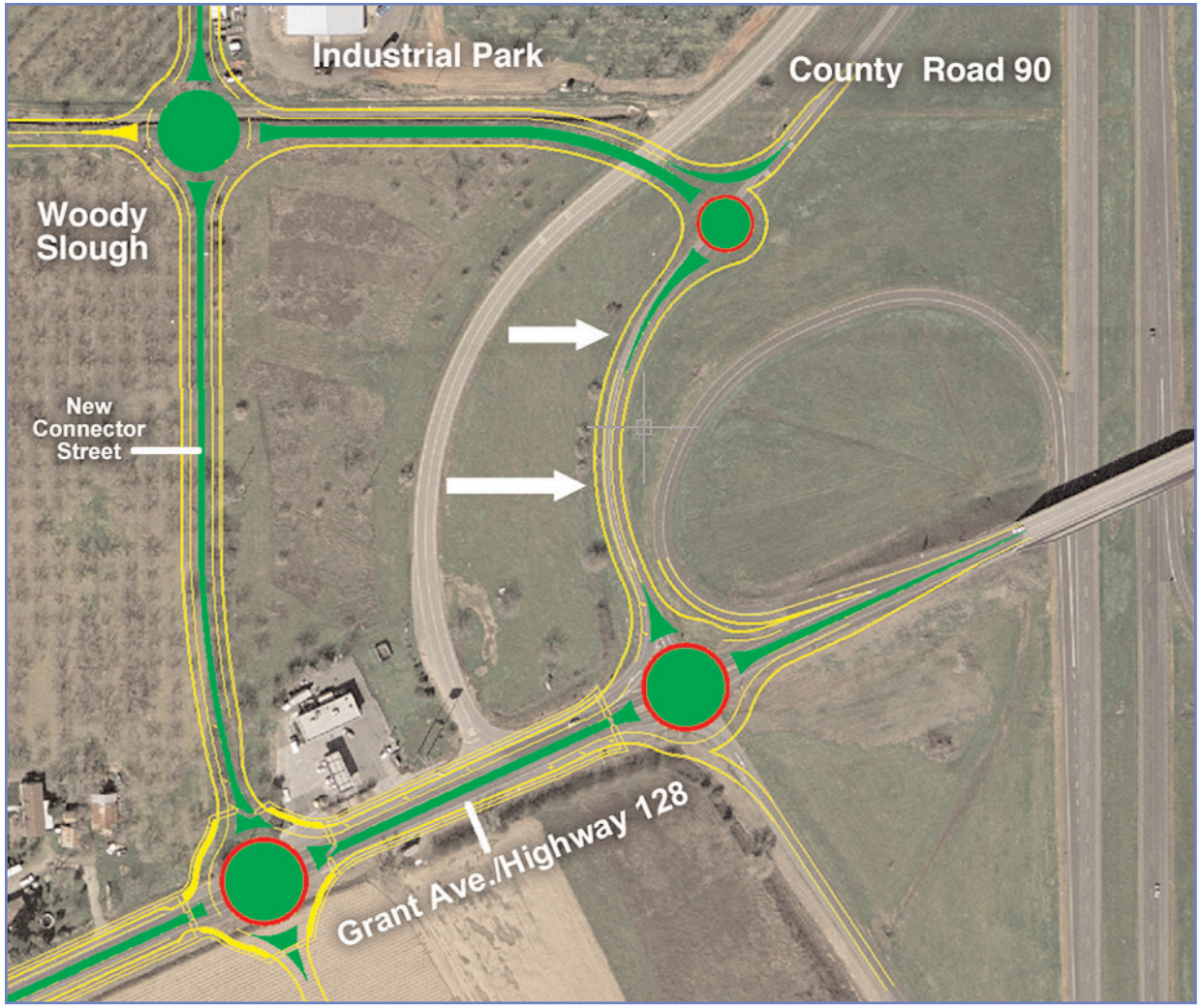
Morgan St. is another good location for a roundabout if cross-city movement is to be encouraged. Currently, there is no crosswalk at this intersection and pedestrians must cross 40 feet at a location where vehicles travel at high speeds. A roundabout will help pedestrians cross Grant Ave. by reducing the crossing distances to 12-14 feet while lowering vehicle speeds.

Morgan St. should also be extended north to connect with Colby and Broadview Lanes. This street would also need to be modified to provide a better angle into the roundabout on Grant Ave. (See photo on previous page)

Grant Ave. at East Main St.

A roundabout is recommended at the intersection of East Main St. on Grant Ave. to improve the flow of commuter traffic for residences on East Main St. and to the west. The concept to the right contains medians on Grant Ave. and the current East Main St., a median island on the new north extension, curb extensions, high-visibility crosswalks and right-turn lanes to separate right-turn movements on Grant Ave.

Before and after photos of potential roundabout at Morgan St (top). Concept for potential roundabout at intersection of Grant Ave. and East Main St (bottom).



The Grant Avenue and I-505 interchange, showing new concept for access to the future industrial area north of Moody Slough and the alternate route to Grant.

I-505 and Country Road 90

A roundabout near the I-505 freeway interchange could provide a gateway to Winters and help slow traffic coming down from the overpass. This option shifts County Road 90 to the east to avoid having two intersections so close together. The relocation of County Road 90 near the freeway ramp exit would make it possible to install a roundabout as the gateway to the industrial area.

This road network is also designed to keep trucks away from residential areas. Shifting County Road 90 would also open up additional land for development.

East Grant Avenue as a Gateway

According to the Winters Design Guidelines (2002) Grant Ave. from Interstate 505 to Railroad Ave. is envisioned as the gateway to Winters and should "provide a bold statement of community character while providing for unrestricted access to through traffic."

New mixed use development along this portion of Grant Ave. can act as a gateway to welcome visitors to Winters and signal that they are entering an urban environment. A goal should be to establish a pedestrian-friendly design along this portion of Grant Ave.

As called for in the Winters Design Guidelines, sidewalks should be consistent along this corridor so that businesses are not separated from the pedestrian environment. The streetscape design should also include the installation of pedestrian-scale lighting throughout the corridor to create a sense of security and to enhance pedestrian safety while crossing streets.

Traffic flow and safety along this corridor can be improved with the use of roundabouts at key intersections (previous pages), and the redirection of traffic patterns with medians and left-turn pockets as needed.

Current commercial development at Grant Ave. and Baker St. (top) is setback from the property line, but does not provide pedestrian access on Grant Ave.

The example of mixed use development in the bottom photo has a pedestrian-oriented focus, with seating and on-street parking to create a public space.

The streetscape in front of this business on Grant Ave. near Walnut Lane (top) is currently unattractive and does not provide safe pedestrian access. As the after photo shows, there is sufficient room to allow for on-street parking, a landscaped planter strip, sidewalk and driveway access to the business.

Other Selected Streets

Valley Oak Drive

One technique for lowering speeds on Valley Oak Dr. and other collector and arterial streets without reducing the operational space for motor vehicles is to mark the travel lane at 10 feet with 8-inch lines for the bicycle lane to make the roadway feel narrower. For additional enhancement, colorize the bicycle lane.

Main Street

Portions of Main St. are very wide, leading to faster speeds. To reduce the speeds on wide sections, well-marked parking and colorized bicycle lanes should be added to the street. Omitting the center stripe helps to reduce speeds by creating the sense of a smaller street.

Main Street East

Main Street East is a good location to promote lower speeds, cross city movements, and pedestrian movements. Since this street passes a park, the recommended enhancements would improve the safety for children and other users of the park.

The design team recommended the following short-term recommendations for treatments at intersections along Main Street East:

- ➢ Add pedestrian crossing islands.
- ➢ Repaint the crosswalks with higher-visibility, ladder style markings.
- ➢ Add curb extensions to reduce pedestrian crossing distances and shelter parked cars.

Valley Oak Drive (top); Main Street (middle); and Main Street east (bottom)

Putah Creek Bridge

Participants expressed an interest in slowing traffic coming off of the Putah Creek Bridge. The installation of a roundabout on the north side of the bridge (top right) would provide visual cues to drivers that they are entering an urban environment, and that they should lower their speed. A roundabout in this location could also serve as a gateway to Winters. A gateway monument or sign could be placed in the center of the roundabout as proposed in the new design for Putah Creek Bridge (Macdonald Architects, 2006).

Installation of a roundabout would require using portions of the adjacent properties. While the City owns the property on the east side near the Community Center, the City would need to work with other property owners adjacent to the proposed roundabout.

A second roundabout could be installed at the south end of the bridge (bottom right). A roundabout in this location would help slow traffic crossing the bridge before reaching the pedestrian area downtown.

Concepts for roundabouts on north (top) and south (bottom) ends of the Putah Creek Bridge.

Implementation

Winters can choose a number of strategies for implementing report recommendations and applying the principles to areas outside those emphasized in the study. One sound approach is to start with the easiest improvements, and work up to more complicated and costly investments.

Once the concept is endorsed, existing programs can easily phase in general recommendations as part of on-going projects. For example, street maintenance projects provide an opportunity to use enhanced, high-contrast markings. Normal maintenance cycles for re-striping lane markings or resurfacing the street provide opportunities for implementing lane diets and intersection improvements.

Funding opportunities

A number of funding sources could help implement report recommendations. They offer alternatives for street design, community facilities, and other infrastructure. Some sources for funding are:

- City road maintenance and construction funds
- Development fees
- Special districts
- SACOG Community Design Grants
- Community Development Block Grants (CDBG)
- California Trade and Commerce Agency
- Proposition 12 Tree Planting Grant Program
- Volunteer initiatives and private donations
- State and federal transportation funds

City road maintenance and construction funds

Winters can add striping, traffic calming, sidewalks, curbs and similar elements to other projects that already involve digging up or rebuilding street sections in the downtown area. For example, storm drain and sewer improvements, utility undergrounding projects, and routine street resurfacing are all possibilities.

The greater the extent of the reconstruction, the greater the opportunity for adding elements such as bulbouts, medians and roundabouts at a fraction of the cost of a stand-alone project. Also, communities avoid the disruption, noise and expense of repeatedly digging up a street and detouring traffic.

Such combination projects will require coordination between departments and capital improvement projects whose schedules and budgets are often separate.

Many cities have incorporated traffic calming into street reconstruction projects. In Venice, FL, for example, officials added $80,000 to a previously planned Main Street resurfacing project that provided for intersection bulb-outs, mid-block bulb-outs, median crossings, and crosswalks of colorful paver stones.

In Fort Pierce, FL, three blocks of new sidewalks together with a new roundabout were added to a long-planned sewer project. Sidewalks and roundabout built at the same time were added for only $15,000.

Seattle has added planted medians to several streets at reduced cost as part of sewer upgrade projects. County transportation sales tax measures can provide substantial funding for city street maintenance and rehabilitation.

Development fees

Some cities require developers to install or help pay for infrastructure improvements (streets, sidewalks, trails, landscaping, etc.) through individual development agreements. On a larger scale, Winters could explore using development fees with a capital improvements program to help fund recommendations.

Special districts

Special districts can provide up-front and on-going funding for projects benefiting the downtown area. For example, a Business Improvement District could be created to fund improvements, such as signage, landscaping, clean up, and marketing and promotion activities. Landscaping and lighting districts are sometimes established for streetscape improvements and maintenance.

Other types of facilities and infrastructure districts are sometimes created for parks, drainage and sewage. Special districts generally assess a charge levied upon parcels of real property within the district's boundaries

to pay for "local improvements." Unlike redevelopment, to fund such a district it is necessary to charge an assessment or fee to property owners and/or merchants.

Sacramento Area Council of Governments (SACOG) Community Design Grants

The SACOG Community Design Funding Program provides grants to local government agencies and their partners to support planning and capital improvements that support the SACOG's Blueprint Principles. The intent of the Community Design Program is to use regional transportation funding to promote the construction of projects that lead to fewer vehicles miles traveled and more walking, biking, and transit usage.

The program funds projects approximately every two years. Notification for a request for applications will be sent to eligible SACOG member and partner agencies in 2007 or 2008. For more information: www.sacog.org/regionalfunding/fundingprograms_commdesign.cfm

Community Development Block Grants (CDBG)

Under the State Small Cities Community Development Block Grant (CDBG) Program, cities and counties may seek funding for a broad range of activities ranging from establishment and operation of revolving loan funds and construction of infrastructure improvements to construction of new housing and community facilities.

Applicants may also seek funding for planning studies and writing grant applications relating to these activities. Funding programs under the CDBG Economic Development Allocation include the Economic Enterprise Fund for small business loans, Over-the-Counter Grants for public infrastructure associated with private-sector job creation, and Planning and Technical Assistance Grants.

Applications under the Economic Development Allocation will require a job creation/retention component. Potential projects include street and traffic improvements, water system expansion and improvements, and sewer system expansion and improvements. For more information: www.hcd.ca.gov/ca

California Trade and Commerce Agency

The TCA administers a revolving fund program for local governments to finance infrastructure improvements, including city streets. This is a loan program for which the City can apply and receive funding from $250,000 to $10 million with terms of up to 30 years for a broad range of projects. For more information: commerce.ca.gov/state/ttca/ttca_homepage.jsp

Proposition 12 Tree Planting Grant Program

This California Department of Urban Forestry program provides over $1 million per year in grants to cities, counties, districts and non-profit organizations for planting and three years of maintenance of trees in urban public settings.

The maximum award is $25,000 for a "small population community" and $50,000 for "regular Proposition 12 applicants." For more information: www.ufei.org/files/grantinfo/Prop12Planting-Grants.html For other possible funding sources for downtown trees: www.californiareleaf.org/grants_guide.html

Volunteer initiatives and private donations

In addition to funding sources, programs can be created for volunteer initiatives such as "Adopt-a" programs where individuals or groups engage in beautification projects such as tree plantings. A program can also fund some projects, such as public art, by enlisting private donors to sponsor downtown enhancement activities. These programs can be administered by the City or by other community organizations.

State and federal transportation funds

Major state and federal transportation funding resources are outlined below. For more information on these funding programs, visit Caltrans' Division of Local Assistance website: www.dot.ca.gov/hq/LocalPrograms

State Transportation Improvement Program (STIP)

Funded at $8.3 billion over 1999-2005, this program represents the lion's share of California's state and federal transportation dollars. Three-quarters of the program's funds was earmarked for improvements determined by locally adopted priorities contained in Regional

Transportation Improvement Programs (RTIP), submitted by regional transportation planning agencies from around the state.

STIP funds can be used for a wide variety of projects, including road rehabilitation, road capacity, intersections, bicycle and pedestrian facilities, public transit, passenger rail and other projects that enhance the region's transportation infrastructure.

The 2004 STIP was adopted by the California Transportation Commission, the body that ultimately programs projects by adopting the STIP, on August 5, 2004.

Transportation Enhancement Activities

Federal Transportation Enhancement funds are for construction projects that are "over and above" normal types of transportation projects. These projects may include street trees and landscaping along roadways, pedestrian and bicycle access improvements and other scenic beautification. These are apportioned throughout the county.

Hazard Elimination Safety Program (HES)

The Hazard Elimination Safety Program is a federal safety program that provides funds for safety improvements on all public roads and highways. These funds serve to eliminate or reduce the number and/or severity of traffic accidents at locations selected for improvement. Some of the street design elements recommended may be eligible for funding if the site selected is considered a high hazard location. Caltrans solicits applications for projects. Any local agency may apply for these safety funds.

Safe Routes to School

Caltrans administers state and federally funded programs to improve walking and bicycling conditions in and around schools. Projects for federal funding must fall under infrastructure (capital) or non-infrastructure (education and encouragement) categories.

A standardized statewide SRTS training program with promotional materials and school resources will be developed to help communities implement programs.

The program seeks to fund projects that incorporate engineering, education, enforcement, encouragement and evaluation components. The City of Winters currently has some SRTS funding that can be applied.

For more information: www.dot.ca.gov/hq/LocalPrograms/saferoute2.htm

Bicycle Transportation Account (BTA)

This state fund, administered by the Caltrans Bicycle Facilities Unit, can be used to aid cyclists, by including median crossings, bicycle/pedestrian signals and bike lanes. After 2005-06, annual BTA funding will be $5 million.

To be eligible for BTA funds, a city or county must prepare and adopt a Bicycle Transportation Plan. Adoption of a plan establishes eligibility for five consecutive funding cycles.

Transportation Development Act (TDA)

TDA provides for two sources of funding: Local Transportation Funds (LTF) and State Transit Assistance (STA). The TDA funds a wide variety of transportation programs, including planning and program activities, pedestrian and bicycle facilities, community transit services, public transportation, and bus and rail projects.

Providing certain conditions are met, counties with a population under 500,000 (according to the 1970 U.S. Census) may also use the LTF for local streets and roads, construction and maintenance. The STA fund can only be used for transportation planning and mass transportation purposes. Yolo County Transportation District (YCTD) will administer around $9.5 million in TDA apportionments for Yolo County (State Fiscal Year 2006/2007).

