

7. TRANSPORTATION ELEMENT

7.1 Transportation Concept

The transportation system plays a very important role in creating a livable and unique community. Most people want to live in a community that they can enjoy as pedestrians and motorists. If carefully planned and implemented, the transportation system can give a community a distinctive character that makes it a more highly sought after place to live.

This Concept Plan establishes a Transportation Element that is intended to accomplish two planning goals:

1. Create an attractive pedestrian and bicycling environment.
2. Support development of a distinctive residential community.

Features of the transportation concept include:

- A residential parkway that forms the backbone of the Concept Plan Area. The parkway will be created to provide an attractive pedestrian environment in a park-like setting. The Parkway will also help to preserve the area's rural feeling.
- A pedestrian network that allows residents to walk to and from key destinations (parks, shopping) for recreation and transportation.

Figure 7-1 illustrates the automobile circulation plan for the Concept Plan area, followed by a detailed explanation of how it will be implemented. Detailed information and graphics on the pedestrian plan are also included in this element. It should be noted that, in general, streets have been located on property lines in order to facilitate development. However, a possible disadvantage of locating streets on property lines is that streets might be incomplete when only one property owner elects to develop their land. These locations should be considered "shadow" streets, and the locations of street connections might shift some as a result of the subdivision process.

Park and may help to reduce through traffic volumes along Oregon 99E, thus relieving the over-capacity situation expected for that facility. A full study of appropriate intersection treatment at this intersection should be undertaken prior to initiating any improvements.

7.7.2 Roadway Projects

Analysis was conducted to identify the potential costs associated with developing the street system to serve the NE Canby Concept Plan area. Included were streets entirely within the project area, as well as streets immediately adjacent to the project. The cost estimates should be considered as planning level estimates only and not for construction. Assumptions included in the estimates are as follows:

- Streets are assumed to be built to the cross-section and with the required features identified in the City of Canby “Land Development and Planning Ordinance”. For the residential parkway, the street cross-section would require 86 feet of right-of-way width.
- Unit costs were developed per linear foot of roadway by functional classification. The development of these unit cost estimates assumes \$3.50 per square foot for asphalt paving and base; \$20 per linear foot for sidewalks, and \$10 per linear foot for curbs and gutters. Drainage is assumed to cost 10 percent of the base and paving cost, landscaping between 5 and 10 percent, and traffic management 15 percent. A 40 percent contingency was included along with 25 percent for preliminary and construction engineering. Total unit costs per linear foot are comparable to those used by Clackamas County for planning level estimation of project costs. These unit costs by street classifications are as follows:
 - Parkway - \$865.00
 - Collector (Territorial, Mulino and Hazel Dell) - \$903.00
 - Neighborhood Connector (all others) - \$792.00

Total cost for improvements to roads in the study area are presented in Table 7-1. As indicated in the table, total cost of developing the internal street system for the project area (including urban upgrades to streets immediately adjacent to the study area) would be approximately \$16.1 million. This estimate does not include costs associated with the specific traffic mitigation improvements identified in Section 7.5.1.

S Sequoia Parkway/Redwood Street and would meet ODOT's access management policy requirements. The Otto Drive connection to Oregon 99E is included in the City's *Transportation System Plan*. (ODOT owns full access control along this section of highway, so a "Grant of Access" will need to be obtained.) ODOT access control policies for Regional highways like Oregon 99E stipulate that new intersections can be located with a minimum spacing of 990 feet where the speed limit is 55 mph. This is the current speed limit along most of the highway between Territorial Road and Otto Road. As the NE Canby area develops, the speed limit in this area may be lowered to complement the changed urban environment. Access spacing for highways with 45 mph speed limits is 750 feet, while for 35 mph speeds it is 600 feet.

No additional roadway access onto Oregon 99E is planned.

7.7 City Transportation Projects

7.7.1 Mitigation Projects

The NE Canby Concept Plan area will cause increasing traffic congestion on Oregon 99E and other City roadway facilities.

7.7.1.1 Oregon 99E/Pine Street

Two mitigation options were considered:

- Develop east/west left turn lanes that could improve signal phasing at this location and provide additional capacity for traffic on this street, thus freeing up additional green time for the heavy volumes on the state highway.
- Add right turn lanes on Oregon 99E to provide additional capacity for these turning movements and improved operations for the through traffic movement.

