

## I.2 Streets and Public Ways

### I. GOALS

- A. To develop streets that support pedestrians, bicyclists and vehicles equally.
- B. To build street systems that support healthy, safe and livable residential neighborhoods by creating an environment that encourages walking, bicycling and a sense of community.
- C. To recognize that streets constitute the majority of public space of our City, and to insure that the design of our streets considers not only the functional requirements of pedestrians, bicycles and vehicles, but also the spatial definition and the resulting quality of the public space being created.
- D. To construct streets that by their design and features keep vehicle traffic speeds at appropriate levels for their setting.
- E. To provide street widths appropriate to serve emergency vehicle needs.
- F. To encourage all the elements of the streetscape; adjacent buildings, medians, vehicle lanes, bikeways, parking, intersections, sidewalks, tree canopies, landscaping, street furniture, lighting, and signs, to be thought of as a complete package that works together.
- G. To encourage people to use other modes of transportation than the automobile.



Fig. 1.2.1 Local Street.



Fig. 1.2.2 Transitional Street - Fourth Street.



Fig. 1.2.3 Regional Street.

## II. STREET CATEGORIES & TYPES

Streets are categorized by how they perform for the neighborhood and the community. For simplicity, street categories can be broken into three groups:

### **STREET CATEGORIES**

***Equivalent to V2020  
General Plan***

**LOCAL:** These provide access to and from a neighborhood and within a neighborhood and include: trails, alleys, lanes, neighborhood streets and minor streets.

**MINOR**

**TRANSITIONAL:** These provide transitional access to and from neighborhoods and include: avenues and main streets.

**COLLECTOR**

**REGIONAL:** These provide regional access and include: parkways and boulevards.

**ARTERIAL / MAJOR**

### A. LOCAL STREETS



Fig. 1.2.4

*Local streets, which form the heart of quiet neighborhoods, function primarily to provide access to neighborhood destinations and make numerous connections within neighborhoods. All of these streets provide vehicle, pedestrian and utility access. Traffic speed of not more than 15-30 mph is appropriate for such streets. A measure of how successful a local street is performing its intended function is how well it adds to the quality of the neighborhood by offering access, parking, tranquility, and safety.*

*Neighborhoods work best with many connections from the edges. Connections to centers of neighborhoods are appropriate too, but they should not move significant amounts of traffic, nor move that traffic too quickly. People entering neighborhoods should feel rewarded by ease of access to specific locations, but also encouraged to travel by foot or bicycle.*

*Local streets should provide indirect connections between Transitional or Regional Streets. Long straight connections will encourage “shortcut” traffic through neighborhoods.*

*The Local Street category includes the following Street Types:*

- Trail
- Alley
- Lane
- Neighborhood Street
- Minor Street

*See the following pages for plates illustrating the Local Streets in graphics and text.*

### TRAIL

City Std. # XXX (need new standard)

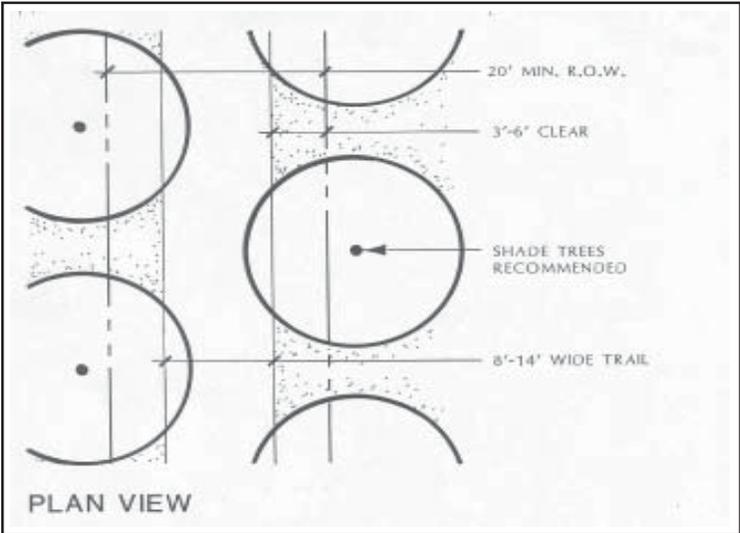
#### DESCRIPTION

Trails are connectors through neighborhoods not intended for motorized vehicles. They often follow their own independent rights-of-way or utility corridors. Serving as an independent alternative transportation system, trails connect many homes to parks, schools, transit stops, and other common destinations. Trails can provide access into commercial districts, linking with bike lanes for added access to more distant commercial districts, employment centers and major transit hub. Neighborhood trails also make connection to natural areas and parks, and should provide access to regional greenways and open spaces. In healthy neighborhoods, trails may comprise 20-40% of the total residential connectors. Trails should provide at intervals sitting areas with benches at vista points and along creeks.



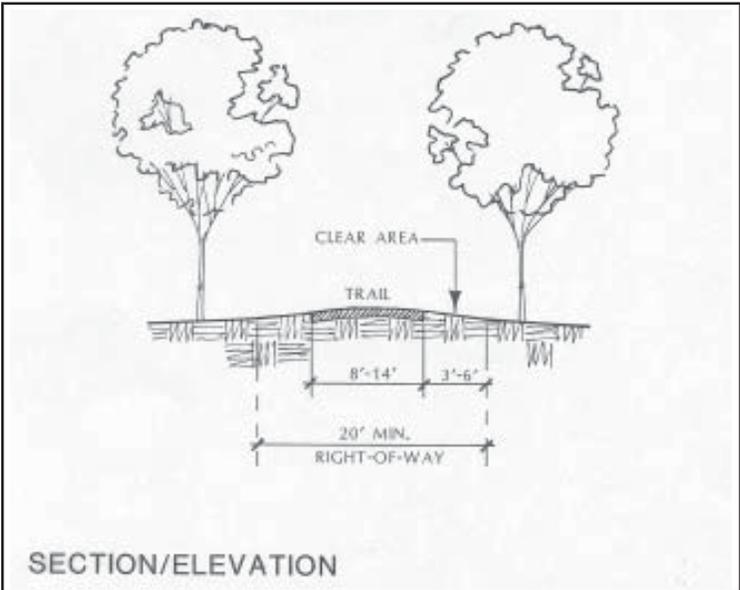
#### FEATURES

- Trail width: 8-14 ft.
- Clear Zone of 3-6 ft.
- Right-of-way 20 ft. min.
- Shade tree recommended.
- Surface to comply with ADA accessibility requirements.



#### BUILDING & LAND USE

- Link to make connections between all homes, parks, schools and shopping districts.
- Trails should be located adjacent to streets, creeks, open space and other public spaces or otherwise oriented to provide “informal surveillance” in order to enhance public safety.





