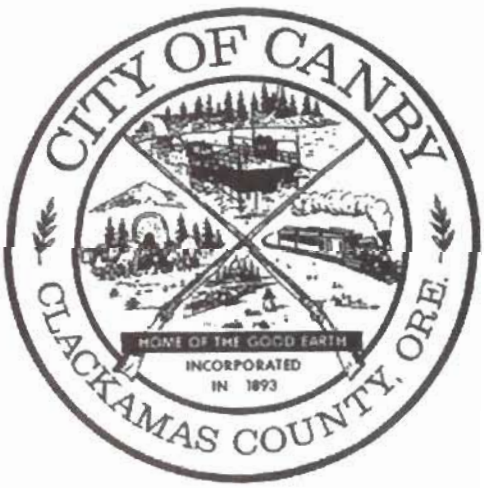
CITY OF CANBY

TRANSPORTATION SYSTEM PLAN

TSP



Adopted April 19, 2000

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Executive Summary

In accordance with the Transportation Planning Rule (TPR), OAR 660 Division 12, a comprehensive analysis of the transportation system within the City of Canby has been prepared. Included is an analysis of existing conditions, identification of short-term and long-term transportation system improvements, a transportation system plan, a transportation finance plan, and a description of the transportation system plan's compliance with the Transportation Planning rule.

The City of Canby has established a well thought out collector and arterial street system to service existing and future land development. Canby's major streets were designed and constructed in fairly wide rights-of-way (harkening back to horse-drawn wagon days of large turning radii) thereby providing greater flexibility in use of public right-of-way (e.g. mixed auto and bicycle use). With some exceptions, most of Canby's collectors and arterials have sidewalks on at least one side of the street.

Other transportation system components in Canby include Tri-Met bus service, local rail service connection S.P.R.R. via Molalla Western Railway (private operator leasing S.P.R.R. branch line), and the Canby Ferry with access across the Willamette River.

Canby also boasts excellent air transportation service with regional airport service at Aurora State Airport, Mulino Airport (Port of Portland is currently developing the Mulino site as a general aviation reliever to Portland International Airport), and local airport service at Oregon City Skypark and Lenhardt Airport Park (Mulino). Passenger Air service at Portland International Airport is within 30-45 minutes access from Canby (via automobile).

A detailed analysis of the street network revealed that there are several unsignalized intersections within the City of Canby that are currently operating at or near capacity along Highway 99-E. These conditions are primarily attributable to the high conflicting traffic volumes on Highway 99-E and the local street connections. Future transportation needs were identified based on an assessment of long-range impacts of local and regional growth of the transportation system and surrounding land uses. Three alternatives were developed to assess the long-term transportation needs: Do-Nothing (No-Build), Comprehensive Plan System Improvements, and Unidentified Improvements Needed. The third alternative, Unidentified Improvements Needed, was chosen as the alternative that best met the established goals and objectives for the development of the TSP.

Transportation system improvement costs were calculated for the improvements identified in the Canby Comprehensive Plan and for those necessary to mitigate future transportation system deficiencies (Unidentified Improvements Needed). These improvements include the reconstruction of existing collector and arterial streets and the construction of new collector and arterial streets to provide future capacity and access for autos, trucks, transit, pedestrians and bicycles. The total cost for all improvements was estimated at $47.8 million. The future transportation system improvement costs were assessed, by formula, to new development, existing land use, and the respective jurisdictions of the City of Canby, Clackamas County and the State of Oregon.

The plan included a detailed examination of transportation system funding sources and identified alternatives for the City of Canby to pay for future transportation improvements attributable to the City.

1

EXISTING CONDITIONS

This section of the Canby Transportation System Plan (TSP) provides a summary of the existing transportation system conditions within the Canby urban area. The purpose of this section is to summarize:

- existing traffic control measures and physical characteristics of City arterial and collector streets
- existing traffic volumes
- existing public transit service routes and ridership
- existing traffic operations (level-of-service) and safety characteristics of roadway facilities within the study area

Canby is situated approximately 20 miles to the south of Portland on the Willamette River. State Route 99E (Pacific Highway) runs through and provides the most direct access to the City. Territorial Road forms the major east-west arterial route to the north of the City, while S. 13th Avenue is an arterial at the southern extent of the City. Ivy Street (the Canby-Marquam Highway) is the major north-south arterial. Holly Street connects Canby with West Linn to the north via the Canby Ferry which provides a somewhat unusual pedestrian, bicycle, and auto service across the Willamette River. The Southern Pacific Railroad which parallels Highway 99E forms a major barrier to traffic of all modes wishing to travel from north to south.

The study area shown in Figure 1-1 was defined to be the Urban Growth boundary (UGB). The Canby UGB is generally bounded by the Molalla River on the west and south, Mulino Road on the east, and Territorial Road and 22nd Avenue on the north.

The following modes of transportation are provided within or near the City of Canby and are addressed in the TSP:

- Auto
- Bicycle and Pedestrian
- Transit
- Rail
- Air
- Water
- Pipeline

A. TRANSPORTATION FACILITIES

Roadway Facilities

Highways and streets are the primary means of mobility within the City of Canby. **Figure 1-1** displays the Canby Urban Growth Boundary (UGB) and the City of Canby's existing and future arterial and collector street system (as established in the City of Canby Comprehensive Plan, 1992). The functional classification and the physical characteristics of each roadway facility are identified in Appendix A (Table A-1). Canby's street standards are summarized in the Transportation Element of the Canby Comprehensive Plan.

Existing traffic control and right-of-way (R-O-W) on the arterial-collector street system are shown in **Figures 1-3 and 1-4**, respectively. The intersections of Highway 99E with Ivy Street, Grant Street, Elm Street, Fourth/Pine Streets, and Berg Parkway, and the intersection of Ivy Street and 13th Avenue, are the only locations within the City that are controlled by a traffic signal. Each signal is timed and operated separately by the Oregon Department of Transportation (ODOT). Currently, there is no interconnect between the signals.

The majority of the remaining major street intersections within the City of Canby are controlled with stop signs.

There is no grade-separated railroad crossing in Canby, apart from the private logging road to the east of downtown Canby. Severe blockages and delays can occur when the railroad crossings are blocked by a train during the peak hour traffic periods.

Pedestrian and Bicycle Facilities

Sidewalks are located along many of the downtown streets and some of the newer collector and arterial streets in Canby. However, many of the sidewalks are discontinuous (or exist on only one side of the street) and do not fully connect residential areas with schools, parks and short-distance retail (shopping) activities. Pedestrian and bicycle facilities are discussed in detail in Chapter 4.

Public Transportation

Tri-Met

Currently, Canby is serviced by two Tri-Met bus routes (see **Figure 1-4**). Route #79 provides continuous service to Clackamas Town Center throughout the day (5:30 a.m. - 6:30 p.m.). One-way travel time from Canby to the Oregon City Transit Center is approximately 35 minutes, and to Clackamas Town Center approximately 55 minutes. Average weekday ridership within Canby is approximately 200 although only a small percentage of these riders use the bus for internal trips within Canby.

Route #35 provides peak hour service (5:30 - 6:30 a.m. and 5:30 - 6:30 p.m.) to and from downtown Portland. One-way travel time from Canby (at First/Grant) to the Oregon City Transit Center is approximately 17 minutes, and to downtown Portland (SW Sixth/Salmon) approximately 50-55 minutes. One bus provides lift equipment for wheelchairs. Average weekday ridership is approximately 40 within the Canby area.

No Saturday or Sunday service is provided by Tri-Met on either route in Canby. Both routes #79 and #35 stop at the Oregon City Transit Center, enabling riders from Canby to transfer to the following routes:

- #32 - local service to downtown Portland
- #33 - local service to downtown Portland
- #34 - local service to the Milwaukie Transit Center
- #99X - express service to downtown Portland.

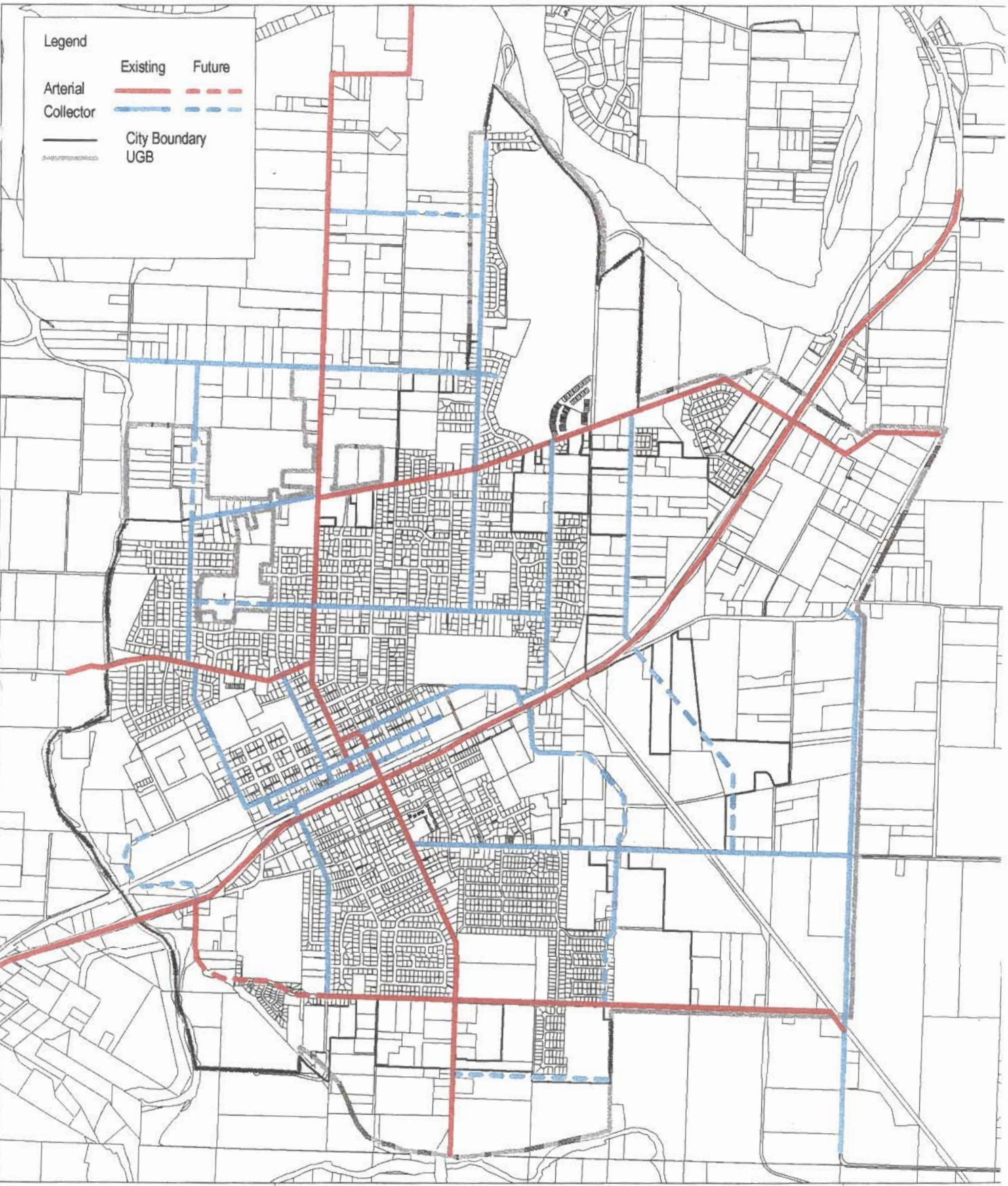
School Bus

On weekdays, School Bus Services, Inc. transports public school students (grades K-12) to/from school sites in the Canby Unified School District. **Figure 1-5** illustrates designated school bus routes on Canby's local, collector, and arterial streets.

Special Transit

Transportation for the disabled and elderly is provided by Clackamas County's Social Services program Transportation Reaching People (TRP). Volunteer drivers provide services between 8:30 a.m. and 5:00 p.m. Monday through Friday, with limited service in the evenings and the weekends.

In addition, the Canby Adult Center offers services for the elderly and handicapped to and from the center, and to doctor's appointments and shopping.

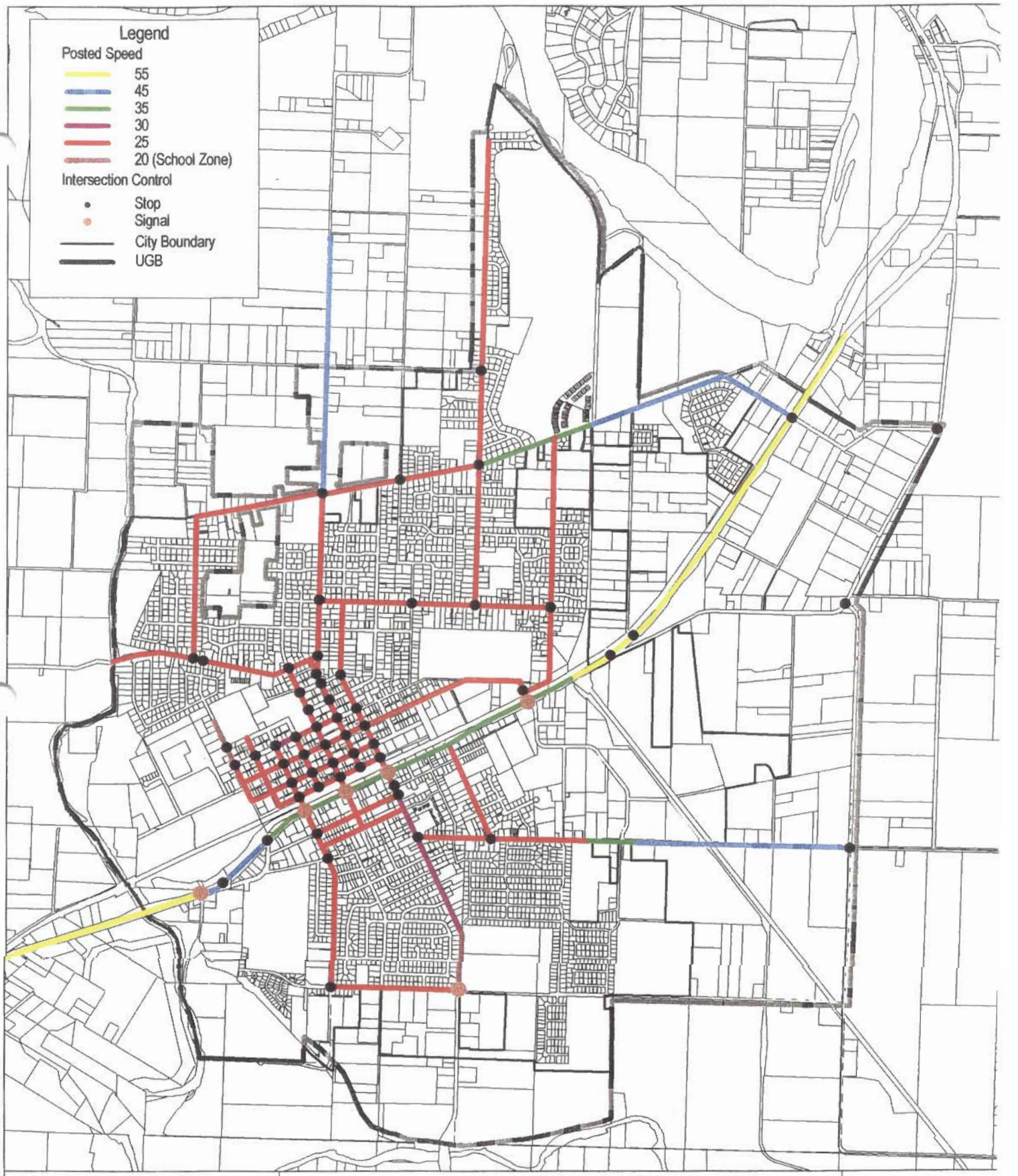


City of Canby
Transportation System Plan

May 1999

Figure 1-1
City of Canby Comprehensive Plan *
Collector / Arterial Street System

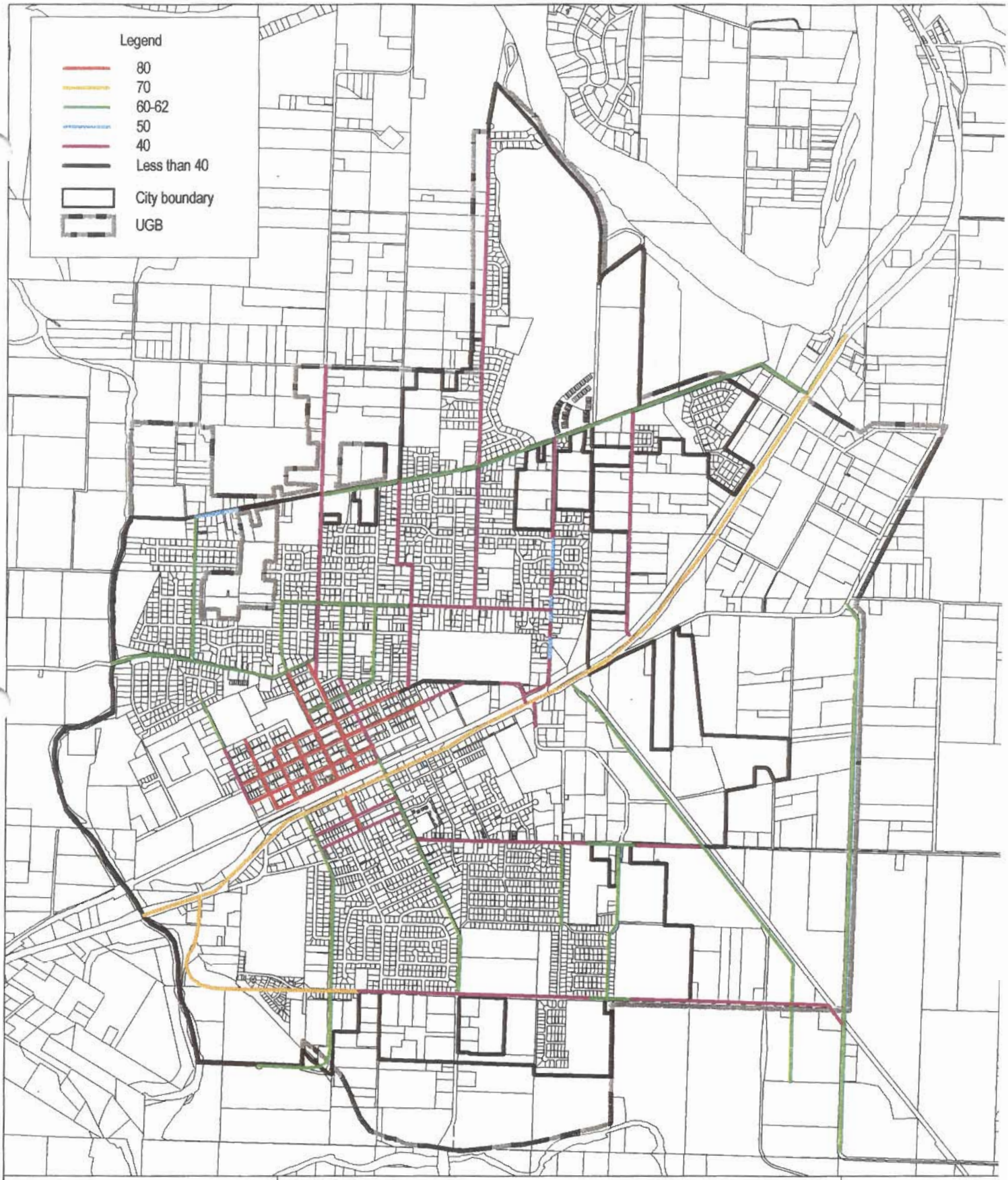
*As of August 1994



City of Canby
Transportation System Plan

April 1999

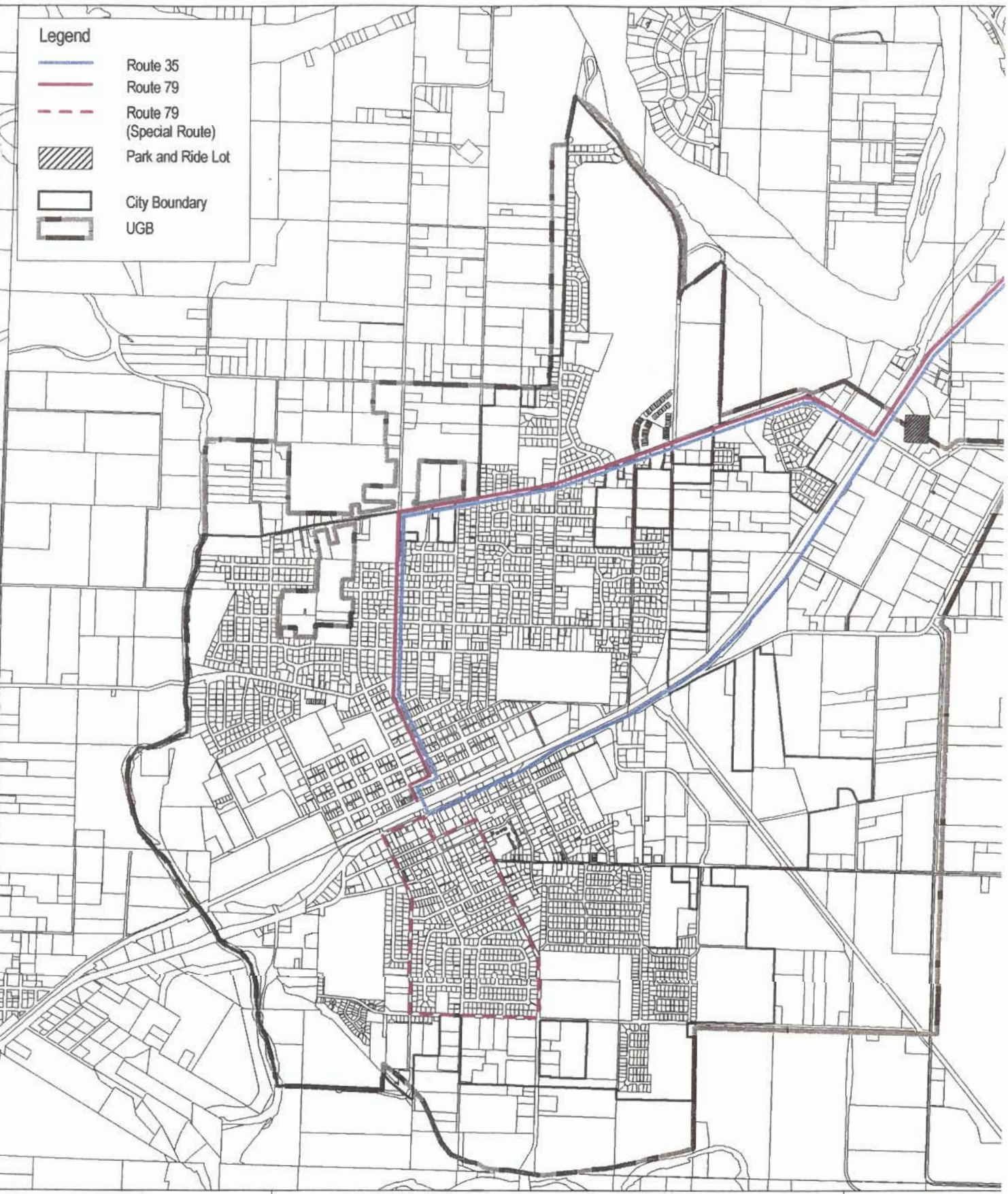
Figure 1-2
City of Canby Comprehensive Plan
Traffic Control



City of Canby
Transportation System Plan

April 1999

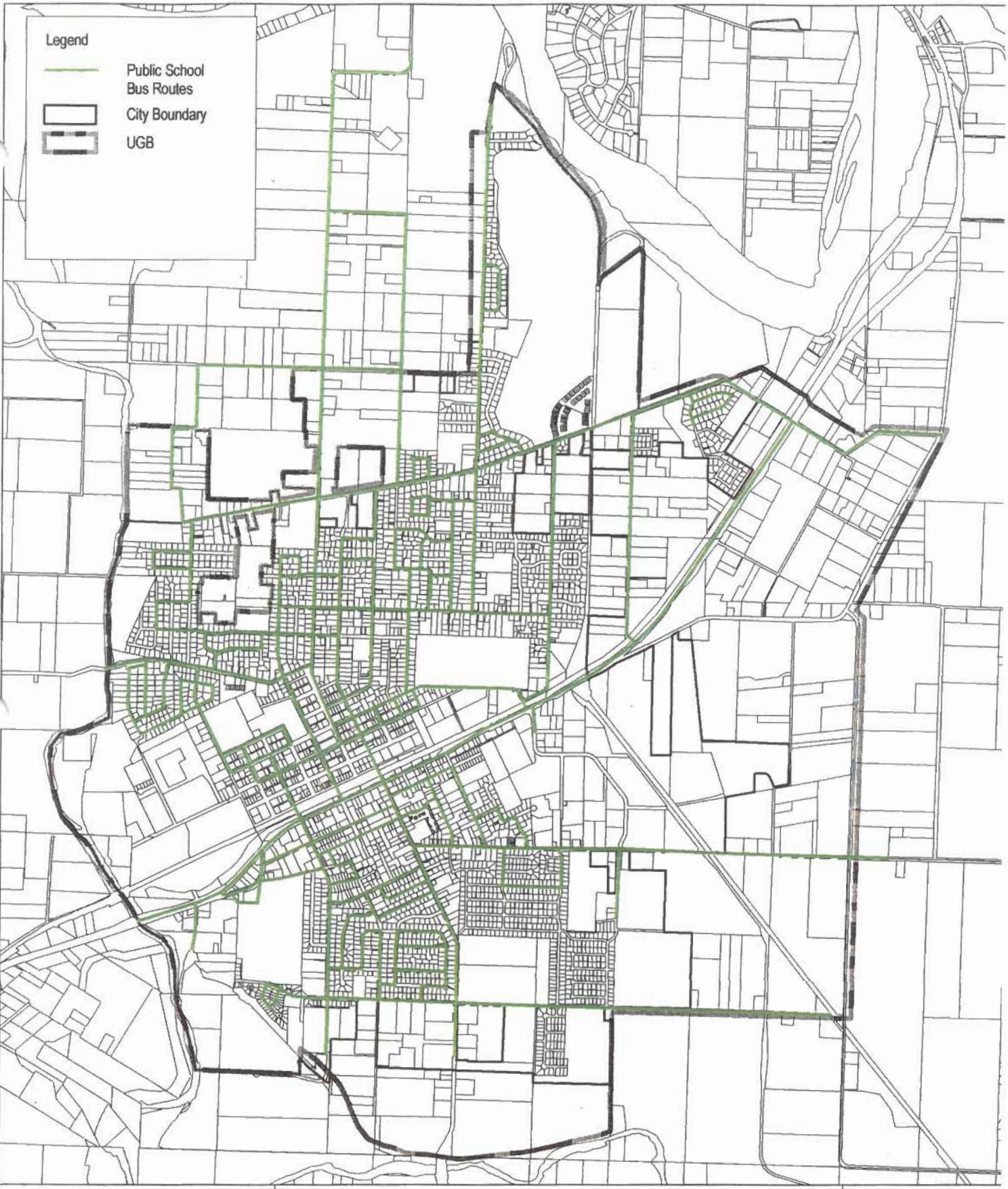
Figure 1-3
City of Canby Comprehensive Plan
Right-of-Way Arterial & Collector Streets



City of Canby
Transportation System Plan

April 1999

Figure 1-4
City of Canby Comprehensive Plan
Tri-Met Fixed-Route Transit Service



City of Canby
Transportation System Plan

April 1999

Figure 1-5
City of Canby Comprehensive Plan
Public School Bus Routes

Rail

Passenger rail service is provided daily (2 trains/day) by AMTRAK to Portland and Salem, Oregon. Southern Pacific R.R. provides daily service (16 trains/day) for *freight* shipment in Canby. Spur line freight service (lumber and feed) between Canby and Molalla is provided weekly by the Molalla Western Railway Company.