California State Parks Recreational Trails Program (RTP)

The Recreational Trails Program provides funds annually for recreational trails and trails-related projects. The program provides funding for acquisition of easements and fee simple title to property for recreational trails, development of trailside and trailhead facilities, and construction of trails.

The maximum amount of RTP funds allowed for each project is 88% of the total project cost. The applicant is responsible for obtaining a match amount that is at least 12% of the total project cost. The grant cycle ends in early October of each year. For more information: www.parks.ca.gov

Appendices

Appendix A: General Street and Walkability Concepts – Principles and Practices

Healthy Streets

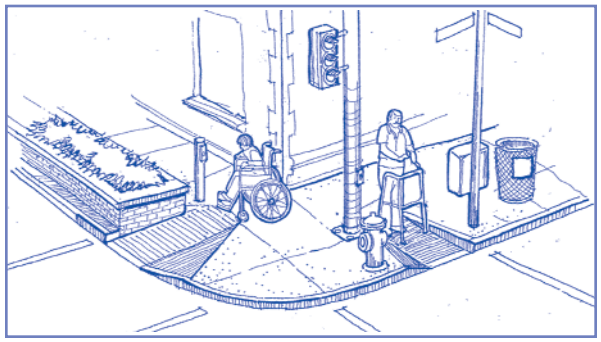
A healthy street is one that works for everyone using the street. It is of a size and scale that vehicular traffic can move efficiently and steadily, typically under 35 mph. It is attractive, a place where people enjoy traveling by car, by foot, transit and by bicycle.

How can streets be designed for everyone?

Healthy streets are designed to provide mobility and access for all people, whether inside a vehicle or using other modes of transportation. Street designs should meet the needs of all pedestrians, including those with visual impairments or mobility restrictions.

How fast is too fast?

Speeds over 30-35 mph do not serve the goals of creating more walkable and bicycle-friendly communities, nor do they increase capacity on urban streets.



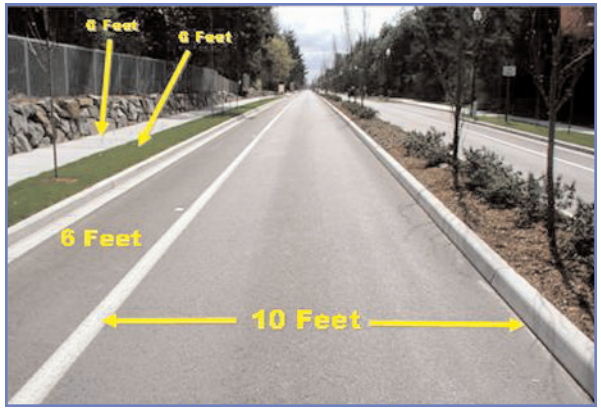
Many factors influence a driver's selection of travel speed. For example, the width and length of streets affect drivers' sense of what is an appropriate speed for the environment. The number of people visible, amount of landscaping, weather conditions, number of parked cars, and many other factors are quickly processed by drivers' minds to select travel speed. Drivers' temperament, trip purpose and time schedule are other considerations. The result is that many drivers do not adhere to posted speed limits, but drive according to comfort levels set for them by designers.

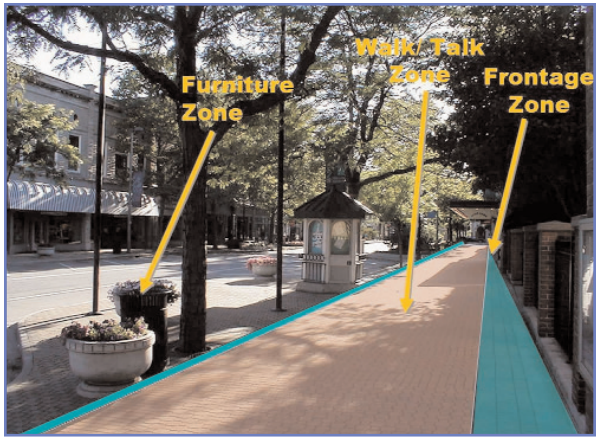
Barren, scary streets generally produce higher speeds. The city of Winters, unfortunately, has some stark streets, void of trees, with far too much concrete and asphalt, and other features that encourage speeding.

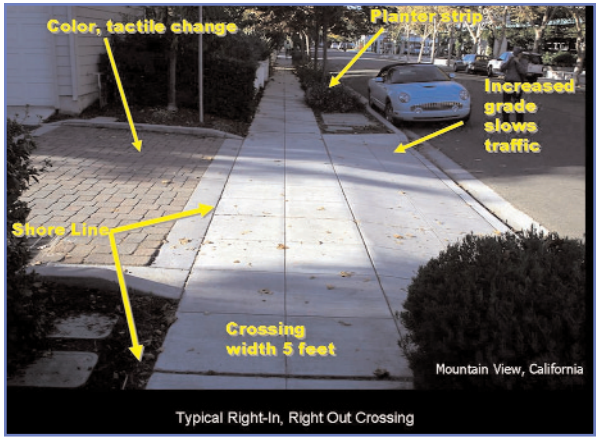
How much space do vehicles need?

The American Association of State Highway Transportation Officials (AASHTO) publishes the Policy on the Geometric Design of Streets and Highways (Green Book). This book provides guidelines for designing streets and highways of all sizes. Unfortunately, these guidelines are often weak on issues associated with village centers and main streets.

Our recommendation is for vehicle travel lanes throughout Winters to be 10 feet wide, unless extra width is needed to accommodate buses, trucks and other larger vehicles. Where 6-foot bike lanes are provided, the effective operational width of a 10-foot wide travel lane is 16 feet, which facilitates turning movements for large vehicles.







Right- and left-turn lanes have been provided at many intersections. These lanes add considerable distance to pedestrian crossings. An assessment should be conducted to determine if these lanes can be removed at some locations to facilitate pedestrian movements.

How can bicyclists share streets?

By reducing vehicle lane width, space within the street can be designated for bicyclists. Designated on-street bike lanes are recommended on every collector and arterial street where there is adequate space, and where running speeds are 25 mph or higher.

Bike lanes have benefits in addition to providing space for bicyclists. They provide buffers between traffic and sidewalks, increase driver sight-distance, provide forgiveness for errant drivers, allow easier entry and exit from parking spaces, create temporary storage areas for cars while emergency responders go by and provide many other benefits.

How can walking routes be improved?

All streets in urban neighborhoods in Winters should have sidewalks on both sides and be designed using the sidewalk zoning method (see middle photo above). In addition to providing a basic transportation route, sidewalks offer the opportunity to create safe, appealing public spaces that reflect community pride and invite people to walk. A furniture zone provides space for landscaping, hydrants, transit stops, bike racks and benches so that walkways remain unobstructed.

Walkways, including trails, links and passageways, are also key pedestrian facilities. Sidewalks and walkways should create a continuous, connected network similar to the street system provided for motorized traffic.

How do driveways impact pedestrians?

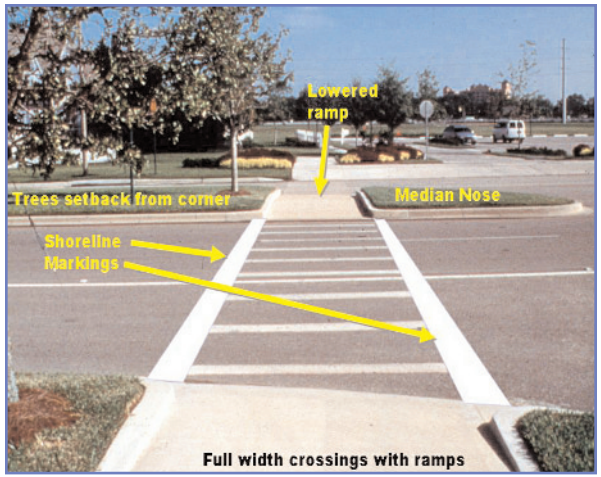
Driveways, like side streets, expose pedestrians to turning vehicles. Although drivers need access to properties, consolidating driveways and keeping them as small as possible makes the walkway more practical. Sloped driveways are problematic for people using wheelchairs or walkers.

Medians and Turning Pockets

One method for reducing the frequency of turning movements that cross pedestrian travel routes is to provide raised medians.

Medians provide essential buffers between opposing lanes of traffic and can increase carrying capacity of individual lanes by 30%, by restricting crossover traffic and lane stoppages at turning points. Left-turn pockets are provided in the median at major turning points.

Medians also provide pedestrians with a place to wait for a crossing opportunity between travel lanes. They allow space for street beautification and gateway treatments and help eliminate aggressive behaviors such as inappropriate passing.



How important are trees?

Trees beautify areas, provide shade, and help cool spaces. Trees can be planted so as to create a sense of enclosure that contributes to slower traffic speeds. In a survey of one community, 74% of the public preferred to shop in establishments whose structures and parking lots are beautified with trees and other landscaping (Center for Urban Horticulture).

How can parking needs be met?

On-street parking provides convenient auto access to streetside businesses. It also provides a buffer between pedestrians and moving traffic. On-street parking takes up only one-third of the space of off-street parking, adding to essential village density.

The provision of bulbouts ensures visibility between drivers and people waiting to cross streets who might otherwise be screened by parked cars.

Bike lanes need to be wide enough that opening car doors do not endanger passing bicyclists (generally 6 feet next to 7-foot parking bays).

Healthy Crossings

At all intersections, pedestrians need the shortest possible crossing distances, curb ramps to facilitate use of wheelchairs or canes, detectable warning strips for people with visual impairments, and adequate time to cross the street without conflicting with traffic. Medians can be used in large intersections to limit the amount of time pedestrians are exposed to traffic and allow them a refuge before completing their crossing.

Pedestrian signals

The signaled intersection in Winters should be evaluated to ensure that a minimum of 7 seconds is allowed for a pedestrian to cross the street or cross against the light. This segment of the signal phase – referred to as the walk interval – is the only time a pedestrian can begin the journey across the street.

In town and neighborhood centers, a pedestrian walk interval should be provided whether or not a pedestrian pushes a button. In some remote locations, and on some mid-block signalized crossings, pedestrians are required to push the button for activation, but it must respond to their call quickly. When push buttons do not respond quickly pedestrians often seek other places to cross the street.

In locations where push buttons are provided, the button should give tactile and audible information for people who have physical disabilities.

Crosswalk markings

Ladder-style markings are recommended for all collectors and arterial roadways. The higher the speed and volume the more visible markings need to be. Marked crosswalks on major roadways should be 12 feet wide or wider. Proper widths allow pedestrians from opposing directions to enter, pass one another and get out of the street in the most efficient manner.

Curb extensions

Curb extensions, also referred to as bulbouts or bump-outs, narrow the street by extending the curb into the parking lane, shoulder area, or curb lane. They can be used at intersections or along streets where there is on-street parking. They help to slow down vehicles making right turns.

Should pedestrians always cross at intersections?

No. Pedestrians need crossing opportunities that are convenient to their destinations. Intersections may serve this purpose, but there are also times when a crossing between intersections works better. These are called mid-block crossings.

Mid-block crossing islands

Placing a raised island between travel lanes where mid-block crossings are used allows pedestrians to cross one-half of the street, then wait for an opportunity to complete

their journey. The crossing area in the island can be angled to encourage pedestrians to look at oncoming traffic before proceeding.

Pedestrian Linkages

Linkages are alleys, walkways, corridors and shared-use paths or trails that connect pedestrian facilities.

Why are linkages important?

Linkages increase pedestrian convenience by providing "short cuts" to destinations. Linkages often provide travel routes that are more appealing than walking next to traffic.

Bicycle Facilities

Providing good facilities for bicyclists helps all users of the street system, not only bicyclists. (For 22 benefits of bicycle lanes: www.walkable.org/download/shoulder.doc)

Bike lane markings

Bike lane markings should be highly visible. An 8-inch wide stripe is recommended. Details for markings through intersections and other locations are identified in Part Nine of the Manual on Uniform Traffic Control Devices (mutcd.fhwa.dot.gov).

Bike parking

Bike parking should be provided on all destination blocks, all parking garages, and by employers of 10 or more employees. High security bike parking should be provided at all new parking garages, and retrofitted into existing garages.

Curb extensions come in a variety of designs...

Bulbouts/Curb Extensions

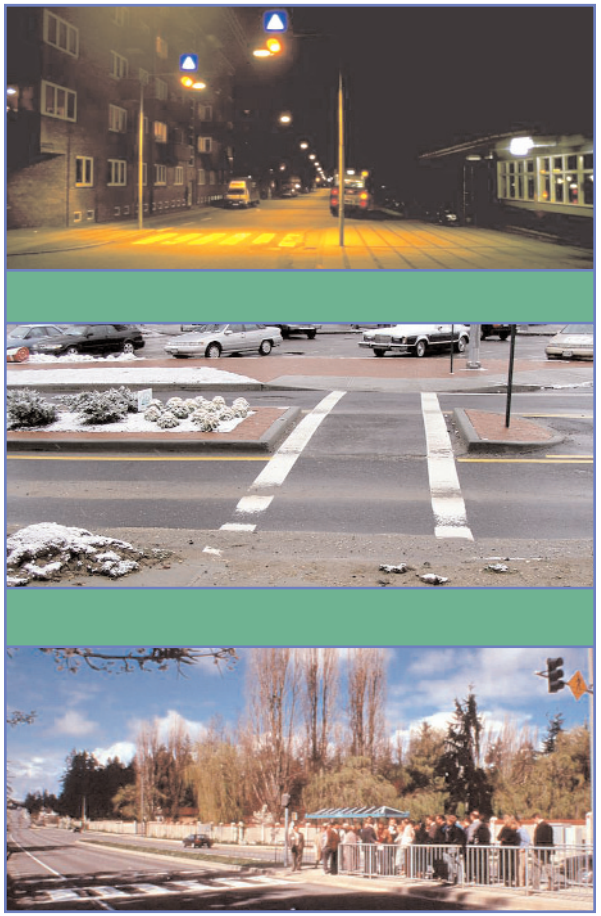
Bulbouts at one-way street locations can often be narrowed to as little as 14 feet. Speeds and directional movements are controlled, pedestrian crossings are reduced, and all movements become more efficient. This treatment is directly across from a wide, less attractive one-way street where the treatment has not been applied.

Bulbouts reduce nonessential street space. By using a variety of colors, textures, materials, lighting and street furniture, streets can be made both more functional and attractive.

Variety of designs

Curb extensions or bulbouts help channel and focus pedestrians and motorists. Downtown and school areas especially benefit from well designed, well placed bulbouts. Bulbouts are now accepted on major arterial roadways, as well as much smaller collector roadways.

Streetscapes without bulbouts (top) and with bulbouts (above)



High-emphasis markings

Properly marked and signed crossings, matched with appropriate speed geometric designs lead to higher levels of motorist courtesy toward pedestrians. Large cities like Seattle (top left) have learned that one-half of all pedestrian fatalities occur while people are at or near transit stops and stations.

The crossing in Fargo, ND (top right), was built after putting the four-lane street on a road diet, reducing the number of lanes from four to three. Many cities choose to have lights flash only when pedestrians are present. In this way, motorist-yielding behavior can be very high, even on busy roadways.

Ladder-style crossings (three photos at left) help older adults and others with visual acuity issues establish a shoreline, aiding them in direct curb-to-curb travel. Ladder-style markings should be emphasized for crossings of all collectors and arterials. When not placed at signalized intersections these markings also require standard (MUTCD) pedestrian-crossing signs. Good lighting is essential.

Multi-lane roadways require more than just crosswalks.

Research conducted by the Federal Highway Administration found no increase in pedestrian crashes, nor severity of crashes, in marked crosswalks versus unmarked crossings on two-lane roads.

On multiple lane roadways, however, crossings with just markings and signs have increased crash levels. For this reason, the study recommends that crossings on multi-lane roadways, at mid-block and un-signalized intersection locations, have added features, such as yield lines placed back 40-60 feet (see photo below), crossing islands and in some cases, half-signals. (FHWA-RD-01-142, Safety Effects of Marked vs. Unmarked Crosswalks, May 2001, Charles Zegeer, et al.)

Multi-lane crossings work best with center median islands. This allows pedestrians to clear the street in under 8 seconds. If islands are thin and gaps are few, signals may be needed. The median below includes a fence that requires pedestrians to walk toward oncoming traffic before crossing the road.

Birmingham, MI, uses quality materials to screen parking lots and create attractive street furniture.

Trees and Street Furniture

Street furniture lights our way and provides navigational aid and information. It can also help create a sense of place. Street lamps need to be placed where light diffuses well onto walkways, between and often under trees.

Properly located street trees are not frills, fluff nor safety hazards. Instead, they are aids in traffic calming, a means of purifying air and a cooling mechanism.

Winters should add urban street trees on all significant corridors. Trees should be set back four feet from travel lanes. Use of bike lanes creates more border width, allowing closer spacing. Minimum setback of all street furniture should be 18-24 inches. Trees are normally spaced 30-50 feet apart. In urban walkways, trees often require specially prepared tree wells.