## ALLEY

City Std. # 202 (needs revision)

### DESCRIPTION

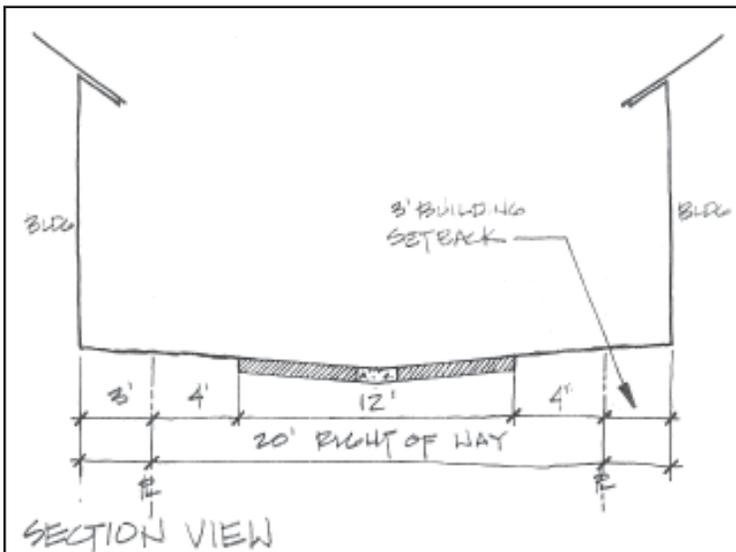
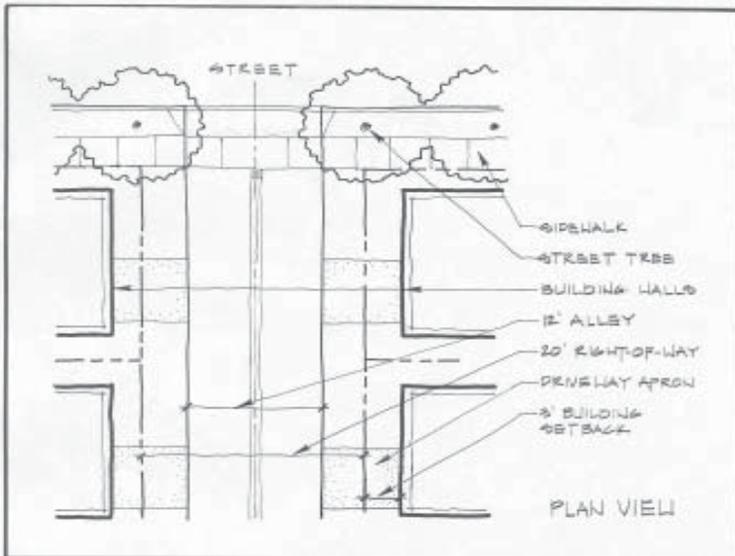
Alleys are slow speed (10 mph) secondary access ways running behind and sometimes between rows of houses, or commercial buildings. Alleys, typically a 12 foot paved section within a 20 foot right-of-way, can provide service workers easy access to utilities and sanitation, and residents easy access to garages, backyards, and any accessory units. Alleys shall be detailed as a secondary access way, not as a street; curbs, gutters, sidewalks and streetlights are not required. If alleys are used to provide Fire Department access, additional requirements may be applied.

### FEATURES

- Paved width: 12 ft.
- Right-of-way: 20 ft. min.
- Desired speed: 10 mph.
- Good location for private utilities and drainage.

### BUILDING & LAND USE

- Residential- primarily single family.
- Consistent building line recommended.
- Provides rear access to garages.
- Consider second units above garage.
- 3 ft. minimum setback from right-of-way.
- Commercial applications- use 12-20 ft. paved width for access and deliveries.



## LANE

City Std. # 202E

### DESCRIPTION

These narrow roads (typically 16-20 feet wide) are useful in accessing small numbers of homes (up to approximately 10 homes). Parking, when needed, can be placed on one side or in parking bays. 37 to 41 foot rights-of-ways are usually required. One-way lanes can operate around parks or nature preserves. They also work well as two-way facilities in many other contexts. Landscaping and sidewalks fill the remainder of the available public right-of-way.

### FEATURES

- Width: 16 ft. with curb and gutter & no parking, subject to fire access requirements.
- Width: 20 ft. with curb and gutter & parking one side, subject to fire access requirements.
- Right-of-way: 37-41 ft. min.
- Parking bays as needed.
- 5 ft. planter strips typical.
- No sidewalk, up to four homes.
- 5 ft. sidewalk, one side minimum, five to ten homes
- 5 ft. sidewalk, both sides, 11 or more homes.
- Desired speed: 15 mph.

### BUILDING & LAND USE

- Residential- primarily single family.
- Buildings brought closer to the sidewalk.
- Consistent build-to line suggested.

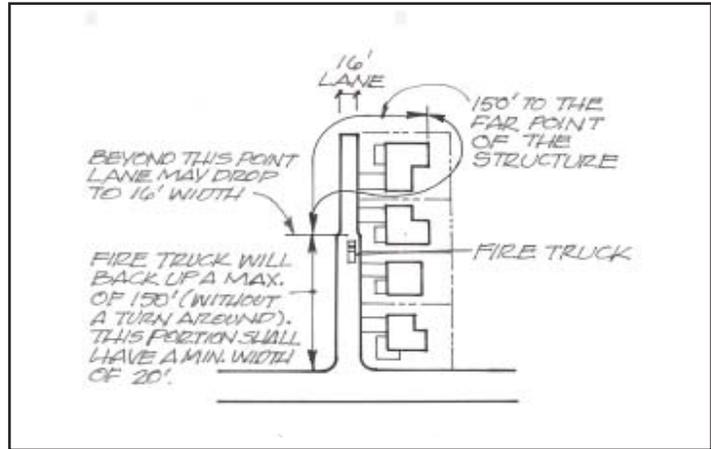
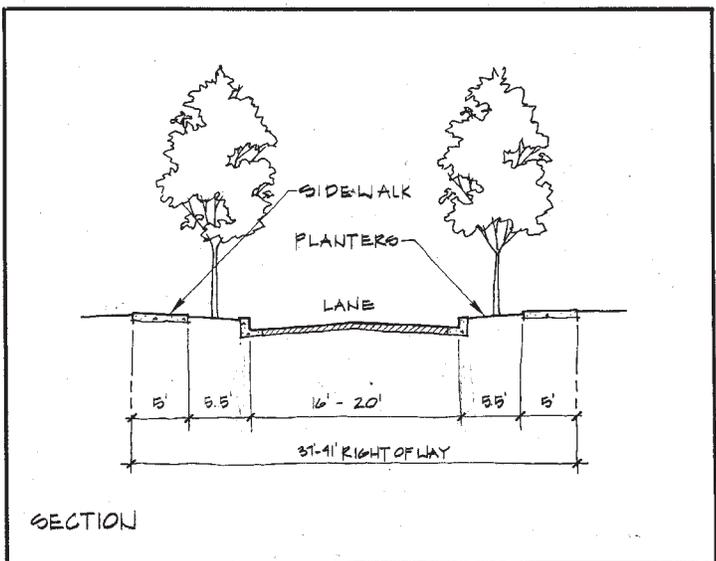
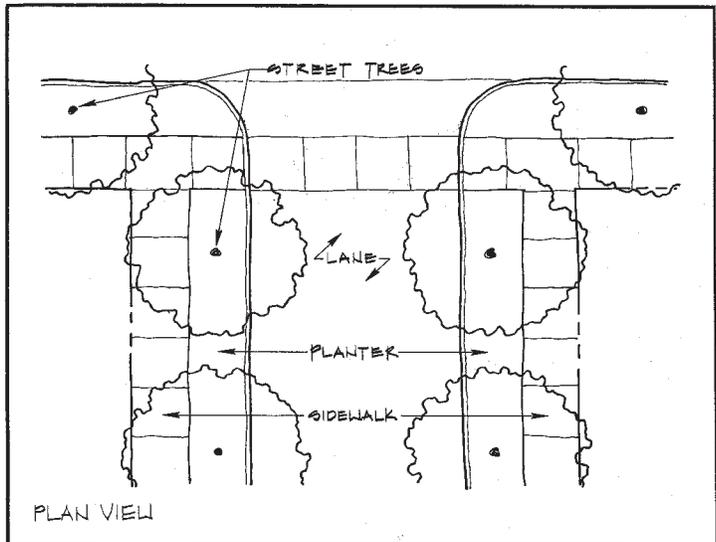