Air

Regional and international air service for passengers and freight is provided at the Portland International Airport which is located approximately 20 miles from Canby. The Aurora State Airport and Mulino Airport also provide local commercial service and private aircraft use.

Water

The Canby Ferry is operated year-round by Clackamas County and provides auto, bicycle and pedestrian service across the Willamette River. The ferry links the community of Canby with Pete's Mountain Road and West Linn to the north. Historically, the Willamette River has been used for the shipment of raw timber and other bulk goods. Current use of the river as a transportation route is limited to barge shipment of sand and gravel as well as some floats of timber. Recreational boating on the Willamette River is popular year-round.

Pipeline

Pipeline transportation in and through the Canby urban area includes transmission lines for electricity, cable television, and telephone services, and pipeline transport of water, sewer, and natural gas.

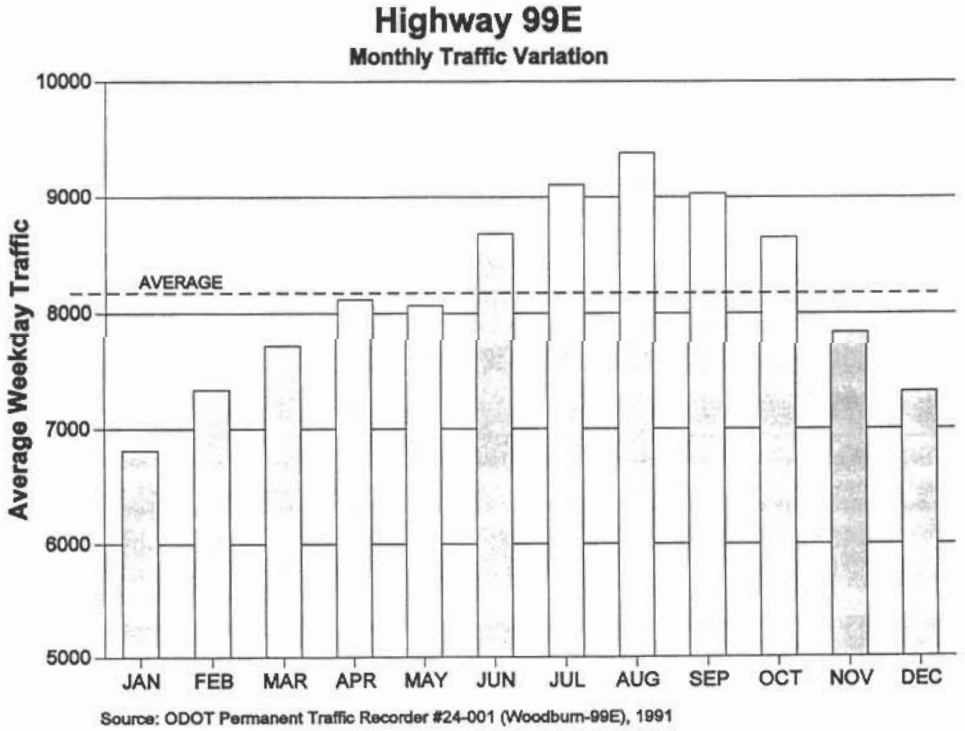
B. TRAFFIC OPERATIONS

Manual turning movement counts were conducted at each study area intersection during the weekday p.m. peak period (4:00 - 6:00 p.m.) in October and November 1993. The p.m. peak hour traffic counts were examined for reasonableness and were also compared to previous traffic counts conducted in the area as gleaned from previous traffic studies.

All of the intersection volume data were adjusted to reflect the annual average volume, taking into account seasonal adjustment factors. **Figure 1-6** illustrates the seasonal (monthly) variation of traffic volumes that typically occur in Canby.

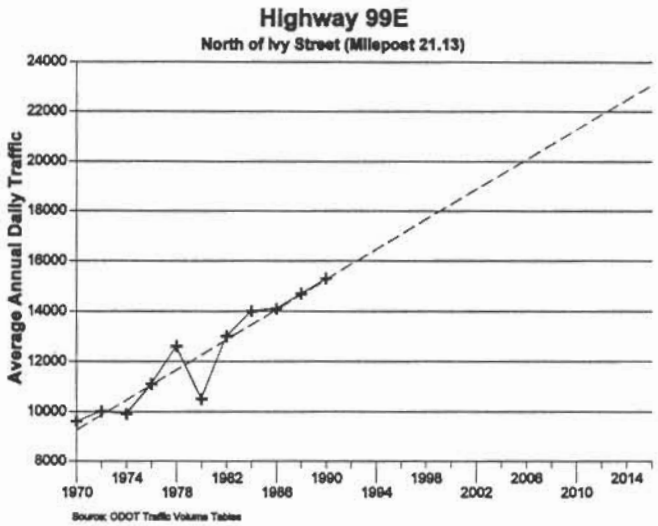
These count data were adjusted, as needed, to reflect 1993 conditions using factors based on recent traffic volume growth trends as summarized in **Figure 1-7**. **Figure 1-8** illustrates the previously conducted (1993) p.m. peak hour traffic volumes on Canby's arterial-collector street system. Using these volumes, an operational analysis was conducted at each intersection to determine existing levels of service. All Level of

Figure 1-6
Monthly Traffic Variation on Highway 99E



Source: ODOT Permanent Traffic Recorder #24-001 (Woodburn-99E), 1991

Figure 1-7
Traffic Volume Growth Trend on Highway 99E



Service (LOS) analyses described in this report are in accordance with the procedures stated in the *1994 Highway Capacity Manual* (Reference 1). A description of the LOS, the criteria that determines the LOS, and how the LOS is measured is available in Appendix B. In order to assure that this analysis was based on a worst case scenario, the peak 15 minute flow rate during the evening peak hour was used in the evaluation of all of the intersection LOS.

The LOS for the existing signalized and unsignalized intersections are listed in Appendix A (Table A-2). For signalized intersections, the average delay and volume/capacity ratio are listed with the corresponding LOS. For the unsignalized intersections, the reserve capacity is listed with the corresponding LOS. For the purposes of this investigation, LOS "D" and "E" were considered to be the minimum acceptable standard for signalized and unsignalized intersections, respectively.

As shown in Appendix A (Table A-2), several traffic operations problem areas were identified. Particular intersections that are operating at or near capacity are described below.

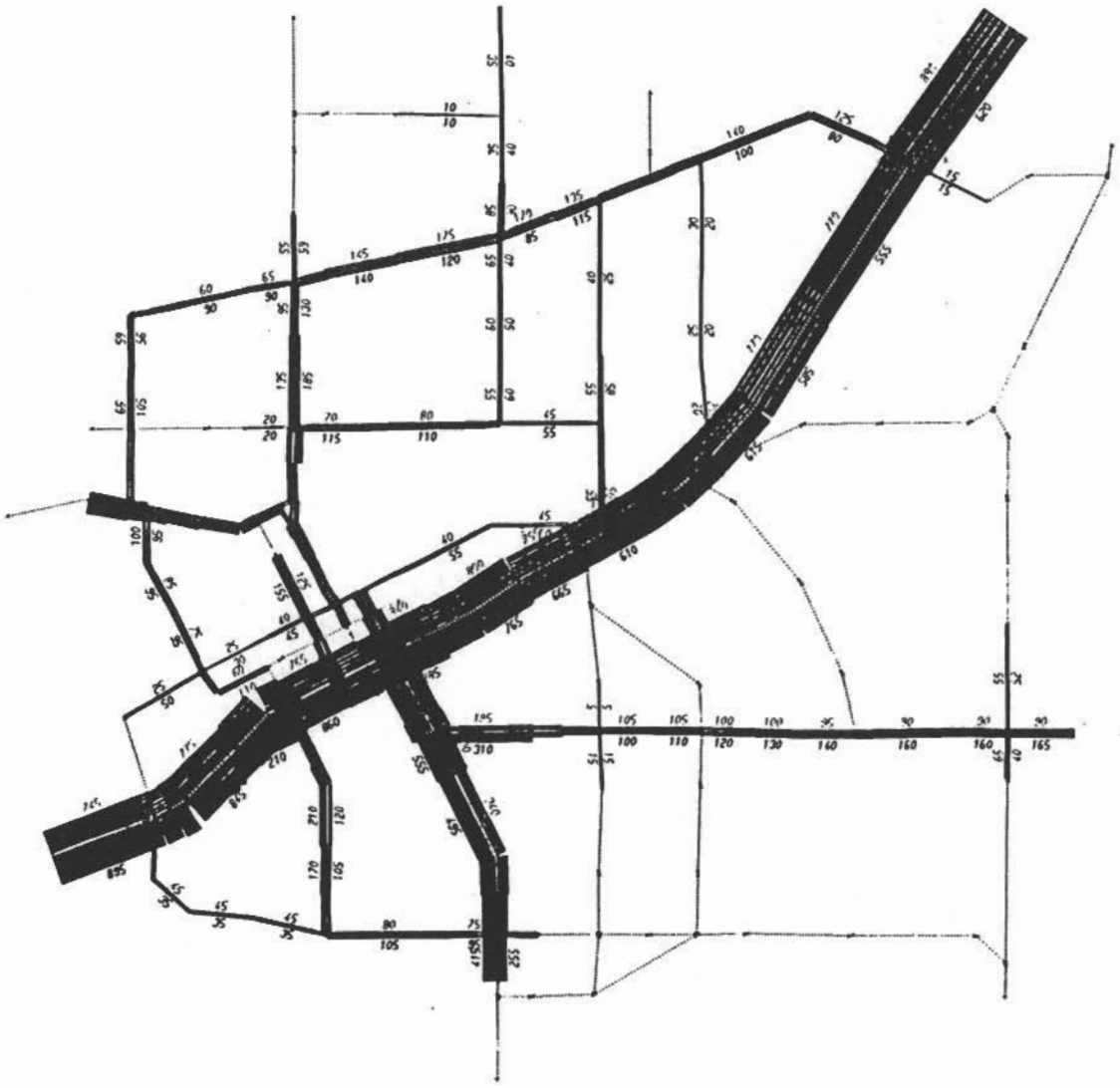
Highway 99E/Territorial Road, a two-way stop-controlled intersection, is currently estimated to be operating at a LOS "F" during the p.m. peak hour. Because of the high volumes of traffic on Highway 99E, minor street movements on the single-lane approaches to Highway 99E experience excessive delays. The eastbound left turn movement on Territorial Road is operating near capacity and has excessive queuing on the single lane approach. This intersection meets the traffic signal warrants included in the Manual on Uniform Traffic Control Devices. A preliminary design for a traffic signal (including significant street improvements to accommodate a signalized intersection), have been prepared by Clackamas County.

BASE NETWORK

USER DEFINED LINK DATA 3

emme/2

LINKS:
typ=2,100



SCALE: 50

200

400

600

800

1000

WINDOW:
2247/133.36
22358/ 15217

EMME/2 PROJECT: Canby Transportation Plan Project #1127
SCENARIO 1: 1993 P.M. Peak Hour Volumes

95-08-07 08:20
MODULE: 2.13
LINE: ...

Figure 1-8

TRANSPORTATION SAFETY

Traffic Safety

A summary of reported accidents along Highway 99E through Canby over the three years from January 1990 - December 1992, was assembled from ODOT records and is presented in Appendix A (Table A-4).

Accidents reported for intersections on Highway 99E and for roadway segments between the main intersections are listed by severity and by type. The accident rate for both the intersection or road segment is given.

For intersections, the accident rate is given in terms of accidents per million entering vehicles and is calculated by dividing the average number of accidents per year by the total average entering volume for the year. For roadway segments total accidents are divided by the product of the street volume and the segment length in miles.

Two fatal accidents were reported over the three-year review period. A pedestrian was killed under icy conditions at milepost 19.98 which lies between Territorial Road and Redwood Street. The straight line plan for Highway 99E through Canby shows no roadway intersection or other feature at milepost 19.98. It is surmised that the pedestrian was either walking along the highway, or attempting to cross the highway away from a pedestrian crossing point when struck.

The other recorded fatal accident occurred at the intersection of Pine Street and Highway 99E and did not involve a pedestrian, but rather a vehicle occupant. The accident rate for this intersection, 0.36 accidents per million entering vehicles, does not indicate an obvious safety deficiency, as it is lower than the rate experienced at either Territorial Road or Ivy Street. The City of Portland's list of high accident locations lists 90 intersections with an accident rate of 1.0 or greater, and generally does not consider an intersection unsafe if the rate is lower. Near-term plans to realign and signalize the Pine Street/Highway 99E intersections (See Chapter 2 - Short-Term Improvements) should improve safety conditions at that location.

Apart from the locations of the fatalities, the safety analysis does not indicate any undue traffic safety problems on Highway 99E within the City of Canby. Intersection accident rates are below what are generally regarded as threshold levels, and none of the roadway segments experienced a high number of accidents. Planned improvements are expected to improve safety at the two locations where have fatalities occurred.

Bicycle/Pedestrian Safety

As discussed previously, one pedestrian fatality was reported on Highway 99E over the three year period, January 1990 - December 1992.

The absence of sidewalks in some areas and the lack of continuity of sidewalks in others creates a potential pedestrian safety hazard, particularly for children and the elderly.

The relative absence of bicycle lanes or routes within Canby also creates potential safety hazards for cyclists.

The creation of a safe and comprehensive pedestrian and bicycle network should be a priority in the development of Canby's Transportation System Plan. The City is currently developing a bicycle route plan for collector and arterial streets which will include posted routes as well as bicycle lanes and a recreational bicycle route network. Plans for the system are included in Chapter Four of this report.

2

SHORT-TERM IMPROVEMENTS

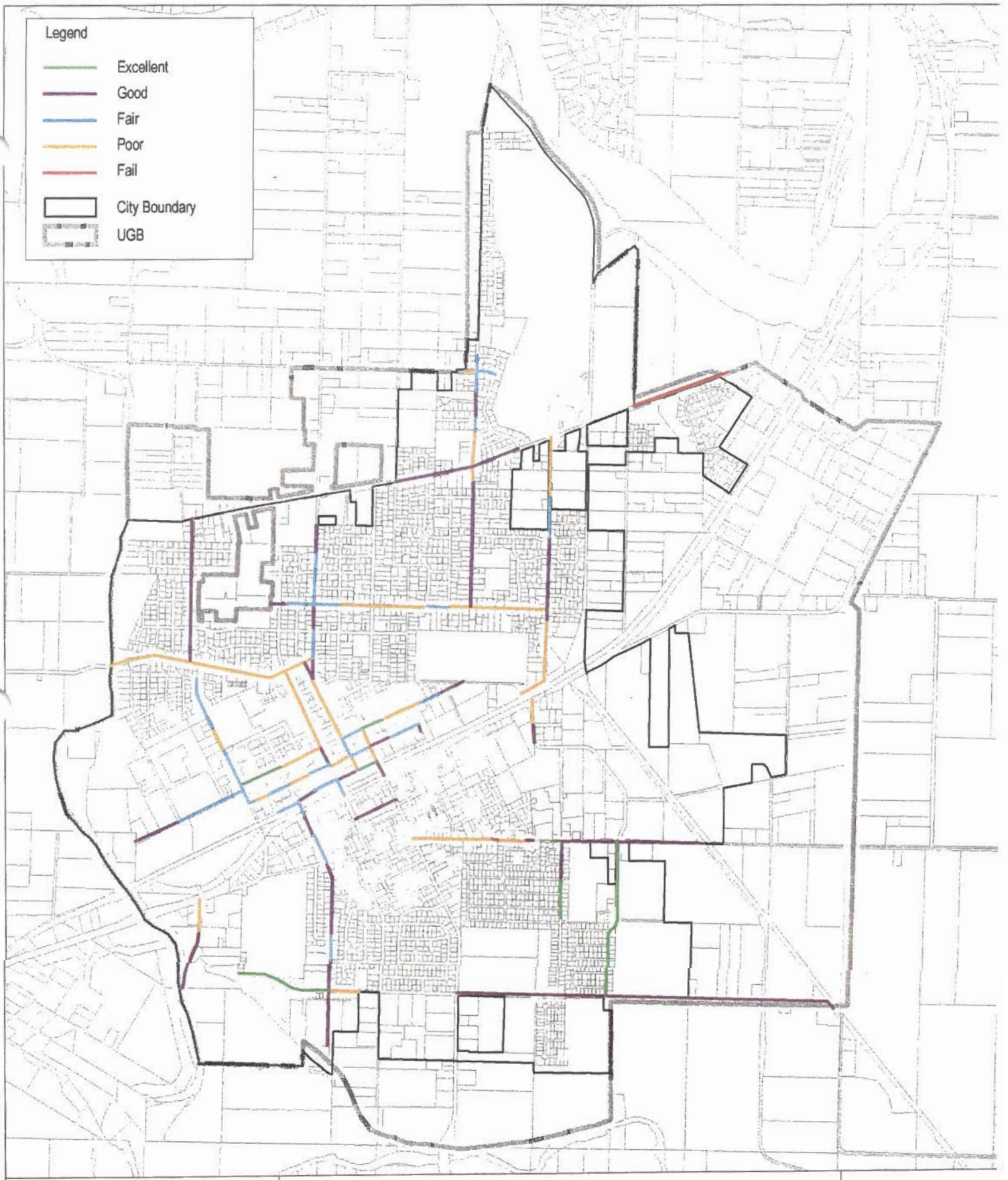
Short-term transportation improvement needs for the City of Canby were examined based on the results from the operational analyses of the street system, bicycle and pedestrian route inventory, field reconnaissance, and discussions with City, Clackamas County, and Oregon Department of Transportation (ODOT) staff.

This section includes the identification of planned transportation system improvements and street maintenance and rehabilitation projects in the Canby urban area.

A. STREET MAINTENANCE AND REHABILITATION PROJECTS

A short-term maintenance and rehabilitation program was established for the City of Canby and is outlined in a report prepared by Pavement Services, Inc. This report summarizes the existing pavement condition within the City of Canby, evaluates alternative annual budgets for rehabilitation and maintenance, and identifies necessary projects for the nine year period (1994 - 2003).

According to the report, the majority of Canby's arterials and collectors' pavement conditions are rated as "good," which corresponds to an average 1993 pavement condition rating (PCR) of 56. The PCR is ranked on a scale from 0 to 100; a PCR of 100 signifies the pavement is in "excellent" condition while a PCR of 0 signifies the pavement has "failed." Approximately 12 percent of the streets within the City of Canby were rated as "very poor" or "failed." A summary of the existing (1994) pavement condition on Canby's arterial and collector streets is illustrated in **Figure 2-1**.



City of Canby
Transportation System Plan

April 1999

Figure 2-1
City of Canby Comprehensive Plan *
Existing Pavement Conditions

EXISTING PAVEMENT 040699

04.1784.0001 CAN

Based on the existing pavement inventory, pavement condition deterioration over a nine-year period (1994 - 2003) was modeled mathematically and standards were developed for the selection of maintenance rehabilitation and repair (MRR) projects. Alternative annual budgets of $50,000, $250,000, and $400,000 were evaluated based on a number of performance indicators, as described in the report, to determine the annual budget required to maintain or improve the pavement condition during the analysis period.

As described in the full report, there is currently a backlog of maintenance rehabilitation and repair work of $4,100,000 within the City of Canby. A network budget analysis indicated that an annual budget of $216,000 for MRR projects is necessary to maintain the pavement system at its current condition through the year 2013. Therefore, the report recommends the approval of an annual budget of $250,000 to reduce the current backlog of rehabilitation and repair work, divided between $200,000 for road rehabilitation and $50,000 for repair work. Based on this annual budget, a yearly schedule for the maintenance rehabilitation and repair work is outlined in the report.

PLANNED TRANSPORTATION IMPROVEMENTS

Clackamas County, in its 5-Year Transportation Capital Improvement Program (1998/99 - 2002/03) and 20 Year Long-Range Transportation Plan (1998-2018), identifies ten major transportation improvements within or near the Canby study area. These transportation improvements are described below:

Five Year Capital Improvement Program

Township Road R/R Crossing: This project involves construction of a new railroad crossing between Redwood Street and Walnut Street.

Territorial Road: This project involves widening of Territorial Road between Molalla Forest Road and Holly Street to include two travel lanes and bike lanes.

Holly Street: This project involves widening of Holly Street from Territorial Road to the Canby Ferry to include two travel lanes and bike lanes. This project has been combined with the Territorial Road project.

Canby Ferry: Docking Improvements.

20 Year Long Range Transportation Plan

Highway 99E / Territorial Road: Traffic signal and intersection reconfiguration.

Arndt Road Extension: This project involves constructing a new 5-lane road between 99E and Knights Bridge Road (approximately 0.75 miles).

Arndt Road: This project involves widening Arndt Road to 5 lanes between Knights Bridge Road and I-5 Cutoff (approximately 3.1 miles).

Berg Parkway: This project involves construction of a new 2-lane road between 99E and Ivy Street (approximately 0.4 miles, portions already complete).

Ivy Street / Township Road: Traffic Signal.

Territorial Road: Additional widening from Highway 99E to Holly Street.