7.7.1.2 Oregon 99E/Otto Road

Install a traffic signal. Peak hour warrants per the Manual of Uniform Traffic Control Devices were evaluated based on projected traffic volumes for the Concept Plan. This evaluation indicates that the peak hour warrants would be met with substantial leeway.

7.7.1.3 S Haines Road at 1st Avenue/Mulino Road

Three mitigation options were considered:

- The first involved installation of a traffic signal. Peak hour warrants would be met if the heavy northbound right-turning movement from S Mulino Road to S Haines Road is considered. Without this volume, peak hour warrants would not be met
- The second involved development of a roundabout to serve SE 1st Avenue, S Mulino Road, S Haines Road and a new east/west road serving the NE Canby study area (potentially an extension of Otto Road). This roundabout would likely operate at an acceptable level of service under either land development alternative.
- Traffic mitigation at this location could also involve a complete reconstruction of the intersection to accommodate a shift in through traffic movement away from a SE 1st Avenue/S Haines Road alignment to a more direct connection (e.g. not requiring turns) between S Mulino Road and S Haines Road (with turns onto and off of SE 1st Avenue). The provision of a more direct connection along Haines/Mulino Road would better accommodate traffic traveling to and from the Canby Pioneer Industrial

7.4 Connectivity Performance Standards

The purpose of a street network is to connect separated places and to enable movement from one place to another. With few exceptions, a local street network connects every place in a community to every other place in a community. But, depending on the design of the network, the quality of those connections will vary. The network may provide one connection or many connections from one place to another. The number and quality of connections is referred to as connectivity. A high degree of connectivity influences the accessibility of potential destinations in a community, and has important implications for travel choices, emergency access and quality of life.

Development in the area is required to meet the following connectivity standards:

- Pedestrian connectivity performance standards are detailed in Section 7.3.
- An automobile connection must be developed within 600 feet of the nearest parallel facility, including the Parkway, Collector, Neighborhood Connector, and Local Street classifications. Oregon 99E is not considered an adequate parallel connection because the facility is not designed to handle internal circulation and ODOT retains full access control within the NE Canby Concept Plan area.

7.5 Modern Roundabouts

Modern roundabouts are a form of intersection that can efficiently and safely handle higher traffic volumes than standards intersections while providing easy crossings for pedestrians. Modern roundabouts can also be designed to enhance an area's aesthetic quality and afford it with a distinctive edge. Figure 7-1 shows potential locations for construction of modern roundabouts.