Fig. 1.2.5 Fire Access Requirements



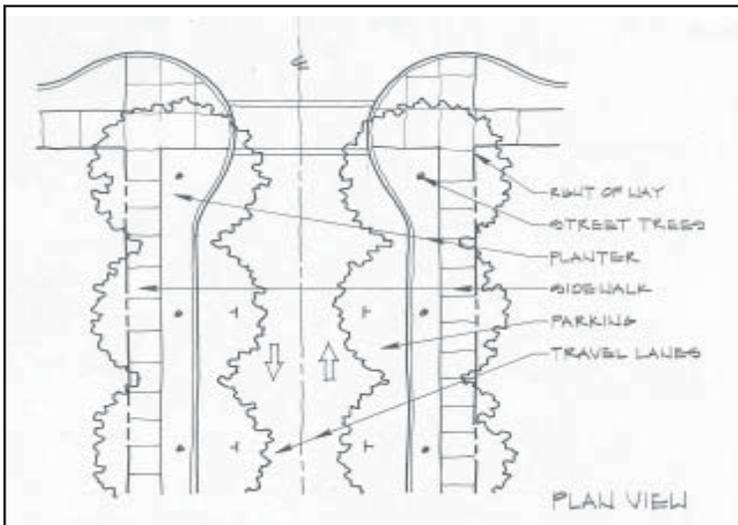


## NEIGHBORHOOD STREET

City Std. 200F, 200G (needs clarification)

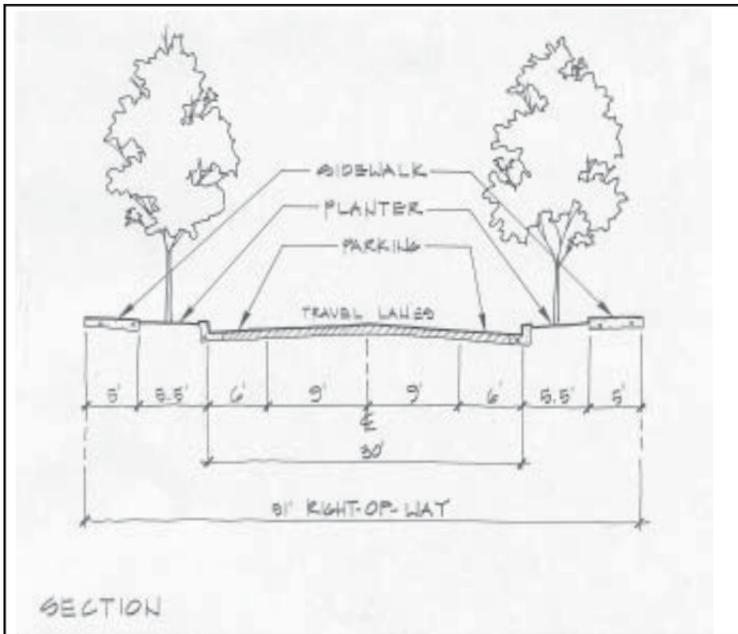
### DESCRIPTION

Neighborhood streets are the most common type of access roads in healthy neighborhoods. Paved portions of these streets are generally between 20 feet and 30 feet, depending on parking. This is the preferred street to service residential streets when the street does not exceed 100 homes or 1000 average daily trips (ADT). Streets are short, terminating in two to six blocks. These streets can also encircle a square or other public space. On-street parking is encouraged as it helps to provide needed parking and slows traffic.



### FEATURES

- Width: 20-30 ft. w/ curb & gutter  
20 ft w/ no parking  
26 ft. w/ parking one side  
30 ft. w/ parking both sides
- Right-of-way: 51 ft. (Parking both sides)
- Neck down at intersection permits easier pedestrian crossing. Avoid locating utility devices in neck downs.
- 5 ft. planter strips typical (contiguous sidewalks w/ tree wells in urban settings)
- 5 ft. sidewalks both sides typical.
- Two to six blocks long.



### BUILDING & LAND USE

- Residential- many types
- Residences brought closer to the sidewalk.
- Consistent build-to line suggested.
- Front porches encouraged.
- ADT shall not exceed 1000.

**MINOR STREET**

City Std. 200B

**DESCRIPTION**

Minor streets are utilized when the traffic volume exceeds 1000 average daily trips. Although efforts should be made to create interconnected street layouts which disperse traffic, in many cases a concentration of traffic is unavoidable. In these cases, the wider 24- 36 foot paved section is appropriate. The right-of-way is typically 59 feet.



**FEATURES**

- Width: 24-36 ft. w/ curb & gutter  
 24 ft w/ no parking  
 30 ft. w/ parking one side  
 36 ft. w/ parking both sides
- Right-of-way: 59 ft. (Parking both sides)
- Bulbouts or neck downs at intersection permits easier pedestrian crossing.
- 6 ft. planter strips typical (contiguous sidewalks w/ tree wells in urban settings)
- 5 ft. sidewalks both sides typical.
- Generally more than 6 blocks long.

**BUILDING & LAND USE**

- Residential- many types
- Residences set back typically 20 ft. from back of sidewalk.
- Consistent build-to line suggested.
- ADT generally greater than 1000.
- On-street parking is encouraged.