Variety of designs

Street furniture can be unique to each site. Winters should take unattractive features (trash bins, dumpsters, newspaper racks) and convert them into visual sources of pride.

Contests should be held to award prizes to businesses or residents that contribute the best new bench, light, sign or other street feature.

Alleys and passageways

Paseos, Connectivity, Links

Mobility and access in a community are not only about streets and roads. Many cities across the U.S. are learning to use paseos, trails and other connectors to improve access to schools, services and businesses for their residents.

Alleys into passageways

Parking to the rear of buildings needs to be easily accessed. If stores do not face into these spaces a careful dedication of landscape materials, lighting and other features will make these corridors comfortable for travel.

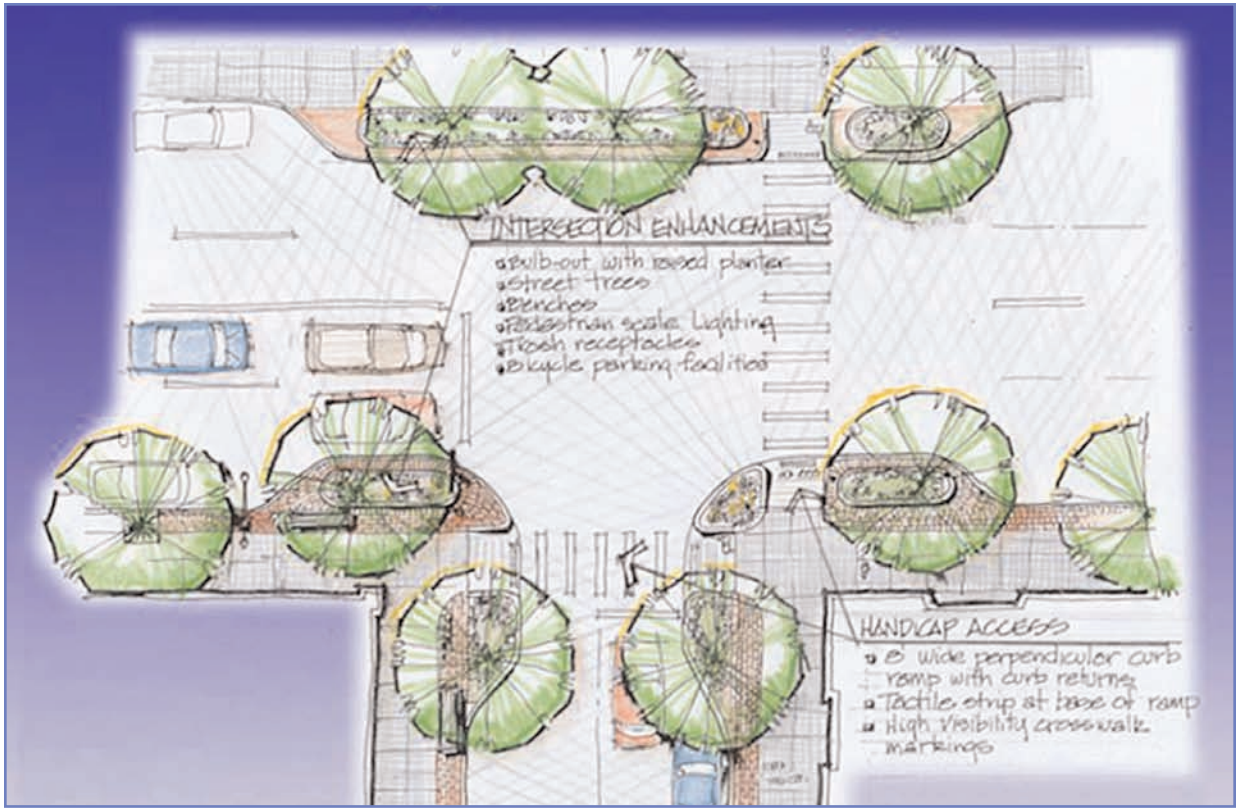
Eyes on connectors

Buildings should be constructed to provide supervision over converted alleys or new travel corridors. The historic retrofit (right top) and new shopping center (right bottom) show two ways of achieving high levels of comfort and safety when using these connectors.

New pedestrian links are needed

Like many communities, Winters has many long blocks and other land areas where new links will need to be provided. Ideally, pedestrians are provided links between parallel blocks every 300-500 feet. The examples above feature ways to arrange these buildings and physical spaces.

These spaces need to have ample (but not too much) width, many eyes facing into the spaces, effective use of landscaping to increase safety, and other features that draw people to them many hours of the day and night.



An example set of ramps at a T-intersection (below)

Effective use of contrasting materials and flat walkway at top of drive (below)

ADA – Universal Design

When push buttons are used, they should have large buttons, an arrow helping orient people to the direction of travel and an indicator button acknowledging the call has been received.

Barrier free and easy guidance

People with visual and motor skill disabilities need well-constructed sidewalk and crossing systems with no barriers. Although easy to address in well thought out new construction, it is harder to do in older urban areas. The diagram (left) illustrates proper width, orientation and a reasonable crossing even though the crosswalk marking was overlooked.

New national rules for public rights-of-way, currently under consideration by the Access Board, offer guidance on minimum design standards (online at www.accessboard.gov/indexes/accessindex.htm). In the interim, an excellent guide for accessible design is the Federal Highway Administration's "Designing Sidewalks and Trails for Access."

Security through Design

Well-behaved buildings

In each of the four sets of images here, note which are friendlier to pedestrians. People learn to avoid those places that have poor building environments.

Well-behaved buildings provide: (1) many distinctive visual qualities, (2) many windows and doors facing the street, (3) proximity to the street, (4) landscaping as well as other features that add color, pride, custodianship and ownership to spaces.

Multi-family housing before and after. (simulation by Steve Price, Urban Advantage)

Top pair: Division Avenue and Fulton Street, Grand Rapids, MI. (photos: Ramon Trias)

Fences, Fencing, Walls

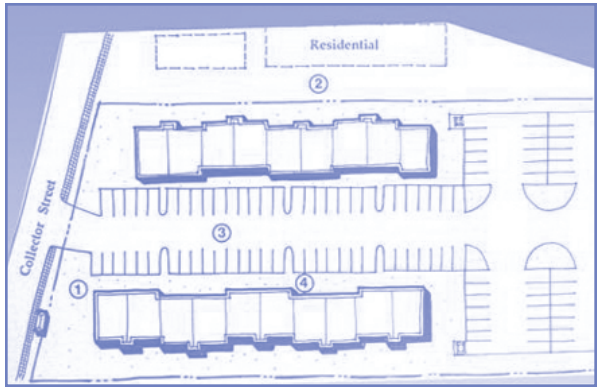
Walls or fences screening buildings from the street (top pair) create security problems for people walking along a street and property owners.

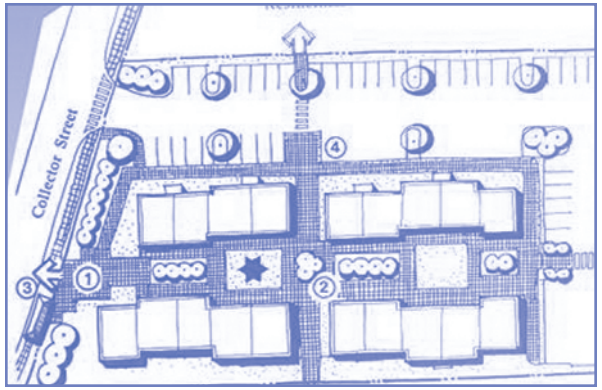
Transparent, low fencing (middle pair, bottom left) is attractive and allows people passing by to detect anything going wrong, as well as those inside to watch over the street.

An example of a limited, acceptable property fence (bottom right). Eyes are still on the street. This pattern would not work if two adjacent alley properties both had visual barriers.

Eyes on Space, Not Walls

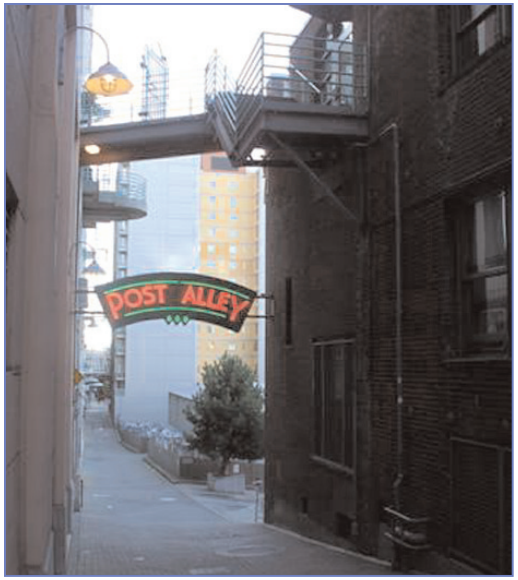
Law enforcement officers are quick to point out that tall fences do not make good neighbors. Despite lingering myths that walls and buffers add to security, they do not. Instead they simply make possible more illegal and hidden activity. Winters' public and private lands should be built to allow maximum viewing of outdoor spaces.





The two plan views above show how design can improve safety. Both have the same amount of housing and parking but the plan on the right clearly defines private and public spaces and creates a central gathering place.

Multi-family housing units above have similar densities. The one on the left invites people to take part in activities in the central court. The one on the right discourages residents from interacting.



Alleys

A master plan needs to be developed to provide guidance on how to improve all alleys and alleyways. All alleys should be attractive and inviting, with significant movement and uses up and down them.

Alleys need to be clean, attractive and tidy. There should be no offensive odors or leakage from dumpsters.

Common dumpster storage areas should be created, minimizing the number and location of dumpsters.

Openings from alleys to streets (bottom left pair) should be clean and attractive.

Pedestrians should have dominant movement along streets, with minimal intrusion by entering and exiting vehicles.

Parking Issues and Opportunities

Off-street parking

Over time, well-planned cities are able to coordinate parking in central locations. Instead of requiring each business to have its own parking, the town or city works with businesses to make available more on-street parking and establish municipal lots.

If activity levels are high enough, parking garages are built and located where they do the least harm to downtown traffic patterns.

Off-street parking must be attractive, safe and friendly to pedestrian environments.

Many new large buildings fully incorporate parking needs in their structure and are encouraged to lease and market parking to the public and others.

Angled parking

Angled parking can add from 30-100% more parking to a street. There are many benefits of angled parking, including its effect on traffic calming. Seattle, WA, Arlington, VA, Washington, DC, and other cities are adding back-in angled parking to their streets to make it easier to park and especially to exit.

Other benefits include greater safety for motorists and bicyclists as vehicles exit, easier loading of trunks and passengers (especially children), and less room taken up in the street.

Parking should be a planned resource.

Parking availability and location is a central element of a walkable community. Many communities are re-pricing their parking to reward those coming to town centers for events, shopping, business and short visits.

Meanwhile, longer-term parking for commute needs is priced at higher rates, making up the difference in garage income. This pricing concept is incorporated into efforts to provide improved, high performance transit service, downtown residential living and other strategies to improve the livability and performance of town centers.

Parking policies can help reduce auto dependence and increase incentives for those choosing to walk, ride bicycles or use transit.

Appendix B: Crosswalk Guidelines

Recommended guidelines for crosswalk installation

From FHWA, "Pedestrian Facilities Users Guide" (FHWA-RD-01-102):

Marked crosswalks serve two purposes: (1) they tell the pedestrian the best place to cross, and (2) they clarify that a legal crosswalk exists at a particular location.

Marked crosswalks are one tool to get pedestrians safely across the street. When considering marked crosswalks at uncontrolled locations, the question should not simply be: "Should I provide a marked crosswalk or not?" Instead, the question should be: "Is this an appropriate tool for getting pedestrians across the street?" Regardless of whether marked crosswalks are used, there remains the fundamental objective of getting pedestrians safely across the street.

In most cases, marked crosswalks are best used in combination with other treatments (e.g., curb extensions raised crossing islands, traffic signals, roadway narrowing, enhanced overhead lighting, traffic-calming measures, etc.). Think of marked crosswalks as one of a progression of design treatments. If one treatment does not adequately accomplish the task, then move on to the next one. The failure of one particular treatment is not a license to give up and do nothing. In all cases, the final design must address the goal of getting pedestrians across the road safely.

Marked pedestrian crosswalks may be used to delineate preferred pedestrian paths across roadways under the following conditions:

- At locations with stop signs or traffic signals. Vehicular traffic might block pedestrian traffic when stopping for a stop sign or red light; marking crosswalks may help to reduce this occurrence.
- At non-signalized street crossing locations in designated school zones. Use of adult crossing guards, school signs and markings, and/or traffic signals with pedestrian signals (when warranted) should be used in conjunction with the marked crosswalk, as needed.
- At non-signalized locations where engineering judgment dictates that the number of motor vehicle lanes, pedestrian exposure, average daily traffic (ADT), posted speed limit, and geometry of the location would make the use of specially designated crosswalks desirable for traffic/pedestrian safety and mobility. This must consider the conditions listed below.

Marked crosswalks alone are insufficient (i.e., without traffic-calming treatments, traffic signals and pedestrian signals when warranted, or other substantial crossing improvement) and should not be used under the following conditions:

- Where the speed limit exceeds 64.4 km/hr (40 mile/hr).
- On a roadway with four or more lanes without a raised median or crossing island that has (or will soon have) an ADT of 12,000 or greater.
- On a roadway with four or more lanes with a raised median or crossing island that has (or will soon have) an ADT of 15,000 or greater.

Street-crossing locations should be routinely reviewed to consider the following available options:

Option 1 – No special provisions needed.

Option 2 – Provide a marked crosswalk alone.

Option 3 – Install other crossing improvements (with or without a marked crosswalk) to reduce vehicle speeds, shorten crossing distances, increase the likelihood of motorists stopping and yielding, and/or other outcome.

The spacing of marked crosswalks should also be considered so that they are not placed too close together.

A more conservative use of crosswalks is generally preferred. Thus, it is recommended that in situations where marked crosswalks alone are acceptable that a higher priority be placed on their use at locations having a minimum of 20 pedestrian crossings per peak hour (or 15 or more elderly and/or child pedestrians per peak hour). In all cases, good engineering judgment must be applied.

Distance of marked crosswalks from signalized intersections

Marked crosswalks should not be installed in close proximity to traffic signals, since pedestrians should be encouraged to cross at the signal in most situations. The minimum distance from a signal for installing a marked crosswalk should be determined by local

traffic engineers based on pedestrian crossing demand, type of roadway, traffic volume and other factors.

The objective of adding a marked crosswalk is to channel pedestrians to safer crossing points. It should be understood, however, that pedestrian crossing behavior may be difficult to control merely by the addition of marked crosswalks. The new marked crosswalk should not unduly restrict platooned traffic, and should also be consistent with marked crosswalks at other unsignalized locations in the area.

Other treatments

In addition to installing marked crosswalks (or, in some cases, instead of installing marked crosswalks), there are other treatments that should be considered to provide safer and easier crossings for pedestrians at problem locations. Examples of these pedestrian improvements include:

- ➢ Providing raised medians (or raised crossing islands) on multi-lane roads.
- ➢ Installing traffic signals and pedestrian signals where warranted, and where serious pedestrian crossing problems exist.
- ➢ Reducing the exposure distance for pedestrians by:
  - Providing curb extensions.
  - Providing pedestrian islands.
  - Reducing four-lane undivided road sections to two through lanes with a left-turn bay (or a two-way left-turn lane), sidewalks, and bicycle lanes.
- ➢ When marked crosswalks are used on uncontrolled multi-lane roads, consideration should be given to installing advance stop lines as much as 9.1 m (30 ft) prior to the crosswalk (with a "Stop Here for Crosswalk" sign) in each direction to reduce the likelihood of a multiple-threat pedestrian collision.
- ➢ Bus stops should be located on the far side of uncontrolled marked crosswalks.
- ➢ Installing traffic-calming measures to slow vehicle speeds and/or reduce cut-through traffic. Such measures may include:
  - Raised crossings (raised crosswalks, raised intersections).
  - Street-narrowing measures (chicanes, slow points, "skinny street" designs).
  - Intersection designs (traffic mini-circles, diagonal diverters).
  - Others (see "ITE Traffic-Calming Guide" for more details) Some of these traffic-calming measures are better suited to local or neighborhood streets than to arterial streets.
- ➢ Providing adequate nighttime street lighting for pedestrians in areas with nighttime pedestrian activity where illumination is inadequate.
- ➢ Designing safer intersections and driveways for pedestrians (e.g., crossing islands, tighter turn radii), which take into consideration the needs of pedestrians.

These guidelines were developed in an FHWA report, "Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations" (FHWA-RD-01-142, May 2001. www.walkinginfo.org/rd/devices.htm).

In developing these proposed U.S. guidelines for marked crosswalks and other pedestrian measures, consideration was given not only to the research results in this study, but also to crosswalk guidelines and related pedestrian safety research in Australia, Canada, Germany, Great Britain, Hungary, The Netherlands, Norway, and Sweden. For more information about this research:

"Safety of Vulnerable Road Users, Organisation for Economic Co-operation and Development (OECD)," August 1998.