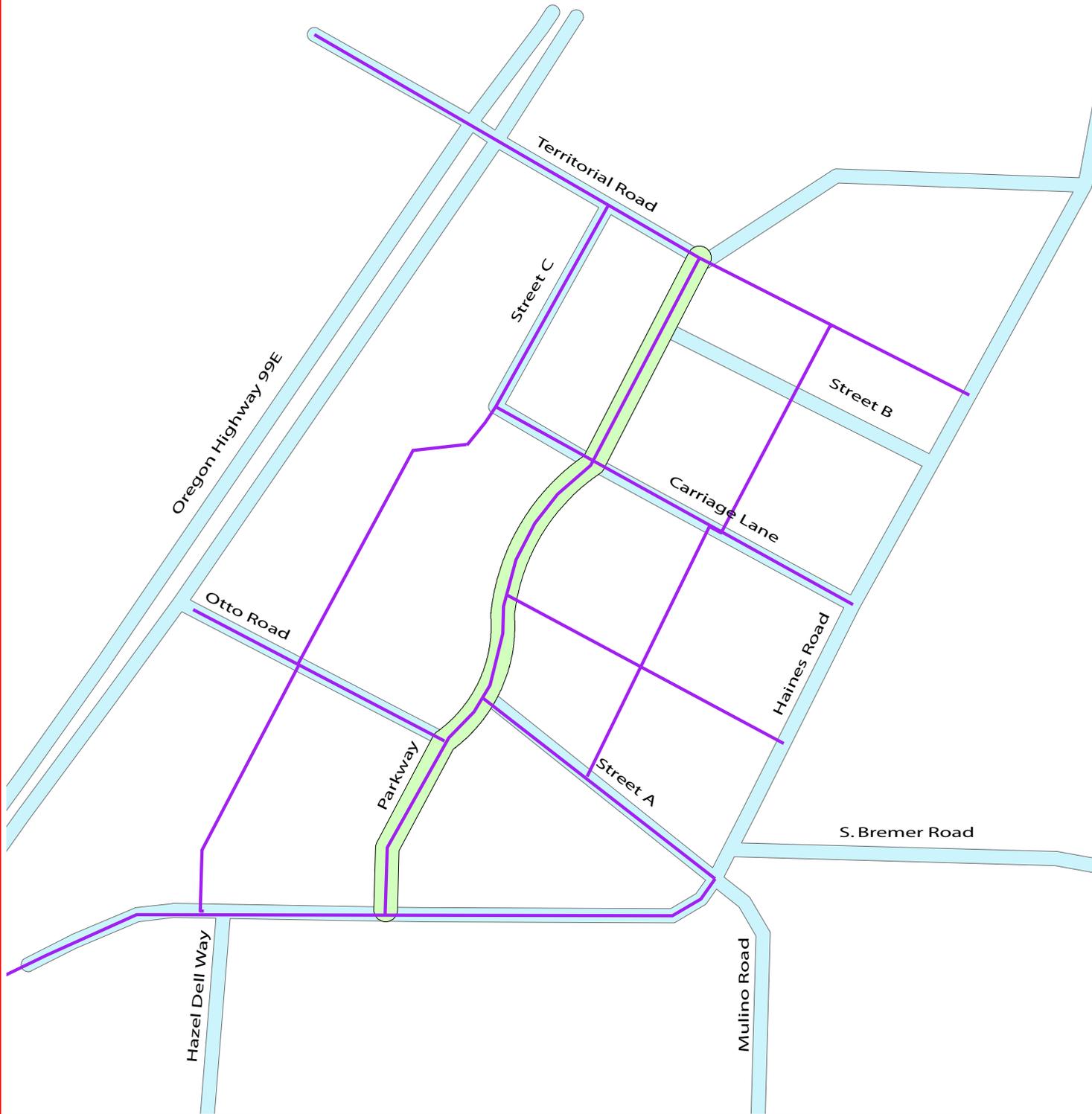
Photograph 7-2. Example Modern Roundabout



(For illustration only)

7.6 Access Management Strategies

An improved intersection will be added on Oregon 99E at approximately Otto Road. This new intersection would lie over 1,000 feet north of the existing intersection of Oregon 99E at



—
 PRIORITY
 PEDESTRIAN
 CONNECTION

↑
 1":600'

NE CANBY MASTER PLAN

FIGURE 7-9: PEDESTRIAN PLAN

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7.3 Pedestrian Plan

Sidewalks provide basic separation between motor vehicles and pedestrians (children walking to and from the school bus, parents pushing baby carriages, people out for an evening stroll, etc.). Sidewalks are required on every street within the NE Canby Concept Plan area, and they must be continuously connected to provide a fully interconnected network. This Concept Plan includes a Pedestrian Plan which provides a general policy for the location of key pedestrian connections (Figure 7-9). Pedestrian connections identified on Figure 7-9 can be provided on streets or pedestrian walkways. Pedestrian connections identified on Figure 7-9 will be striped with crosswalks and receive a special safety treatment when traversing the parkway or collectors.

A pedestrian connection, a sidewalk or walkway, must be constructed within 400 feet of the nearest parallel facility. Where there is more than 400 feet, a pedestrian connection must be provided. This connectivity standard includes, but is not limited to, the sidewalks, walkways, and other transportation facilities identified on Figure 7-1 or Figure 7-9.

The City of Canby currently has pedestrian connections across Oregon 99E and the Union Pacific Railroad Tracks in the Concept Plan area at the intersection of NE Territorial Road/Oregon 99E. The City of Canby and ODOT will explore whether a pedestrian connection is feasible at Otto Road/Oregon 99E, over or under the railroad tracks, when traffic signals are installed. If such a connection were feasible, the City of Canby may develop a multiuse trail to the northeast of this intersection.