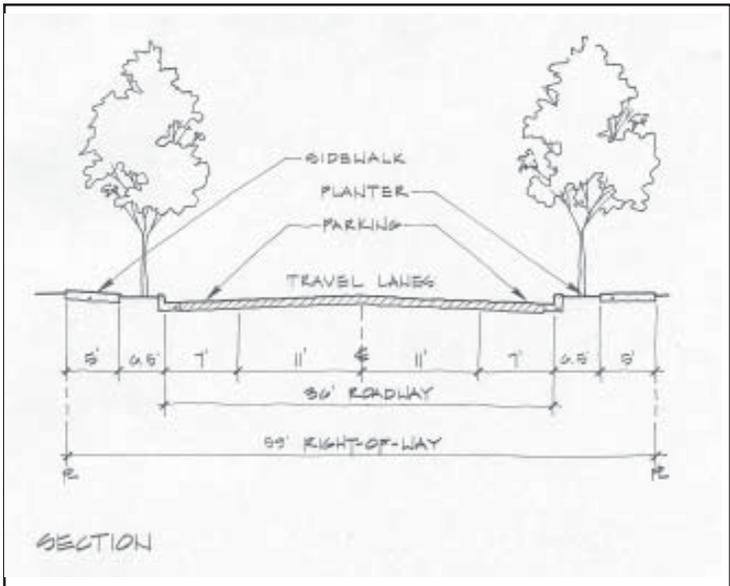
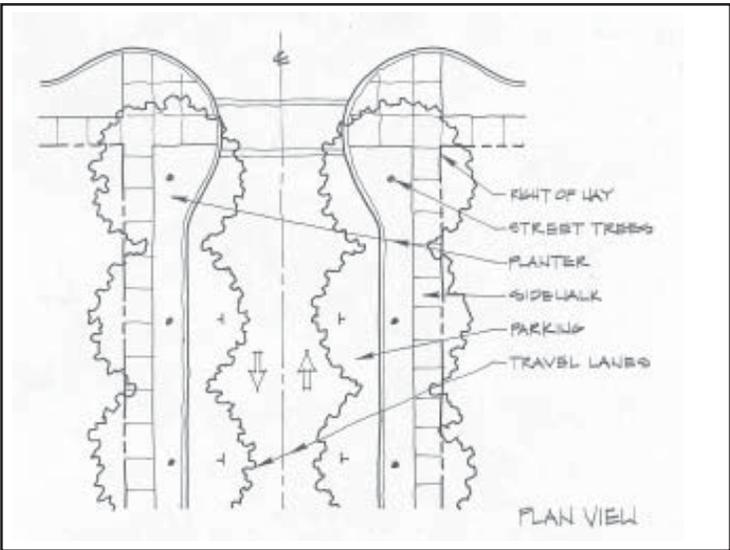




Fig. 1.2.6

## B. TRANSITIONAL STREETS

Transitional streets connect residential neighborhoods to commercial centers and service commercial districts. Avenues and Main Streets are transitional roadways. In addition to providing access, they carry large and more diverse amounts of traffic. Avenues and main streets host deliveries and efficient emergency responses. They anchor neighborhood commerce, serve bicyclists and pedestrians, and improve transit operations. Transitional streets must operate at low to moderate speeds, since many people live, work, shop, and play within these street environments. Parking is found on many, but not all, avenues and main streets.

The Transitional Street category includes the following Street Types:

- Avenues
- Main Streets

See the following pages for plates illustrating the transitional streets in graphics and text.

## AVENUE

City Std. 200B

### DESCRIPTION

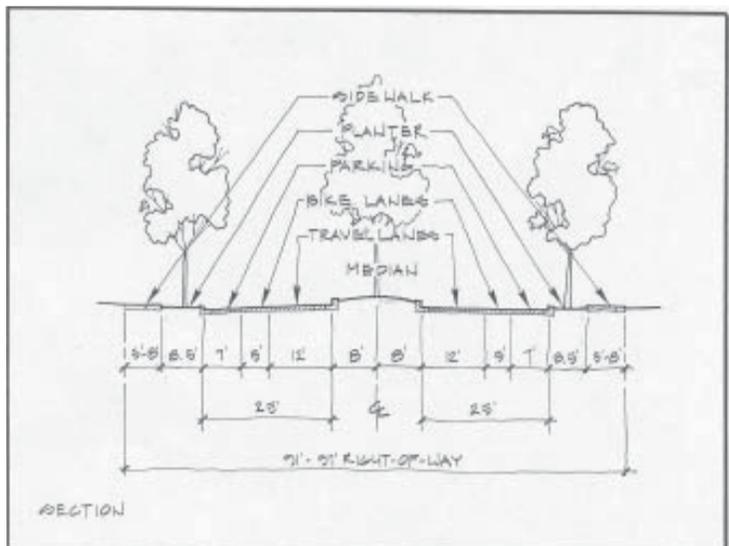
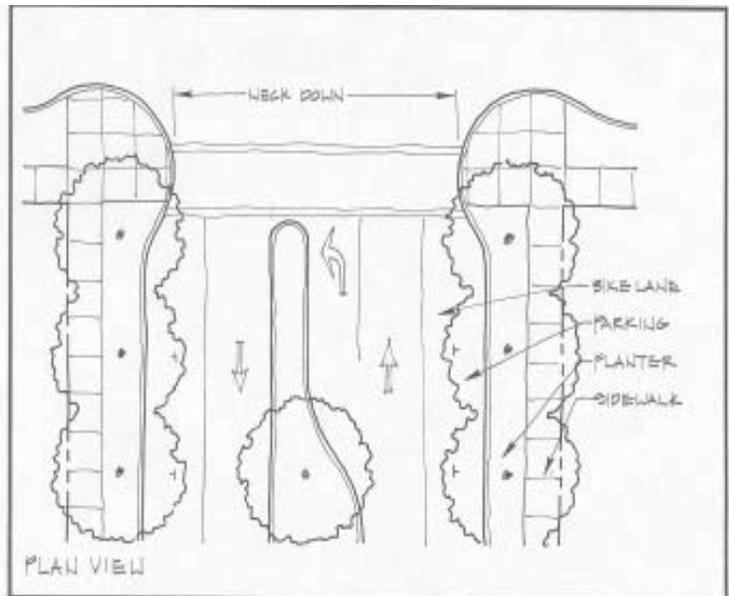
Avenues connect neighborhoods to town centers, commercial centers, and other neighborhoods. The paved portion of the roadway is from 17-24 feet per side (depending upon whether on-street parking or bike lanes are provided). A raised center median is preferred allowing for a triple canopy of street trees. Avenues are richly landscaped, since they are civic spaces that serve as gateways to town centers. Since avenues serve as the transitions between neighborhoods and commercial districts, speeds should be kept low, typically 35 mph. Avenues also serve as major transit routes. Avenues may circulate around a square or neighborhood park.

### FEATURES

- Width: 24 ft. On both sides of median with on-street parking. 17 ft. if no on-street parking, curb & gutter.
- Median width: 12- 16 ft.
- Maximum two travel lanes. Actual number of lanes shall be determined in concert with the City Staff, based on the City's General Plan Transportation Element.
- Bike lanes: 5 ft.
- Right-of-way: 91-97 ft.
- Neck down at intersection permits easier pedestrian crossing.
- 8 ft. planter strips typical.
- 5- 8 ft. sidewalks both sides typical.
- Maximum length approximately one mile long.
- Drainage: curb & gutter, median may have swale for natural drainage & water retention.
- Contiguous sidewalk at bus stops/turnouts.
- Allow for two way left turn lane.
- Allow for delivery zone in commercial areas.