Ekman, L., "Pedestrian Safety in Sweden," Report No. FHWA-RD-99-091, FHWA, Washington, DC, Dec. 1999.

Hummel, T., "Dutch Pedestrian Safety Research Review," Report No. FHWA-RD-99-092, FHWA, Washington, DC, Dec. 1999.

"Pedestrian Safety: Analyses and Safety Measures," Danish Road Directorate, Division of Traffic Safety and Environment, Copenhagen, June 1998.

Van Houten, R., "Canadian Research on Pedestrian Safety," Report No. FHWA-RD-99-090, FHWA, Washington, DC, Dec. 1999.

Cairney, P., "Pedestrian Safety in Australia," Report No. FHWA-RD-99-093, FHWA, Washington, DC, Dec. 1999.

Davies, D., "Research, Development, and Implementation of Pedestrian Safety Facilities in the United Kingdom," Report No. FHWA-RD-99-089, FHWA, Washington, DC, Dec. 1999.

Appendix C: Expected Operation of Some Suggested Roundabouts

Appendix C provides a summary of the expected operation for several roundabouts along Grant Avenue.

Traffic volumes in this summary were taken from the Fehr and Peers draft report, "Grant Avenue Access Study" (January 2006).

Option IV was the option from which the traffic numbers were taken because this option was the most similar to the future option recommended in this report.

Under existing conditions, single-lane roundabouts would be expected to provide acceptable levels-of-service except at Railroad Avenue where extensive queues could be expected, and right turn lanes were added to the one-lane roundabout.

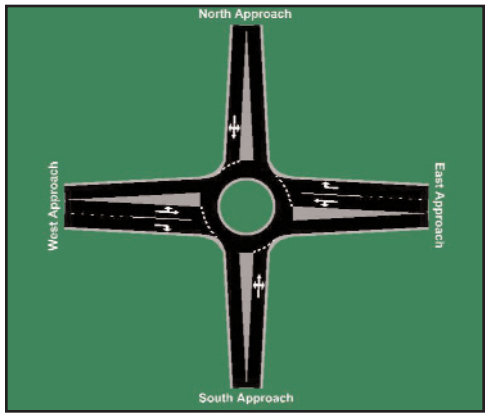
To provide similar operation with the predicted traffic volumes shown in Option IV additional lanes at several of the proposed roundabouts would be required as shown in the following pages.

In addition to minimizing the number of lanes along Grant Ave., a grid network of streets is essential. Such a network would distribute traffic throughout the city and avoid the need for many drivers to drive to Grant Ave., turn and travel along Grant Ave. and then turn off Grant Ave. and then repeat the process for the return journey. In doing so, an excessive number of trips is added to Grant Ave. needlessly increasing the need to widen Grant Ave.

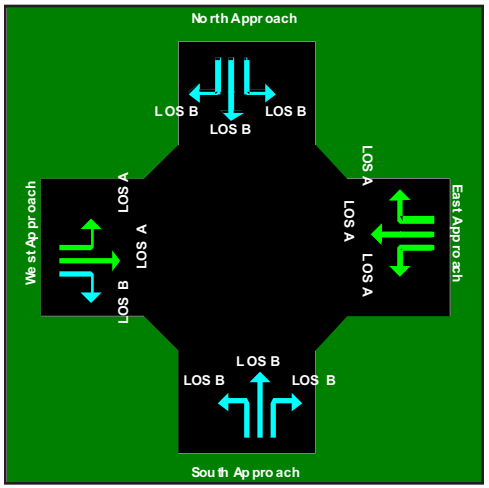
The traffic volumes for Morgan St. were assumed to include the supermarket as existing and a four-leg intersection in the future.

Grant Avenue at Railroad Avenue – Existing Conditions

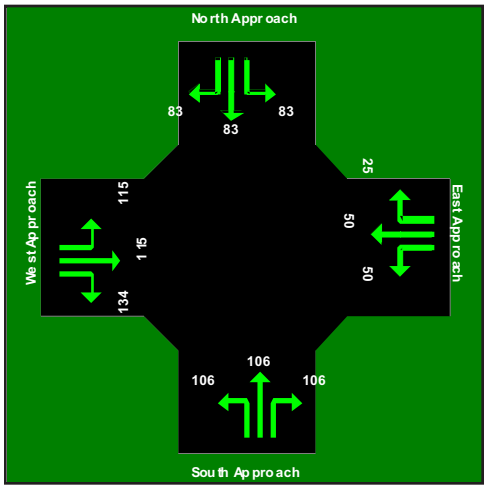
Grant and Railroad Intersection



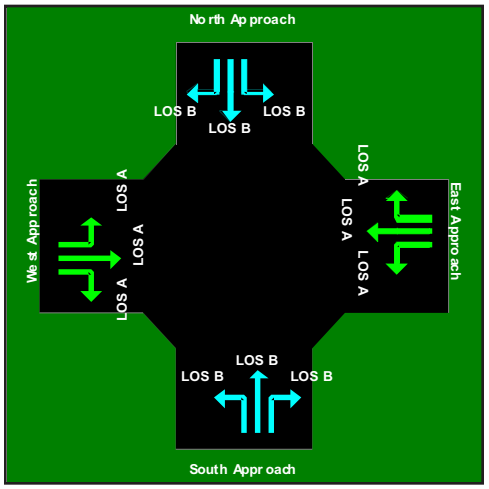
AM Peak Level of Service



95th Percentile Vehicle Queue



PM Peak Level of Service



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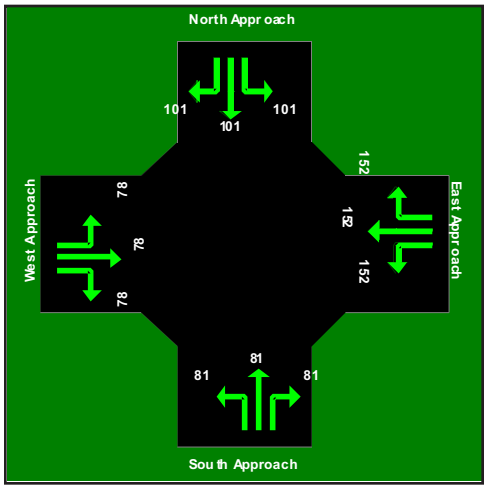
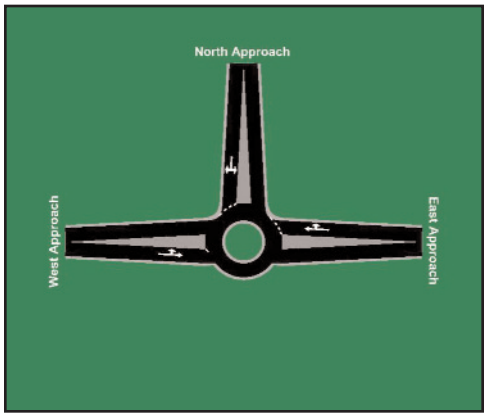
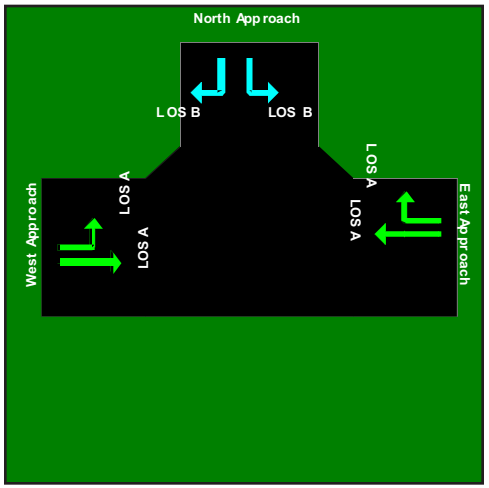


Grant Avenue at Walnut Lane – Existing Conditions

Grant and Walnut Intersection



AM Peak Level of Service



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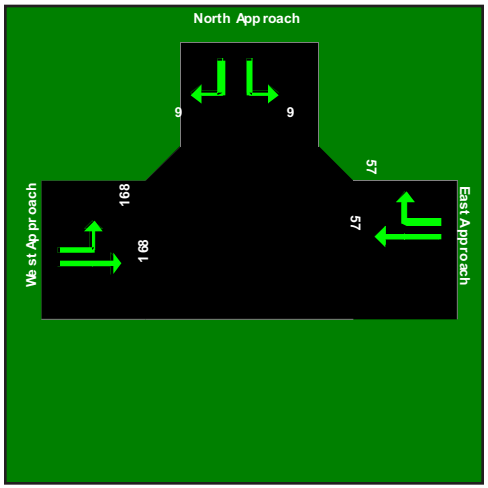
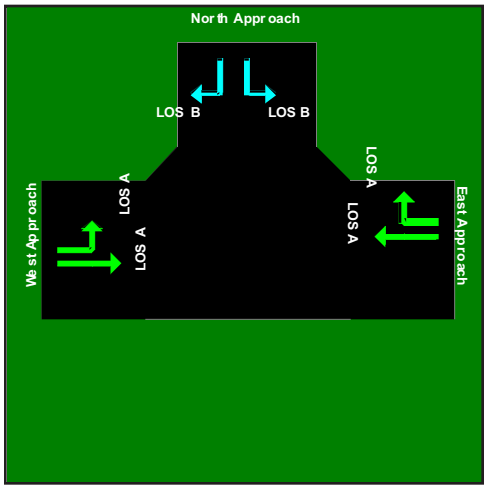


PM Peak Level of Service



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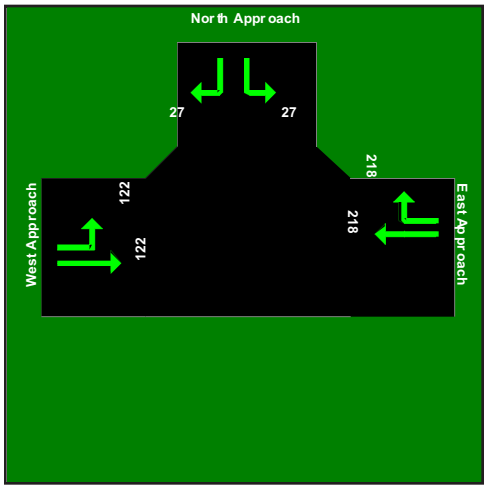
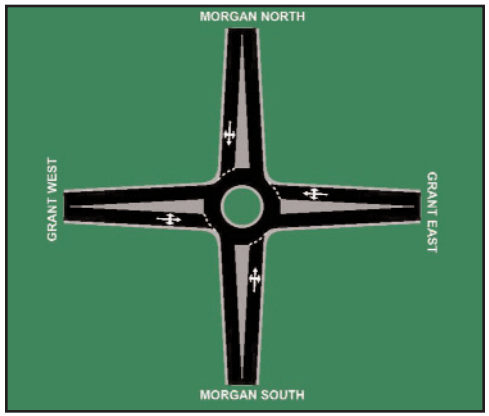
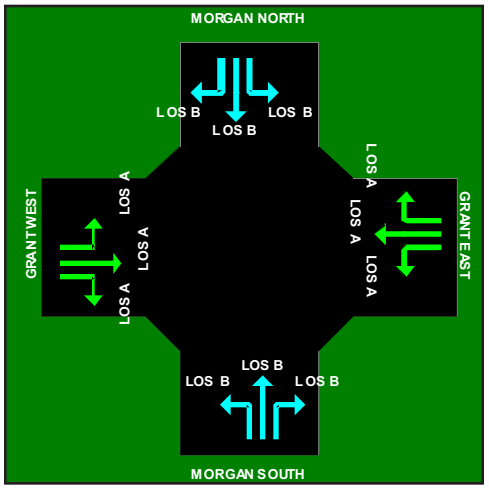


Grant Avenue at Morgan Street – Existing Conditions

Grant and Morgan Intersection



AM Peak Level of Service



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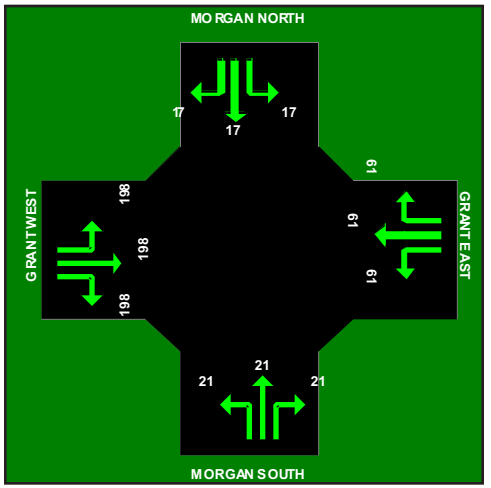

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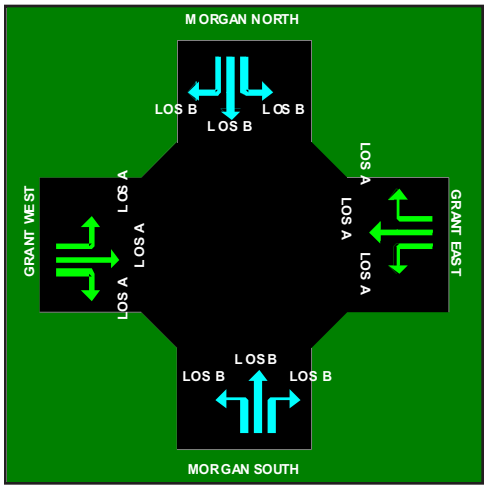

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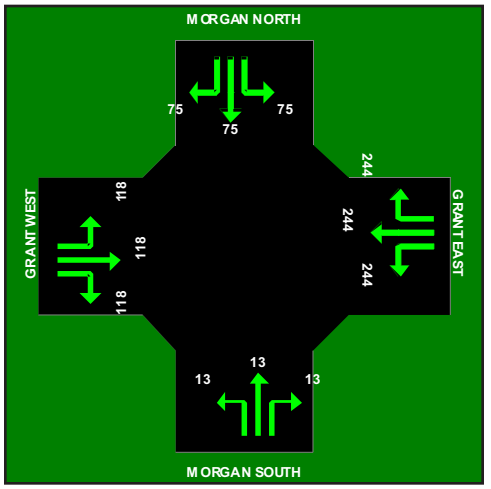
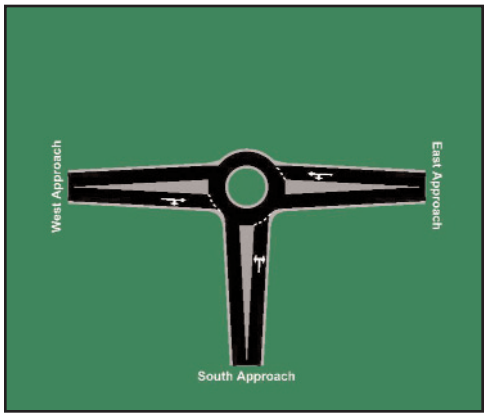


Grant Avenue at Main Street East – Existing Conditions

Grant and Main St. Intersection



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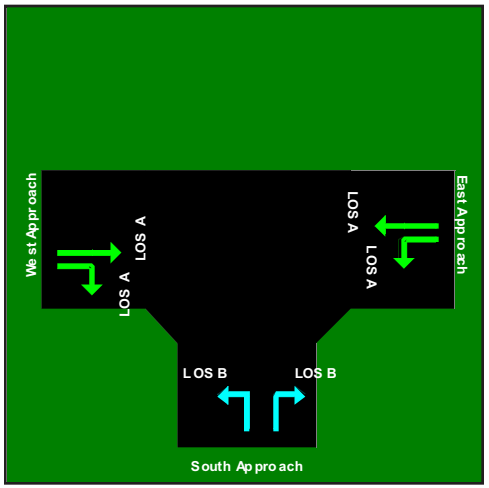

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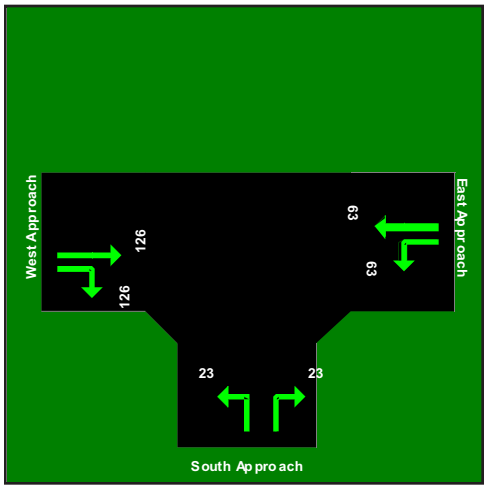

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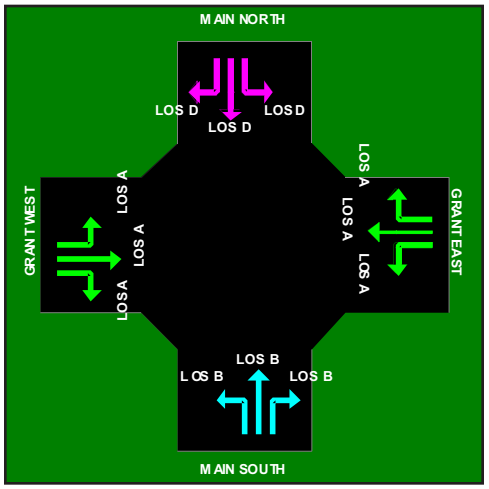