Photograph 7-1. Pedestrian Walkway

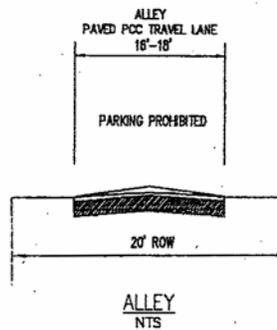


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7.2.5 Service Drives and Alleys

The function of service drives and alleys is to provide access to parking areas and garages. The service drive is characterized by a single 16-foot to 18-foot travel lane with no parking (Figure 7-7).

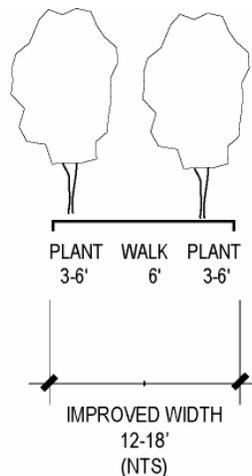
Figure 7-7. Alley Cross-section



7.2.6 Pedestrian Walkway

The function of pedestrian walkways is to provide pedestrian connectivity through areas where streets are not present. At a minimum, a pedestrian walkway includes a 6-foot sidewalk (using pavement or other durable materials), and landscape buffers ranging from 3 feet to 6 feet as right-of-way allows (Figure 7-8). Landscaping should include native hardy shrubs for narrower buffers and native trees for wider buffers. Where pedestrian walkways are adjacent to private development, a 6-foot to 8-foot tall privacy fence will be constructed. Pedestrian walkway will be constructed at least every 400 feet from the nearest viable pedestrian connection (including existing and planned streets and walkways). These pathways will be constructed as public improvements.

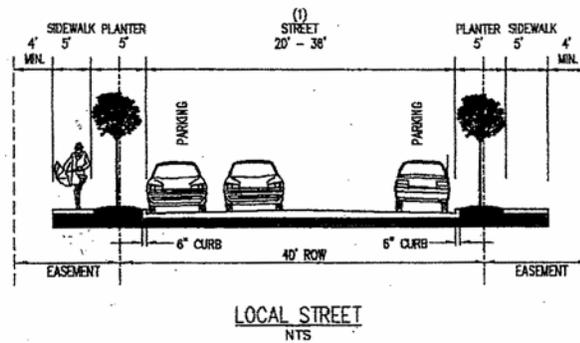
Figure 7-8. Pedestrian Walkway



7.2.4 Local Streets

The function of local streets is to provide access to private dwellings and businesses. The local street is characterized by two 11-foot-wide travel lanes; 7-foot parking lanes and provides that sidewalks should be placed on both sides of the street, separated from the street by a planting strip (Figure 7-6). Local streets can be laid out in a variety of different patterns, including but not limited to grid patterns, cul-de-sacs, or loops. However, cul-de-sacs should only be created in combination with a housing cluster when necessary to preserve natural resources. Local streets in the NE Canby Concept Plan area will utilize bioswales and other on-site stormwater management facilities whenever possible. Bioswales and stormwater management facilities will be constructed as part of the street development process, or using other management techniques per the requirements of the Oregon Department of Environmental Quality. Stormwater facilities will be maintained by adjacent land owners in cooperation with the City of Canby. Neighborhood Connector street improvements will be funded by developer exactions.