### BUILDING & LAND USE

- All residential uses and mixed residential and commercial uses.
- Buildings brought close to sidewalk.
- Consistent build-to line suggested.
- Place prominent public buildings and plazas at end of vista (terminated vistas).



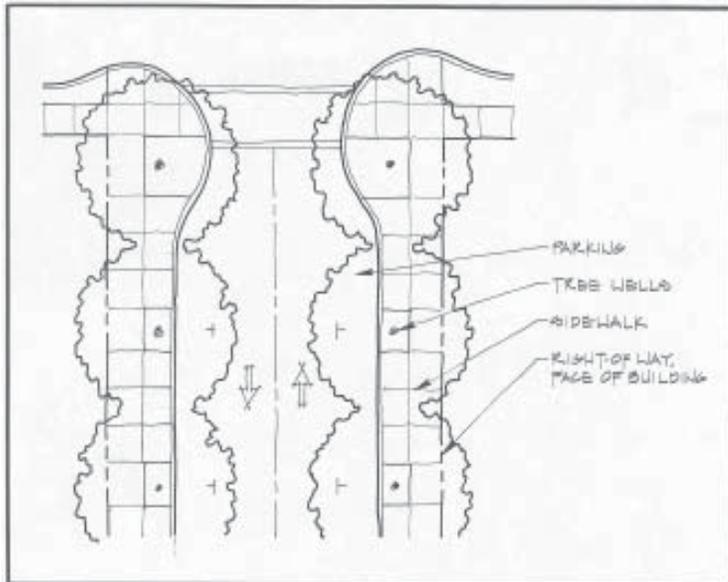


## MAIN STREET

City Std. 200B (needs clarification)

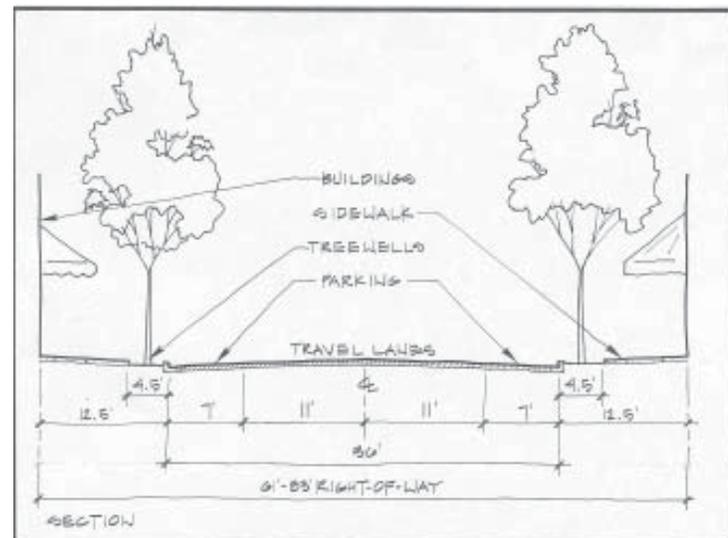
### DESCRIPTION

Main streets provide access to neighborhood commercial and mixed use buildings and districts. The paved section is generally 36 feet wide with a 60 foot right-of-way. On-street parking is very desirable and recommended. Low speeds (25-30 mph) are desirable to protect pedestrians and enhance commercial activity. To help pedestrians safely cross streets and to calm traffic, bulbouts (wider sidewalks that extend into the parking lane) or raised pavement should be provided at intersections and if blocks are long, at mid-block crossings.



### FEATURES

- Travel lanes: 11 ft, with striped parking.
- Maximum 4 travel lanes. Actual number of lanes shall be determined in concert with the City Staff, based on the City's General Plan Transportation Element.
- Landscaped median optional.
- Bike Lanes: Refer to the City's Bicycle and Pedestrian Master Plan for locations.
- Right-of-way: 61- 83 ft.
- Bulbouts at intersection and mid-block crossings.
- Contiguous 8 ft.- 12 ft. sidewalks with minimum 4 ft. sq. tree wells.
- Drainage: curb & gutter.
- Diagonal parking (similar to Fourth Street in Railroad Square) is encouraged adjacent to commercial and mixed uses.
- Allow for delivery zone.



### BUILDING & LAND USE

- Commercial and mixed use.
- Buildings brought close to sidewalk.
- Consistent build-to line suggested.
- Place prominent public buildings and plazas at end of vista (terminated vistas).
- Awnings, arcades, sidewalk dining, retail, benches, and other pedestrian amenities recommended.

## C. REGIONAL STREETS

Boulevards and parkways connect town centers to the greater region. Boulevards and parkways are essential for combining motorized and non-motorized traffic in safe, efficient, welcoming environments. Since the success of commerce and traffic circulation depends on effective street design, much attention has to be paid to the orderly and balanced movement of all transportation modes on boulevards and parkways. On these streets, car traffic, delivery trucks, emergency responders, and transit must operate with high levels of efficiency. Pedestrians and bicyclists must also be welcomed and are in greater need of support, due to higher vehicle speeds and amounts of traffic.



Fig. 1.2.7

The Regional Street category includes the following Street Types:

- Boulevards
- Parkways

See the following pages for plates illustrating the Regional Streets in graphics and text.



## BOULEVARD

City Std. 200L

### DESCRIPTION

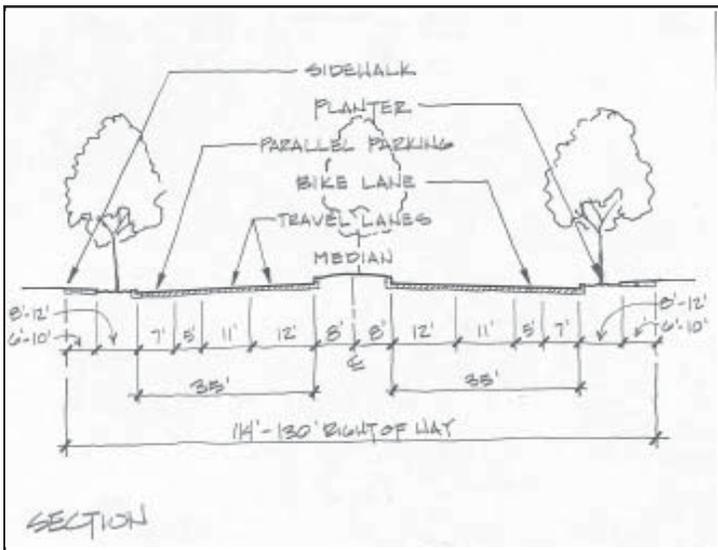
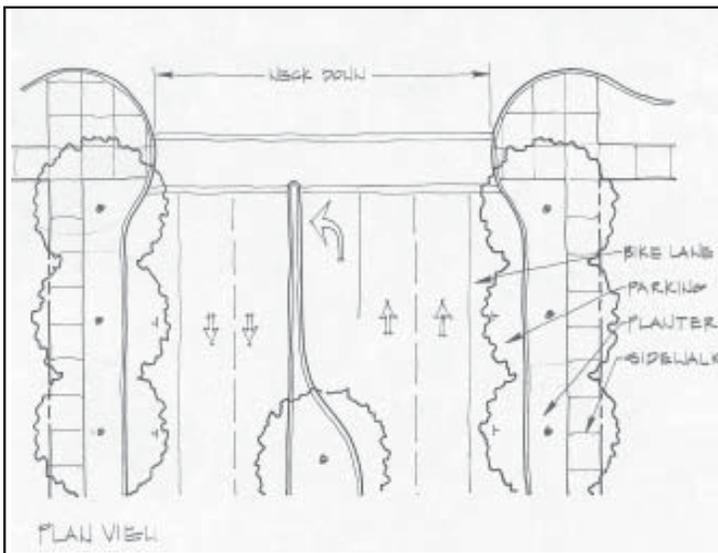
Boulevards provide multi-lane access to commercial, residential and mixed-use buildings and they carry regional traffic. For these reasons, speeds on these streets are higher (30-40 mph). Boulevards have medians, which are optional, but preferred, bike lanes and parking to support adjacent uses. When parking is provided the paved section is typically 35 feet per side with a raised median in the center.