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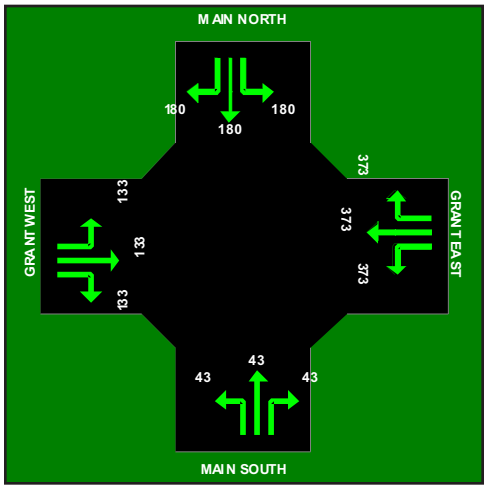
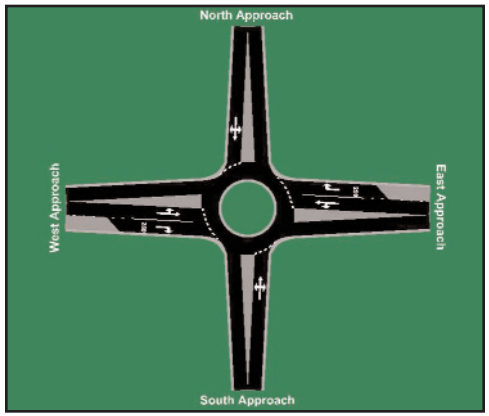


Grant Avenue at Railroad Avenue – Future Conditions

Grant and Railroad Intersection



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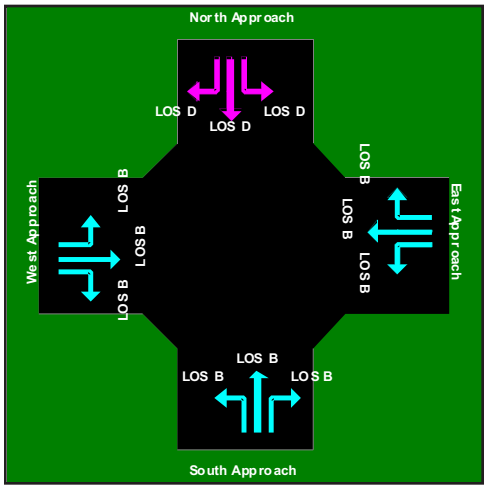

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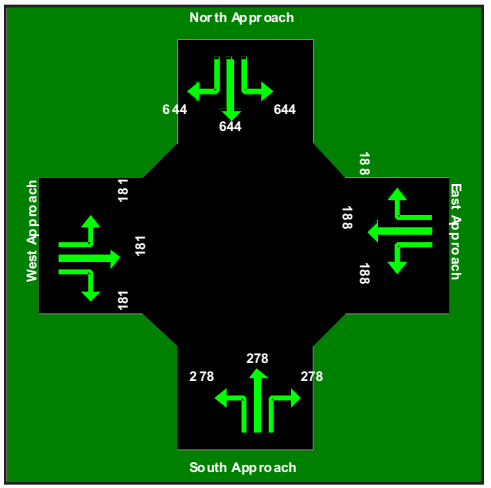

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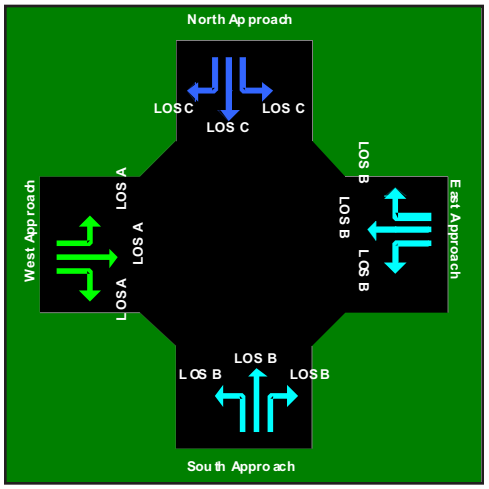

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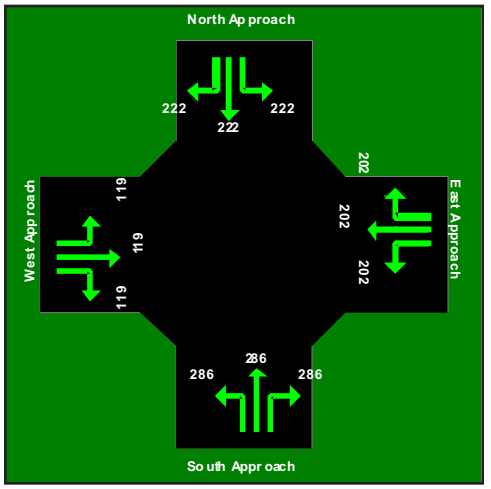
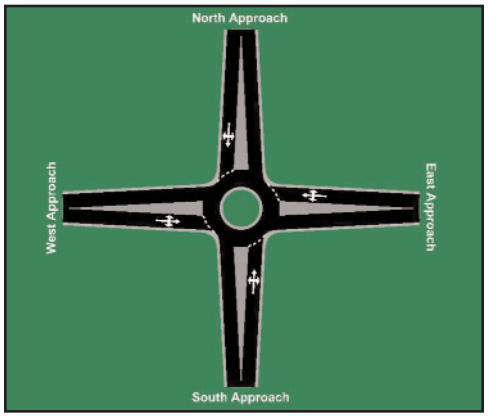


Grant Avenue at Walnut Lane – Future Conditions

Grant and Walnut Intersection



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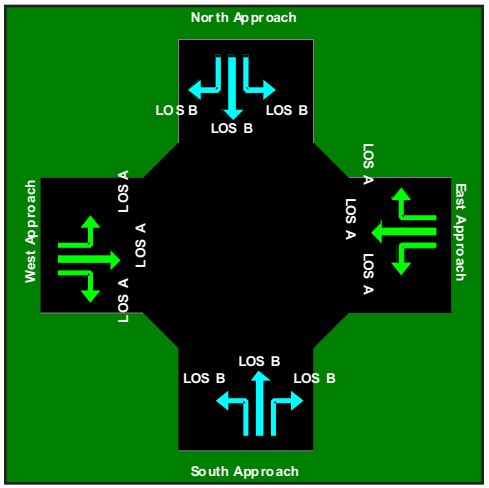

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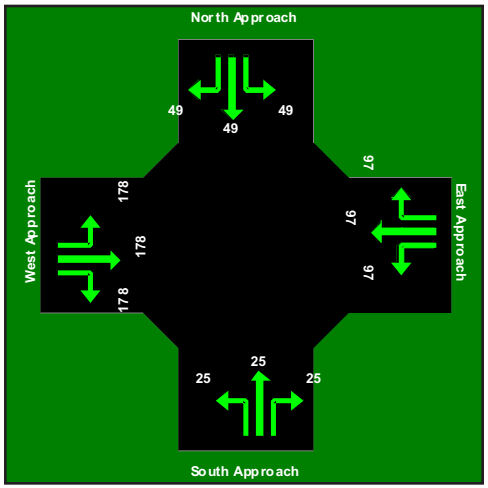
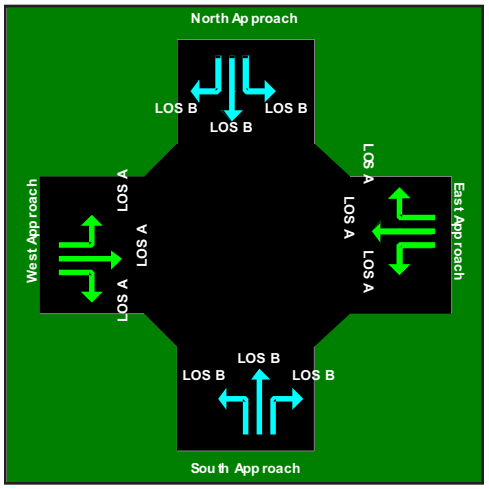


PM Peak Level of Service



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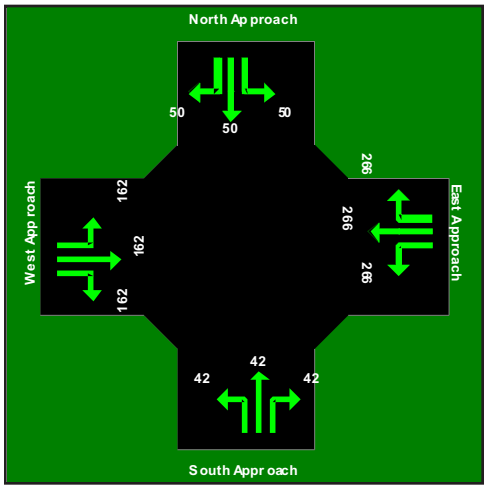
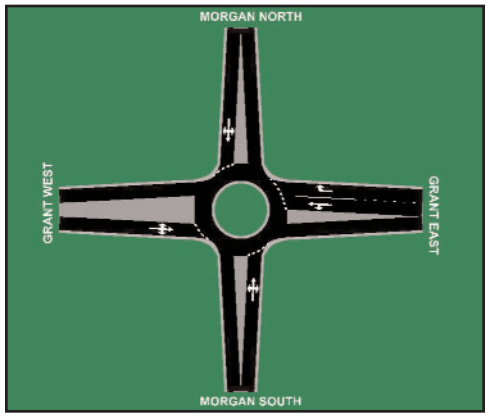
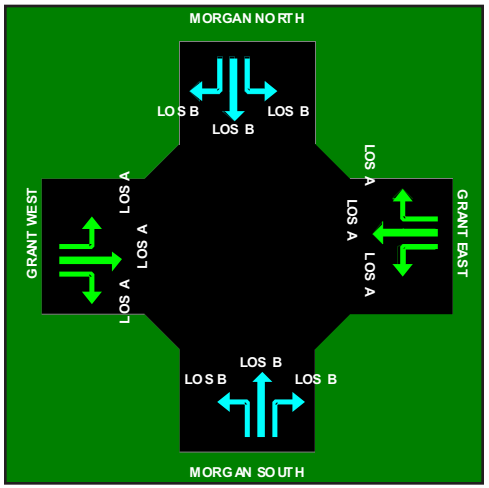


Grant Avenue at Morgan Street – Future Conditions

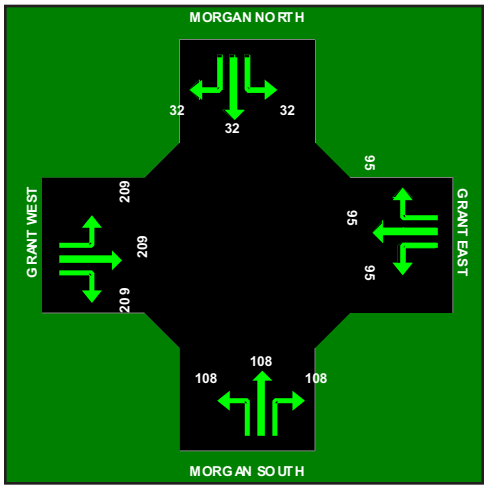
Grant and Morgan Intersection



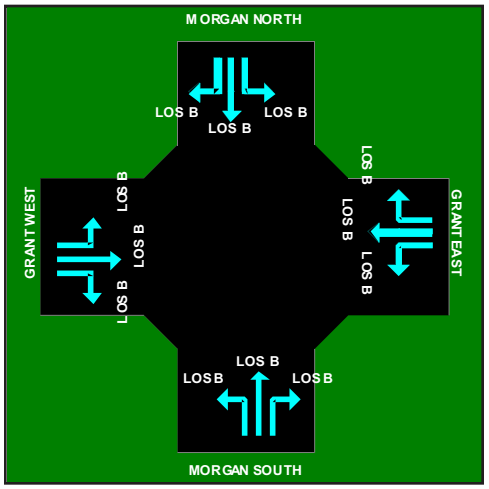
AM Peak Level of Service



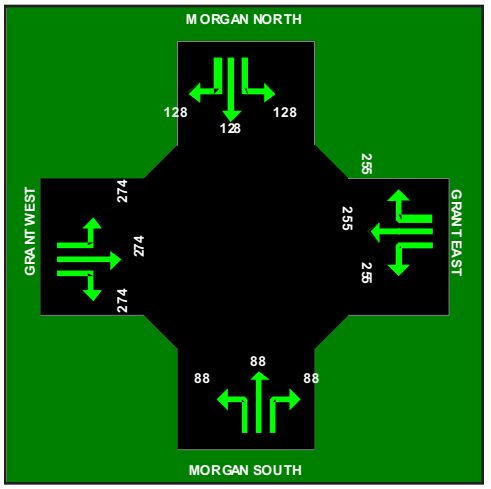
95th Percentile Vehicle Queue



PM Peak Level of Service

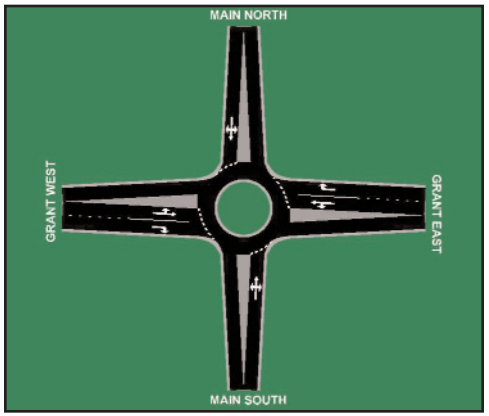


95th Percentile Vehicle Queue

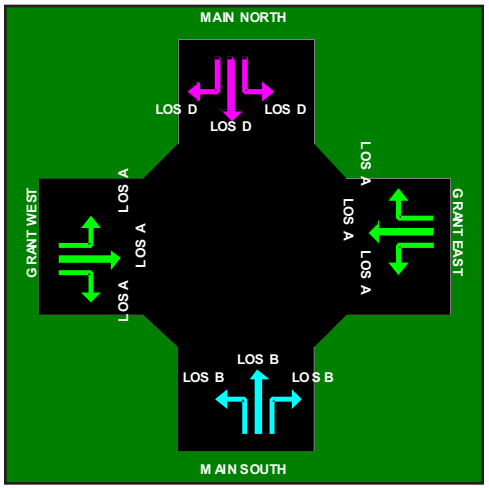


Grant Avenue at Main Street East – Future Conditions

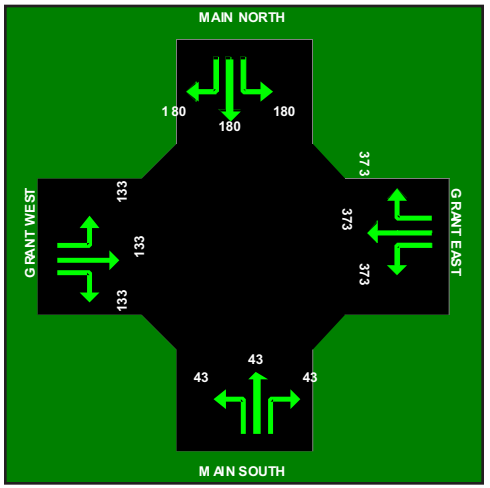
Grant and Main St. Intersection



AM Peak Level of Service



95th Percentile Vehicle Queue



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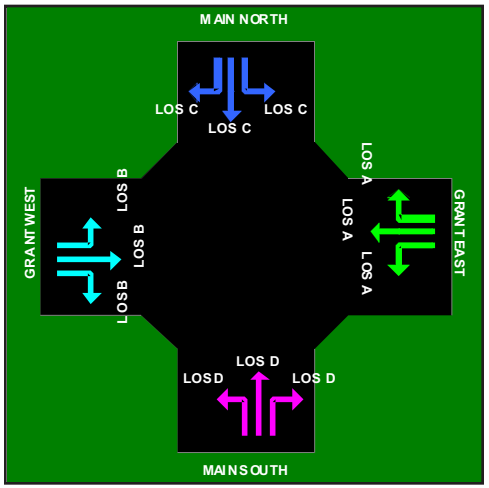
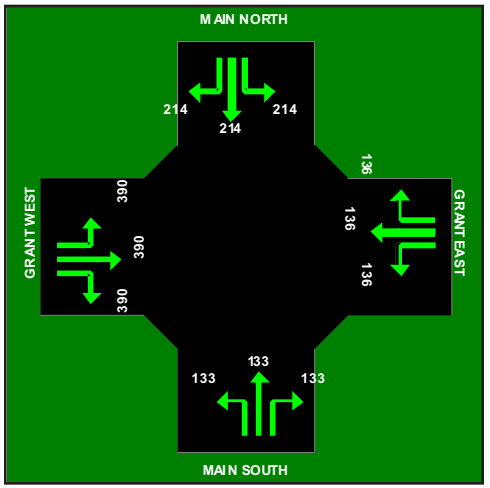