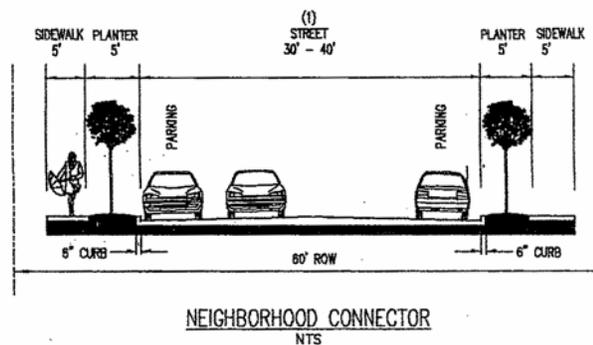
Figure 7-6. Local Streets Cross-section



7.2.3 Neighborhood Connector Streets

Neighborhood connectors provide local access to adjacent properties as well as facilitating movement in and out of a neighborhood or travel between neighborhoods. Neighborhood connectors are characterized by two 11-foot wide travel lanes, with adjacent seven-foot parking lanes, where parking is desired (Figure 7-5). These streets should have sidewalks on both sides of the street, separated from the paved surface by a planting strip. Neighborhood connectors are intended to be low speed, relatively low volume neighborhood streets, and thus are anticipated to function best with vehicles and bicycles sharing the travel lane. Neighborhood Connector streets in the NE Canby Concept Plan area will utilize bioswales and other on-site stormwater management facilities whenever possible. Bioswales and stormwater management facilities will be constructed as part of the street development process, or using other management techniques per the requirements of the Oregon Department of Environmental Quality. Stormwater facilities will be maintained by adjacent land owners in cooperation with the City of Canby. Neighborhood Connector street improvements will be funded by developer exactions.

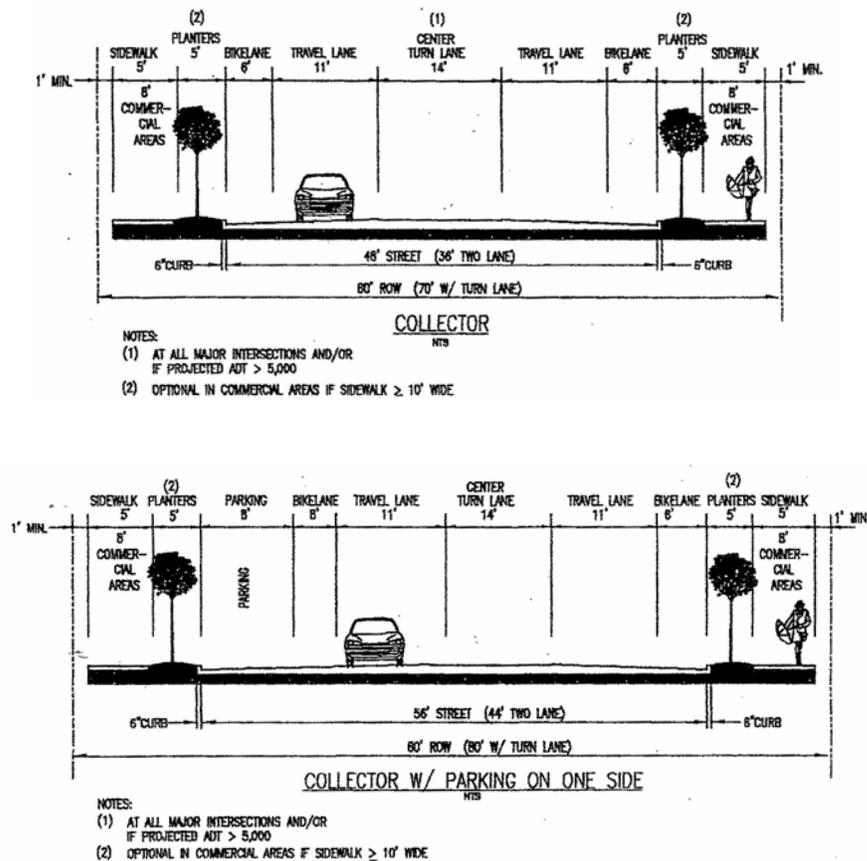
Figure 7-5. Neighborhood Connector Cross-section



7.2.2 Collector Streets

The primary function of collector streets is to move traffic between arterials and local streets, with a secondary function of providing access to adjacent land uses. The collector street is characterized by a two- or three-lane street section (Figure 7-4). Parking may be provided on one or both sides. Bike lanes should be provided. Sidewalks should be provided on both sides of the street, and should be separated from the paved surface by a planting strip. Intersections with arterials may be signalized, if warranted. Collector streets will only include a center thru lane when necessary, otherwise the street configuration will only include two travel lanes. Collector streets in the NE Canby Concept Plan area will utilize bioswales and other on-site stormwater management facilities whenever possible. Bioswales and stormwater management facilities will be constructed as part of the street development process, or using other management techniques per the requirements of the Oregon Department of Environmental Quality. Stormwater facilities will be maintained by adjacent land owners in cooperation with the City of Canby. Collector street improvements may be partially funded through citywide System Development Charges, developer exactions and other City sources.