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3

LONG-TERM TRANSPORTATION/ LAND USE ALTERNATIVES

This chapter describes the methodology used in the 1994 Transportation System Plan to evaluate system alternatives and determine the preferred alternative. This 1999 TSP update is based on the preferred alternative selected for the 1994 TSP.

Long-term transportation improvement needs for the City of Canby were examined based on results from the operational analyses of the street system (See Chapter 1), field reconnaissance, future travel demand forecasts of the land use alternatives, and discussions with the City, Clackamas County, and the Oregon Department of Transportation staff.

Three general transportation system alternatives were developed to assess the long-term transportation needs. The alternatives were:

1. ***Do-Nothing (No-Build)*** - assumes the existing transportation system is in place, unaltered and unimproved in 2015.

2. ***Canby Comprehensive Plan System Improvements*** - includes new road construction within the UGB, primarily to the south of Highway 99E, as identified in the Canby Comprehensive Plan and the Clackamas County Capital Improvement Program.

3. ***Unidentified Improvements Needed*** - includes a list of possible improvements needed to sustain an acceptable level of traffic operations in addition to those identified in the Canby Comprehensive Plan and Clackamas County's Capital Improvement Project list.

A. FUTURE LAND USE/DEMOGRAPHICS

A twenty-year planning horizon (1993 - 2015) was chosen for the study to identify future demographic conditions from which future traffic forecasts were developed. Beyond the twenty-year planning horizon population, employment and future travel demand forecasts become more speculative and less reliable for identifying future infrastructure needs. This section summarizes the development of future population and employment projections that were used to develop travel demand forecasts for the Canby urban area. These projections are summarized in Figure 3-1.

Population

The current Canby Comprehensive Land Use Plan[1], adopted by the City of Canby in 1984 and approved by LCDC through periodic review in 1993, served as the basis from which future transportation system needs were assessed. The current Comprehensive Plan projects that by the year 2015 Canby's 1993 population of approximately 9,560 will more than double to over 20,000.

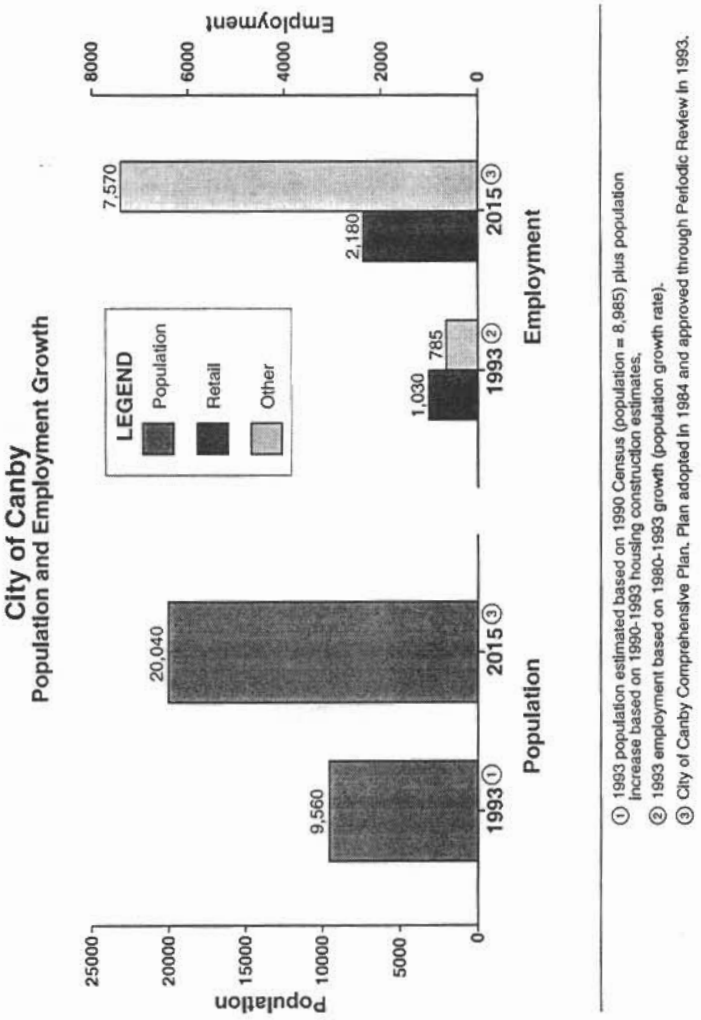
Employment

Employment projections for year 2015 were based on the expected development of the Canby Urban Growth Boundary (UGB) as identified in the Canby Comprehensive Plan. Given these projections, the new population and employment that are expected to occur by year 2015 were allocated geographically based upon developable lands within the UGB (by land use category) and Transportation Analysis Zone (TAZ). Figure 3-2 shows the TAZ system developed for the Canby Urban Growth Boundary.

By year 2015 the Canby UGB has the capacity for an additional 10,480 people (in residential land development) and 7,935 jobs (in new commercial, office, and industrial land development) beyond 1993 figures. A summary of the projections of new households and new employment in each TAZ is included in Appendix A (Table A-5).

1 City of Canby Comprehensive Plan, 1984.

Figure 3-1: Canby Population and Employment Growth



① 1993 population estimated based on 1990 Census (population = 8,985) plus population increase based on 1990-1993 housing construction estimates.
② 1993 employment based on 1980-1993 growth (population growth rate).
③ City of Canby Comprehensive Plan. Plan adopted in 1984 and approved through Periodic Review in 1993.

B. FUTURE TRAFFIC CONDITIONS

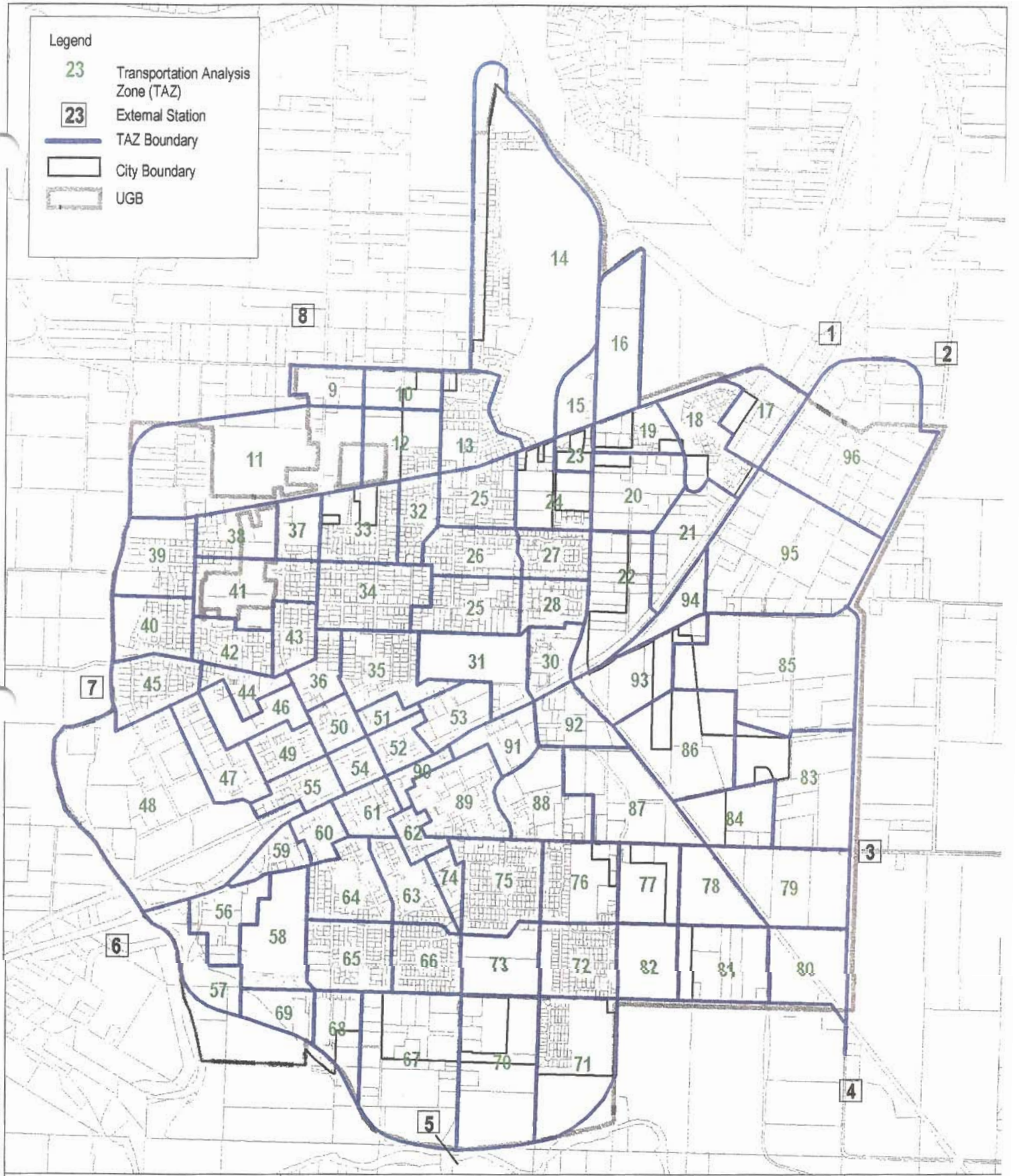
Future year (2015) traffic conditions were determined by adding the estimated number of vehicle trips generated by future land uses within the Canby urban area to the existing traffic volumes . New trips (trips generated by future land development in the Canby UGB) were distributed to destinations inside and outside the Canby area, and then assigned to the Canby street system. These calculations were accomplished through the use of a travel demand forecasting model developed and calibrated specifically for the Canby urban area.

The travel model trip generation, distribution and assignment assumptions were calculated for the most critical period of the day -- the p.m. peak hour. For the purposes of calculating trip generation, distribution and travel assignment, all travel model data were summarized by TAZ (See **Figure 3-2**). A description of the future travel forecasting model is given in Appendix C. **Figure 3-3** shows the total traffic volumes for the future year 2015 under the Do-Nothing alternative; **Figure 3-4** shows the total traffic volumes with the Comprehensive Plan improvements.

C. *FUTURE TRANSPORTATION SYSTEM ALTERNATIVES*

Future p.m. peak hour traffic assignments were calculated using the travel demand model developed for the City of Canby. Operational analyses were conducted on each of the study intersections detailed in Chapter 1 to determine the levels of service under future traffic conditions. As stated in Chapter 1, all Level of Service (LOS) analyses described in this report are in accordance with the procedures stated in the *1985 Highway Capacity Manual.*

The LOS (as of 1994) for critical study area intersections are listed in Appendix A (Tables A-6 (unsignalized) and A-7 (all-way stop-controlled and signalized)). For all-way stop-controlled and signalized intersections, the average delay and volume/capacity ratio are listed with the corresponding LOS. For the unsignalized intersections, the reserve capacity is listed with the corresponding LOS. LOS "D" and "E" were considered to be the minimum acceptable standard for signalized and unsignalized intersections respectively. Since then, a new methodology has been adopted into the Highway Capacity Manual for all-way-stop-controlled intersections. With this method, Level of Service D is the minimum acceptable standard for all-way-stop-controlled intersections.

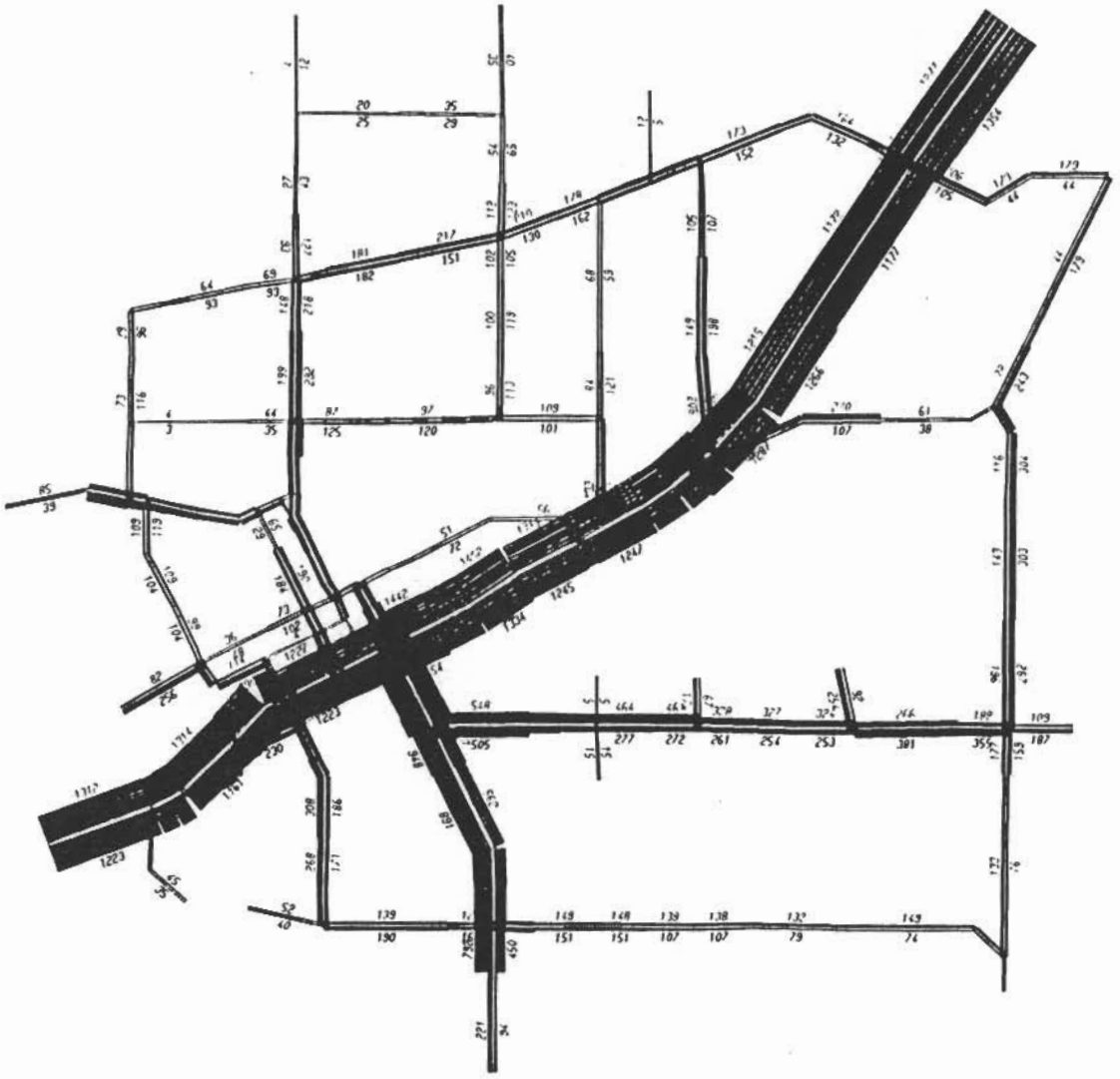


City of Canby
Transportation System Plan

April 1999

Figure 3-2
City of Canby Comprehensive Plan
Transportation Analysis Zones

TOTAL VOLUMES ON AUTO NETWORK



emme/2

LINKS:
Typ=2 100

SCALE: 75

200

400

600

800

1000

WINDOW:
2247/133 36
2236/87 1527

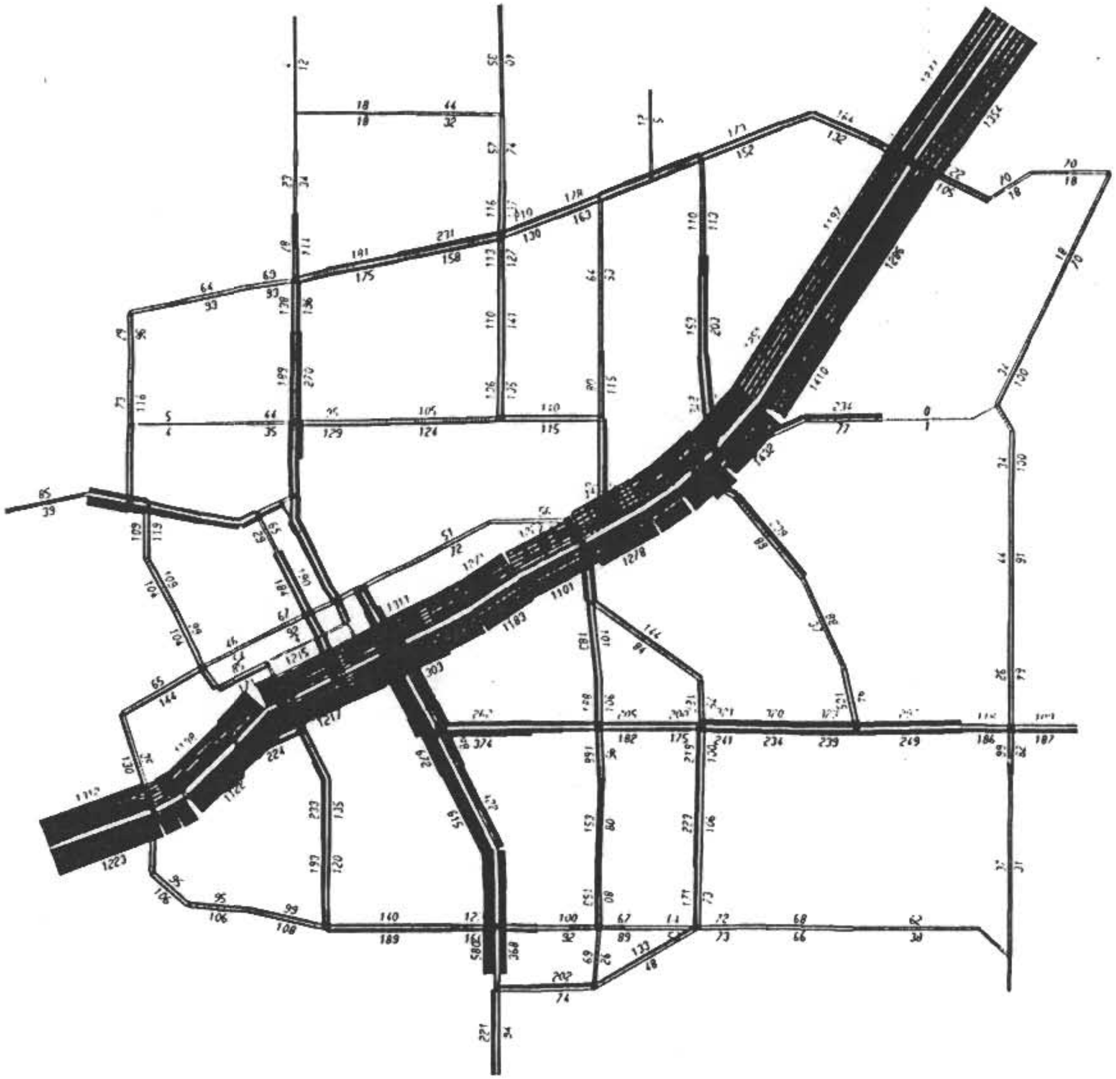
EMME/2 PROJECT: Canby Transportation Plan Project #1127
SCENARIO 3: 2015 No Build

Figure 3-3

TOTAL VOLUMES ON AUTO NETWORK

emme/2

LINKS:
typ=2 100



SCALE 25

200
400
600
800
1000

WINDOW:
2247/133 36
2258.87 15217

15 08 07 08 21
MODULE 6.12
EMME2 ...

EMME/2 PROJECT: Canby Transportation Plan Project #1127
SCENARIO 2: 2015 Comp. Plan

Figure 3 4

Operational Analysis

The operational analyses were conducted for future traffic conditions under three scenarios:

1. ***Do Nothing (No-Build)*** - unimproved road network, i.e. the road network as it exists today.

2. ***Comprehensive Plan Improvements*** - network improvements identified in the City of Canby Comprehensive Plan (1992) and by Clackamas County in their 5-Year Transportation Capital Improvement Program (1992/93-1996/97) and Long-Range CIP (1992-2010). These transportation improvements include:

   Berg Parkway: new 2-lane road between Highway 99E and Ivy Street (approximately 0.4 miles, portions already complete), and the extension of the street to the north of Highway 99E to connect with the westerly extension of 3rd Avenue;

   Territorial Road: widening of Territorial Road to a three lane section between 99E and Holly Street (approximately 1.6 miles);

   Pine Street: portions of Pine Street have been constructed south of 99E and Township Road. Full connection of Pine Street to 13th Avenue is scheduled as development occurs;

   Redwood Street: the full connection of Redwood Street between Township Road and 13th Avenue is planned as development occurs in the near future. The Redwood Street connection between Pine Street and Township Road (north of Township Road) is also planned for future development;

   Pine/Redwood connection: this connection to the west of the railroad will join Pine Street at its intersection with 2nd Avenue with the Township Road/Redwood Street intersection to the south, to provide access to future developable lands;

   Birch Street and 10th Avenue: extensions of Birch Street in a straight alignment to the north of Territorial Road, and 10th Avenue between Birch and Grant Streets.

3. ***Unidentified Improvements Needed*** - transportation system improvements needed to achieve acceptable traffic operations in addition to the Comprehensive Plan Improvements and CIP improvements outlined above.

Future Transportation System Deficiencies

The analysis of system alternatives indicates that the following intersections will likely exceed capacity by the year 2015:

Highway 99E/Territorial Road: Under future traffic conditions, this two-way stop-controlled intersection would operate over capacity. Minor street movements onto or across Highway 99E would be severely delayed; in particular the eastbound-to-northbound left-turn movement would experience long delays which would lead to excessive queuing on the single approach lane.

Highway 99E/Redwood Street: This intersection would experience similar problems to the intersection of Highway 99E/Territorial Road in that the minor street left-turn onto the highway would operate over capacity and experience significant delays.

Highway 99E/Pine Street: Under either future scenario the southbound left-turn onto the highway at this unsignalized intersection would operate at an unacceptable "F" LOS as a result of the high traffic volumes on the major street. This intersection has since been signalized.

Highway 99E/Ivy Street: This signalized intersection would operate at an unacceptable "F" LOS under unimproved conditions and at LOS "E" if the Comprehensive Plan improvements were implemented. Improved LOS could be achieved by adding a second left-turn lane on the northbound and southbound approaches.

Ivy Street/Township Road: This stop-controlled "T" intersection is projected to operate at an "F" LOS under unimproved conditions, and an "E" with Comprehensive Plan improvements. The heavy westbound left-turn onto Ivy Street experiences a capacity deficiency. Signalization of this intersection would achieve LOS "C" on an improved network, or "D" under the Do-Nothing scenario.

Ivy Street/13th Avenue: This intersection would operate at LOS "F" under unimproved roadway conditions and LOS "E" with Comprehensive Plan improvements. Signalization would achieve LOS "C" under either scenario. In addition, the pedestrian traffic crossing Ivy Street to the school district campus located in the northeast quadrant of the intersection added to the desirability of a signal at this intersection. This intersection has since been signalized.

Township Road/Mulino Street: Under unimproved network conditions, this two-way stop-controlled intersection would experience an "E" LOS, due primarily to the northbound left-turn and through movements. With the Comprehensive Plan improvements, the LOS would increase to "A". This intersection has since been converted to all-way-stop-control, and appears to be functioning adequately.

Appendix A (Table A-8) indicates the improved future LOS conditions achieved by signalizing the intersections of Highway 99E with Territorial Road, Redwood St. and Pine St. as well as the intersections of Ivy Street with 13th Ave and Township Road. These improvements partially constitute scenario three outlined above.

D. TRANSPORTATION SYSTEM IMPROVEMENT ALTERNATIVES

This section describes the alternatives analysis process conducted for the original 1994 Transportation System Plan. The 1999 update is based on the preferred alternative chosen in 1994, as no conditions have arisen that would reasonably necessitate reevaluation of alternatives. Project information has been updated where appropriate.

Do-Nothing (No-Build)

Figure 3-5 shows the results of the intersection operational analysis conducted for the Do-Nothing alternative: the locations shown in green, yellow and red are projected to operate at "under capacity", "near capacity" and "over capacity", respectively. Under this alternative, six intersections would experience unacceptable LOS. The intersections of Highway 99E with Territorial Road, Redwood Street and Pine Street, and those of Ivy Street with 13th Avenue, Township Road and Highway 99E would fail to operate at acceptable levels of service in 2015.

2015 Comprehensive Plan Improvements

Figure 3-6 shows the projected year 2015 p.m. peak hour intersection LOS. In comparison to the Do-Nothing alternative, four intersections would fail to operate at acceptable LOS.