95th Percentile Vehicle Queue



Traffic Capacity Analysis Summaries

produced by Akcelik & Associates

Vehicle Movement Summary – Grant/Railroad Existing AM Peak

Roundabout

Mov No	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
South Approach										
32	L	56	1.7	0.439	14.1	LOS B	106	0.88	0.93	29.2
32	T	122	1.7	0.439	14.1	LOS B	106	0.88	0.93	29.2
32	R	118	1.7	0.439	14.1	LOS B	106	0.88	0.93	29.2
Approach		**296**	**1.7**	**0.438**	**14.1**	**LOS B**	**106**	**0.88**	**0.93**	**29.2**
East Approach										
22	L	73	1.9	0.239	8.2	LOS A	50	0.46	0.58	31.7
22	T	248	1.9	0.239	8.2	LOS A	50	0.46	0.58	31.7
21	R	137	2.2	0.134	8.5	LOS A	25	0.45	0.61	31.9
Approach		**457**	**2.0**	**0.239**	**8.3**	**LOS A**	**50**	**0.45**	**0.59**	**31.8**
North Approach										
42	L	220	1.8	0.390	12.0	LOS B	83	0.63	0.74	30.1
42	T	118	1.8	0.390	12.0	LOS B	83	0.63	0.74	30.1
42	R	51	1.8	0.390	12.0	LOS B	83	0.63	0.74	30.1
Approach		**389**	**1.8**	**0.390**	**12.0**	**LOS B**	**83**	**0.63**	**0.74**	**30.1**
West Approach										
12	L	52	2.0	0.470	8.7	LOS A	115	0.69	0.69	31.2
12	T	503	2.0	0.470	8.7	LOS A	115	0.69	0.69	31.2
11	R	526	2.1	0.524	10.4	LOS B	134	0.74	0.78	30.9
Approach		**1082**	**2.0**	**0.524**	**9.6**	**LOS A**	**134**	**0.71**	**0.73**	**31.1**
All Vehicles		**2224**	**1.9**	**0.524**	**10.3**	**LOS B**	**134**	**0.67**	**0.73**	**30.8**

Vehicle Movement Summary – Grant/Railroad Existing PM Peak

Roundabout

Mov No	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
South Approach										
32	L	79	1.9	0.376	11.6	LOS B	81	0.74	0.80	30.4
32	T	119	1.9	0.376	11.6	LOS B	81	0.74	0.80	30.4
32	R	118	1.9	0.376	11.6	LOS B	81	0.74	0.80	30.4
Approach		**316**	**1.9**	**0.376**	**11.6**	**LOS B**	**81**	**0.74**	**0.80**	**30.4**
East Approach										
22	L	104	2.0	0.550	8.3	LOS A	152	0.58	0.61	31.5
22	T	655	2.0	0.550	8.3	LOS A	152	0.58	0.61	31.5
22	R	197	2.0	0.550	8.3	LOS A	152	0.58	0.61	31.5
Approach		**956**	**2.0**	**0.550**	**8.3**	**LOS A**	**152**	**0.58**	**0.61**	**31.5**
North Approach										
42	L	135	2.3	0.419	16.5	LOS B	101	0.90	0.95	28.0
42	T	77	2.3	0.419	16.5	LOS B	101	0.90	0.95	28.0
42	R	47	2.3	0.419	16.5	LOS B	101	0.90	0.95	28.0
Approach		**259**	**2.3**	**0.419**	**16.5**	**LOS B**	**101**	**0.90**	**0.95**	**28.0**
West Approach										
12	L	28	2.0	0.345	8.0	LOS A	78	0.56	0.62	31.8
12	T	406	2.0	0.345	8.0	LOS A	78	0.56	0.62	31.8
12	R	53	2.0	0.345	8.0	LOS A	78	0.56	0.62	31.8
Approach		**488**	**2.0**	**0.345**	**8.0**	**LOS A**	**78**	**0.56**	**0.62**	**31.8**
All Vehicles		**2019**	**2.0**	**0.550**	**9.8**	**LOS A**	**152**	**0.64**	**0.69**	**30.9**

Vehicle Movement Summary – Grant/Railroad Future AM Peak

Roundabout Right-Turn Lanes

Mov No	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
South Approach										
32	L	179	2.2	0.724	18.7	LOS B	278	1.00	1.13	26.9
32	T	242	2.2	0.724	18.7	LOS B	278	1.00	1.13	26.9
32	R	126	2.2	0.724	18.7	LOS B	278	1.00	1.13	26.9
Approach		**548**	**2.2**	**0.724**	**18.7**	**LOS B**	**278**	**1.00**	**1.13**	**26.9**
East Approach										
22	L	158	2.0	0.590	10.4	LOS B	188	0.82	0.79	30.5
22	T	505	2.0	0.590	10.4	LOS B	188	0.82	0.79	30.5
22	R	126	2.0	0.590	10.4	LOS B	188	0.82	0.79	30.5
Approach		**790**	**2.0**	**0.590**	**10.4**	**LOS B**	**188**	**0.82**	**0.79**	**30.5**
North Approach										
42	L	116	1.9	0.935	49.1	LOS D	644	1.00	1.73	17.5
42	T	389	1.9	0.935	49.1	LOS D	644	1.00	1.73	17.5
42	R	74	1.9	0.935	49.1	LOS D	644	1.00	1.73	17.5
Approach		**578**	**1.9**	**0.935**	**49.1**	**LOS D**	**644**	**1.00**	**1.73**	**17.5**
West Approach										
12	L	53	2.0	0.565	11.3	LOS B	181	0.90	0.89	30.5
12	T	484	2.0	0.565	11.3	LOS B	181	0.90	0.89	30.5
12	R	221	2.0	0.565	11.3	LOS B	181	0.90	0.89	30.5
Approach		**759**	**2.0**	**0.565**	**11.3**	**LOS B**	**181**	**0.90**	**0.89**	**30.5**
All Vehicles		**2675**	**2.0**	**0.935**	**20.7**	**LOS C**	**644**	**0.92**	**1.09**	**25.6**

Vehicle Movement Summary – Grant/Railroad Future PM Peak

One-Lane Roundabout with Turn Lanes

Mov No	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
South Approach										
32	L	211	2.1	0.732	19.0	LOS B	286	0.99	1.13	26.8
32	T	242	2.1	0.732	19.0	LOS B	286	0.99	1.13	26.8
32	R	126	2.1	0.732	19.0	LOS B	286	0.99	1.13	26.8
Approach		**579**	**2.1**	**0.732**	**19.0**	**LOS B**	**286**	**0.99**	**1.13**	**26.8**
East Approach										
22	L	158	2.0	0.607	10.9	LOS B	202	0.85	0.83	30.4
22	T	505	2.0	0.607	10.9	LOS B	202	0.85	0.83	30.4
22	R	126	2.0	0.607	10.9	LOS B	202	0.85	0.83	30.4
Approach		**790**	**2.0**	**0.607**	**10.9**	**LOS B**	**202**	**0.85**	**0.83**	**30.4**
North Approach										
42	L	105	1.8	0.653	21.1	LOS C	222	1.00	1.16	25.8
42	T	211	1.8	0.653	21.1	LOS C	222	1.00	1.16	25.8
42	R	74	1.8	0.653	21.1	LOS C	222	1.00	1.16	25.8
Approach		**388**	**1.8**	**0.654**	**21.1**	**LOS C**	**222**	**1.00**	**1.16**	**25.8**
West Approach										
12	L	53	2.0	0.464	8.9	LOS A	119	0.73	0.69	31.2
12	T	484	2.0	0.464	8.9	LOS A	119	0.73	0.69	31.2
12	R	221	2.0	0.464	8.9	LOS A	119	0.73	0.69	31.2
Approach		**759**	**2.0**	**0.464**	**8.9**	**LOS A**	**119**	**0.73**	**0.69**	**31.2**
All Vehicles		**2516**	**2.0**	**0.732**	**13.7**	**LOS B**	**286**	**0.87**	**0.91**	**28.9**

Vehicle Movement Summary – Grant/Walnut Existing AM Peak

Roundabout

Mov No	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
East Approach										
22	T	429	2.3	0.287	6.1	LOS A	57	0.15	0.46	33.9
22	R	13	2.3	0.287	6.1	LOS A	57	0.15	0.46	33.9
Approach		**443**	**2.3**	**0.287**	**6.1**	**LOS A**	**57**	**0.15**	**0.46**	**33.9**
North Approach										
42	L	20	3.6	0.056	10.9	LOS B	9	0.51	0.65	30.8
42	R	34	3.6	0.056	10.9	LOS B	9	0.51	0.65	30.8
Approach		**55**	**3.6**	**0.056**	**10.9**	**LOS B**	**9**	**0.51**	**0.65**	**30.8**
West Approach										
12	L	32	2.0	0.547	6.2	LOS A	168	0.17	0.46	33.6
12	T	867	2.0	0.547	6.2	LOS A	168	0.17	0.46	33.6
Approach		**899**	**2.0**	**0.547**	**6.2**	**LOS A**	**168**	**0.17**	**0.46**	**33.6**
All Vehicles		**1397**	**2.1**	**0.547**	**6.4**	**LOS A**	**168**	**0.18**	**0.47**	**33.6**

Vehicle Movement Summary – Grant/Walnut Existing PM Peak

Roundabout

Mov No	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
East Approach										
22	T	978	2.1	0.658	6.4	LOS A	218	0.33	0.46	33.0
22	R	42	2.1	0.658	6.4	LOS A	218	0.33	0.46	33.0
Approach		**1020**	**2.1**	**0.658**	**6.4**	**LOS A**	**218**	**0.33**	**0.46**	**33.0**
North Approach										
42	L	26	2.7	0.127	16.2	LOS B	27	0.84	0.83	28.1
42	R	46	2.7	0.127	16.2	LOS B	27	0.84	0.83	28.1
Approach		**73**	**2.7**	**0.127**	**16.2**	**LOS B**	**27**	**0.84**	**0.83**	**28.1**
West Approach										
12	L	49	2.0	0.433	6.5	LOS A	122	0.19	0.47	33.4
12	T	640	2.0	0.433	6.5	LOS A	122	0.19	0.47	33.4
Approach		**689**	**2.0**	**0.433**	**6.5**	**LOS A**	**122**	**0.19**	**0.47**	**33.4**
All Vehicles		**1782**	**2.1**	**0.658**	**6.8**	**LOS A**	**218**	**0.29**	**0.48**	**32.9**

Vehicle Movement Summary – Grant/Walnut Future AM Peak

One-Lane Roundabout Only

Mov No	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
South Approach										
32	L	32	4.7	0.111	15.8	LOS B	25	0.82	0.80	28.5
32	T	11	4.7	0.111	15.8	LOS B	25	0.82	0.80	28.5
33	R	32	3.1	0.111	11.5	LOS B	25	0.82	0.77	30.6
Approach		**75**	**4.0**	**0.111**	**14.0**	**LOS B**	**25**	**0.82**	**0.78**	**29.4**
East Approach										
22	L	21	2.2	0.405	6.6	LOS A	97	0.30	0.48	33.0
22	T	537	2.2	0.405	6.6	LOS A	97	0.30	0.48	33.0
22	R	21	2.2	0.405	6.6	LOS A	97	0.30	0.48	33.0
Approach		**581**	**2.2**	**0.405**	**6.6**	**LOS A**	**97**	**0.30**	**0.48**	**33.0**
North Approach										
42	L	137	2.4	0.247	13.8	LOS B	49	0.68	0.79	29.5
42	T	11	2.4	0.247	13.8	LOS B	49	0.68	0.79	29.5
42	R	63	2.4	0.247	13.8	LOS B	49	0.68	0.79	29.5
Approach		**211**	**2.4**	**0.247**	**13.8**	**LOS B**	**49**	**0.68**	**0.79**	**29.5**
West Approach										
12	L	32	2.0	0.604	7.2	LOS A	178	0.59	0.57	32.0
12	T	705	2.0	0.604	7.2	LOS A	178	0.59	0.57	32.0
13	R	32	3.1	0.604	8.3	LOS A	178	0.59	0.60	31.5
Approach		**769**	**2.1**	**0.604**	**7.2**	**LOS A**	**178**	**0.59**	**0.57**	**31.9**
All Vehicles		**1636**	**2.3**	**0.604**	**8.2**	**LOS A**	**178**	**0.51**	**0.58**	**31.8**

Vehicle Movement Summary – Grant/Walnut Future PM Peak

One-Lane Roundabout Only

Mov No	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
South Approach										
32	L	53	3.1	0.192	15.4	LOS B	42	0.78	0.81	28.7
32	T	11	3.1	0.192	15.4	LOS B	42	0.78	0.81	28.7
33	R	84	2.4	0.192	10.6	LOS B	42	0.78	0.77	31.1
Approach		**149**	**2.7**	**0.192**	**12.6**	**LOS B**	**42**	**0.78**	**0.79**	**30.0**
East Approach										
22	L	74	2.0	0.727	7.8	LOS A	266	0.60	0.55	31.6
22	T	737	2.0	0.727	7.8	LOS A	266	0.60	0.55	31.6
22	R	200	2.0	0.727	7.8	LOS A	266	0.60	0.55	31.6
Approach		**1010**	**2.0**	**0.727**	**7.8**	**LOS A**	**266**	**0.60**	**0.55**	**31.6**
North Approach										
42	L	74	2.2	0.229	15.8	LOS B	50	0.86	0.87	28.4
42	T	11	2.2	0.229	15.8	LOS B	50	0.86	0.87	28.4
42	R	53	2.2	0.229	15.8	LOS B	50	0.86	0.87	28.4
Approach		**137**	**2.2**	**0.229**	**15.8**	**LOS B**	**50**	**0.86**	**0.87**	**28.4**
West Approach										
12	L	53	2.0	0.578	7.3	LOS A	162	0.54	0.56	32.1
12	T	632	2.0	0.578	7.3	LOS A	162	0.54	0.56	32.1
13	R	63	1.6	0.578	8.2	LOS A	162	0.54	0.59	31.7
Approach		**748**	**2.0**	**0.578**	**7.3**	**LOS A**	**162**	**0.54**	**0.56**	**32.0**
All Vehicles		**2044**	**2.1**	**0.727**	**8.5**	**LOS A**	**266**	**0.61**	**0.59**	**31.4**

Vehicle Movement Summary – Grant/Morgan Existing AM Peak

Roundabout

Mov No	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
MORGAN SOUTH										
32	L	19	5.2	0.100	15.5	LOS B	21	0.82	0.81	28.4
32	T	4	5.2	0.100	15.5	LOS B	21	0.82	0.81	28.4
32	R	33	5.2	0.100	15.5	LOS B	21	0.82	0.81	28.4
Approach		**58**	**5.2**	**0.100**	**15.5**	**LOS B**	**21**	**0.82**	**0.81**	**28.4**
GRANT EAST										
22	L	16	2.2	0.301	6.8	LOS A	61	0.32	0.50	32.9
22	T	365	2.2	0.301	6.8	LOS A	61	0.32	0.50	32.9
22	R	22	2.2	0.301	6.8	LOS A	61	0.32	0.50	32.9
Approach		**404**	**2.2**	**0.301**	**6.8**	**LOS A**	**61**	**0.32**	**0.50**	**32.9**
MORGAN NORTH										
42	L	43	3.2	0.096	11.3	LOS B	17	0.52	0.67	30.5
42	T	1	3.2	0.096	11.3	LOS B	17	0.52	0.67	30.5
42	R	49	3.2	0.096	11.3	LOS B	17	0.52	0.67	30.5
Approach		**94**	**3.2**	**0.096**	**11.3**	**LOS B**	**17**	**0.52**	**0.67**	**30.5**
GRANT WEST										
12	L	85	2.0	0.618	7.0	LOS A	198	0.36	0.48	32.6
12	T	819	2.0	0.618	7.0	LOS A	198	0.36	0.48	32.6
12	R	27	2.0	0.618	7.0	LOS A	198	0.36	0.48	32.6
Approach		**933**	**2.0**	**0.618**	**7.0**	**LOS A**	**198**	**0.36**	**0.48**	**32.6**
All Vehicles		**1489**	**2.3**	**0.618**	**7.5**	**LOS A**	**198**	**0.37**	**0.51**	**32.4**