### FEATURES

- Travel lanes: 11- 12 ft, with striped bike lanes-stripped parking optional.
- Maximum 4 travel lanes. Actual number of lanes shall be determined in concert with the City Staff, based on the City’s General Plan Transportation Element.
- Median width: 12- 16 ft.
- Bike lanes: 5 ft.
- Right-of-way: 114-130 ft.
- Neckdowns at intersection.
- 8 - 12 ft. planter strips typical.
- 6- 10 ft. sidewalks both sides typical.
- Contiguous min. 10 ft. sidewalks with minimum 4 ft. sq. tree wells at commercial locations.
- Drainage: curb & gutter.
- Contiguous sidewalk at bus stops/turnouts.

### BUILDING & LAND USE

- Commercial, residential and mixed use.
- Buildings brought close to sidewalk.
- Consistent build-to line suggested.
- Sidewalks and bike lanes both sides.



# PARKWAY

City Std. 200C

## DESCRIPTION

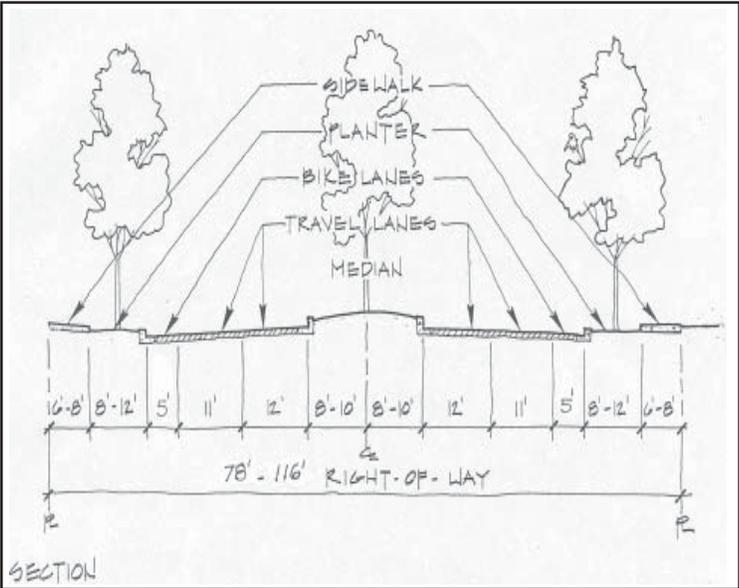
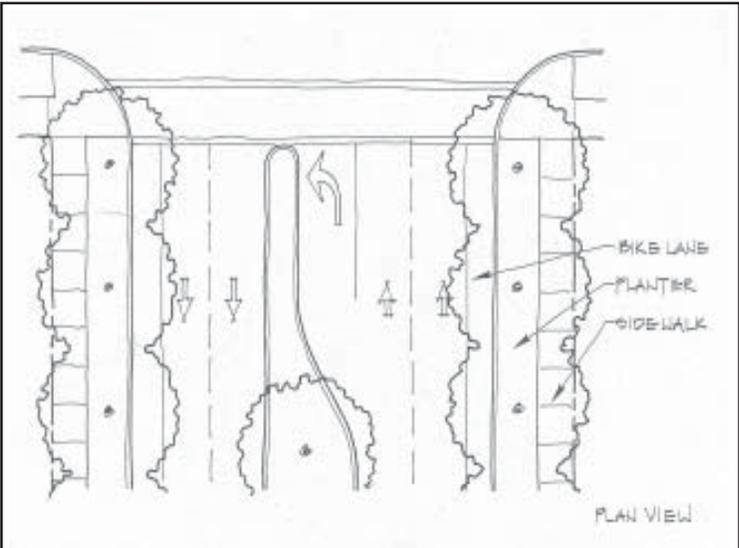
Parkways bring people into town, or they carry traffic through natural areas. Parkways are not designed to accommodate adjoining development. Roadway speeds may be 35-45 mph or higher. When parkways enter town, they become boulevards, and speeds are reduced to 30-40 mph. Bike lanes are typically included in parkways, although they may be separated from the Parkway. Since parking is not included, the paved section is generally 29 feet per side with a raised median. Rights-of-way can be from 78 to 116 feet.

## FEATURES

- Travel lanes: 11- 12 ft.
- Maximum 4 travel lanes. Actual number of lanes shall be determined in concert with the City Staff, based on the City’s General Plan Transportation Element.
- Median width: 14- 24 ft.
- Bike lanes: 5 ft. (also used as an emergency pull-over lane).
- Right-of-way: 78-116 ft.
- 8-12 ft. planter strips typical.
- 6-8 ft. sidewalks typical, may be one side only.
- Drainage: curb & gutter or swales allowed.
- Verify if bus stop/turnout is needed. If so, sidewalk is also needed for disabled access.

## BUILDING & LAND USE

- No buildings directly adjacent to parkway.
- Parkways are designed to be on the edge of towns, nature preserves or agricultural areas with limited access.
- Multi-use trails maybe on either or both sides.



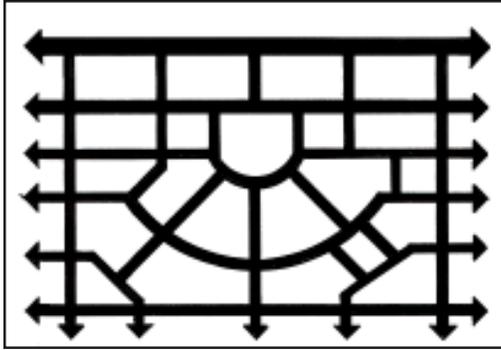


Fig. 1.2.8 The City's preference is for interconnected street systems which permit pedestrians and vehicles many choices in navigating through their neighborhood.



Fig. 1.2.9 Vistas at the end of a street (or on a curve) provide opportunities for important buildings, man made or natural features. Placing prominent buildings in these locations also helps people to orient themselves within a neighborhood.