In particular, the extension of Berg Parkway to link 13th Avenue to Highway 99E, and its extension north of the highway to link with 3rd Avenue would effectively reduce traffic demand at the Highway 99E/Elm Street intersection, resulting in significantly improved LOS in the future.

The connection of Pine Street across Highway 99E with full connection south to Township Road and 13th Avenue effectively reduces local travel demand on Ivy Street. The LOS on Ivy Street will improve at Highway 99E, Township Road and 13th Avenue as a result of the Pine Street improvements. Most of this improvement has already been constructed.

A further improvement called for by the Canby Comprehensive Plan is the extension of Redwood Street to the south of Highway 99E to connect with Township Road to the east of the Great Western Railroad tracks. This network improvement reduces future travel demand on Township Road and Mulino Road. The effect of the network improvement in

this area would be an improvement from LOS "E" to "A" at the unsignalized intersection of Mulino and Township Roads. The planned street network for this area is described in detail in the 1998 Canby Industrial Area Master Plan.

Finally, the extension of Birch Street to the north of Territorial Road has little effect on intersection operations in the area; however, it achieves the completion of an established grid in the area and thereby improves circulation, minimizing out of direction travel.

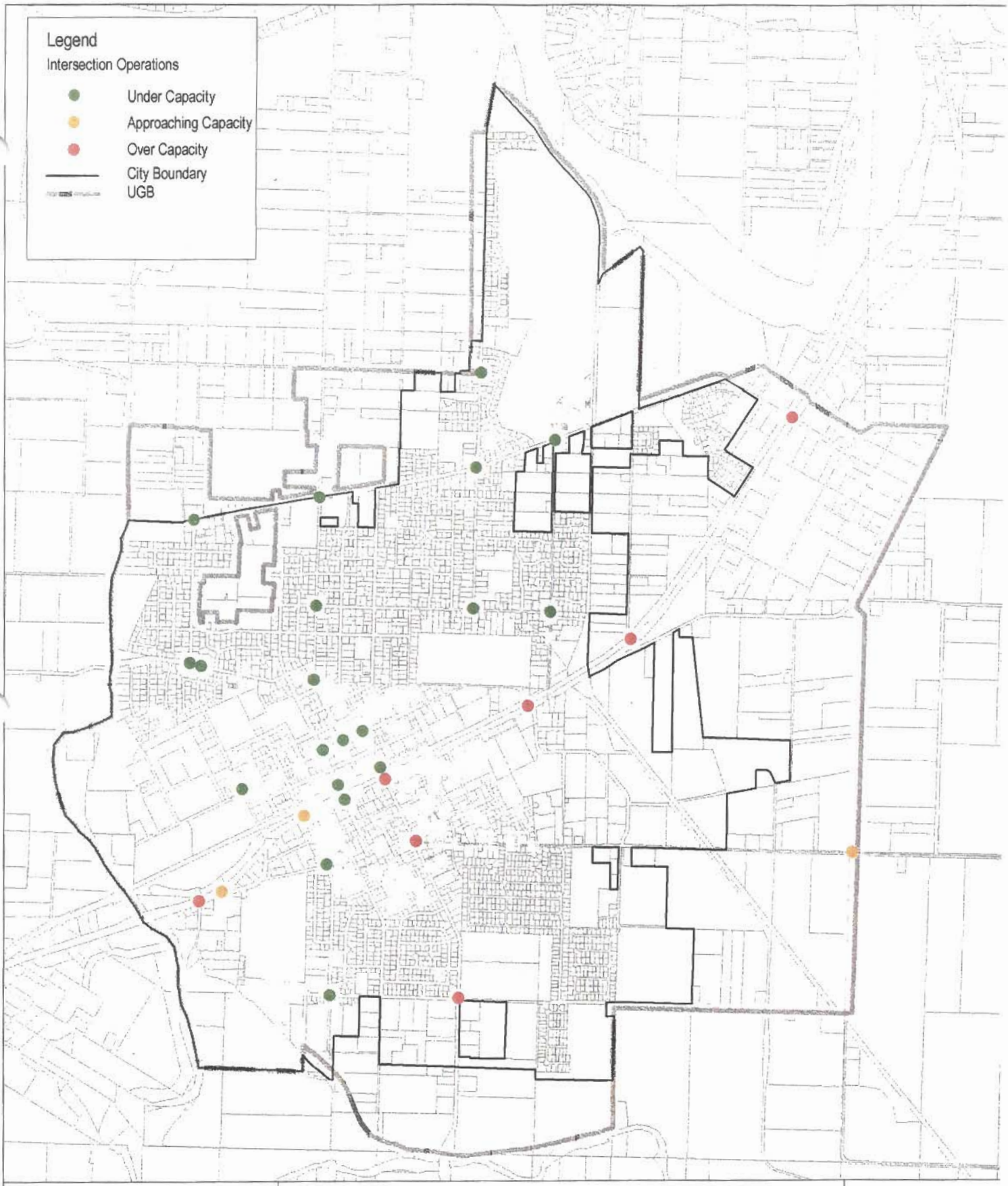
The upgrading of Territorial Road to a three-lane section between Highway 99E and Holly Street provides adequate capacity for minor street movements without intersection control measures such as signalization or all-way stop signs.

Network Improvements not Addressed in the Comprehensive Plan (Preferred Alternative[2])

Despite the considerable improvements achieved by the network changes detailed in the City's and County's Comprehensive Plans, a number of intersections would not operate at acceptable levels of service in 2015. On Highway 99E, the intersections of Territorial Road, Redwood Street and Pine Street would require signalization in order to achieve acceptable levels of service as shown in Appendix A (Table A-8). The intersection of Pine Street and Highway 99E has already been signalized.

The intersection of Ivy Street/Township Road was analyzed with a signal and shown to operate at LOS "F" without improvements but at LOS "C" with Comprehensive Plan improvements. The intersection of Ivy Street/13th Avenue would operate at LOS "E" as a two-way stop-controlled intersection in 2015, whereas the installation of a signal would achieve a "C" LOS in the future. The intersection of Ivy Street/13th Avenue has been signalized.

[2] The Preferred Alternative as selected in development of the original TSP in 1994.

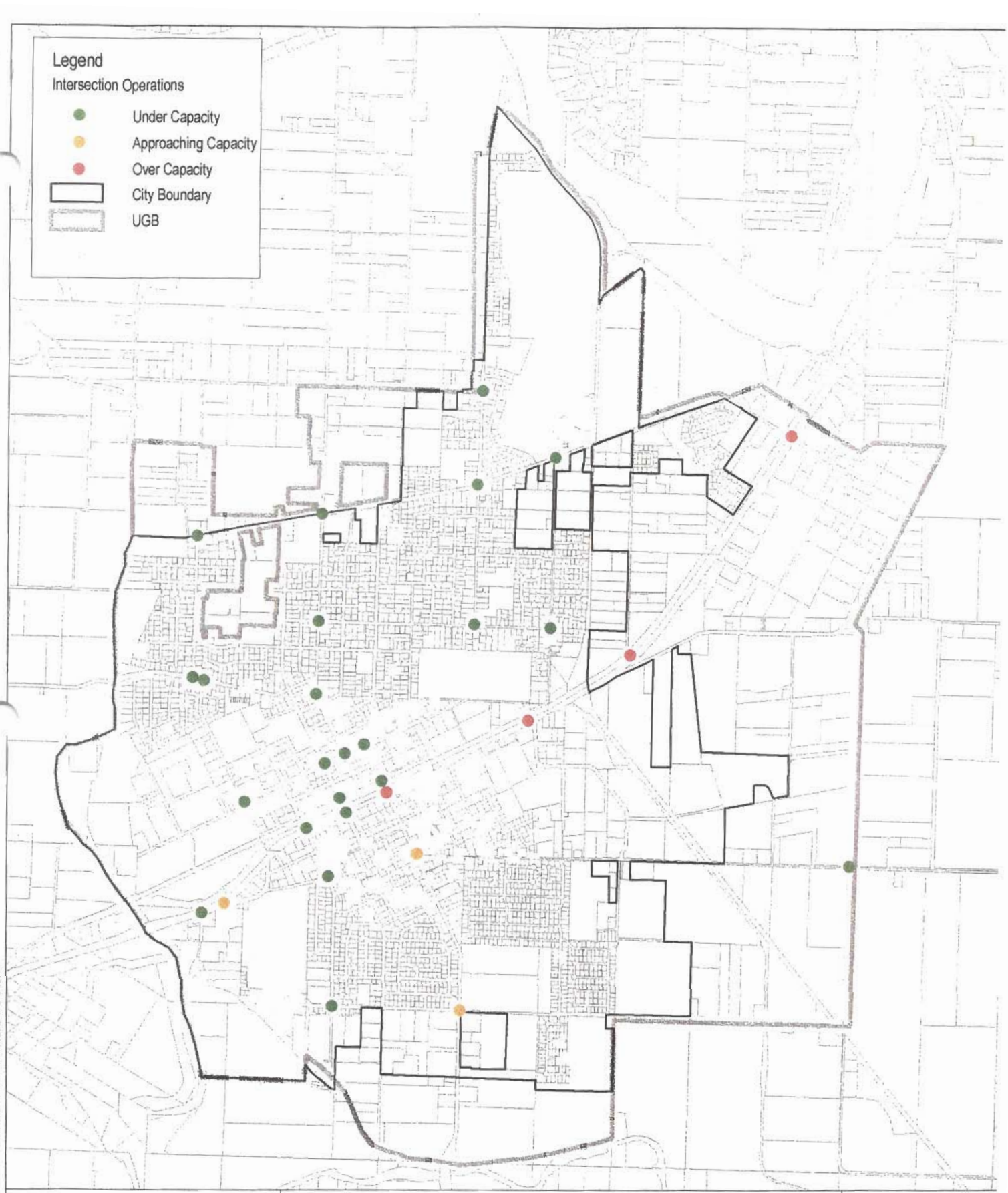


City of Canby
Transportation System Plan

April 1999

Figure 3-5
City of Canby Comprehensive Plan
Level Of Service 2015 Do-Nothing

LEVEL OF SERVICE 2015 DO NOTHING LEVEL PRT 060799
04.17840001 CAN



City of Canby
Transportation System Plan

April 1999

Figure 3-6
City of Canby Comprehensive Plan
Level Of Service 2015 Comp. Plan Improvements

E. PROJECT (DECISION MAKING) EVALUATION CRITERIA

The following criteria were established to evaluate the three transportation system alternatives.

1. Mobility/Circulation/Safety

- Develop transportation system to facilitate all travel modes
- Ensure sufficient capacity to accommodate future travel demand (vehicular, bicycle, pedestrian, etc.) along Canby's collector and arterial streets, and along Highway 99E
- Improve vehicular-pedestrian crossing of Southern Pacific R.R.
- Identify the potential for improving the local circulation system, in an effort to reduce reliance on Highway 99E
- Provide mobility to the transportation disadvantaged
- Ensure an adequate truck route network to reduce commercial/neighborhood conflicts
- Resolve the future Highway 99E future cross-section design and sidewalk requirements
- Refine County development strategy for collector/arterial street development within the UGB

2. Capital Improvement

- Maximize cost effectiveness of transportation improvements
- Ensure sustained funding for transportation projects

3. Community Goals

- Protect Canby's "small town" quality of life
- Encourage safe and efficient vehicle, bicycle, pedestrian and transit crossing of the Southern Pacific R.R., especially if high speed passenger rail service is provided in the future
- Improve pedestrian and bicycle access and safety, especially between residential developments and pedestrian/bicycle trip generators (i.e. schools, parks, etc.)
- Enhance the vitality of the Canby downtown area

4. Economic Development

- Balance local access to Highway 99E with the need to serve statewide traffic needs, while encouraging business activities.

4

TRANSPORTATION SYSTEM PLAN

The City of Canby Transportation System Plan incorporates the preferred future transportation alternative summarized in Chapter 3. The Transportation System Plan (TSP) includes recommended policies and plans for long-range transportation capacity and non-capacity improvements for the major street system.

The cost of those transportation improvements are estimated in 1999 dollars, and include:

- street construction/reconstruction (grading and paving)
- storm sewers
- curbs, gutters, and sidewalks (both sides)
- street lighting
- right-of-way (where needed)
- engineering, surveying, and inspection.

The Transportation System Plan includes recommendations for public transportation, bicycle/pedestrian systems, air service, rail service, and water transportation improvements. Where appropriate, planning level cost estimates for these improvements are provided. The identification of potential funding sources and a recommended funding strategy are provided in Chapter 5 - Transportation Finance Plan. Finally, the identified transportation improvements are prioritized, and a schedule for project implementation is developed.

A. STREET FUNCTIONAL CLASSIFICATION

Policy Considerations

The existing City Street Functional Classification Guideline descriptions are revised to include a new class - *Neighborhood Connector*. A complete description of the recommended Street Functional Classification follows:

Arterial Streets

The primary function of arterial streets is to provide through movement of traffic, distributing it to collector and connector streets. A secondary function of providing land access is limited in order to minimize interruption of the primary function. The streets are characterized by a five-lane (Highway 99E only), a three-lane street section, or (in lower-volume cases) a two-lane section with three lanes at intersection approaches where extra width is necessary to accommodate turning traffic. Bicycle lanes, sidewalks, and planting strips are to be provided on all arterials. Signalization may be provided at intersections with other arterials and collector streets, as warranted.

Collector Streets[1]

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. 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.

Neighborhood Connector

Neighborhood Connectors provide local access to adjacent properties as well as facilitating movement into 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. 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.

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1 The 1998 Industrial Area Master Plan identifies street standards for the industrial area, including a Parkway Collector with different standards than other collectors.

Local Streets

The function of local streets is to provide access to private dwellings and businesses. The local street is characterized by two eleven-foot-wide travel lanes; seven-foot parking lanes are provided and sidewalks should be placed on both sides of the street (where possible separated from the street by a planting strip depending on the available right-of-way).

Alley streets provide secondary access to residential properties where street frontages are narrow; where the street is designed with a narrow width to provide limited on-street parking; or where alley access to development is desired to increase residential densities. Alleys are intended to provide rear access to individual properties, and may provide alternative areas for utility placement.

Highway 99E

Highway 99E is significantly different in character from Canby City Streets, and thus has a unique functional classification within the city. Highway 99E's functional classification (in the city system) is designated as its classification by ODOT for the State Highway Classification System, and it is currently a Regional Highway.

The purpose of classifying streets within the City of Canby is to provide a balanced transportation system that facilitates mobility for all modes at acceptable service levels, while also providing sufficient accessibility to adjacent land uses, and ensuring neighborhood livability. The adoption of Street Functional Classification policies will ensure that Canby's transportation facilities will be constructed to operate safely and efficiently, while serving the mobility and access needs of the traveling public. Appendix G contains additional descriptions of street characteristics by functional classification.

The City of Canby has a number of existing streets that, because of current conditions, do not conform with the City's *construction standards* for new streets as shown in **Figures 4-1a** and **4-1b**. Recognizing that these *construction standards* provide "optimal" facilities, and that public resources need to be used as efficiently as possible, a set of *adequacy standards* was developed for existing facilities. There are several streets that are slightly smaller than the *construction standards* would specify, which could eventually lead to the scheduling of widening projects on these facilities.

The cost of widening all streets to construction standards, rather than adequacy standards, would be $10.2 million above and beyond the total project costs listed in this TSP.

The extensive cost of demolishing and reconstructing curbs and sidewalks to provide an extra foot or two of width on each side of these streets may be an inefficient use of public resources, especially when these streets are generally considered adequate for all modes of travel. Thus, streets deemed adequate by meeting these *adequacy standards* will not be scheduled for upgrades to the new *construction standards*. For streets with variable cross-sections, these *adequacy standards* are applicable to a portion of street if one-third of the length of that street meets these standards (consider curb-to-curb width for paving and reconstruction projects; sidewalk width for sidewalk only projects). In these cases, the remainder of the portion of the street only needs to be widened to meet

the *adequacy standard*[2]. **Figures 4-1a, 4-1b** and **4-1c** illustrate the recommended street *construction* and *adequacy standards* for each functional classification. In the few cases where the adequacy standards cannot be met as illustrated, the City Council should review and approve alternative plans.

Recommended Changes to Current Street Functional Classification

The current functional classification of existing and future major streets as established in the City of Canby Comprehensive Plan (1992) was described in Chapter 1. With this 1999 TSP Update, the Functional Classification system has been modified to include the classification of Neighborhood Connector. The priority of moving traffic and level of tolerance for effects of moving vehicles is higher on a neighborhood connector than on a local street, but lower than on a collector. Conversely, the priority of access to adjacent land uses is higher for a neighborhood connector than a collector but lower than a local street. Appendix G lists anticipated characteristics of streets based on their functional class. **Figure 4-2** shows the updated Functional Classification for the Major Street System.

The modifications to the current street functional classification as outlined below will provide better circulation and function.

Ivy Street Ivy Street, between Highway 99E and Territorial Road, has been reclassified from a collector to an arterial.

Holly Street Holly Street, between Northwest 1st Avenue and Territorial Road has been reclassified from an arterial to a collector.

NW Birch Street Northwest Birch Street between Territorial Road and Knights Bridge Road has been reclassified as a neighborhood connector.

NW Territorial Road Territorial Road from Birch Street to Holly Street has been reclassified as a neighborhood connector.

N Maple Street Maple Street from 10th Street to its north end has been reclassified as a neighborhood connector.

N 10th Avenue North 10th Avenue from Birch Street to Holly Street has been reclassified as a neighborhood connector.

NW 3rd Avenue Northwest 3rd Avenue, between Ivy and Holly Streets has been reclassified from an arterial to a collector.

NW 5th Avenue Northwest 5th Avenue from Birch Street to Elm Street has been reclassified as a neighborhood connector, but include bicycle lanes within the existing street width because 5th Avenue provides direct access to the schools.

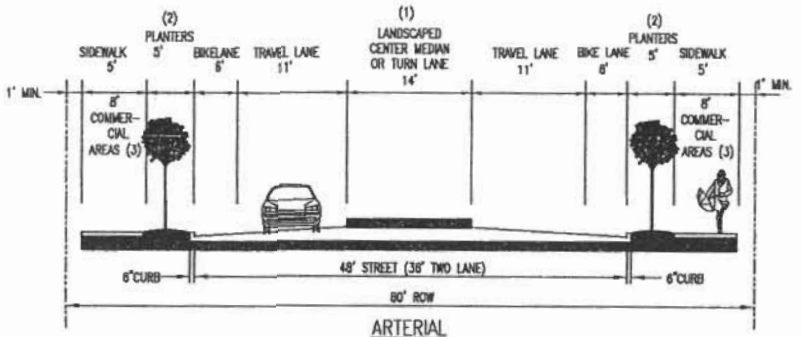
---

2 Otherwise the TSP recommends full street construction to the construction standards

N Elm Street	Elm Street between Northwest 3rd and 5th Avenues has been reclassified as a neighborhood connector but includes bicycle lanes within the existing street width because Elm Street provides immediate access to the schools there.
SE 6th Avenue	Southeast 6th Avenue has been reclassified as a neighborhood connector from Elm Street to Ivy Street.
SE 10th Avenue	Southeast 10th Avenue has been reclassified as a neighborhood connector west of South Redwood Street.
S Pine Street	South Pine Street between South Redwood Street and Southeast 13th Avenue has been reclassified as a neighborhood connector.
S Redwood St	The extension of South Redwood Street from South 13th Avenue to the new South 17th Avenue has been classified as a neighborhood connector.
Industrial Area	The street classifications included in the 1998 Industrial Area Master Plan shall be implemented as appropriate when streets are constructed in this area.
SE 4th Avenue	SE 4th Avenue from South Redwood Street to Shimadzu has been reclassified as a collector street.

Figure 4-1a
City of Canby Transportation System Plan
Recommended Street Standards

NEW CONSTRUCTION STANDARDS

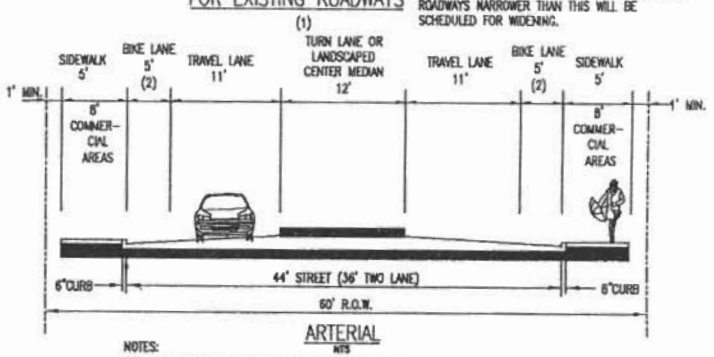


ARTERIAL
NTS

NOTES:
(1) IF PROJECTED ADT < 4,000, TURN LANE / MEDIAN NOT REQUIRED
(2) OPTIONAL IN COMMERCIAL AREAS IF SIDEWALK ≥ 12' WIDE
(3) DOWNTOWN COMERCIAL TO BE 10' SIDEWALK W/ REDUCED PLANTER

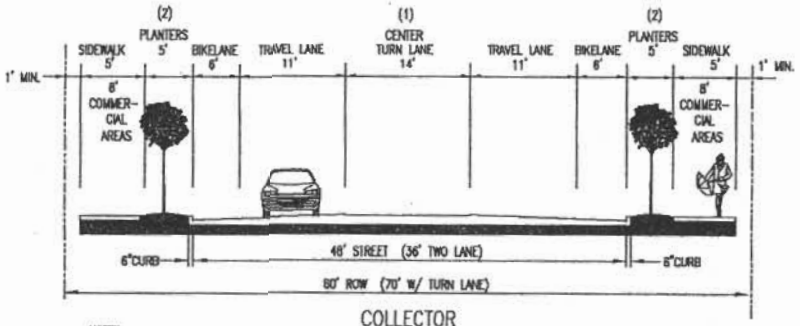
ADEQUACY STANDARDS FOR EXISTING ROADWAYS

NOTES:
MINIMUM WIDTHS FOR EXISTING ROADWAY SECTIONS. ROADWAYS NARROWER THAN THIS WILL BE SCHEDULED FOR WIDENING.