Vehicle Movement Summary – Grant/Morgan Existing PM Peak

Roundabout

Mov No	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
MORGAN SOUTH										
32	L	16	5.9	0.066	12.1	LOS B	13	0.67	0.71	30.3
32	T	11	5.9	0.066	12.1	LOS B	13	0.67	0.71	30.3
32	R	23	5.9	0.066	12.1	LOS B	13	0.67	0.71	30.3
Approach		**51**	**5.9**	**0.066**	**12.1**	**LOS B**	**13**	**0.67**	**0.71**	**30.3**
GRANT EAST										
22	L	49	2.0	0.717	7.8	LOS A	244	0.62	0.57	31.6
22	T	843	2.0	0.717	7.8	LOS A	244	0.62	0.57	31.6
22	R	75	2.0	0.717	7.8	LOS A	244	0.62	0.57	31.6
Approach		**966**	**2.0**	**0.717**	**7.8**	**LOS A**	**244**	**0.62**	**0.57**	**31.6**
MORGAN NORTH										
42	L	28	2.8	0.327	14.7	LOS B	75	0.91	0.92	28.8
42	T	7	2.8	0.327	14.7	LOS B	75	0.91	0.92	28.8
42	R	144	2.8	0.327	14.7	LOS B	75	0.91	0.92	28.8
Approach		**181**	**2.8**	**0.327**	**14.7**	**LOS B**	**75**	**0.91**	**0.92**	**28.8**
GRANT WEST										
12	L	116	2.0	0.468	7.6	LOS A	118	0.34	0.52	32.3
12	T	523	2.0	0.468	7.6	LOS A	118	0.34	0.52	32.3
12	R	27	2.0	0.468	7.6	LOS A	118	0.34	0.52	32.3
Approach		**666**	**2.0**	**0.468**	**7.6**	**LOS A**	**118**	**0.34**	**0.52**	**32.3**
All Vehicles		**1864**	**2.1**	**0.717**	**8.5**	**LOS A**	**244**	**0.55**	**0.59**	**31.5**

Vehicle Movement Summary – Grant/Morgan Future AM Peak

Roundabout

Mov No	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
MORGAN SOUTH										
32	L	74	2.2	0.436	15.4	LOS B	108	0.91	0.96	28.5
32	T	21	2.2	0.436	15.4	LOS B	108	0.91	0.96	28.5
32	R	179	2.2	0.436	15.4	LOS B	108	0.91	0.96	28.5
Approach		**274**	**2.2**	**0.436**	**15.4**	**LOS B**	**108**	**0.91**	**0.96**	**28.5**
GRANT EAST										
22	L	105	1.9	0.414	8.4	LOS A	95	0.51	0.61	31.7
22	T	463	1.9	0.414	8.4	LOS A	95	0.51	0.61	31.7
22	R	105	1.9	0.414	8.4	LOS A	95	0.51	0.61	31.7
Approach		**673**	**1.9**	**0.414**	**8.4**	**LOS A**	**95**	**0.51**	**0.61**	**31.7**
MORGAN NORTH										
42	L	53	2.4	0.162	12.7	LOS B	32	0.70	0.77	30.0
42	T	11	2.4	0.162	12.7	LOS B	32	0.70	0.77	30.0
42	R	63	2.4	0.162	12.7	LOS B	32	0.70	0.77	30.0
Approach		**127**	**2.4**	**0.162**	**12.7**	**LOS B**	**32**	**0.70**	**0.77**	**30.0**
GRANT WEST										
12	L	158	1.9	0.674	8.7	LOS A	209	0.62	0.60	31.2
12	T	611	1.9	0.674	8.7	LOS A	209	0.62	0.60	31.2
12	R	105	1.9	0.674	8.7	LOS A	209	0.62	0.60	31.2
Approach		**873**	**1.9**	**0.674**	**8.7**	**LOS A**	**209**	**0.62**	**0.60**	**31.2**
All Vehicles		**1947**	**2.0**	**0.674**	**9.8**	**LOS A**	**209**	**0.63**	**0.67**	**30.8**

Vehicle Movement Summary – Grant/Morgan Future PM Peak

Roundabout

Mov No	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
MORGAN SOUTH										
32	L	63	2.0	0.376	13.0	LOS B	88	0.87	0.88	29.8
32	T	42	2.0	0.376	13.0	LOS B	88	0.87	0.88	29.8
32	R	147	2.0	0.376	13.0	LOS B	88	0.87	0.88	29.8
Approach		**252**	**2.0**	**0.376**	**13.0**	**LOS B**	**88**	**0.87**	**0.88**	**29.8**
GRANT EAST										
22	L	242	2.0	0.706	10.4	LOS B	255	0.74	0.72	30.6
22	T	695	2.0	0.706	10.4	LOS B	255	0.74	0.72	30.6
22	R	158	2.0	0.706	10.4	LOS B	255	0.74	0.72	30.6
Approach		**1095**	**2.0**	**0.706**	**10.4**	**LOS B**	**255**	**0.74**	**0.72**	**30.6**
MORGAN NORTH										
42	L	42	2.3	0.475	19.3	LOS B	128	1.00	1.06	26.5
42	T	32	2.3	0.475	19.3	LOS B	128	1.00	1.06	26.5
42	R	147	2.3	0.475	19.3	LOS B	128	1.00	1.06	26.5
Approach		**221**	**2.3**	**0.475**	**19.3**	**LOS B**	**128**	**1.00**	**1.06**	**26.5**
GRANT WEST										
12	L	189	2.1	0.721	12.3	LOS B	274	0.84	0.83	30.1
12	T	484	2.1	0.721	12.3	LOS B	274	0.84	0.83	30.1
12	R	105	2.1	0.721	12.3	LOS B	274	0.84	0.83	30.1
Approach		**780**	**2.1**	**0.721**	**12.3**	**LOS B**	**274**	**0.84**	**0.83**	**30.1**
All Vehicles		**2348**	**2.0**	**0.721**	**12.1**	**LOS B**	**274**	**0.81**	**0.81**	**29.9**

Vehicle Movement Summary – Grant/Main St. Existing AM Peak

Roundabout

Mov No	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
South Approach										
32	L	28	2.2	0.121	13.4	LOS B	23	0.71	0.77	29.6
32	R	62	2.2	0.121	13.4	LOS B	23	0.71	0.77	29.6
Approach		**91**	**2.2**	**0.121**	**13.4**	**LOS B**	**23**	**0.71**	**0.77**	**29.6**
East Approach										
22	L	19	2.1	0.277	6.3	LOS A	63	0.16	0.47	33.6
22	T	408	2.1	0.277	6.3	LOS A	63	0.16	0.47	33.6
Approach		**428**	**2.1**	**0.277**	**6.3**	**LOS A**	**63**	**0.16**	**0.47**	**33.6**
West Approach										
12	T	780	2.1	0.492	6.0	LOS A	126	0.14	0.46	33.9
12	R	29	2.1	0.492	6.0	LOS A	126	0.14	0.46	33.9
Approach		**810**	**2.1**	**0.492**	**6.0**	**LOS A**	**126**	**0.14**	**0.46**	**33.9**
All Vehicles		**1329**	**2.1**	**0.492**	**6.6**	**LOS A**	**126**	**0.19**	**0.48**	**33.5**

Vehicle Movement Summary – Grant/Main St. Existing PM Peak

Roundabout

Mov No	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
South Approach										
32	L	21	3.3	0.066	11.2	LOS B	12	0.57	0.68	30.7
32	R	39	3.3	0.066	11.2	LOS B	12	0.57	0.68	30.7
Approach		**61**	**3.3**	**0.066**	**11.2**	**LOS B**	**12**	**0.57**	**0.68**	**30.7**
East Approach										
22	L	74	1.9	0.573	6.5	LOS A	185	0.19	0.46	33.4
22	T	866	1.9	0.573	6.5	LOS A	185	0.19	0.46	33.4
Approach		**939**	**1.9**	**0.573**	**6.5**	**LOS A**	**185**	**0.19**	**0.46**	**33.4**
West Approach										
12	T	505	2.1	0.370	6.4	LOS A	80	0.27	0.48	33.3
12	R	26	2.1	0.370	6.4	LOS A	80	0.27	0.48	33.3
Approach		**532**	**2.1**	**0.370**	**6.4**	**LOS A**	**80**	**0.27**	**0.48**	**33.3**
All Vehicles		**1532**	**2.0**	**0.573**	**6.7**	**LOS A**	**185**	**0.23**	**0.48**	**33.2**

Vehicle Movement Summary – Grant/Main St. Future AM Peak

Roundabout

Mov No	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
MAIN SOUTH										
32	L	32	21.9	0.459	37.1	LOS D	133	1.00	1.09	20.4
32	T	11	21.9	0.459	37.1	LOS D	133	1.00	1.09	20.4
32	R	63	21.9	0.459	37.1	LOS D	133	1.00	1.09	20.4
Approach		**105**	**21.9**	**0.459**	**37.1**	**LOS D**	**133**	**1.00**	**1.09**	**20.4**
GRANT EAST										
22	L	32	22.0	0.436	6.7	LOS A	136	0.30	0.47	33.1
22	T	589	22.0	0.436	6.7	LOS A	136	0.30	0.47	33.1
22	R	242	22.0	0.436	6.7	LOS A	136	0.30	0.47	33.1
Approach		**864**	**22.0**	**0.436**	**6.7**	**LOS A**	**136**	**0.30**	**0.47**	**33.1**
MAIN NORTH										
42	L	305	22.0	0.624	23.7	LOS C	214	0.92	1.13	25.1
42	T	11	22.0	0.624	23.7	LOS C	214	0.92	1.13	25.1
42	R	63	22.0	0.624	23.7	LOS C	214	0.92	1.13	25.1
Approach		**378**	**22.0**	**0.623**	**23.7**	**LOS C**	**214**	**0.92**	**1.13**	**25.1**
GRANT WEST										
12	L	11	22.0	0.768	12.4	LOS B	390	0.94	0.94	30.3
12	T	811	22.0	0.768	12.4	LOS B	390	0.94	0.94	30.3
12	R	21	22.0	0.768	12.4	LOS B	390	0.94	0.94	30.3
Approach		**841**	**22.0**	**0.768**	**12.4**	**LOS B**	**390**	**0.94**	**0.94**	**30.3**
All Vehicles		**2188**	**22.0**	**0.768**	**13.3**	**LOS B**	**390**	**0.69**	**0.80**	**29.5**

Vehicle Movement Summary – Grant/Main St. Future PM Peak

Roundabout

Mov No	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
MAIN SOUTH										
32	L	32	21.9	0.187	14.4	LOS B	43	0.80	0.84	29.3
32	T	11	21.9	0.187	14.4	LOS B	43	0.80	0.84	29.3
32	R	63	21.9	0.187	14.4	LOS B	43	0.80	0.84	29.3
Approach		**105**	**21.9**	**0.187**	**14.4**	**LOS B**	**43**	**0.80**	**0.84**	**29.3**
GRANT EAST										
22	L	95	22.0	0.757	6.9	LOS A	373	0.52	0.47	32.3
22	T	1000	22.0	0.757	6.9	LOS A	373	0.52	0.47	32.3
22	R	158	22.0	0.757	6.9	LOS A	373	0.52	0.47	32.3
Approach		**1253**	**22.0**	**0.757**	**6.9**	**LOS A**	**373**	**0.52**	**0.47**	**32.3**
MAIN NORTH										
42	L	105	21.8	0.557	46.1	LOS D	180	1.00	1.18	18.5
42	T	32	21.8	0.557	46.1	LOS D	180	1.00	1.18	18.5
42	R	11	21.8	0.557	46.1	LOS D	180	1.00	1.18	18.5
Approach		**147**	**21.8**	**0.557**	**46.1**	**LOS D**	**180**	**1.00**	**1.18**	**18.5**
GRANT WEST										
12	L	21	22.2	0.465	7.3	LOS A	133	0.59	0.57	32.1
12	T	558	22.2	0.465	7.3	LOS A	133	0.59	0.57	32.1
12	R	53	22.2	0.465	7.3	LOS A	133	0.59	0.57	32.1
Approach		**632**	**22.2**	**0.465**	**7.3**	**LOS A**	**133**	**0.59**	**0.57**	**32.1**
All Vehicles		**2137**	**22.0**	**0.757**	**10.1**	**LOS B**	**373**	**0.58**	**0.57**	**30.5**

Appendix D: Context-Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities

Excerpt from "Principles for CSS in Urban Walkable Communities"

This 225-page, 2006 document was created through the cooperative effort of the Federal Highway Administration (FHWA) Office of Infrastructure, Office of Environment and Planning and the U.S. EPA (Office of Policy, Economics and Innovation). It was assembled by professional planners and engineers, and published by the Institute of Transportation Engineers (ITE).

It provides recommended policies for bringing walkability back to communities.

"This report provides guidance on how walkability principles can be applied in the design of networks and major thoroughfares in places where the qualities of walkable communities are a high priority objective. This report supports excellence in transportation with additional principles specific to context sensitivity in these places. These principles are:

1. Urban circulation networks should accommodate pedestrians, bicycles, transit, freight and motor vehicles, with the allocation of right-of-way in individual streets determined through the CSS process.

2. The larger network, including key thoroughfares, should provide safe, continuous and well designed multimodal facilities that capitalize on development patterns and densities that make walking, transit and bicycle travel efficient and enjoyable.

3. Thoroughfare design should complement urban buildings, public spaces and landscape, as well as support the human and economic activities associated with adjacent and surrounding land uses.

4. Safety is achieved through thoughtful consideration of users' needs and capabilities, through design consistency to meet user expectations and selection of appropriate speed and design elements.

5. Thoroughfare design should serve the activities generated by the adjacent context in terms of the mobility, safety, access and place-making functions of the public right-of-way. Context sensitivity sometimes requires that the design of the thoroughfare change as it passes through areas where a change in character is desired.

6. Systemwide transportation capacity should be achieved using a high level of network connectivity and appropriately spaced and properly sized thoroughfares, along with capacity offered by multiple travel modes, rather than by increasing the capacity of individual thoroughfares."

Appendix E: Focus Group Notes

Latino Focus Group

Rominger Intermediate School
Tuesday, May 2, 2006 • 6-7 p.m.

Attendees: Veronica Arellano, Margarita Hernandez, Esteban Montaño

What do you think are the most important issues to you?

- There are problems crossing Grant Ave. and Railroad Ave.
- The new traffic light has helped with the traffic and crossing Grant Ave., but it has been less than a year.
- Getting to Waggoner Elementary from the mobile houses requires students to cross Grant Ave.
- There should be more bike path and greenways leading to Rominger.
- It is a long distance from the Yolo Housing in the south east of town to Rominger, so bus service is needed for students to get to school. It is difficult for people to cross the overpass by walking or biking.
- The drop-off at Hemenway Ave. is a problem and chaotic. The drop-off at the high school is also chaotic.
- Cars travel at high speeds on the streets leading to the schools, such as on Anderson Ave. and Niemann St.

School Focus Group

Rominger Intermediate School
Woody Fridae's 5th Grade Class
Thursday, May 4, 2006 • 1-2 p.m.

What method did you take to school today?

- Walking = 7
- By Bike = 4
- By Car = 14
- By Bus = 2

Why do you like walking?

- It's fun because you get to see things.
- You have time to talk to friends.
- You get to see and hear a bunch of stuff.
- You get to meet other people.
- You get exercise.

Why do you like to ride bikes?

- You get to know your way around town.
- You get to ride with friends.
- You get to do cool stuff.
- You get more exercise.

What can make biking and walking more fun or safer?

- It would be more fun if more ramps are added.
- It would be safer if there were more crossing guards for the big roads.
- It would be more fun if there were more trails and paths.
- It would be safer if there were a cement trail to school for the cut-through.
- It would be safer if the rocky road were filled in with concrete, because some have sprained ankles in that path, so they have to go all the way around.

City Staff Focus Group

City Hall Conference Room
Thursday, May 4, 2006 • 2:30-3:30 p.m.

Attendees: Harold Anderson, City Councilmember; Dan Sokolow, Community Development Director; Pierre Neu, Planning Commissioner

What is the most important conclusion you want to get out of this process for the future of Winters?

- We want to be able to educate people about roundabouts because the Grant Avenue Access Study has met Caltrans standards.
- There has been some mitigation money made available for another stoplight.
- We want to get a longer-range view from the public.
- In the future, we could put a roundabout on the west end to slow down traffic.
- We are looking at a stoplight at Valley Oak Dr. for the west end.
- If we look at putting in a roundabout at Main St. and Grant Ave., we'll have to take out a portion of a house.
- The roundabout could just be moved down a bit.
- There is hardly anytime when we can't do a roundabout.
- The new development won't have any cul-de-sacs.
- You need to complete your connections before any development.
- I hope that the town gets pulled together and made into all one unit.
- I also want to make sure that cars and bikes can get to all places in the city.
- There are lots of dead-ends in the city and I think we will see dramatic improvements once the connections are made.
- People can see the schools from their backyards, but it is difficult to get to there.
- People will be able to cross Taylor St. once Kennedy Dr. punches through to Main St.
- Main St. will eventually connect to the schools in the north.
- I think the worst streets are Hemenway Ave., Anderson Ave. and Niemann St.
- The worst traffic experiences are early in the morning around 5-6:30 a.m.
- The biggest complaints we get are for traffic around the streets.
- We don't see the middle of Grant Ave. as able to get any wider. It's not very practical.
- There has been discussion of going to four lanes because Railroad Ave. backs up.
- The Chevron station is busy about 24 hours a day.
- The outlying population is about 2,000.
- In the Downtown Master Plan, we've discussed using Putah Creek Rd. as a pressure relief and as an entrance to downtown.
- Putah Creek Rd. is heavily cycled, so it needs trails.