Figure 7-4. Collector Street Cross-sections



7.2 Street Classifications

7.2.1 Residential Parkway

The primary function of a residential parkway is to create an attractive environment for pedestrians, cyclists, and motorists to traverse an area while accommodating higher volumes than neighborhood connectors and lower street classifications. The characteristics of a residential parkway include pedestrian walkways on both sides of the street with generous landscaped areas on both sides of each walkway, two travel lanes, a landscaped median with left-turn pockets, and bicycle lanes (Figure 7-2). The parkway will be designed to curve in some sections, especially near the neighborhood park. Figure 7-1 shows where the parkway will curve. Extra trees and landscaping will be installed where the parkway curves to create a more rural look for the roadway. The residential parkway is access controlled and street connections are limited to one per every 400' feet. Local street connections to the residential parkway are not allowed.

The residential parkway may be partially funded through citywide System Development Charges, developer exactions and other City sources.

Figure 7-2. Residential Parkway Cross-section

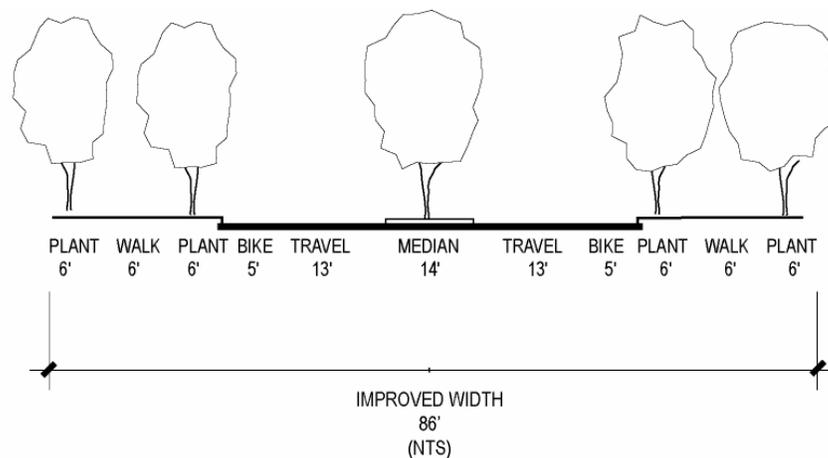
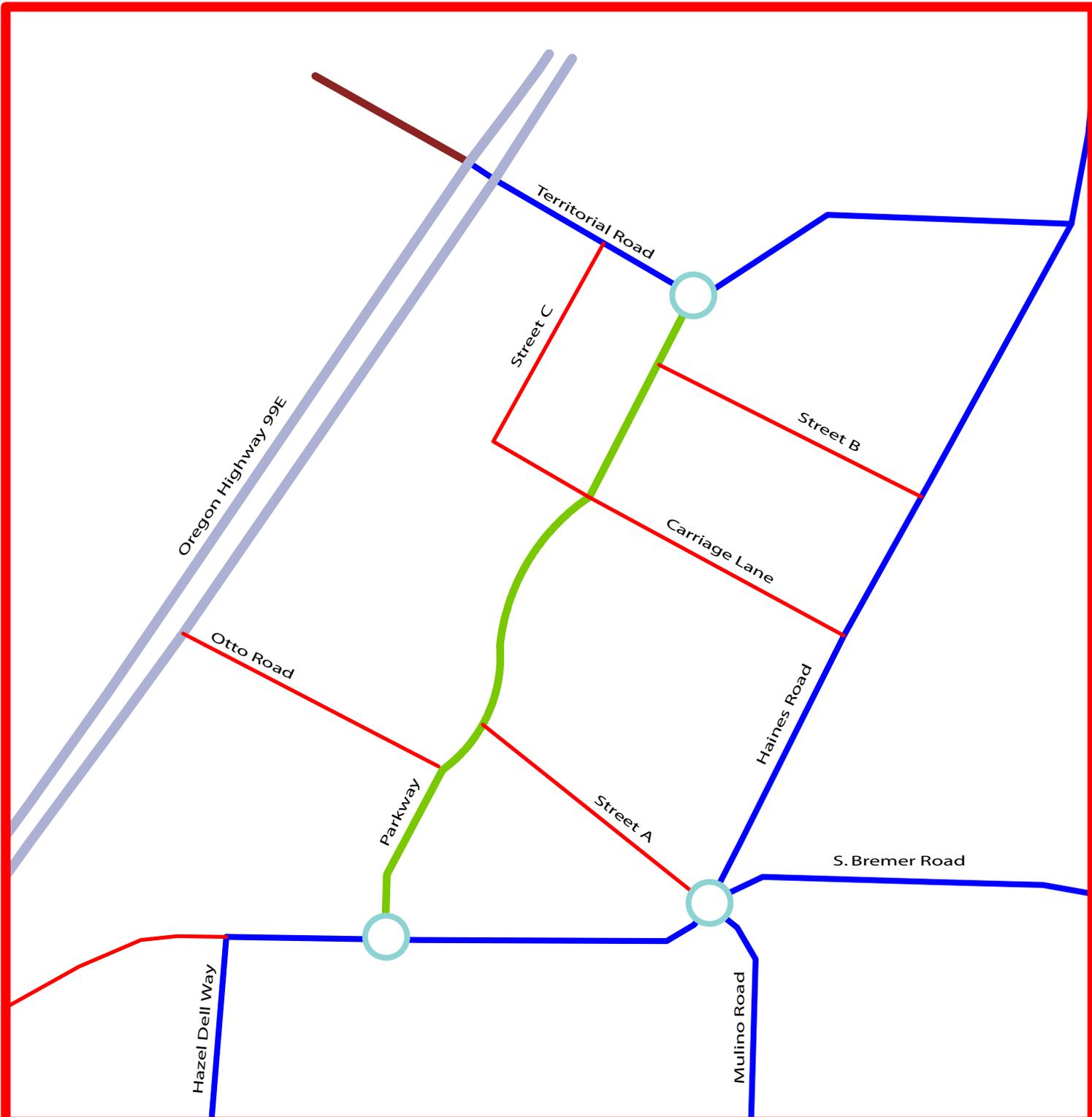