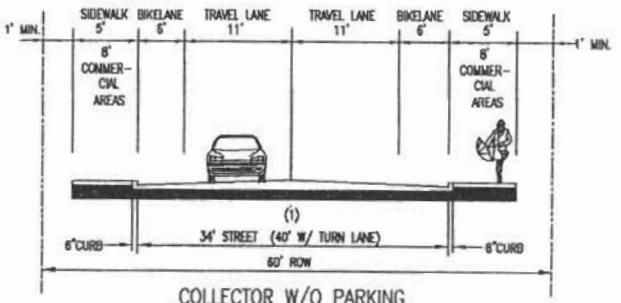
ARTERIAL
NTS

NOTES:
(1) IF PROJECTED ADT < 5,000, TURN LANE / MEDIAN NOT REQUIRED
(2) IF PROJECTED ADT < 5,000, BIKE LANE TO BE 6'



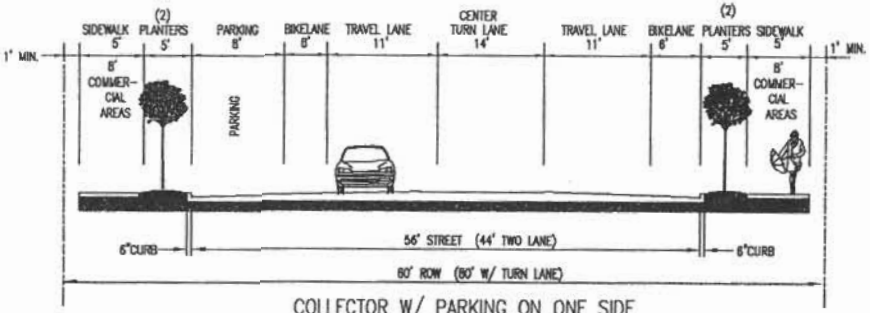
COLLECTOR
NTS

NOTES:
(1) AT ALL MAJOR INTERSECTIONS AND/OR IF PROJECTED ADT > 5,000
(2) OPTIONAL IN COMMERCIAL AREAS IF SIDEWALK ≥ 10' WIDE



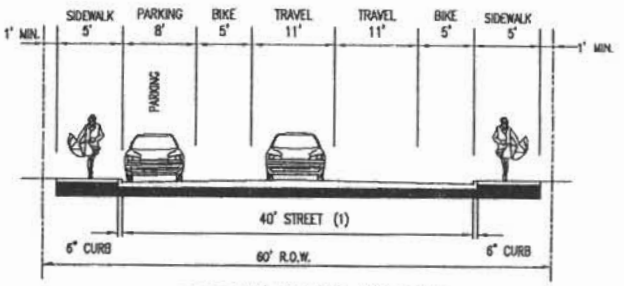
COLLECTOR W/O PARKING
NTS

NOTES:
(1) TURN LANE NEEDED AT ALL INTERSECTIONS WITH ARTERIALS OR IF PROJECTED ADT >6,000, SEE ARTERIAL SECTION



COLLECTOR W/ PARKING ON ONE SIDE
NTS

NOTES:
(1) AT ALL MAJOR INTERSECTIONS AND/OR IF PROJECTED ADT > 5,000
(2) OPTIONAL IN COMMERCIAL AREAS IF SIDEWALK ≥ 10' WIDE

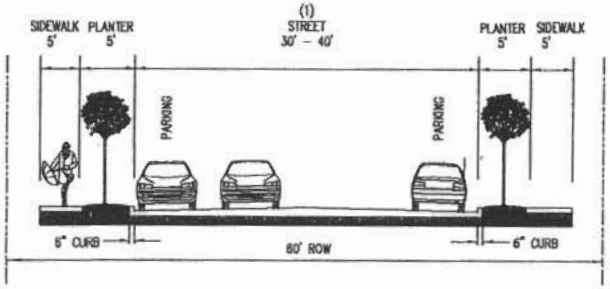


COLLECTOR W/ PARKING ONE SIDE
NTS

NOTES:
(1) TURN LANE NEEDED AT ALL INTERSECTIONS WITH ARTERIALS OR IF PROJECTED ADT >6,000, SEE ARTERIAL SECTION

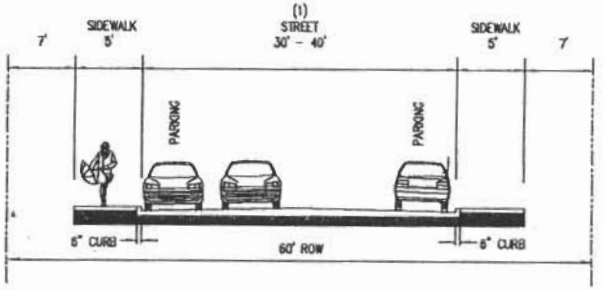
Figure 4-1b
City of Canby Transportation System Plan
Recommended Street Standards

NEW CONSTRUCTION STANDARDS



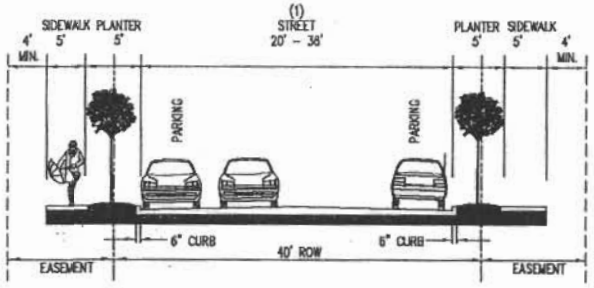
NEIGHBORHOOD CONNECTOR
NTS

ADEQUACY STANDARDS FOR EXISTING ROADWAYS

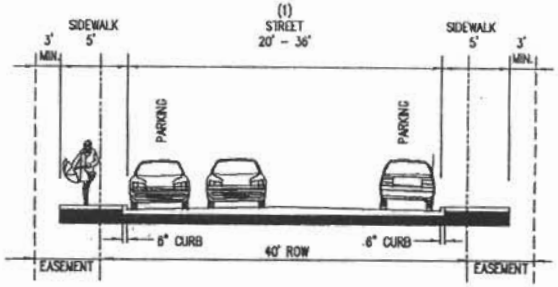


NEIGHBORHOOD CONNECTOR
NTS

(1) STREET WIDTH IS 40' WITH PARKING ON BOTH SIDES, 36' WITH PARKING ON ONE SIDE. STREETS NARROWER THAN 40' MAY BE ALLOWED ONLY ON A CASE BY CASE BASIS BY THE PLANNING COMMISSION OR CITY COUNCIL.

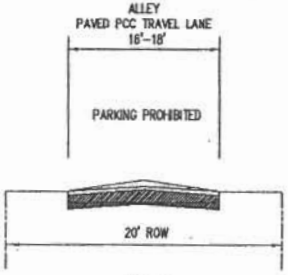


LOCAL STREET
NTS

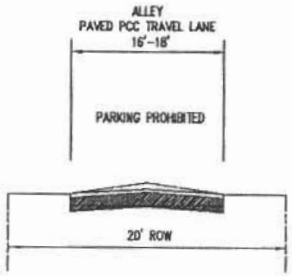


LOCAL STREET
NTS

(1) STREET WIDTH IS 36' WITH PARKING ON BOTH SIDES, 28' WITH PARKING ON ONE SIDE. STREETS NARROWER THAN 36' MAY BE ALLOWED ONLY ON A CASE BY CASE BASIS BY THE PLANNING COMMISSIONS OR CITY COUNCIL.

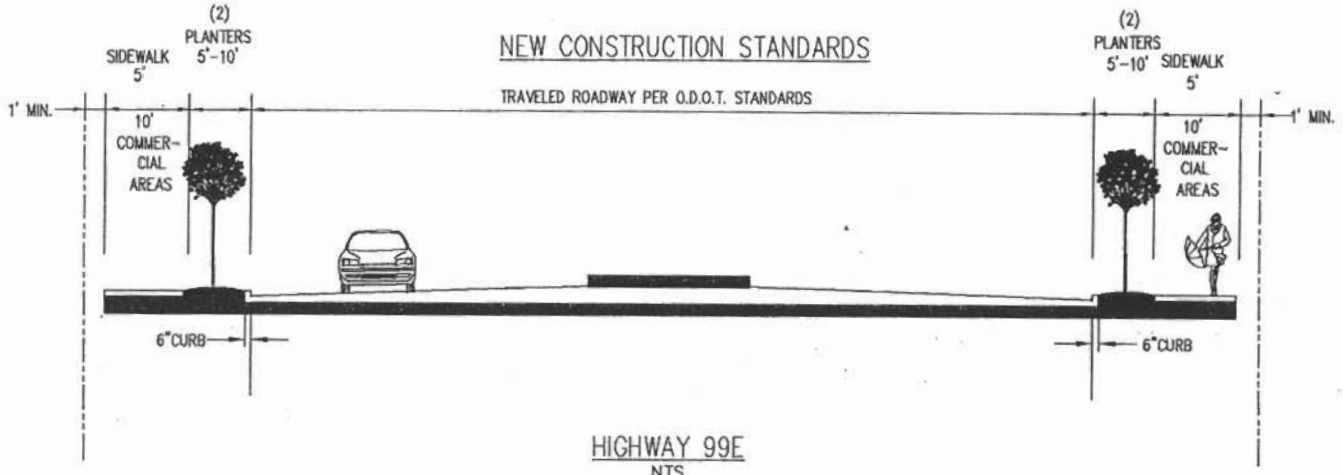


ALLEY
NTS



ALLEY
NTS

NEW CONSTRUCTION STANDARDS

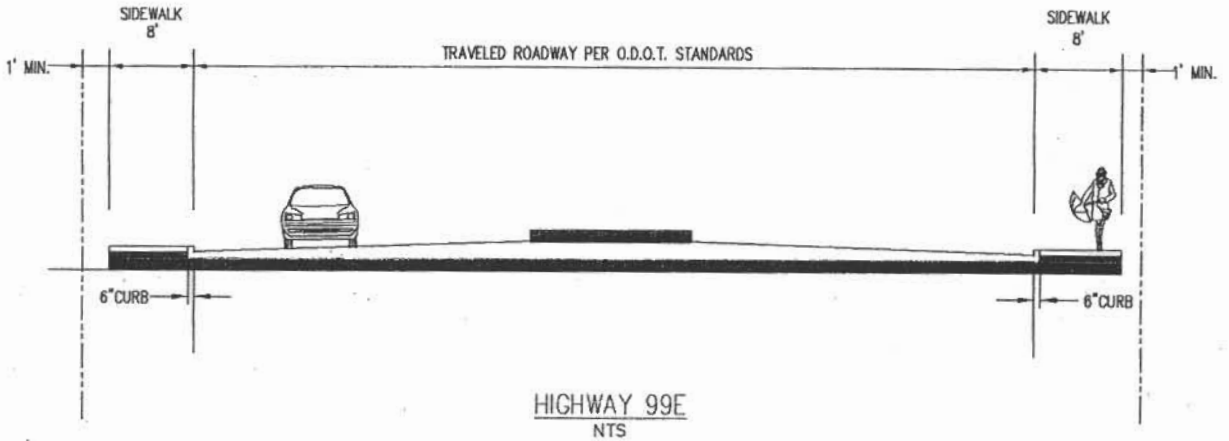


HIGHWAY 99E
NTS

NOTES:

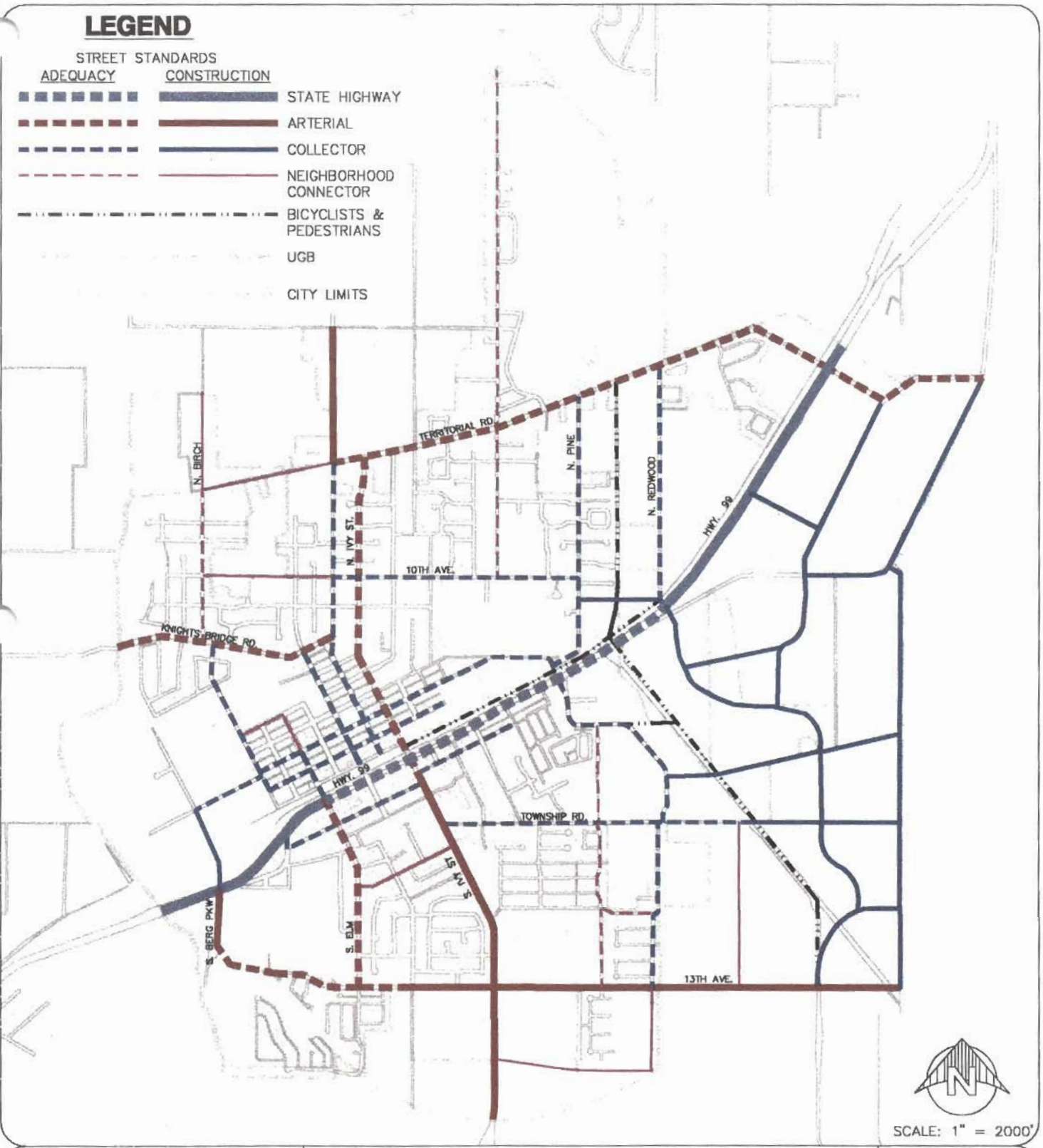
(2) OPTIONAL IN COMMERCIAL AREAS IF SIDEWALK ≥ 10' WIDE

ADEQUACY STANDARDS



HIGHWAY 99E
NTS

Figure 4-1c
City of Canby Transportation System Plan
Recommended Street Standards



CITY OF CANBY
TRANSPORTATION SYSTEM PLAN

JANUARY 2000

Figure 4-2
City of Canby Transportation System Plan
Major Street System

B. MAJOR STREET PLAN

The long-range transportation plan for Canby's major street system is defined as those projects to be completed in a 20-year time frame. These projects encompass auto, pedestrian, bicyclist, and public transportation modes. The long-term transportation improvements for the Canby area major street system include two categories of projects: capacity improvements and non-capacity improvements. **Figure 4-2** illustrates the recommended major street system to serve the Canby urban area. All of these projects are allowed by this TSP, with the exception of Baker Drive, which may require additional approvals for the overcrossing structure.

Capacity Improvements

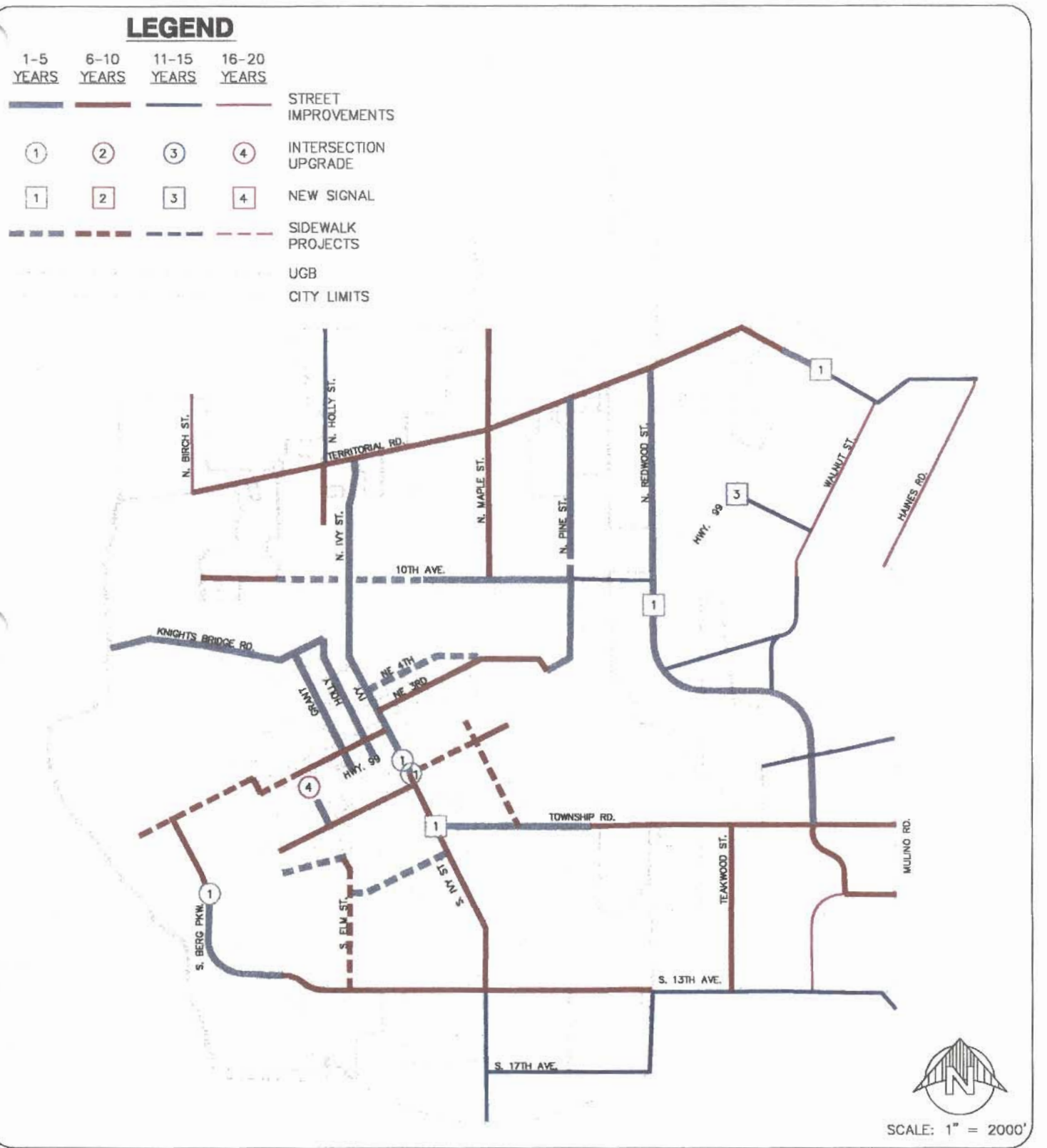
The original TSP (1994) costs have been updated to 1999 dollars. In some cases, the specific project costs have been refined.

Future street capacity deficiencies were identified in the 1994 Transportation System Plan, based upon traffic generated by future land development identified in the Canby Comprehensive Plan, and the preferred future transportation system alternative. This project list has been revised to include updated project costs, and the addition of some new projects. These improvements are listed and defined individually below, and illustrated in **Figure 4-3.** Each project is also listed in **Table 5-1**, which also describes project costs and projected cost allocations among different funding sources.

SW Berg Parkway

An extension of Berg Parkway is planned from its current terminus approximately 0.2 miles south of Highway 99E to 0.3 miles west of Elm Street. This 0.2 mile extension should be constructed to three-lane arterial adequacy standards, with sidewalks and bike lanes on both sides of the street. This will match the existing 40-foot street improvements on SW 13th Avenue. The Berg Parkway extension will provide increased access to southwest Canby and Canby Community Park and relieve some of the traffic demand from Ivy Street and Highway 99E.

Berg Parkway is planned to be widened to three-lane arterial construction standards with sidewalks and bike lanes south of Highway 99E. This widening project (connecting with the extension of Berg Parkway) will improve access to the residential areas and shopping center south of Highway 99E for auto and non-auto modes, and will extend .2 miles south of the Highway.



CITY OF CANBY
TRANSPORTATION SYSTEM PLAN

JANUARY 2000

Figure 4-3
City of Canby Transportation System Plan
Major Street System Improvements

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SW Berg Parkway continued

The traffic signal at the Highway 99E/Berg Parkway intersection will also need to be upgraded in the next five years (portions of this project are already underway) to provide additional intersection capacity for autos, pedestrians, and bicycles. This improvement is anticipated to cost $0.1 million.

N Ivy Street

N. Ivy Street will be a 40 foot arterial and needs to be completely reconstructed to the adequacy standard from Highway 99E to 9th Avenue. The block from 9th to 10th Avenue is already 40' wide and only requires an overlay. Additional right-of-way is needed from 2nd to 6th Avenues.

There is interest in striping a north/south bike route from Territorial Road to Highway 99E. Ivy and Holly Streets can be combined as a route in the interim until both streets are redeveloped. The proposed interim route would be along Ivy Street from Territorial Road to 10th Avenue, then along 10th from Ivy to Holly Street, along Holly to 3rd Avenue and along 3rd to Ivy Street. This alignment avoids the width-restricted areas of Holly and Ivy and creates a north/south route into downtown.

S Ivy Street

South Ivy Street should be widened between Highway 99E and Southwest 2nd Avenue to a 44 foot adequacy standard. Physical limitations in this block preclude further widening. This widening project includes sidewalks and bicycle lanes on both sides of the street. From 2nd to 9th Avenues, S. Ivy Street will be widened to a 48 foot construction standard. South of 13th Avenue, S. Ivy Street will be a 36 foot, two-lane arterial.

The North and South Ivy Street widening projects will provide improved access and added capacity between the areas north and south of Highway 99E. This will improve access between residential areas, commercial areas, schools, and parks along the north-south corridor through Canby for all modes of travel.

A new traffic signal is expected to be warranted at the Township Road intersection with S. Ivy Street in the next ten years. This project will provide additional intersection capacity for autos, pedestrians, and bicyclists.

The traffic signal at the intersection of Highway 99E and Ivy Street will also need to be upgraded in the next five years to provide additional intersection capacity for autos, bicycles, and pedestrians.

N Territorial Road

Territorial Road is planned to be widened to 3-lanes with sidewalks and bicycle lanes between Holly Street and Highway 99E. Much of this widening has already been completed with a curb-to-curb width of 44 feet, which meets arterial adequacy standards, and provides enough space for two travel lanes, a center turn lane, bike lanes, and sidewalks. It is recommended that the rest of this section be widened to 44 feet to meet the adequacy standards and match these sections. Parking will be eliminated on Territorial Road. This 1.6 mile widening project will provide improved access for all modes through the residential areas in north Canby.

Clackamas County is planning a project to slightly widen portions of Territorial Road to include bike lanes from Molalla Forest Road to Holly Street.

In addition, a new traffic signal will be warranted at the intersection of Territorial Road and Highway 99E within the next five years. The cost of the new signal, intersection, and rail crossing improvement is estimated at $1.65 million, and this project will provide additional intersection capacity for autos, bicycles, and pedestrians.

NW Knights Bridge Road

Knights Bridge Road will remain at the existing 40 foot street width. Total reconstruction of this road will be required to the arterial adequacy standard.

SE 13th Avenue

To provide improved access between residential areas and schools in south Canby, and to facilitate access from this area to Highway 99E, SE 13th Avenue should be widened to three lanes with sidewalks and bike lanes. From S. Ivy to Mulino the street will be 44 feet wide.

SW 13th Avenue

SW 13th Avenue from S. Ivy to the west end will be built at a 40 foot cross-section to match the existing street. While traffic volumes may necessitate a three-lane section in the future, a two-lane section is anticipated to function adequately for many years. It is recommended that this street be striped with two travel lanes and bike lanes in the near term. An overlay is required to meet the City's standard section.

SE Brown Road

Southeast Brown Road will be widened to a 48 foot arterial construction standard, with bike lanes and sidewalks, from Highway 99E to Haines Road.

NW Baker Drive

Baker Drive should be extended 0.3 miles south to Highway 99E. This extension should be constructed to full two-lane collector street construction standards with bike lanes and sidewalks on each side of the street. Baker Drive improvements will provide increased access to the industrial areas north of Highway 99E. The construction of an overcrossing of the rail lines paralleling Highway 99E will be necessary to complete the Baker Drive extension. The total cost of this project is estimated to be $6.6 million. The City is not viewing this as a high priority project because of the high anticipated cost and relatively low current demand. Long-range plans for passenger rail service in the Willamette Valley call for the reduction of current at-grade crossings, even within the Canby Urban Growth Boundary. The future NW Baker Drive project will ensure adequate north/south local and emergency service access across the Union Pacific Railroad with connection to 99E.

N Redwood Street

North Redwood Street should be widened to collector adequacy standards from Highway 99E to Territorial Road. Some existing sections of this street have been constructed with a 40-foot curb-to-curb width and parking on both sides, which meets the construction standard (with removal of parking), and will remain. Eliminating parking will allow the currently constructed sections to remain as adequate transportation facilities and reduce the project cost substantially. The project includes widening to three lanes at the approaches to Territorial Road and Highway 99E.

A traffic signal at Highway 99E and N. Redwood/S. Sequoia is being constructed as part of the Gramor/Fred Meyer Development.

N Pine Street

The widening of Pine Street with bike lanes and sidewalks should be completed from Highway 99E to Territorial Road. This project will provide improved access for all travel modes to the Clackamas County Fairgrounds and will accommodate future growth in the area. Widening has been completed along much of this section with a 40-foot curb-to-curb width, which meets the adequacy standard. The rest of the street should be widened to match this 40-foot width, providing enough pavement to accommodate two travel lanes, bike lanes, and parking on one side. Sidewalks should be provided on both sides.

S Township Road

To provide increased access for all auto and non-auto modes to the residential areas in southeast Canby, Township Road should be widened to a 44 foot three-lane collector with sidewalks and bicycle lanes on both sides of

the street. The three-lane section is necessary, due to growing traffic demand, from S. Ivy to the Molalla Western Railroad.