Are there other options for connectivity?

- In the north, there is an opportunity for an informal set of connectors to Slough Rd.
- A number of developments have already been approved, so this needs a policy change, but it also opens this area up to more growth.
- We are planning for a Main Loop, so eventually Main St. will loop all the way around. However, this goes through a flood zone, so we will need to deal with this issue.
- If we can explain the Grant Avenue Access Study to people, this will help.
- We need to move access to the supermarket get people to it.

Is there any new road construction planned?

- Main St. will punch through to the north. Bike connections die in the southeast portion of the city.
- A long-term idea is to have bike lanes within 1-2 blocks of schools.

Schools Focus Group

Winters School District Offices
Thursday, May 4, 2006 • 4-5 p.m.

Attendees: George Griffin, Principal, Winter High School; Manolo Garcia, Principal, Waggoner Elementary; Sandra Ayón, Assistant Principal, Winters Middle School; Winters Joint Unified School District Boardmembers Kathy McIntire, Mary Jo Rodolfa and Rick Romney; Gary Cook; Ron Hall; Dan Sokolow

What do you think are the most important issues?

- To get to school safely. There are problems at Grant Ave. and Railroad Ave. because of the three schools and the Almond Orchard subdivision. There need to be more designated crosswalks.
- Ditto. There are areas where there are no sidewalks that could use them. There aren't any at Almond Orchard, and there are a lot of traffic accidents there because of people making a left onto Walnut Ln. Currently we bus some children in town. We do whatever we can so kids have a safe method to get to school. Most of the busing is mainly for kinder students and those outside of town. The CHP has weighed in on safety and bus routes in the past. We need safe pathways to all of our schools. Some kids come down smaller streets instead of Grant Ave., and the area near Mariani's is also a problem.
- The number of parents who drive their kids to school and back. It's not like it used to be.
- At the high school, we're worried about the kids that drive. We have moved the parking lot to help with this. On Grant Ave., the 25 mph speed limit is rarely observed, and the signal doesn't help either. Many kids choose to cross wherever they want, and I'm worried about them getting hurt.
- Hemenway Ave. is also a problem because groups of kids walk down the middle of the street. We need sidewalks to direct them. I have concerns about younger kids crossing Grant Ave. We are now more of a commuter community. I'm not too keen on roundabouts because I'm concerned about their use in a residential/highway area. There are lots of people going to Berryessa on the weekends who will not be too familiar with roundabouts. I think the proposed signal on the west end is too far out. We need to do something at Hemenway Ave., so the City should move the light forward more towards this street.
- I will have more concerns with kinder coming over next year. The parking lot is a drop-off/pick-up zone. I would like to close this off for these times, but need to figure out where to put it. I'm happy that this project is taking place.

Other comments:

- I'm impressed with number of crossing guards available. This currently coming out school budgets.
- Some suggestions would be to double fines for school area violations, and use that money towards more crossing guards.
- On Anderson Ave., a lot of the teachers are the speeders.
- I would also like to see an education system that can be taken to parents, teachers and students. To explain non-tangible benefits. Also take into consideration all the changes that will happen over the next coming years, such as at the High School. As the town grows, there will be changes in the district. I would also like to see some guarded crosswalks in front of high school. We could make more use of flashing lights; alerting drivers to students at crosswalks. The kindergarten is going to become a continuation high school and this will increase student traffic.
- We need crossing sections at the middle school.
- I like the idea of flashing lights in the street.
- We are working on small projects to address items in the previous Safe Routes to School grant, and then will move forward.
- We need to look at expediting the road extension of Anderson Ave. to Walnut Lane. Currently, there is nothing addressing getting to the north side of town from here.

Local Business Focus Group

Cody's Deli and Catering
Friday May 5, 2006 • 7:30-9 a.m.

Attendees: Howard Hupe, Salli Becker, Dave Flemming, Eric Dowd, Tony Delao, Charlie Wallis, Glenn Negri, Dan Maguire, Harold Anderson, Ed Anderson, Optometrist

What do you hope we can put together as a final vision for you?

- I'm concerned about the new stoplight at Grant Ave. and Railroad Ave. Its width makes it feel like you're on a long hike. I'm also concerned about the future development at the west end.
- The intersection is the biggest problem. I would like to make Grant Ave. so it doesn't feel like a 40 mile-an-hour stretch, but is still economically viable.
- Winters is going in the wrong direction with the last few pieces, such as the intersection. We are going to see a lot of residential growth, and Winters has been described as a commuter community. I fear that as 505 gets used more, it will be seen as a lost opportunity and we'll be forced to develop a lot along the highway. Most people agree that the economic engine needs to be downtown, but I don't want us to become a "Dixon." We need to zone properly near 505 to maintain our identity. There's no reason that Grant Ave. can't look like Main St. It doesn't have to be strip commercial.
- I have a business on Highway 128 and would like to see the sidewalk extended all the way down 128 and connect to Valley Oak Dr. I see kids walking on the street, and have seen so many cars coming from Berryessa going 60-70 mph. This makes for very dangerous situations. I would also like us to add a bike lane for bikers along Grant Ave.
- I would like to see narrower streets. I don't want to have Grant Ave. become commercial strip, but we still need things at the off-ramp such as a hotel. I don't want Winters to abandon the downtown. The intersection at Railroad Ave. was made for big trucks.
- I have had problems getting the City engineer to design how people want. He should follow standard guidelines.
- Coming together like this in a forum provides an opportunity to keep ideas implemented. The current intersection situation works well for trucks, however, there is still only one off-ramp from the freeway. With future development there will still be room for trucks. From the signal to the freeway, traffic has become faster, because people try to make up the time. In front of my business on Grant Ave., the situation is dangerous, and I have asked for more speed control from the police. When headed east, people will go faster than when going west. I can appreciate narrower streets. I would also like to see a planter between the sidewalk and street for safety, attractiveness, and to slow people down when going east. It's important to find the best design for Grant Ave., so we need to put in the time to do that.
- We need to define the vision for what the eastern gateway is going to be. I have an issue with current traffic-calming measures, because they currently don't really calm traffic.
- I would like to see a scheme of round-abouts along Grant Ave. We're trying to take a clean slate approach instead of just throwing up lights. There is currently some money available for improvements.
- I'm in favor of commercial development along Grant Ave., and having downtown-like businesses along this strip. Sometimes traffic in front of the supermarket is difficult to cross. I'm in favor of doing something there. Sidewalks and landscape buffers make sense to me. My concern for putting a sidewalk in is who's going to pay for it?
- Any major development is wonderful, but if we go to four lanes then it will be the demise of our downtown. Make it two lanes.

Emergency Responders/Commercial Services Focus Group

Community Center
Friday May 5, 2006 • 9:30-10:30 a.m.

Attendees: Police Chief Bruce Muramoto, Fire Chief Scott Dozier, Harold Anderson

Where are the safety issues in Winters?

- Grant Ave. and Walnut Lane: where people are trying to make a left hand turn, and someone is trying to beat the traffic.
- Also, traffic coming off of East St.: We have been talking about blocking this street off.
- The piece at the west end is becoming a big problem. We've seen lots of mothers pushing carriages were there are no sidewalks, and being passed by cars going 40-50 mph.
- A problem area is Grant Ave. and Railroad Ave. Traffic pressure in the future is coming from the north end. We need to think about slowing traffic down before hitting the city limits, down to about 30 mph (from east and west). We also need to worry about West Main St., which is going to be a fast street unless we can slow people down.
- I think a roundabout will slow down traffic too much at West Main St. I think traffic will back up at that point, based on my experience in Davis.
- A public safety facility will be built at West Main St., on the northwest side of the intersection.
- I like the use of roundabouts as traffic calming measures. However, I still have concerns about using them at main intersections.
- The city is going to pick up more traffic pressure in the next four to six years. Summer time is the worst for traffic, but the rest of the year is not so bad.
- A major problem is traffic circulation. This could be a big problem if commercial property is developed in the north.
- There are a lot of trucks between Mariani's and Double M. Mariani's has land in the northeast where they could consolidate everything near the freeway. Trucks have started going out earlier to avoid traffic at Grant Ave. and Railroad Ave.
- At the Walnut Lane and East St. intersection, the biggest problems are from people not paying attention. However, these are usually low-speed accidents.
- The older areas aren't too bad, but I think new development at the west end of Grant Ave. is the big problem for the future.
- People travel at higher speeds on Anderson Ave. We could use streetlights, or radar to notify people of their speed to slow them down. Various technologies are available these days that could be implemented.
- Right now, there are not enough buffers on the streets.

How do roundabouts affect the response of emergency vehicles?

- Our trucks are smaller and more nimble so they can get around to more places.
- What if the county does some development outside of the city?
- You can anticipate this through connectivity plans. Even if you prohibit trucking to certain routes, people may still use streets they're not supposed to. You need to take this into consideration.
- The City is currently requiring sprinklers in new development. We are not too worried about the older part of town.

Transportation Focus Group

Community Center
Friday May 5, 2006 • 11 a.m.-12 p.m.

Attendees: Eric Reitz, Yolo County Transportation District; Gabriel Corley, Transportation Planner, SACOG; Bill Biasi; Ron Hall, Caltrans

What types of improvements will help you as transit provider?

- We have a Winters to Davis route for Yolobus. One concern is that with an increasing amount of development, there will be more travelers to support. The main destinations are for Vacaville people and UC Davis employees (250 residents). We are wary on how much increase in service is needed, because it's a long trip to get out here.
- There are two stops along Grant and we are going to put in a stop at the Country Market. If the City doesn't want us in the way, then they will need to provide a turnout for the route. If we can put up more shelters, that would be helpful.
- SACOG is presenting two scenarios in the 2030 MTP: short 5-mile trips and longer 15-mile trips. It also shows a transit hub in winters with an express bus between Winters and Davis, but improvements to the road need to be made. This is what money could be used for by 2030. There is a City parcel near the Pizza Hut that could be used as a hub.

What can be done with respect to ADA?

- I worked with the City Manager in 1999 to see what we could do with the City to improve ADA compliance. Sidewalks are in very poor conditions, and there are not enough curb-cuts. Getting across Highway 128 is terrible. At new subdivisions, we need to have the lights put in before development.
- All new places are required to have curb cuts in Winters, but not for older development. We can't paint a crosswalk without first putting in a light, due to the "feeling of security" issue. We have to take this ruling into consideration.
- There is a need for more accessible transportation around town, such as at for bus stops. A bus stop is currently at Abbey and 4th, but there is no sidewalk to get to the stop.

What if the south road became a primary route?

- I don't think it would be a good option.

What are the most important issues?

- Walkability and connections.
- Connectivity between the north and south sides of town. Regionally speaking, to make Winters more transit friendly, and answer how the City can work with Caltrans to get or change warrants.
- Revise the standards for sidewalks and streets.
- Develop something that lasts for 30 years, or at least 20. It needs to be feasible economically and I suggest hoping on the bandwagon statewide, where money is going into redevelopment. Try to set a precedent where traffic is dividing a community, then maybe there will be a CEQA way of saying there is a nexus, to restore connectivity.
- Could use some property on the east end for carpool lots and rideshare.

Closing Workshop

Community Center
Tuesday May 9, 2006 • 6-8 p.m.

➢ Why back-in angle parking at Waggoner Elementary School?

Because there are lots of advantages: motorists can see traffic, it's safer for bikes, less road space is needed, and it is preferred by bicyclists.

➢ Will Caltrans agree to the recommendations?

Caltrans needs to take care of regional traffic to fulfill its mission. Caltrans can make available a roundabout designer to assist Winters with any roundabouts.

➢ It takes courage to make these improvements. We need to not allow people to say we can't do this or that, but rather need to educate people about improvements like roundabouts.

➢ Is there any way diagonal parking can work on Grant Ave.?

Diagonal parking is possible on Grant Ave. as long as it does not hinder traffic.

➢ What is the difference between roundabouts versus signals?

It is primarily a matter of cost, safety, efficiency and time. Caltrans is finding that signals are becoming more expensive than roundabouts. Roundabouts are safer and more efficient at getting traffic through than a typical stop-controlled intersection.

➢ Is there any recommendation on the number of lanes on Railroad Ave. north of Grant Ave.?

There is no need to widen Railroad Ave. or Grant Ave. if Winters grows smart.

➢ Is there a need for car access to Waggoner Elementary on Grant?

No, you already have a good block form.

➢ What about one-way streets?

Generally, these are being abandoned.

➢ As it is now, there are high speeds north of Anderson Ave. on Railroad Ave. Did you consider this?

Yes. You want to landscape it and keep the lanes less wide. You will need to spend some money on redesign.

➢ Assuming there will be no roundabouts on Grant Ave., how many lanes and signals are the City considering?

Once you create the connectivity, things will work better. It should be possible to handle traffic with two lanes.

➢ For the proposed development north of Railroad Ave., is it sensible for angled parking here?

Yes, if it is retail type development that needs on-street parking.

➢ What are the steps we need to take to get the City to adopt these guidelines and recommendations?

You will need to develop a steering committee to do this, and to work with the city. There will be suggestions for phasing and projects. The City doesn't want to adopt a plan that will sit on a shelf. We were asked to recommend what the City can do first.

➢ Can the speed be lowered on east side of Grant Ave. to Railroad Ave.?

Need to design the road to get speeds appropriate to the conditions and land uses. You shouldn't need faster than 30 mph.

Appendix F: Existing Plans

The City of Winters has already adopted several goals and policies directed at promoting pedestrian and bicycle use and safety, and creating a more livable community in Winters.

Winters General Plan (1992)

The City's General Plan prepared in 1992 includes in its Transportation and Circulation Goals and Policies:

➢ To create and maintain a roadway that will ensure the safe and efficient movement of people and goods throughout the city.

- The City shall require street designs consistent with principles of interconnected network path design.
- The City shall insure that there are multiple, local-street access points to all developments throughout the city.
- The City shall insure that direct access to all local streets from primary and secondary collectors is maintained.
- At the discretion of the City, alleys may be used in conjunction with the overall street layout.
- Street designs should promote pedestrian and bicycle travel and should emphasize safety over travel speed and capacity.
- Neighborhood streets shall be designed to discourage unsafe traffic speeds.
- The City shall encourage the use of curb corner radii that slow traffic turning movements and minimize pedestrian crosswalk lengths, but are consistent with fire truck turning distances.
- Access to new schools shall be located away from major arterials and adjacent to pedestrian and bicycle routes.

➢ To promote pedestrian and bicycle travel as alternatives to automobile use.

➢ All school should be easily accessible from pedestrian and bicycle routes.

Downtown Master Plan (2006)

The Downtown Master Plan adopted in 2006 includes the following objectives:

➢ Concentrate specialty commercial business in the downtown core.

➢ Support infill development along Railroad Avenue.

➢ Improve the Railroad Avenue streetscape.

➢ Establish Downtown-oriented parking policies.

➢ Retain Downtown's historic building character.

➢ Improve the Rotary Park/Downtown Green and expand Creekside Park.

➢ Create an attractive north gateway to the Downtown.

"Grant Avenue is the City's most heavily-used roadway. New development and frontage streetscape improvements are needed to create an attractive Downtown and community image. As existing light industrial and storage use phase out over time, new development and streetscape improvements should be coordinated on the north and south sides of the street to create a harmonious appearance. A Downtown Entrance Sign should be installed to direct visitors to Downtown."

Bikeway System Master Plan (2002)

The Bikeway System Master Plan adopted in 2002 addresses four issues: safety, access, quality of life and effective implementation. The plan's recommendations include the development of a comprehensive bikeway system in Winters that connects all residential neighborhoods with the city's major activity centers.

■ Safety

Safety is the number one concern of citizens. The plan acknowledges that a consistent bikeway network with either bike lanes or wider curb lanes and signing is somewhat lacking in the city. The Winters Circulation Master Plan identified optional bike lanes on all but local streets as part of the recommended street standards.

■ Access

The plan acknowledges that Grant Avenue (State Route 128) hampers access for bicyclists to shopping, work, recreation, schools and other destinations. The volume of traffic on Grant Avenue is a barrier to movement, and mid-block crossings continue to be a problem for bicyclists.

■ Quality of life

The bikeway plan urges Winters to take measurable steps toward the goal of improving every citizen's quality of life – creating a more sustainable environment, reducing traffic congestion, vehicle exhaust emissions, noise and energy consumption.

■ Goals of the Plan

- ➢ Plan for the development of bikeway facilities and programs as a viable alternative to the automobile.
- ➢ Involve the community in the planning and implementation of the bikeway system.
- ➢ Utilize existing resources in Winters.
- ➢ Provide opportunities for all people in Winters to ride to work or play.
- ➢ Integrate bikeways into other alternative modes.
- ➢ Maximize pedestrian and bikeway safety in Winters.