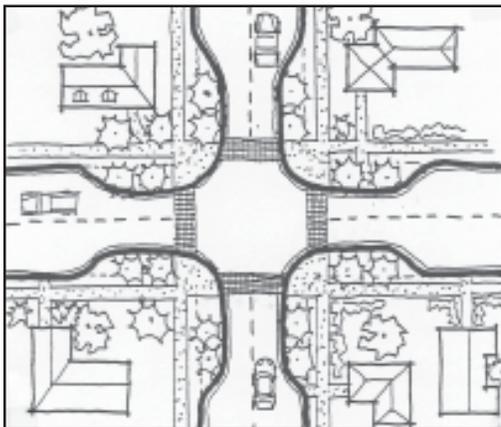


Fig. 1.2.10 Neckdowns at intersection

### III. DESIGN GUIDELINES

#### A. STREET SYSTEM DESIGN

Many development applications occur on existing streets and the scope of the project does not extend to the street system. However, when projects are large and include public streets, they should follow the following guidelines.

1. Design the street layout to be well connected. Limit block lengths to approximately 600 feet.
2. In residential neighborhoods motorist speeds should be kept between 10 and 25 mph.
3. Provide on-street parking as a general rule. Exceptions include parkways and some boulevards. *On-street parking provides several important advantages. In urban areas with contiguous sidewalks, the parked vehicles act as a buffer between pedestrians and moving vehicles and also act as a traffic calming device. In commercial areas, both Downtown and along Avenues and Boulevards, on-street parking provides convenient access for customers which is critical to merchants. In residential settings on-street parking provides visitor parking and acts as a safety valve for overflow parking.*
4. In residential neighborhoods, intersections should have relatively small turning radii that require low speeds, yet allow access by infrequent street users such as fire trucks, maintenance trucks, and delivery vehicles.
5. Design streets with terminated vistas or prominent features where they end, or at the apex of curves.
6. Provide neck downs at intersections (per the Street Plates and page 1.2-19) to shorten crosswalks for pedestrian safety, slow traffic and eliminate parking at the intersection.
7. Provide planter strips with street trees to create a leafy canopy over the street, establish a vertical structure which narrows the perceived width of the roadway (slowing traffic) and separates pedestrians from moving traffic.

8. Provide medians on avenues, boulevards and parkways where it is proper to limit turning movements and where adjoining land uses are supported with limited access. Medians help to create a pedestrian friendly streetscape.

## B. SELECTING THE PROPER STREET

*The network of urban streets provides the matrix of vehicular circulation and also constitutes the major part of the public realm available to pedestrians. As the shared setting for most buildings, streets provide the constant potential for community interaction. As such, streets must be carefully designed both for vehicular capacity and to enhance the pedestrian setting. In addition to providing an attractive pedestrian setting, it is important to limit the speed of vehicular traffic. The velocity of vehicular movement is controlled by physical factors which create the perception of a maximum safe speed. The physical factors are principally the width of the street, inclusion of parking lanes, and street trees. Other factors are the centerline radius and the curb radius.*

*Conventional traffic design manuals prescribe lane width combinations that promote high traffic speeds. These guidelines include a range of options appropriate to the range of urban conditions.*

*The general rule of thumb in selecting streets in Santa Rosa is to use the minimum width street that serves the purpose. The following Design Matrix and Street Selection Guideline should be utilized to select the proper street type.*



Fig. 1.2.11 Local Street.



Fig. 1.2.12 Transitional Street - Fourth Street.



Fig. 1.2.13

## DESIGN MATRIX & STREET SELECTION GUIDELINE

Street Type	City Standard	Max Width	Desired Corner Radius	Desired Centerline Radius	Curb	Median
<b>LOCAL STREET CATEGORY</b>						
Trail	(1)	8-14'	n/a	n/a	no	n/a
Alley	202*	12'	n/a	50'	no	n/a
Lane	200E*	16-20'	15'	90'	option	no
Neighborhood Street	200F 200G*	20/26/30'	15'	90-120'	yes	no
Minor Street	200B	24/30/36	15'	120-150'	yes	no
<b>TRANSITIONAL STREET CATEGORY</b>						
Avenue	200B	varies	15-25'	250'	yes	option
Main Street	200B*	varies	15-25'	600'	yes	option
<b>REGIONAL STREET CATEGORY</b>						
Boulevard	200L	varies	25'	500'	yes	yes
Parkway	200C	varies	25'	1000'+	option	yes

\* = Needs clarification or modification

Note (1) Needs new standard (as of date of original adoption of Guidelines)

(2) Average Daily Trips

(3) See City's "Bicycle & Pedestrian Master Plan" for bike lane locations

(4) Consider separated bike path if room exists for extended distance

Desired Street Length	Vehicle Volume (2)	Side Walk	Bike Lanes	Trees	2-way Traffic	Parking Requirement
n/a	n/a	n/a	n/a	yes	yes	none
400'	200	no	no	optional	yes	optional
600'	200	both	no	yes	yes	1 side only in bays
1400'	600	both	no	yes	yes	2 sides
2000'		both	no	yes	yes	2 sides



Fig. 1.2.14 This 30 foot street with a neck down located within Courtside Village in Southwest Santa Rosa, slows traffic and shortens the crossing distance.



Fig. 1.2.15 Spring Street mini-circle.



Fig. 1.2.16 Roundabout in Naples, Florida.

## IV. TRAFFIC CALMING

The practice of using roadway geometry to improve traffic safety has come to be known as “Traffic Calming”. Traffic Calming slows vehicles on streets where drivers travel at higher speeds than is desirable. It is a way to reduce the negative effect of the automobile use, alter driver behavior and improve conditions for property owners, retailers, pedestrians and bicyclists. To accomplish this, a combination of physical treatments are used such as: intersection neck downs, tree bulb outs at mid-block locations, raised intersections and crosswalks, roundabouts and mini-circles.

Traffic Calming is most often utilized to correct conditions on an existing street where the original design was inappropriate for, or no longer matches, the existing use. In some cases changes in land use and transportation patterns have changed traffic speeds and volumes. These guidelines do not address Traffic Calming in existing neighborhoods. Every existing condition is unique and requires specific analysis.

In 1996, the City of Santa Rosa’s Traffic Engineering Division prepared a report entitled “Traffic Management and Calming within Santa Rosa”. This document should be referred to for an overview as well as a more comprehensive and detailed discussion of Traffic Calming. Residents can contact the Traffic Engineering Division (543-3814) to discuss particular situations, or locations where problems may exist.

These guidelines address new development. While Traffic Calming has predominantly been used in retrofit situation, it can also assist in slowing traffic to appropriate speeds in new developments. Following are a brief description of some Traffic Calming “tools” that are appropriate on new streets. Designers should consider their use.

The City is in the process of developing an Emergency Response network which will designate certain streets as Emergency Response Routes. Traffic calming techniques along designated streets will be limited.