S Elm Street

South Elm Street should be restriped as a two-lane arterial with bike lanes and sidewalks on both sides of the street, and widened to provide a separate left turn lane and bike lanes approaching Highway 99E, with no parking. This 0.2 mile restriping project between Highway 99E and SW 4th Avenue will require removal of parking to meet the adequacy standard.. Partial reconstruction will be needed from 99E to SW 2nd for the 40 foot width. In order for both parking and bike lanes to be provided on this section, an additional widening project would need to be completed.

NW 1st Avenue/N Elm Street

In order to facilitate traffic movement on North Elm Street, NW 1st Avenue should be closed from Northwest Douglas Street to North Elm street. The driving force for this project will be traffic approaching and leaving Highway 99E and the railroad crossing, and this project should be undertaken when the 1st Avenue intersection becomes an unacceptable impediment to safe and efficient traffic flow on North Elm Street. This project is anticipated to be necessary in 11 to 15 years.

NE 3d Avenue

NE 3rd Avenue from Juniper to Pine should be an oversized two-lane collector built to adequacy standards with bike lanes and sidewalks on both sides. This 0.5 mile widening project will improve access for all modes to the downtown neighborhood and the fairgrounds.

SE 2nd Avenue

To provide continuous access between Highway 99E and Ivy Street, the private section of SE 2nd Avenue east of Locust Street should be widened to two-lane collector adequacy standards with bike lanes and sidewalks on both sides of the street. No new right-of-way is required.

SW 2nd Avenue

SW 2nd Avenue should be widened between Elm and Ivy Streets to two-lane collector adequacy standards with parking on one side. This project will improve mobility in this portion of the business area and reduce local traffic use of Highway 99E.

A planned project on South 2nd Avenue would realign Southwest and/or Southeast 2nd Avenue at Ivy street so that both sides of South 2nd Avenue intersect Ivy Street in the same place. This project will improve the viability of South 2nd Avenue as an alternate for local traffic to avoid using Highway 99E.

The section of Southwest 2nd Avenue between Birch and Elm Streets is currently constructed with a 40-foot curb to curb width, which meets the adequacy standard. This section should be restriped to add bike lanes by removing parking on one side.

NW 2nd Avenue

Between North Ivy and North Douglas, NW 2nd Avenue should be reconstructed as a 40 foot collector built to adequacy standards.

N Grant Street

Between Highway 99E and Knights Bridge Road, North Grant Street should be totally reconstructed as a 40 foot collector built to adequacy standards.

N Holly Street

Between 1st Avenue and 7th Avenue, North Holly should be reconstructed to 40 foot collector adequacy standards. From 13th Avenue to Territorial Road, North Holly requires an estimated 20 foot widening to 36 foot collector standards. Between Territorial Road and 22nd Avenue, North Holly should be widened to 36 foot arterial adequacy standards. These projects will provide improved access to neighborhoods, to the Canby Ferry, and to the areas north of Canby.

SE Otto Road

Southeast Otto Road should be constructed to three-lane collector construction standards between Highway 99E and Southeast Haines Road, lining up with SE Mulino Road at Haines. This 0.6 mile project should be constructed as necessary to serve development in the area. In order for this improvement to be fully effective, a traffic signal should be constructed at its intersection with Highway 99E.

Highway 99E

Final plans for the number of lanes (including bicycle lanes), traffic control, and access on Highway 99E should be as identified in the Access Management Plan. It is anticipated that Highway 99E will eventually be reconstructed to include a five-lane cross-section with bicycle lanes and sidewalks. The cost of these improvements are likely to be borne by the State as funding becomes available, with a small portion paid by new development.

Bremer Road/Otto Road/First Avenue Intersection

This intersection should be constructed to City standards in order to accommodate future travel demand. The costs should be shared between the City and County. The need for this project is anticipated in the 16-20 year timeframe.

SE Haines Road

From Mulino to Brown Road, SE Haines should be built to 36 foot, two-lane construction standards to handle increased traffic from SE Canby and the Industrial Area.

Non-Capacity Improvements

These improvements are necessary to provide system-wide access for all modes of travel on the major street system throughout the Canby urban area and access to areas of new development. Many of these streets present a special problem because they are located in areas that are already developed, while other projects will become necessary as a result of new development. Projects in this category have been identified on nine facilities plus the industrial area. These projects are also listed in **Table 5-1**, along with their projected costs and cost allocations.

NW 10th Avenue

North 10th Avenue should be extended from Grant Street to Birch Street to provide improved access to the residential areas in northwest Canby. This 0.2 mile project should be built to neighborhood connector construction standards, and will be constructed along with new development.

North 10th Avenue from Locust Street to Pine Street is currently constructed with a 40-foot curb-to-curb width and a 24-foot pavement width. The pavement should be widened to 40 feet to meet the adequacy standards, and the street restriped to provide two travel lanes, two bike lanes, and parking on one side.

NE 9th Place (NE 10th Avenue extension)

NE 9th Place should be extended from Pine Street to Redwood Street to provide improved access to the newly developing areas in northeast Canby. This 0.3 mile extension should be built to collector construction standards, and will be built by private development. Parking pockets may be provided in the area of current development if deemed necessary.

NE 3rd Avenue

NE 3rd Avenue from Ivy to Juniper should be built to 44 foot adequacy standards and striped for bike lanes and parking.

SE Walnut Road

SE Walnut Road should be built to two-lane collector construction standards with bike lanes and sidewalks between Southeast 1st Avenue and Brown Road. This 0.6 mile project will provide improved access to the developing areas south of Highway 99E.

N Birch Street

North Birch Street should be realigned between Territorial Road and NW 22nd Avenue. This 0.3 mile realignment should be built to neighborhood connector construction standards, with sidewalks on both sides of the street. This connection would only become necessary if new development occurs, and its cost should be borne by new development.

SE 17th Avenue

SE 17th Avenue should be constructed from South Ivy Street to the Redwood Street extension to provide increased access for all modes of travel to the developing areas south of South 13th Avenue. This 0.5 mile extension should be built to neighborhood connector construction standards with sidewalks on both sides of the street.

NW Territorial Road

Territorial Road should be widened to neighborhood connector construction standards with sidewalks between Birch Street and Holly Street.

S Redwood Street

South Redwood Street should be constructed to neighborhood connector construction standards. This 0.3 mile project between SE 13th and SE 17th will provide access for all travel modes to this future neighborhood in south Canby.

N Maple Street

Maple Street is classified as a neighborhood connector, and provides connecting access to neighborhoods and a country club in north Canby. Much of Maple Street is currently curbed on one side with 24 feet of pavement width. The pavement width should be widened to 36 feet to meet neighborhood connector adequacy standards. Sidewalks should be provided on all sections.

S Teakwood Street

South Teakwood street will be developed as a 40 foot neighborhood connector, and will be built along with new development. It will provide

access to new development in SE Canby between S. Township Road and SE 13th Avenue.

Industrial Area

The 1998 Canby Industrial Area Master Plan identifies the network of future streets planned to serve the area bounded by Southeast 1st Avenue, Mulino Road, Southeast 13th Avenue, and the Molalla Forest Road. This network includes 5.3 miles of planned streets and is anticipated to cost $11.8 million, with $9.9 million for collectors and $1.9 million for local streets (local streets are not counted in the section total). This network is planned for construction as necessitated by new development, and these costs are expected to be borne by a combination of new development and other funding methods.

The street network shown on the 1998 Canby Industrial Area Master Plan (IAMP) indicates conceptual alignments for future roads in the area. As development occurs and engineering/design steps are taken to implement the street network, the TSP anticipates the possibility of modifications to alignments shown on the Circulation Plan Map of the IAMP. These modifications may result from physical conditions such as topography, development patterns, street connectivity, rail crossings, etc. The TSP acknowledges that these conditions will affect where specific road alignments are ultimately constructed and recognizes that alignment decisions will be made either when development is proposed or an engineering study is conducted to determine road location.

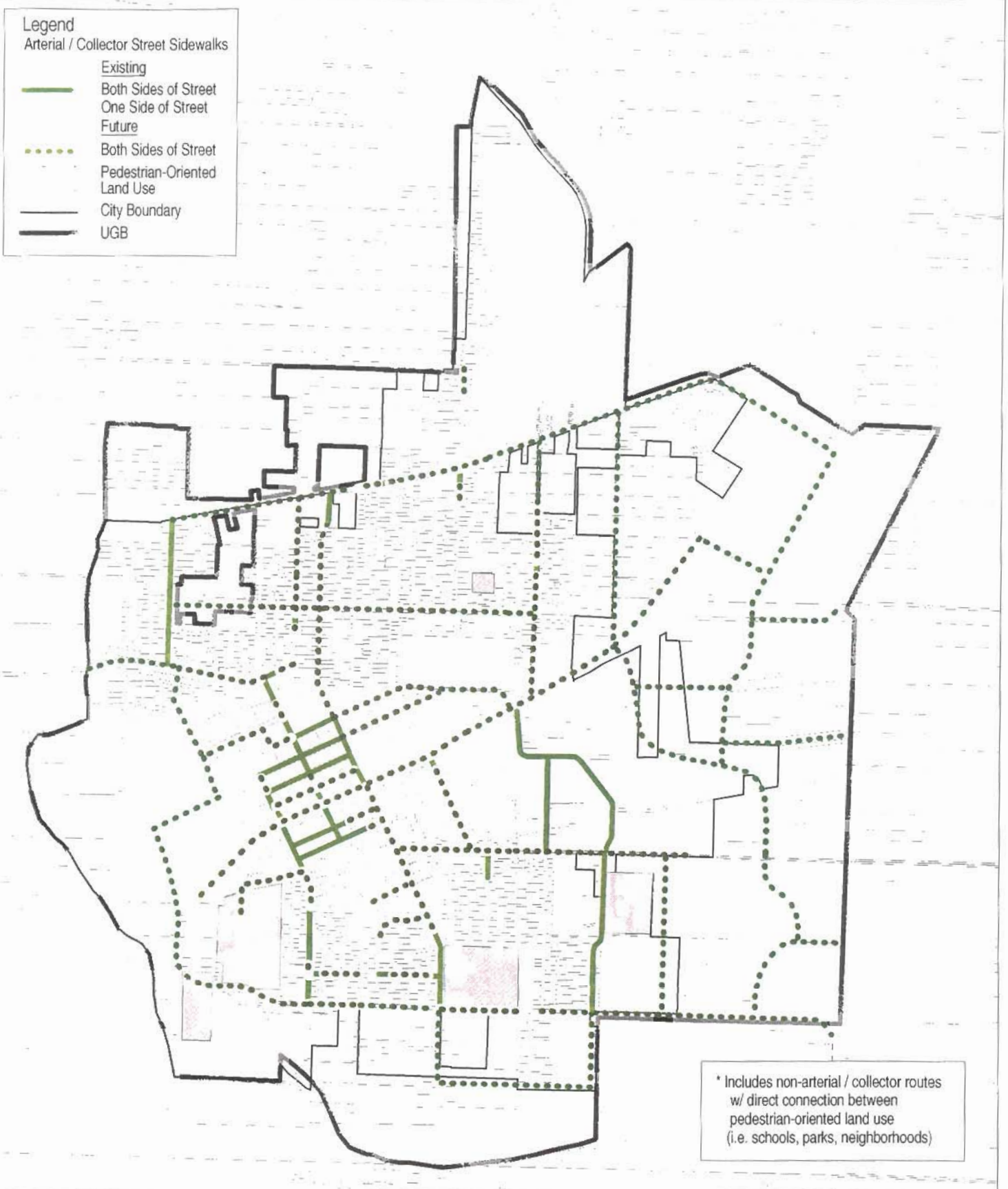
C. PEDESTRIAN PLAN

The City of Canby street standards call for sidewalks on both sides of all streets in order to give pedestrians full accessibility on Canby's street system. The standards for new construction also include planter strips, as buffer space between the sidewalks and the pavement for enhanced pedestrian usability. Sidewalks along newly constructed street sections will be included in those construction projects. Currently, several streets in Canby have either no sidewalks or sidewalks on only one side of the street. Each of these streets should be improved to city standards, and include sidewalks on both sides of the street. **Figure 4-4** illustrates where sidewalk improvements are needed on the city's major street system. Some of these improvements will occur along with street reconstruction projects. The total cost of sidewalk improvement projects alone is $586,750 (see table 5-1). This does not include the cost of adding sidewalks as part of a street reconstruction project, as those costs are included in the individual project costs.

The Molalla Forest Road multi-use pathway is a relatively unique facility that enhances mobility options for pedestrians and bicyclists in Canby. Any new developments abutting this facility should be required to provide a pedestrian/bicycle connection between the Molalla Forest Road, that development, and a public street.

The construction of a multi-use path is planned on the north side of the railroad tracks (north of Highway 99E) from Redwood Street to Ivy Street. This path should provide a good route for pedestrians and bicyclists from many parts of the city traveling to the commercial establishments in the downtown area and near Highway 99E. This is shown on **Figure 4-5.**

Additional multi-use pathways should be required where appropriate for good connections to the existing transportation system from any new developments expected to generate substantial pedestrian traffic.



City of Canby
Transportation System Plan

April 1999

Figure 4-4
City of Canby Transportation System Plan
Pedestrian Plan
(Location Approximate for New Facilities)

D. BICYCLE PLAN

Future bicycle improvements identified in conjunction with street improvements are intended to provide bicyclists with full accessibility on the City of Canby's major street systems. The recommended bicycle route plan is illustrated in **Figure 4-5.** There are a number of additional bicycle facilities that will provide for optimal circulation for the destination-oriented bicyclist, especially for travel between residential areas and schools. These projects also include unique routes between local environmental, social, and cultural/historical features for the recreational bicyclist, and result in a more balanced transportation system providing direct routes for all users in the City of Canby.

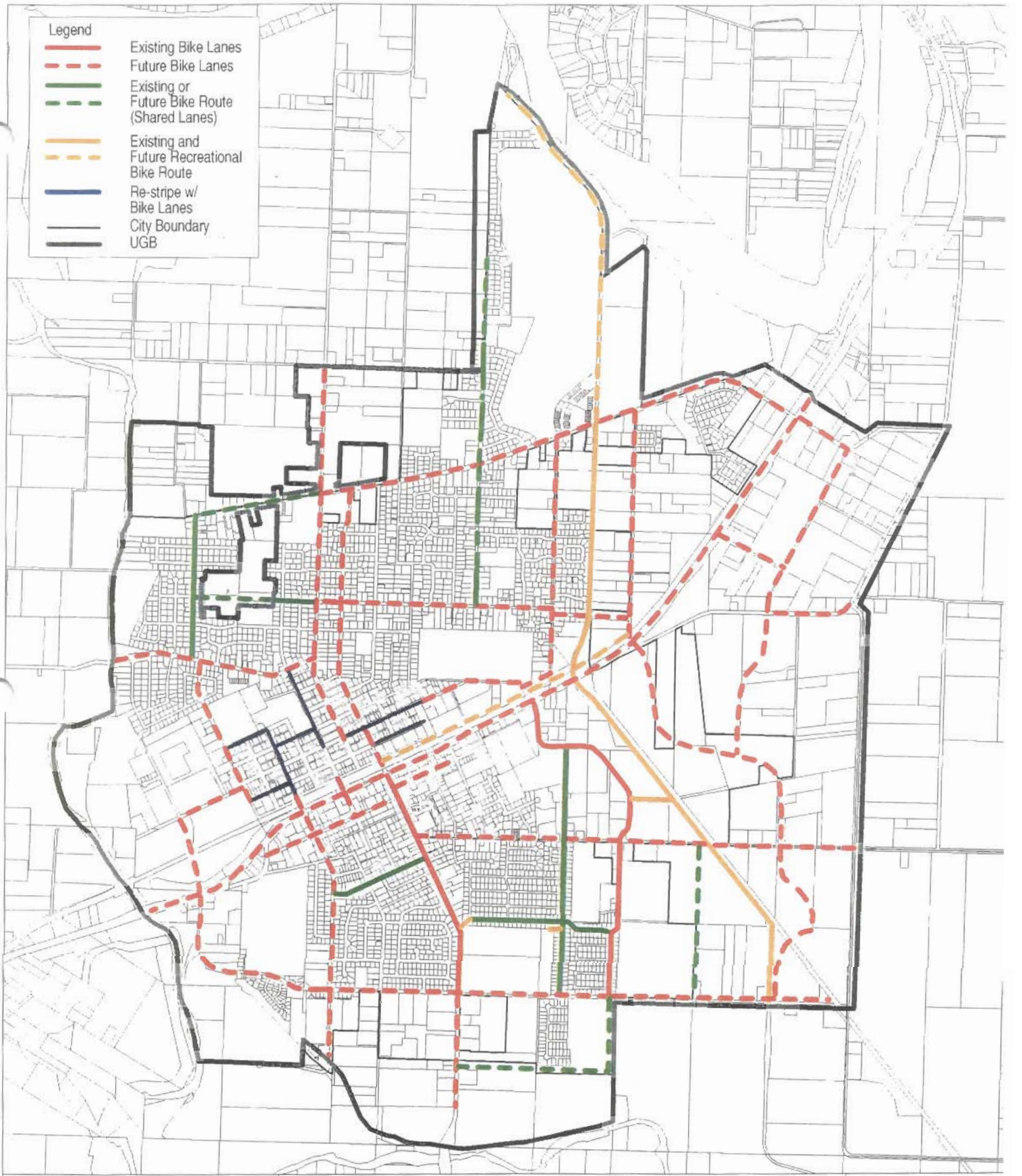
Some streets, particularly in the downtown area, are currently wide enough for bike lanes, as well as the existing travel lanes and on-street parallel parking. Striped bike lanes on these streets would provide space specifically designated for bicycle travel, provide a buffer area between travel lanes and parking, better define the vehicular travel lanes, and perhaps slow vehicular traffic to make downtown a bit more pleasant. These improvements could be gained at relatively low cost. The following street segments should still be planned for bike lanes:

- NE 2nd Avenue from Ivy Street to the dead-end at Thriftway and from Elm to Cedar
- NE 3rd Avenue from Holly Street to Pine Street/99-E intersection
- NE 5th Avenue from Cedar to Elm Street
- N Elm Street from 99-E to 5th Avenue
- Remove bike lanes from Grant Street between 1st and 3rd, but leave lanes across 99-E and the Railroad tracks and extending to the south and from 3rd Avenue to Knights Bridge.

Note: It is assumed that the City will determine the optimal configuration for Grant Street by evaluation of the striping demonstration project in place there.

Note that multi-use paths, discussed in the Pedestrian Plan, are also considered bicycle facilities, and are shown on **Figure 4-5**.

This plan calls for bike lanes to be provided on all arterials and collectors within the next 20 years. In addition, this plan calls for bike lanes to be striped on other streets where existing pavement widths allow. On Neighborhood Connectors, traffic volumes and speeds are expected to be relatively low, so that cyclists can ride safely and comfortably in the vehicular travel lanes, so provision of bike lanes is not appropriate on these facilities. Neighborhood Connectors, when constructed to standard, are somewhat wider than necessary to handle the vehicular traffic expected to use them, and this extra width is intended to facilitate bicycle travel. Therefore, neighborhood connectors are shown on **Figure 4-5** as bike routes, which are shared-lane facilities.



City of Canby
Transportation System Plan

April 1999

Figure 4-5
City of Canby Transportation System Plan
Bicycle and Multi-Use Facilities
(Location Approximate for New Facilities)

E. PUBLIC TRANSPORTATION PLAN

Future public transportation (transit) improvements were identified as part of the Canby Transportation System Plan for both local (Canby intra-city service), commuter transit, intercity bus, and long range transit service.

The Oregon Transportation Plan (Multimodal System Element)[3], recently adopted by the Oregon Transportation Commission (September 15, 1992), identifies statewide policy and a long-range plan for a coordinated transportation system. The plan is intended to meet requirements set forth by the Department of Land Conservation and Development (DLCD) in the Transportation Planning Rule (Goal 12) and the federal Intermodal Surface Transportation Efficiency Act (ISTEA).

This policy plan includes a network of facilities and service for air, rail, highways, public transit, pipeline, marine transport, bikeways, pedestrian and other modes to be developed over the next 20 years. Transit goals and strategies in the State plan that are specific to the City of Canby and/or local transit service include the following:

- Urban areas of 2,500 population or more within 20 miles of a major metropolitan area central city should have at least peak hour transit service to the metropolitan area (includes Canby which already has peak hour commuter service connection to the Portland/Vancouver area provided by Tri-Met).

- Local public transit services and elderly and disadvantaged service providers should connect to intercity passenger terminals.

Long range transportation improvements, listed as "possible" alternatives because they are either too far in the future or too uncertain to be included in the State plan (see also Section 4.II.C. Rail Service), include long-range, high-speed rail passenger transportation service in the Willamette Valley with connection between Eugene, Portland and Seattle. These trains are not likely to stop in Canby.

Commuter Transit

Currently, two Tri-Met bus routes serve the Canby area during the weekday peak hours as is described in Chapter 1 - Existing Conditions. Review of current passenger demand (ridership) on the Tri-Met routes reveals that the system is under utilized. Increased transit use per capita is expected by the year 2015 as the Canby urban area matures, which may require expanded service.

In addition, when (or if) full development of Portland's light rail transit (MAX) is realized (particularly in the South-North corridor), added demand for commuter transit service within the Canby urban area may occur. The city of Canby should continually seek opportunities to improve the service and efficiency of public transportation for its

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3 Oregon Transportation Plan - Multimodal System Element, Oregon Department of Transportation, 1992.

residents and visitors. Alternatives to Tri-Met (e.g. linking to the SMART system in Wilsonville) may be explored to maximize this service and efficiency.

Local Transit

Service for the elderly and handicapped is currently provided by the Canby Adult Center and Clackamas County's Transportation Reaching People (TRP). Continued use of these services in Canby is recommended.

F. RAIL

Freight

Union Pacific Railroad currently provides daily service for freight shipment in Canby; Molalla Western Railway Company currently provides weekly spur line freight service between Canby and Molalla. Continued use of these rail lines for the movement of goods in and through Canby is recommended.

Passenger

ODOT is proceeding with long-range planning for high-speed passenger rail service in the Willamette Valley to enhance existing passenger service (AMTRAK) along the current Union Pacific RR line through Canby, with passenger terminals located in Eugene, Salem and Portland, although major improvements or service are not funded at this time.

Added train traffic through Canby, especially at higher speeds, will place greater pressure to safely control traffic at the existing at-grade rail crossings within the city. Elimination of existing rail crossings will result in:

- Re-routed auto traffic to other crossings, which would result in increased congestion and poorer LOS on Canby's major streets and Highway 99E
- Increased Vehicle Miles Traveled
- Reduced emergency response capability
- Reduced bicycle and pedestrian mobility

All current rail crossings are on City or County Arterials or Collectors. Therefore, no crossing closures are recommended[4], even if high-speed rail service is actually implemented on this rail line.

[4] Unless replaced with grade-separated crossings

G. AIR

As described in Chapter 1, existing regional and international air service for passengers and freight is provided at the Portland International Airport while local commercial service as well as private aircraft use is provided at the Aurora State Airport and Mulino Airport. The continued use of these facilities for air service is recommended.

H. WATER

Current use of the Willamette River is limited to the Canby Ferry, barge shipment of sand and gravel, floats of timber, and recreational boating. The Canby Transportation System Plan encourages the continued use of the river as a means of transportation.

I. PIPELINE

Current pipeline transportation in and through the Canby area includes transmission lines for electricity, cable television and telephone service; and pipeline transport of water, sewer and natural gas. The Canby Transportation System Plan encourages continued use of these services to move goods in and through the City of Canby.

J. OTHER OPTIONS

In addition, "telecommuting" is becoming an increasingly popular method of working at home using telephone communications, home computers, and the internet. Use of telecommuting technology may result in the reduction or even elimination of some auto and transit work travel; travel that typically occurs during the heaviest traveled time periods. The Canby Transportation System Plan recognizes this expanding mode of telecommuting as a an effective means of decreasing the need for expanded or new conventional transportation system infrastructure. As such, the Canby Transportation System Plan encourages, through land use policy and plans, the use of *telecommunications* as an alternative mode to the automobile for work travel commuting.

K. POLICIES/LAND USE REGULATIONS FOR IMPLEMENTING THE TRANSPORTATION SYSTEM PLAN

The Oregon Transportation Planning Rule for Goal 12 requires that local governments adopt standards in their transportation system plans that encourage multi-modal travel and reduced reliance on the single-occupant automobile. The Transportation Planning

Rule also requires jurisdictions to set standards to promote and enhance pedestrian, bicycle and transit travel. As such, the Canby Transportation System Plan provides the City of Canby with general recommendations to amend their Comprehensive Plan and/or ordinances to achieve the requirements of the Transportation Planning Rule.