Figure 7-3. Parkway Example



(For illustration only)



STATE HIGHWAY

COLLECTOR



POSSIBLE MODERN ROUNDABOUT LOCATION

ARTERIAL

NEIGHBORHOOD CONNECTOR

PARKWAY

↑
1":600'

NE CANBY MASTER PLAN

FIGURE 7-1: CIRCULATION PLAN

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Table 7-1. Summary of Planning Level Cost Estimates for NE Canby Area Street Improvements

Street Name	Limits	Classification	Length (ft)	Unit Cost (lf)	Total Cost
Parkway	1st – Territorial	Residential Parkway	3,133	\$865	\$2,710,672
NE Territorial Road*	Haines - Oregon 99E	Collector	2,859	\$903	\$2,851,334
S Haines Road	Mulino – Territorial	Collector	3,929	\$903	\$3,547,416
SE 1st Avenue	Hazel Dell – Mulino	Collector	2,124	\$903	\$1,917,717
SE 1st Avenue	West end of project - Hazel Dell	Neighborhood Connector	355	\$792	\$281,160
Otto Lane	Oregon 99E – C (Parkway)	Neighborhood Connector	1,236	\$792	\$978,912
Carriage Lane	C (Parkway) – Haines	Neighborhood Connector	1,247	\$792	\$987,624
Carriage Lane	Territorial – C (Parkway)	Neighborhood Connector	1,453	\$792	\$1,150,776
#7 (Haines-Parkway)	Haines – C (Parkway)	Neighborhood Connector	1,263	\$792	\$1,000,296
#2 (Mulino-Parkway)	Mulino – C (Parkway)	Neighborhood Connector	1,242	\$792	\$983,664
Totals			18,841		\$16,139,570

* This plan recommends downgrading the classification for NE Territorial Road (from Haines to Oregon 99E from Arterial to Collector in the Canby Transportation System Plan.