### A. NECKDOWNS (ALSO KNOWN AS BULBOUTS AND CURB EXTENSIONS)

Neckdowns, Bulbouts or Curb Extensions are all names for extending the sidewalk or curb line into the street and reducing the street pavement width. This feature is included on typical street plates in section 1.2 (II). This tool calms traffic speeds and shortens the path at pedestrian crossings. Neckdowns improve visibility for motorists and pedestrians and discourage vehicles from parking too close to the intersection. Additionally, neckdowns lower speeds of vehicles moving through the intersection. Neckdowns can also be effectively used at mid block pedestrian crossings. They along with landscaping and a change in pavement give a clear signal to the motorist to watch for pedestrians.

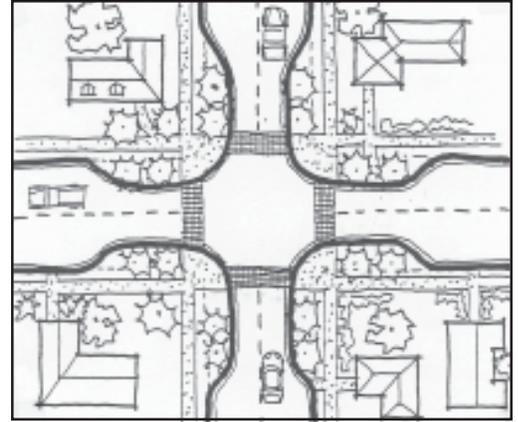


Fig. 1.2.17 Neckdown at intersection.

### B. GATEWAYS

A gateway is created usually with a combination of features such as landscaping, signage, a narrowing of the street, or a change in pavement. The purpose is to announce to motorists that they are leaving a higher speed environment and entering a slower speed environment. This is especially appropriate when leaving a commercial area and entering a residential neighborhood, or when coming into town on a limited access Parkway and entering a commercial area with an Avenue or Boulevard.

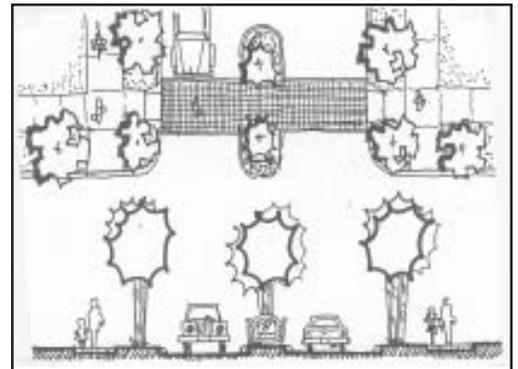


Fig. 1.2.18 Gateway.

### C. LANDSCAPING

Planter strips and street trees are addressed in other sections. It is noted here to reiterate the effect they have on calming traffic. Street trees narrow the perceived width of the roadway causing motorists to unconsciously slow down. The street trees along with shrubs also provide a barrier between moving traffic and pedestrians.

### D. MEDIANS

Medians perform several traffic calming functions. When planted with street trees, they narrow the perceived width of the roadway as noted above. Additionally, they provide the opportunity for a place of refuge at pedestrian cross walks. On multi-lane streets, the ability for pedestrians to stop in

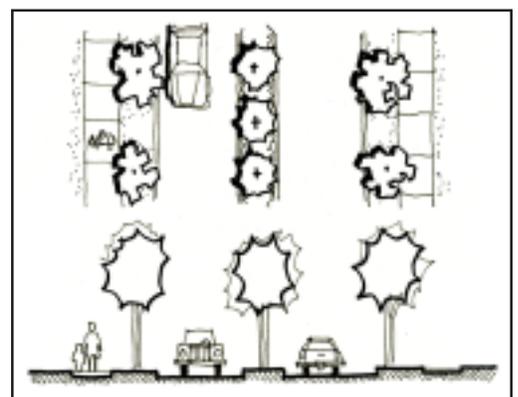


Fig. 1.2.19 Median



Fig. 1.2.20 Raised intersection

the middle and wait for traffic is important. Medians also provide the opportunity to create a special landscaping statement on significant streets.

**E. RAISED INTERSECTIONS AND CROSSWALKS**

A raised intersection or crosswalk elevates the entire intersection or crosswalk 4-6" with a ramp on each leg. The raised section is generally a different paving material. This tool can be effective in a high profile location such as a town center where heavy pedestrian traffic is anticipated. It slows traffic passing through the intersection or across a mid-block crosswalk and makes a clear statement that this is an important pedestrian environment

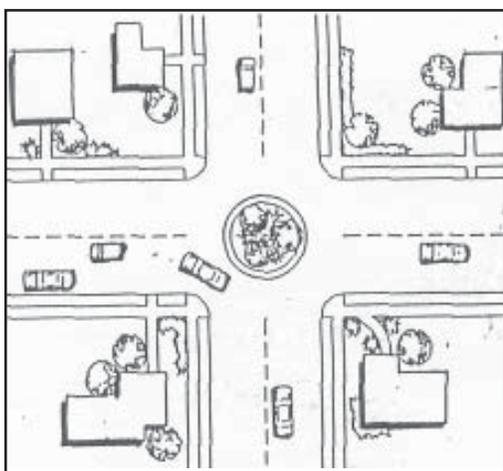


Fig. 1.2.21 Mini-circle

**F. MINI-CIRCLES**

Mini-circles are circular islands placed in the middle of intersections, typically in residential neighborhoods. Usually the circle contains landscaping. There are examples of mini-circles on Spring Street in Santa Rosa. Drivers making left turns drive in a counter clockwise direction exiting the circle with a right turn on the desired street. Statistics show that mini-circles can reduce accidents up to 90% and improve emergency response times by eliminating stop signs.

**G. ROUNDABOUTS**

A roundabout is a larger island than a mini-circle that includes deflector islands and a circular raised island in the middle. As with circles, drivers enter into gaps in traffic and exit on the desired street with a right hand turn. Signals and stop signs are eliminated. Roundabouts are less expensive to install and maintain than signalized intersections, reduce traffic accidents, and can carry more traffic. Roundabouts can be designed to accommodate pedestrians and bicyclists. Roundabouts, like circles and medians, offer the opportunity to create a special landscaping treatment.

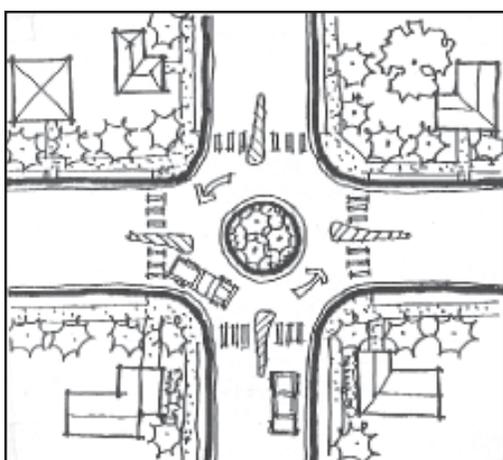


Fig. 1.2.22 Roundabout

**H. CHICANES**

A chicane is a device used to slow traffic by forcing vehicles to follow a serpentine route. The combination of reduced vision, narrowed street width and the curved path of travel, slows traffic and elicits a cautious response from motorists.