Specific recommendations regarding policies and land use regulations related to bicycle, pedestrian and transit travel are outlined in Appendix D. In general, these recommendations provide the City of Canby with direction in considering amendment to their policies in the following areas:

- Transportation design standards to encourage development patterns that are more non-auto oriented;
- Land use or subdivision regulations for bicycle parking facilities, pedestrian and bicycle access, and pedestrian-oriented development) and bicycle circulation.

In addition to the land use policy and regulation recommendations, the Canby Transportation System Plan identifies major street design, access, and classification standards that provide access for all modes of travel in the Canby urban area.

The list of projects contained in Section B of this chapter lists the major transportation projects authorized by this TSP, subject to detailed design. The following types of projects are not on the project list, but are also allowed by this TSP:

- street and right-of-way maintenance
- pavement rehabilitation
- sidewalk or pathway construction
- intersection reconfiguration
- traffic control changes and
- safety projects

RECOMMENDATIONS FOR FURTHER ASSESSMENT

Several transportation projects, plans and issues not dealt with specifically within the Canby Transportation System Plan will require the City to conduct on-going assessment and evaluation.

Access Management

The Transportation Planning Rule defines access management as measures regulating access to streets, roads, and highways from public streets and private driveways and requires that new connections to arterials and state highways be consistent with designated access management categories. As the City of Canby continues to develop, the major street system will become more heavily used and relied upon for a variety of travel needs. As such, it will become increasingly important to manage access on the

existing and future major street system as new development occurs.

It should be noted that existing developments and accesses on the transportation network will not be affected by these access management policies until either a land use action is proposed, a safety or capacity deficiency is identified that requires specific mitigation, or a major construction project is begun on the street.

Experience throughout the United States has shown that a well managed access plan for a street system can:

1. Minimize the number of potential conflicts between all users of the street system, and hence provide safer and more efficient traffic operations
2. Minimize local cost for transportation improvements needed to provide additional capacity and/or access improvements along unmanaged streets

One objective of the Canby TSP is to develop an access management policy that maintains and enhances the integrity (capacity, safety, and level-of-service) of the city's streets and State Highway. Too many access points along a street can contribute to deterioration of its safety and can interfere with efficient traffic flow.

Canby's TSP policies for Access Management are consistent with the 1999 Oregon Highway Plan.

Table 4-1 provides general access management guidelines for each of the major street classifications. These guidelines are consistent with the recently adopted 1998 Oregon Highway Plan (adopted March, 1999). General access management techniques can include restricting the spacing of private driveways based on the type of development. Or, the city could consider offsetting driveways to minimize the number of conflict points between traffic using driveways and public streets.

State Highway 99E

Future developments on Highway 99E should be required to meet the 1999 Oregon Highway Plan (OHP) Level of Importance (LOI) and Access Management policies and standards with whatever modifications the City and/or ODOT agree to. The City of Canby and ODOT have worked together to develop separate Access Management Policies for Highway 99E that include specific requirements for accesses connecting to Highway 99E. Those policies are summarized in **Appendix G.**

City Streets

Construction standards for access on all streets within the City of Canby street system are listed in **Table 4-1.** New developments should have site plans arranged so that these access requirements can be met. Proposed developments or land use actions that do not comply with these standards will be required to obtain conditional access approval from the City of Canby. This conditional approval applies to properties that have no reasonable access or cannot obtain reasonable alternative access to the public street system.

Table 4-1
Access Management Standards

Functional Classification	Minimum Spacing	Residential Use	Commercial and Industrial Use
Highway 99E	As summarized in Appendix G.		
Arterial	300 feet	No direct access for private drives serving fewer than five dwellings	Shared access driveways required if spacing standard not met; encouraged otherwise. Major street left turn lanes determined through review.
Collector	150 feet	Shared access driveways are encouraged where appropriate to meet spacing standards.	Shared access driveways are encouraged. Major street left turn lanes determined through review.
Neighborhood Connector	One access per lot	Shared access driveways are encouraged	Maximum of one 45-foot wide access per 200 foot of frontage or fraction thereof.

Note that the table includes no restrictions on access to local streets.

General Access Policies

The existing *legal* driveway connections, public street intersections and other accesses to the street system *are not required* to meet the spacing standards of the assigned category immediately upon adoption of this access management plan. However, existing permitted connections not conforming to the design goals and objectives of the street classification will be upgraded as circumstances permit and during redevelopment. At any time, an approach street may need to be modified due to a safety problem or a capacity issue that exists or becomes apparent. By statute, ODOT is required to ensure that all safety and/or capacity issues are addressed on State Highways.

Conditional access approval may be issued by the City of Canby and/or ODOT (as appropriate) for a single connection to a property that cannot be accessed in a manner consistent with the spacing standards (shown in **Table 4-1**). These conditions would apply to properties that either have no reasonable access or cannot obtain reasonable alternative access to the public street system. The approval may carry a condition that the access may be closed at such time that reasonable access becomes available to a local public street. In addition, conditional approval might require City- or ODOT-approved turning movement design standards to ensure safety and managed access. Under special circumstances, ODOT may be required to purchase property in order to prevent safety conflicts on Highway 99E.

Level of Service and Traffic Impact Analysis

Future development is expected to have a significant impact upon Canby's transportation system. In cases of significant development, the developer is and will continue to be required to provide a detailed analysis of the transportation system impacts of the proposed development. It is recommended that the city of Canby adopt additional standards that specifically address when detailed traffic analysis is required, what elements of analysis will be required for each case, and what constitutes an acceptable analysis.

Specification of the acceptable Level Of Service (LOS) should be a part of these requirements. LOS D is to be considered the minimum acceptable LOS for signalized and all-way-stop-controlled intersections and street segments, while LOS E is considered to be the minimum acceptable LOS for two-way-stop-controlled intersections.

Neighborhood Traffic Control

If local traffic conditions arise that conflict with adopted street design standards and policies, the City should adopt new or improved design features when available, and if applicable to local Canby standards. These design features can include structural traffic controls.

Structural traffic control measures change the physical street and driving environment to encourage or require a desired driving action. They can alter where people go, how they get there, or at what speeds. In Canby, extensive structural traffic control will not necessarily be warranted within the 20-year time frame. However, the use of curb extensions at strategic locations could lower travel speeds as well as improve pedestrian safety. Other structural changes which Canby might consider include speed humps, traffic circles, and diverters.

Curb extensions narrow the street by widening the sidewalk area to provide safer pedestrian crossings. The narrowed street reminds drivers that they are in neighborhood or commercial areas, not high-speed thoroughfares. Curb extensions may effectively reduce speeds on streets in neighborhoods or commercial areas. Extensions also increase pedestrian safety by reducing the distance across vehicle travel lanes that pedestrians must traverse to move from one side of the street to the other. Curb extensions are often most beneficial in areas with relatively wide streets, high pedestrian usage, and on-street parking, such as the downtown area of Canby.

Pavement treatments at pedestrian crossings can augment the effectiveness of curb extensions. Treatments such as texturization may increase driver awareness of pedestrian use along and across the street and can further help to reduce travel speeds.

County Arterials

The City should work with Clackamas County to refine inter-governmental agreements for the transfer of County public streets within the Canby UGB to the City. These streets, as defined and outlined in Chapter 4, should be developed to the urban street standards recommended in this plan.

High Speed Rail

The City of Canby should work with ODOT and UPRR to identify the appropriate location, function and design of local street crossings of the rail line in the event that high speed passenger rail service is developed and operated through Canby.

Coordination with the State of Oregon and Clackamas County

The City of Canby should participate with the Oregon Department of Transportation and Clackamas County in the revision of their transportation system plans in order to provide for a coordinated and consistent policy and plan, especially for those transportation facilities that cross jurisdictional lines. Furthermore, as land outside of the Canby area is developed, a coordinated transportation/land use plan will help to ensure provision of a transportation system that serves the needs of all users.

5

TRANSPORTATION FINANCE PLAN

A. PROJECT COSTS

The City of Canby Transportation System Plan identifies needed transportation system improvements over the next 20 years, including new streets, street widening, new traffic signals, and bike lane and sidewalk projects. The total cost of these improvements is estimated to be about $47.2 million. Of this total cost, approximately $8.4 million will be assessed to the State of Oregon and Clackamas County for improvements within those jurisdictions; the remaining $38.8 million will be the responsibility of the City and its residents, including new development.

These cost estimates are taken from Table 5-1 (the fold-out spreadsheets on pages 5-3 and 5-4), which summarizes each of the more than 75 projects described in Chapter 4. For each project, an estimate of the costs is presented and these costs are allocated to different sources. Table 5-1 is explained in detail below.

The rows of table 5-1 are organized into four broad project types: new streets, street improvements, traffic signal projects, and sidewalk projects. Within each category, projects are broken out by type of street (arterial, collector, or neighborhood connector). No improvements to local streets are considered in these cost estimates.

The columns of table 5-1 record the location, design, anticipated costs and funding responsibility for each project. The first four columns show the street name, section under consideration, and planned time period for the project. The next column shows the planned final width of the street (curb-to-curb). The "design" column indicates whether the project will be built to construction or adequacy standards (C/A), how many lanes there will be (2/3), the width of improvements needed (reconstruction), and the length of the project in feet. Next, the cost per foot of project is given, which allows calculation of the improvement work. When combined with right-of-way costs in the next column, a total project cost is produced.

The groups of columns on the middle and right of the table 5-1 allocate the project costs to different funding sources. The middle group assigns a percentage to each source, and the right group converts that percentage into dollars. Costs are divided into seven categories, as follows:

1. *City:* The City of Canby is responsible for approximately $1.3 million (3%) of the project costs, mostly for costs that can be assigned to maintenance of existing surfaces.

2. *County:* Clackamas County is allocated a share of the light at Territorial and Highway 99E, covering less than 1% of total project costs.

3. *State:* The State of Oregon has been assigned a share of several projects on or near Highway 99E. These costs total $7.9 million, or 16.7% of the $47.2 million total.

4. *LID:* Local Improvement Districts are planned to cover $508,350 in sidewalk projects.

5. *Grants:* The Oregon Department of Transportation has funded grants for some street projects in the past. It is assumed that $1.1 million of these grants will be available for certain projects (approximately 2.3% of total costs).

6. *New Development:* Developers of new projects and properties are required to provide frontage improvements along their properties. This is anticipated to be a major source of improvements in the future, providing almost $21 million (44%) of the total costs identified in this plan.

7. *System Development Charges:* The City imposes a charge on all new development to cover the costs of projects required due to growth. This SDC is in addition to any on-site costs included in #6 above, and pays for off-site projects all over town. System Development Charges are expected to cover $14.8 million (31%) of the total costs.

The costs for each project are based on the recommended unit costs identified in the table below. This estimate includes the price of curb, sidewalks, street reconstruction, storm drainage, private utilities, street lights, trees, engineering, and contingency, as appropriate. The costs do not include water and sewer costs, which are included in other capital improvement plans and SDCs. All right-of-way costs projected in Table 5-1 were estimated at approximately $125,000 per acre for residential land and $10 per square foot for commercial land ($435,600 per acre).

Recommended Cost Per Linear Foot of Street Construction						
Road Width	20'	32'	36'	40'	44'	48'
Unit Cost	$200	$255	$265	$290	$320	$330

The costs identified in this plan are as accurate as possible given current information. However, variation is expected over time. State law allows actual project costs, and allocations, to vary from those identified in this plan. This plan assigns 75% of total project costs to new development, with the remainder covered by public agencies.

Canby TSP Project Spreadsheets - Updated April 2000

DESIGN LEGEND: C -Construction Standard; A -Adequacy Standard; 2/3/4/5 Number of lanes; P - parking allowed

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TABLE 1 NEW STREETS

NAME	FROM	TO	priority	DESIGN	WIDTH	LENGTH	@COS	PRICE	ROW	TOTAL	FUNDING RESPONSIBILITY (%) CITY	CNTY	STATE	LID	GRANT	NEWDE	SDC	FUNDING RESPONSIBILITY ($) CITY	CNTY	STATE	LID	GRANT	NEWDE	SDC
A) ARTERIAL STREETS																								
BERG PKWY	CANBY SQ	SW 13th AVE	1-5	A-3	40	1200	290	348,000	360,000	708,000							100	0	0	0	0	0	0	708,000
N IVY ST	NW 14th AVE	TERRITORIAL	1-5	A-2-P	44	650	320	208,000		208,000					40	40	20	0	0	0	0	83,200	83,200	41,600
B) COLLECTOR STREETS																								C
NW BAKER ST	3RD	HWY 99	6-10	C-2	40	400	290	116,000		116,000			50				50	0	0	58,000	0	0	0	58,000
	BRIDGE	STRUCTURE	6-10	C-2	40		LS	6,500,000		6,500,000			50				50	0	0	3,250,000	0	0	0	3,250,000
NE 9TH EXT	LOG ROAD	REDWOOD	11-15	C-2	36	700	265	185,500		185,500						100		0	0	0	0	0	185,500	0
SE OTTO RD	WALNUT ST	HWY 99E	11-15	C-3	48	1400	330	462,000		462,000						90	10	0	0	0	0	0	415,800	46,200
SE WALNUT	SE 1ST AVE	TERRITORIAL	16-20	C-2	36	3200	265	848,000		848,000						100		0	0	0	0	0	848,000	0
SE 2nd AVE	SW 2nd AVE	SE 2nd AVE	6-10	C-2	40	300	290	87,000		87,000	50						50	43,500	0	0	0	0	0	43,500
INDUSTRIAL AI	AREA MASTEI	PLAN		C-2/3			LS	9,900,000		9,900,000						90	10	0	0	0	0	0	8,910,000	990,000
		SUBTOTAL						18,098,500		18,098,500								43,500	0	3,308,000	0	0	10,359,300	4,387,700
C) NEIGHBORHOOD CONNECTORS																								
NW BIRCH	TERRITORIAL	NW 22ND AVE	16-20	C-2-P	40	1600	290	464,000		464,000						90	10	0	0	0	0	0	417,600	46,400
NW 10TH AVE	BIRCH	GRANT ST	6-10	C-2-P	40	1300	290	377,000		377,000						100		0	0	0	0	0	377,000	0
SE 17TH AVE	IVY	REDWOOD	11-15	C-2-P	40	2600	290	754,000		754,000						100		0	0	0	0	0	754,000	0
S REDWOOD	SE 13TH	SE 17TH AVE	11-15	C-2-P	40	1600	290	464,000		464,000						100		0	0	0	0	0	464,000	0
S TEAKWOOD	TOWNSHIP	S 13th AVE	11-15	C-2-P	40	2600	290	754,000		754,000						90	10	0	0	0	0	0	678,600	75,400
								2,059,000		2,059,000								0	0	0	0	0	2,012,600	46,400

TABLE 2 STREET WIDENING/UPGRADING COSTS

NAME	FROM	TO		WIDTH	DESIGN	NEW CON	LENGTH	@COS	PRICE	ROW	TOTAL	CITY	CNTY	STATE	LID	GRANT	NEWDE	SDC	CITY	CNTY	STATE	LID	GRANT	NEWDE	SDC
A) ARTERIAL STREETS																									
N IVY ST	HWY 99E	NW 2nd AVE	1-5	40	A-2	40	330	290	95,700		95,700						50	50	0	0	0	0	0	47,850	47,850
N IVY ST	NW 2ND	NW 6th AVE	1-5	40	A-2-P	40	1300	290	377,000	78,000	455,000					40		60	0	0	0	0	182,000	0	273,000
N IVY ST	NW 6th	NW 9th AVE	1-5	40	A-2-P	40	800	290	232,000		232,000					40		60	0	0	0	0	92,800	0	139,200
N IVY ST	NW 9th	NW 10th AVE	1-5	40	A-2-P	0verlay	480	30	14,400		14,400					40		60	0	0	0	0	5,760	0	8,640
N IVY ST	NW 10th	NW 12th AVE	1-5	40	A-2-P	40	600	290	174,000		174,000					40		60	0	0	0	0	69,600	0	104,400
N IVY ST	NW 12th	NW 14th AVE	1-5	40	A-2-P	0verlay	800	30	24,000		24,000					40		60	0	0	0	0	9,600	0	14,400
S IVY ST	HWY 99E	SW 2ND AVE	6-10	44	A-3	16	260	160	41,600		41,600							100	0	0	0	0	0	0	41,600
S IVY ST	SW 2ND	SE 9th AVE	6-10	48	C-3	22	2600	220	572,000		572,000							100	0	0	0	0	0	0	572,000
S IVY ST	S 13th AVE	SOUTH	11-15	36	C-2	18	2640	180	475,200		475,200						80	20	0	0	0	0	0	380,160	95,040
TERRITORIAL	HOLLY ST	REDWOOD	6-10	44	A-3	24	5700	240	1,368,000	114,000	1,482,000						50	50	0	0	0	0	0	741,000	741,000
	REDWOOD	HWY 99E	6-10	44	A-3	14	3200	140	448,000	48,000	496,000						50	50	0	0	0	0	0	248,000	248,000
KNIGHTSBRID	HOLLY ST	K-BRIDGE	1-5	40	A-3	40	3000	290	870,000		870,000	50						50	435,000	0	0	0	0	0	435,000
S BERG PKW	HWY 99	CANBY SQ	1-5	48	C-3	48	1000	330	330,000	60,000	390,000							100	0	0	0	0	0	0	390,000
S 13th AVE	W END	ELM ST	6-10	40	A-3	Overlay	1600	30	48,000		48,000							100	0	0	0	0	0	0	48,000
S TERRITOR	HAINES RD	HWY 99E	11-15	40	A-2-P	40	3000	290	870,000		870,000						60	40	0	0	0	0	0	522,000	348,000
S 13th AVE	ELM ST	FIR ST	6-10	40	A-3	40	700	290	203,000		203,000						20	80	0	0	0	0	0	40,600	162,400
	FIR ST	REDWOOD	6-10	44	C-3	30	2600	245	637,000	78,000	715,000						50	50	0	0	0	0	0	357,500	357,500
	REDWOOD	MULINO RD	11-15	44	C-2	36	4500	265	1,192,500		1,192,500						100		0	0	0	0	0	1,192,500	0
N HOLLY ST	TERRITORIAL	N 22nd AVE	11-15	36	C-2	20	2200	200	440,000		440,000						90	10	0	0	0	0	0	396,000	44,000
S ELM ST	HWY 99E	SW 2nd AVE	1-5	40	A-2	16	400	160	64,000		64,000	50						50	32,000	0	0	0	0	0	32,000
HWY 99E	TOWN LIMIT	TOWN LIMIT		EST 74	A/C/5	14	14600	200	2,920,000	1,460,000	4,380,000			90			10		0	0	3,942,000	0	0	438,000	0
		SUBTOTAL							11,396,400		13,234,400								467,000	0	3,942,000	0	359,760	4,363,610	4,102,030
B) COLLECTOR STREETS																									
N PINE	N 4th AVE	TERRITORIAL	1-5	40	A-2-P	40	3600	290	1,044,000		1,044,000						80	20	0	0	0	0	0	835,200	208,800
N REDWOOD	TERRITORIAL	HWY 99E	1-5	40	A-2-P	0-20	2000	200	400,000		400,000						80	20	0	0	0	0	0	320,000	80,000
SE 2ND	PRIVATE	SECT	6-10	40	A-2-P	24	700	240	168,000		168,000						80	20	0	0	0	0	0	134,400	33,600
TOWNSHIP	IVY ST	PINE ST	1-5	44	A-3	44	2600	320	832,000		832,000		5			40	5	50	0	41,600	0	0	332,800	41,600	416,000
TOWNSHIP	PINE	RAILROAD	6-10	44	A-3	44	2800	320	896,000		896,000						50	50	0	0	0	0	0	448,000	448,000
N 10TH AVE	LOCUST ST	PINE ST	1-5	40	A-2-P	40	2300	290	667,000		667,000	40						60	266,800	0	0	0	0	0	400,200
NE 3RD AVE	IVY ST	JUNIPER ST	6-10	44	A-2-P	40	300	290	87,000		87,000					80		20	0	0	0	0	69,600	0	17,400
NE 3RD AVE	JUNIPER ST	HWY 99E	6-10	44	A-2-P	40	2800	290	812,000	84,000	896,000					40	10	50	0	0	0	0	358,400	89,600	448,000
N HOLLY ST	N 1st AVE	N 7th AVE	1-5	40	A-2-P	40	2200	290	638,000		638,000	50						50	319,000	0	0	0	0	0	319,000
N HOLLY ST	13th AVE	TERRITORIAL	6-10	36	A-2-P	20	800	200	160,000		160,000						90	10	0	0	0	0	0	144,000	16,000
NW 2nd AVE	IVY ST	Douglas ST	6-10	40	A-2-P	40	2000	290	580,000		580,000							100	0	0	0	0	0	0	580,000
N GRANT ST	Hwy 99E	KNIGHTS BR RD	1-5	40	A-2-P	40	2200	290	638,000		638,000	40					20	40	255,200	0	0	0	0	127,600	255,200
SW 2nd AVE	ELM ST	IVY ST	6-10	44	A-2-P	22	1800	220	396,000	108,000	504,000						80	20	0	0	0	0	0	403,200	100,800
SE HAINES	MULINO RD	BROWN RD	16-20	36	C-2	36	3200	265	848,000	108,000	956,000						80	20	0	0	0	0	0	764,800	191,200
		SUBTOTAL							8,166,000		8,466,000								841,000	41,600	0	0	760,800	3,308,400	3,514,200
C) NEIGHBORHOOD CONNECTORS																									
TERRITORIAL	BIRCH	HOLLY ST	6-10	40	C-2-P	40	2100	290	609,000		609,000						50	50	0	0	0	0	0	304,500	304,500
MAPLE	N 10TH	N 22nd AVE	6-10	36	A-2	0-16	4000	160	640,000		640,000						50	50	0	0	0	0	0	320,000	320,000
		SUBTOTAL							$1,249,000		$1,249,000								$0	$0	$0	$0	$0	$624,500	$624,500
		TOTAL									$43,814,900								$1,351,500	$41,600	$7,250,000	$0	$1,120,560	$20,668,410	$13,382,830

TABLE 3 TRAFFIC SIGNAL PROJECTS

INTERSECTING STREETS			PRICE		TOTAL	FUNDING RESPONSIBILITY (%) CITY	CNTY	STATE	LID	GRANT	NEWDE	SDC	FUNDING RESPONSIBILITY ($) CITY	CNTY	STATE	LID	GRANT	NEWDE	SDC
NEW SIGNALS																			
Highway 99E	Territorial		1,650,000		1,650,000		24	40				36	0	400,000	650,000	0	0	0	600,000
Highway 99E	Redwood		200,000	50,000	250,000						100		0	0	0	0	0	250,000	0
Highway 99E	Otto		250,000		250,000						20	80	0	0	0	0	0	50,000	200,000
Ivy	Township		200,000		200,000							100	0	0	0	0	0	0	200,000
		Subtotal	2,300,000		2,350,000								0	400,000	650,000	0	0	300,000	1,000,000
SIGNAL UPGRADE/MODIFICATION																			
Highway 99	Ivy		250,000	50,000	300,000							100	0	0	0	0	0	0	300,000
Highway 99	Berg Parkway		100,000		100,000							100	0	0	0	0	0	0	100,000
		Subtotal	350,000		400,000								0	0	0	0	0	0	400,000
INTERSECTION RECONFIGURATION																			
NW 1ST	ELM	CLOSE WEST LEG OF 1ST	100,000		100,000							100	0	0	0	0	0	0	100,000
		Subtotal	100,000		100,000								0	0	0	0	0	0	100,000
		TOTAL			$2,850,000								$0	$400,000	$650,000	$0	$0	$300,000	$1,500,000

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TABLE 4 SIDEWALK PROJECTS

NAME	FROM	TO	1 SIDE	2 SIDE				@COS	PRICE		TOTAL	FUNDING RESPONSIBILITY (%) CITY	CNTY	STATE	LID	GRANT	NEWDE	SDC	FUNDING RESPONSIBILITY ($) CITY	CNTY	STATE	LID	GRANT	NEWDE	SDC
N 10th Ave	Grant	Locust	550	4400				20/35	165,000		165,000				100				0	0	0	165,000	0	0	0
NE 4th Ave	Ivy	Pine		3200				35	112,000		112,000		70		30				0	78,400	0	33,600	0	0	0
NW 3rd Ave	Cedar	End		1800				35	63,000		63,000				100				0	0	0	63,000	0	0	0
NW 2nd Ave	Douglas	Cedar		400				35	14,000		14,000				100				0	0	0	14,000	0	0	0
SE 2nd Ave	Ivy	Maple	600	2000				20/35	82,000		82,000				100				0	0	0	82,000	0	0	0
SW 4th Ave	Elm	Birch	1100					20	22,000		22,000				100				0	0	0	22,000	0	0	0
S Locust	Hwy 99	Township	1600					20	32,000		32,000				100				0	0	0	32,000	0	0	0
S Elm	SW 4th	SW 13th	1600					20	32,000		32,000				100				0	0	0	32,000	0	0	0
SW 6th Ave	Elm	Ivy		1850				35	64,750		64,750				100				0	0	0	64,750	0	0	0
		TOTAL							586,750		586,750								0	78,400	0	508,350	0	0	0

FUNDING OPTIONS

There are a variety of options available to the City to fund the transportation system improvements; each option has particular advantages and disadvantages. These funding options are outlined below, and each is evaluated with respect to the City's anticipated financial needs, and equity principles. A recommended funding approach is also presented.

State Gasoline Tax

The City currently receives about $520,000 annually in state highway fund revenues for transportation system maintenance and improvements. The City could obtain additional state gasoline tax revenues to fund a portion of the improvements identified in the transportation plan. Using state gasoline tax revenues would essentially spread the costs of the improvements to gasoline purchasers throughout the state. The advantage to Canby of doing so is that the residents of the City would not have to pay the full costs of the improvements. Therefore, the net costs to the community would be minimized.

A related advantage of this alternative is that it would probably be relatively widely accepted within the City because of the limited financial impacts on local residents. Public acceptance is a desirable feature of infrastructure financing, and it is usually closely correlated with the cost burden borne by the community.

However, it is unlikely that sufficient funds are available from state gas taxes to fund all the improvements that are anticipated. The City would need to compete with other Oregon communities in seeking additional state gas tax revenues for transportation system projects. Therefore, this source would probably have to be supplemented with other revenue sources to fund the program. The probable inadequacy of this funding source is a disadvantage unless it is combined with other alternatives.

Another disadvantage of this option is that it results in subsidies from other areas in the state to Canby. This situation is inequitable to the extent that state gasoline taxpayers in these other areas will receive little or no benefit from the improvements. Conversely, to the extent that other areas may use gasoline taxes to fund their local improvements, Canby residents would subsidize others. A transportation financing system involving cross subsidies inevitably results in "winners" and "losers" in terms of improvement financing, and it is not possible to determine in advance if Canby residents would be net beneficiaries. Financing equity is limited under systems of state gasoline tax funding of transportation projects. Most communities, however, are not particularly concerned about this issue as long as they perceive that they are receiving their "share" of the revenues.

Local Gasoline Tax

The City could use revenues from a local gasoline tax to fund future transportation system improvements. This funding mechanism does not currently exist, and the imposition of such a tax would require voter approval. If voter approval is unlikely, this option should probably not be relied upon. Furthermore, even if voters generally support

a local gasoline tax, the support might not extend to a tax large enough to finance the complete program. Therefore, the local gasoline tax might have to be supplemented with other funding alternatives. The uncertainty of voter approval is a disadvantage of this funding mechanism in the financial planning for the improvements.

If voter approval could be obtained, a local gas tax would be a relatively equitable approach, alone or in combination with another source, to fund transportation system improvements. This funding option closely follows the "user pays" principle; those who drive the most, and therefore who benefit most from transportation improvements, pay the most (through gas taxes) toward the costs of those improvements. The disadvantage of a local gas tax (compared, for example, with a regional gas tax) is that users of the streets and roads in Canby include some non-local users who may purchase gas from outside the City. A local gasoline tax would result in only a minimal contribution by these non-local users to the funding of improvements that benefit them. Conversely, some who use Canby's streets and roads very little may subsidize local users if they purchase gas in the City. The net effect is probably that local residents would subsidize other non-local users.

Another benefit of a local gasoline tax is that the funding source would be relatively stable and reliable once it was approved and implemented. This stability would only be threatened if severe gasoline shortages occurred or if the voters decided to revoke the tax. The converse of this advantage is that the tax would not be flexible to changing financial needs in the future, assuming there would be a fixed tax per gallon.

Regional Gasoline Tax

Some counties in Oregon (e.g., Washington and Multnomah counties) charge a county-wide gas tax and remit a portion of the revenue generated by the tax to the incorporated cities within the county. A regional gas tax has many of the same advantages of a local gas tax (e.g. revenue stability and equity), and it is further enhanced because it eliminates some of the inequities caused by consumers buying gas outside the City's boundaries. Clackamas County does not currently have a regional gasoline tax, so the primary disadvantage of this option is the uncertainty of approval.

User Fees

Communities are increasingly turning to transportation user fees to fund street operations and improvements. In this case, properties are assessed fees based on the traffic generation by type of land use or business activity. These user fees are primarily used for operations, but sometimes the fees are set to recover certain capital costs.

An advantage of user fees is that they provide a steady revenue base for the transportation program of a community. A fixed charge per quarter or per year for each type of property generates stable, adequate revenues if the fees are based on the long-term costs of improvements.

Another advantage is that the fees can be developed to closely follow the costs of service for each major type of property. This feature means that the charges are equitable in the traditional rate-making sense that subsidies among user groups are minimized, if the user fees are properly calculated. The only significant inequity of user fees results from

non-local users, who do not pay for their share of the improvements because they are not located in the City. This aspect of user fees sometimes limits public acceptance in the local community, especially if it is perceived that a significant level of use is by non-local vehicles.

The revenues from user fees are generally insufficient to provide full funding of a capital program. Therefore, the City would probably have to combine this approach with other funding mechanisms. The tax limitation uncertainty associated with transportation user fees is a disadvantage of this funding option.

Property Taxes

Property taxes are a method commonly used by communities to fund a transportation capital program. The taxes can be set at specific levels to generate adequate funds for improvements. The revenues from property taxes are known, stable, and reliable. To the extent that property values increase, funds for future improvements will also increase (subject to prevailing tax limitations). If property taxes are approved, they are a highly reliable source of revenue for capital programs, such as a transportation capital program.

The primary disadvantage of this funding option is that voter approval and Measure 5/47 limitations would be applicable. The uncertainty of voter approval severely affects the assurance of adequate program funding until such approval occurs. Property taxes tend to be controversial and often unpopular in the current political climate; therefore, the public acceptance criterion is anticipated to be a disadvantage of this option.

Property taxes, like user fees and local gasoline taxes, are often viewed as inequitable to the extent that nonlocal users do not contribute to the cost of the program. In addition, inequities are expected because the value of each property is unrelated to the use of the transportation facilities in the City. Therefore, equity concerns are another disadvantage of this approach.

Serial Levies

In the early 1980's, the City of Canby used serial levies as a funding source for transportation system improvements. A serial levy is an ad valorem taxing authority granted by the voters to fund specific activities or capital projects. The levy amount is guaranteed for a specified period of time, and is usually based on a specific tax rate per thousand dollars of assessed value or for a specific amount annually.

An advantage of a serial levy is that it provides steady, reliable funds for a specific period of time (usually 3 to 10 years). A disadvantage of this option is that it is not permanent; therefore, toward the end of the levy's life, it becomes difficult to plan future activities because of the uncertainty of continued voter approval. Serial levies are also subject to the same equity concerns as property taxes.

Local Sales Tax

The City could obtain voter approval to impose a local sales tax to fund new transportation improvements. If so, the funding would be obtained from both local residents and individuals from other areas who make purchases in Canby. This approach

would spread the funding beyond just the residents of the City, and thereby help obtain a financial contribution from nonlocal users of the improvements. This aspect is an advantage of this option. Also, assuming that local sales are reasonably stable, the revenues to finance the improvements would also be stable. Stable, adequate revenues are an advantage of this approach.

The disadvantage of a local sales tax is that it would require voter approval to implement. Approval of a local sales tax is highly uncertain, and public acceptance is probably lower than for other methods. Therefore, the availability of this method for Canby is questionable.

Relative inequity of this funding mechanism is also a problem because local purchases of goods and services are in most cases unrelated to the use and benefit of transportation improvements. Therefore, there is both a perceived inequity that adversely affects public acceptance and a real inequity in terms of costs borne by residents and benefits they may receive.

Debt Funding

The City could issue bonds to finance transportation system improvements. This approach would spread the cost of the improvements over the life of the bonds and lower the annual expenses in the construction years. If revenue bonds are issued, voter approval would probably not be needed. However, without a steady, reliable source of revenues (e.g., user fees) to repay the bonds, the bond market is not likely to support revenue bonds; therefore, this funding option may not be feasible. General obligation bonds would require voter approval, and if the debt service was paid by property taxes, this method would have the same advantages and disadvantages as the property tax option described above.

Debt financing is merely an interim funding solution. The debt needs to be repaid, and one of the other funding approaches must be relied upon to do so. Also, the additional expense associated with interest on the bonds adds to the overall costs. Therefore, this approach may be a useful option in combination with other methods, but it is not a complete solution to the funding issue by itself.

Because debt funding spreads the costs over time, the financial impacts on the community in any given year are lessened. This aspect tends to enhance public acceptance and affordability in the community. Many communities use debt financing as part of their funding programs for local infrastructure improvements.

Economic Development Funding

To the extent that local transportation improvements are an integral element in an economic development plan or activity, the City may be able to obtain economic development grants or loans. An advantage of grant funding is that the costs to local residents are minimized. The availability of such funding and eligibility requirements are potential obstacles to the use of this approach. Therefore, the financial adequacy of this approach depends on the availability of development funds, which tend to be in high demand and in limited supply.

Public acceptance of this alternative is relatively good because individuals outside the community pay a significant portion of the costs and the local financial burden is minimized. However, cost-of-service inequity occurs because nonusers pay for many of the costs, but usually this is just a conceptual issue that is of little concern to the local community.

A more significant problem is that even if development funds are initially available, they may not be available in subsequent years. Therefore, any program that would require obtaining these development funds more frequently than a onetime basis would face the potential of lack of funding the remaining improvements even if initial funding was provided. This instability could be a major problem if a community was left with a major financial commitment in the later years of a transportation capital program.

System Development Charges

Oregon law enables communities to fund growth-related transportation improvements by the imposition of system development charges. These charges to newly developed property can be used to recover past and/or future growth-related improvements. They may not recover improvements to serve existing users/residents. System development charges are relatively easy to calculate and implement, but are not adequate for complete program funding because they may be used only for growth-related facilities.

This option is equitable to the extent that many improvements are needed because of anticipated growth in the community. On the other hand, there are also inequities to the extent that transportation improvement needs occur as a result of non-local traffic growth and to the degree to which existing users benefit from the improvements. Both of these groups would not pay anything toward the financing needs through system development charges.

Because system development charges are assessed to new development in the City, the revenues from these charges will vary with the level of development activity. New development fluctuates with the local and national economy, and therefore, this revenue source is particularly unstable from year to year. Although transportation development charges are relatively new in most areas, the longer-term experience with water and wastewater system development charges in many communities shows that revenue instability over time is a major disadvantage of this method. However, because Oregon law requires that revenues from system development charges are used only to finance those transportation improvements that are tied to local growth needs, if anticipated growth does not occur, both the improvement costs and the development charge revenues will not be needed.

C. FINANCIAL PLAN RECOMMENDATIONS

Cost Assessment Summary

The City of Canby's Draft Transportation System Plan includes about $47.2 million in transportation system improvements. Based on the types of improvements anticipated, these costs are assessed as follows:

JURISDICTION	COST (millions)
Clackamas County	$ 0.5
State of Oregon	$ 7.9
Local Improvement Districts	$ 0.5
Developer Contributions	$ 21.0
System Development Charges	$ 14.9
City of Canby (incl. grants)	$ 2.4
TOTAL	$47.2

The costs assessed to Clackamas County are primarily for street widening and upgrade projects for arterial and collector streets in the County's jurisdiction. State of Oregon costs are for a grade separated rail line crossing at Berg Parkway and Highway 99E. Local Improvement Districts (LIDs) will be responsible for numerous sidewalk projects throughout the community. Approximately $35.9 million of improvements will be recovered from new development through both system development charges and developer contributions. System development charges are assessed for general system capacity-increasing improvements (e.g., street widening and upgrade of arterial and collector streets), while individual developers are directly assessed for specific improvements (mainly new collector streets) that are needed to serve them. The remaining $2.5 million of improvements is the responsibility of the City and may be funded through one, or a combination, of the funding options described earlier.

The assessment of costs summarized above is assumed to be an accurate determination of the cost responsibility of the respective entities and groups, for the purposes of the financial plan.

Financing Approach

Direct Assessment

It is assumed in this financial plan that the costs assessed to Clackamas County and the State of Oregon will be paid directly by those entities and that the payments will be made in a timely manner so as to avoid any cash flow problems. It is also assumed that certain improvements that directly benefit new development will be paid directly by those benefitting properties. Therefore, the City will not be responsible for financing these improvements.

The costs assessed to LIDs will be financed directly by those assessments. No significant additional financing measures are required, assuming assessment payments are received on a timely basis and with a minimum of delinquent payments. If the assessed properties are offered a multi-year payment option in order to ease the financial burden of the assessments, the City might need to undertake short term borrowing in order to meet cash flow requirements of the projects. If payment terms are not offered, this borrowing would not be necessary.

System Development Charges

A total of about $14.9 million of the transportation plan improvements are identified as being attributable to general new development and growth (as distinct from improvements that benefit only specific properties to be developed). Under Oregon law, these costs may be charged to new development through system development charges (SDCs). The SDC legislation allows the recovery of a reimbursement fee, an improvement fee, or both. The reimbursement fee recovers the costs of transportation improvements that have already been made in support of growth. The improvement fee recovers future improvements that will benefit new development. Only costs incurred to meet growth needs are recoverable through SDCs.

It is recommended that all costs related to general new development be financed from SDCs. This method has the advantages of equity (because growth pays for growth-related costs) and minimizing the financial impacts on current Canby residents.

There are two disadvantages of using SDCs. First, if anticipated development does not occur or occurs more slowly than planned, the revenues from SDCs will be less than anticipated. Second, SDCs have an inherent cash flow problem. For new development to occur (and the SDC revenues to be generated), the new infrastructure needs to be in place. New transportation, water, sewer, and other infrastructure improvements usually need to be made before the new development can occur. Further, new development occurs slowly over time, whereas the new improvements are generally made over shorter time periods. Therefore, the costs of transportation and other improvements related to growth will be incurred **before** most of the SDC revenues are received.

This situation means that SDC financing may need to be accompanied by another interim financing source to cover cash flow requirements. Usually this interim financing method is either the use of existing fund balances that a city may have available or the issuance of bonds that are fully or partially repaid by the SDC revenues over time. It is recommended that the City of Canby use borrowed funds in conjunction with SDC revenues to overcome this cash flow problem. The SDC revenues could be dedicated to repayment of the debt incurred in support of these development-related transportation improvements.

City of Canby Improvements

Under 5 percent of the transportation improvements ($2.4 million) are assessed to the City of Canby. In addition, it is likely that future street maintenance projects will require additional expenditures of $100,000 annually. The following funding options are recommended for the improvements and maintenance program.

State Financial Assistance. Although state financial assistance is limited, it is

recommended that the City actively pursue economic development funding and additional state gasoline tax revenues.

Also, the City currently receives about $520,000 per year in state gasoline tax revenues; if state gasoline taxes are increased in the future, additional funds may be available to the City.

General Obligation Bonds. In the likely event that economic development funding and additional state gasoline taxes are not received or are insufficient to meet the financial requirements of the plan, it is recommended that the City seek to issue general obligation bonds that would utilize property taxes if other funding sources are not available or are insufficient to fund the debt service. Although debt financing results in interest costs being added to the overall plan requirements, it has the advantage of spreading the costs over time and thereby limiting the financial burden on current residents. Without the benefit of spreading costs over time, it is probable that the financial requirements on a current revenue basis would be unaffordable to the community.

Assuming bond underwriting costs of 1.5 percent of the issue amount, and financial advisor expenses of $100,000, a bond would need to be about $3.26 million to fund $3.2 million of improvements needed during the first 5 years. At least two additional bond issues would probably be required over the later 10 years of the plan to fund remaining improvements.

Any debt issue is inherently an interim funding source. The debt service requirements need to be repaid from another financing mechanism. The primary options include user fees; state, regional, or local gasoline taxes; property taxes; and local sales taxes. As mentioned previously, additional funding from the state gasoline tax is judged to be highly unlikely, as is approval of a local sales tax

User Fees. It is recommended that the City of Canby consider establishing a street utility and developing user fees to recover a portion of the costs associated with maintaining the transportation system and repaying the bonds. The user fees could be based on estimates of trip requirements by different types of land uses, and assessed to customers based on the number dwelling units, square footage, or some other variable. This approach is desirable in terms of equity because the revenue requirements of the utility would be allocated to users based on their estimated costs of service.

Currently, there are a number of communities in Oregon that charge transportation user fees; these include the cities of Tualatin, Ashland, Medford and La Grande. A detailed analysis of trip generation rates and existing development by land use would be required to develop user fees for different types of development in Canby. While this level of analysis is beyond the scope of this study, a cursory analysis of existing developed land based on the City's comprehensive plan and published information on trip generation rates by land use was conducted. This analysis indicates that a monthly rate of about $1.00 per dwelling unit for residential, and $1.65 per 1,000 square feet for commercial and industrial would be needed to generate $100,000 annually, enough to cover the projected costs of the City's additional maintenance projects. To the extent that user fees were also used to pay a portion of the debt service, the monthly charges would probably need to be higher.

Local and Regional Gasoline Taxes. Because of the current uncertainty regarding the

application of Measure 5/47 to user fees, it would be prudent for the City to consider alternative funding sources for the transportation system maintenance and improvements. Local or regional gasoline taxes are recommended alternatives. Like user fees, a gasoline tax has the advantage of maximizing equity based on the "user pays" principle. Those who drive the most, and therefore who benefit most from transportation improvements, would pay the most toward the costs of the projects through a local or regional gasoline tax. In addition, non-local users (i.e., drivers from outside Canby) would also pay for some of the costs when they purchase gasoline in the City or County. This would be a relatively stable revenue source for the City.

Regional and local gasoline taxes are subject to voter approval. Clackamas County considered implementing a regional gasoline tax that would include a revenue sharing agreement with the incorporated cities; however, their attempts failed. In order to increase the chance for voter approval locally, the City might propose that the tax be limited in duration to a period equal to the time period of the repayment of the bonds. In this manner, there would be a guarantee to the voters that the tax would be used for the indicated purposes and not be a continuing charge beyond the intended time frame. Approval for this financing approach is a key element in the financial plan. It is anticipated that any of the other realistic financing methods would be similarly dependent on voter approval.

At this time there are not sufficient data to accurately estimate the regional and local gasoline tax rates that would be required to meet the City's debt service requirements. However, there are data available for Washington and Multnomah Counties that may provide some insight into the magnitude of a regional gas tax. Currently, it is not known what percentage of revenue from a regional gas tax would be available to the City. However, if the entire City portion of the improvements were financed by regional gasoline taxes to pay debt service on the bond issues, the City's portion of the tax rate would be equivalent to $.001 per gallon in the first 5 years, based on estimated gasoline sales in the County of 160 million gallons and annual debt service of $120,000. For this analysis, annual sales in Washington County are assumed to be representative of sales in Clackamas County, because the number of registered vehicles in Clackamas County are within about 2 percent of the number of vehicles in Washington County.

A regional gasoline tax is dependent on approval outside the City. In the event that such "outside" approval is not obtained, the City would need to be able to rely on its own financing capability to meet its debt obligations. Therefore, it is likely that the City would need to pledge property taxes as a means of repaying the debt if all other methods are not available or are insufficient. This pledge would have to occur **prior** to implementing other elements of this financial plan. Such assurance probably would be required by bond buyers as a condition of the purchase, and voter approval of general obligation bonds would provide this guarantee.

Property Taxes. Because the approval of a local or regional gasoline tax is also uncertain, a final alternative would be to use property taxes to fund the debt service on the bonded improvements. This approach would require voter approval of general obligation bonds. The estimated tax rate to fund annual debt service of $281,000 would be approximately $0.78 per $1,000 of assessed valuation, based on an estimated assessed value in the City of $357 million. This tax rate would cost a single family home valued at $70,000 about $59.00 per year.

6

TRANSPORTATION PLANNING RULE COMPLIANCE

In April 1991, the Land Conservation and Development Commission (LCDC), with the concurrence of the Oregon Department of Transportation (ODOT), adopted the Transportation Planning Rule (TPR), OAR 660 Division 12. The TPR requires local jurisdictions to prepare and adopt a Transportation System Plan (TSP). Outlined below is a list of recommendations (designated by italics) and requirements for a Transportation System Plan for an Urban Area with a population between 2,500 and 25,000, and how each of those were addressed in the Canby TSP.

DEVELOPMENT OF A TRANSPORTATION SYSTEM PLAN

TPR Recommendations/Requirements	Canby TSP Compliance
Public and Interagency Involvement	
Establish Advisory Committees	· A Technical Steering Committee (TSC) established for the development of the TSP. See Appendix E for a list of Canby TSC members.
· Develop informational material	· Materials (including report text, charts and maps were prepared for public and agency review, illustrating and defining critical components of the Canby TSP.
· Schedule informational meetings, review meetings and public hearings throughout the planning process. Involve the community.	· Two TSC and two joint Planning Commission/City Council meetings were held in review of the draft interim TSP.
Coordinate plan with other agencies	Representatives from Clackamas County, LCDC, Tri-Met, ODOT and other local agencies were apprised of the TSP development and participated at the TSC.
Review Existing Plans, Policies, Standards and Laws	
Review and evaluate existing comprehensive plan.	The Canby Comprehensive Plan (developed and approved in 1983, and approved by LCDC through Periodic Review in 1993) was reviewed and evaluated as part of the TSP development.
Land use analysis – existing land use/vacant lands inventory	· The Canby Comprehensive Plan served as the basis for all population/employment forecasts, inventory of vacant lands, and initial location and

	type of collector/arterial streets serving the Canby Comprehensive Plan land uses.
· *Review existing ordinances – zoning, subdivision, engineering standards.*	· Existing City ordinances and engineering standards were reviewed for adequacy in the development of the Canby TSP.
· *Review existing significant transportation studies*	· Significant transportation studies reviewed as part of the Canby TSP include the Clackamas County Comprehensive Plan – Transportation Section and the Oregon Department of Transportation Oregon Transportation Plan, Bicycle, Highway and Rail Passenger Policy Plans.
· *Review existing capital improvements programs/public facilities plans.*	· The Canby, Clackamas County, and State CIP's were reviewed as part of Canby TSP development.
· Americans with Disabilities Act requirements.	· The ADA requirements were reviewed and recognized as part of the Canby TSP development.
Inventory Existing Transportation System	
· Street system number of lanes, lane widths, traffic volumes, level of service, traffic signal location and jurisdiction, pavement conditions, structure locations and conditions, functional classification and jurisdiction, truck routes, number and location of accesses, safety, substandard geometry.	· An inventory of the existing street network, traffic volumes, traffic control devices and levels of service is provided in Chapter 1 of the TSP.
· Bicycle ways (type, location, width, condition, ownership/jurisdiction)	· A summary of the existing bicycle route system is given in Chapter 1.
· Pedestrian ways (location, width, condition, ownership/jurisdiction)	· An inventory of existing sidewalks along collector and arterial streets in Canby is illustrated in Figure 1-5.

· Public Transportation Services (transit ridership, volumes, route, frequency, stops, fleet intercity bus, passenger rail, special transit services)	· A summary of the existing public transportation services is presented in Chapter 1 and illustrated in Figures 1-6 (Tri-Met) and 1-7 (school bus routes).
· Intermodal and private connections	· No significant intermodal and private carrier transportation services and/or connections are found within the Canby UGB.
· Air transportation	· A summary of existing air transportation (passenger, cargo and recreation) is provided in Chapter 1.
· Freight rail transportation	· A summary of freight rail transportation services is provided in Chapter 1.
· Water transportation	· A summary of water transportation services is provided in Chapter 1.
· Pipeline transportation	· A summary of pipeline transportation services is provided in Chapter 1.
· Environmental Constraints	· Within the Canby UGB, there are no significant environmental constraints affecting the development and general conclusions of the Canby TSP.
· Existing population and employment	· Population and employment figures are provided in Chapter 3.

Determine Transportation Needs

· Forecast population and employment	· The Canby Comprehensive Land Use Plan served as the basis for forecasting future year

	2015 population and employment (see Chapter 3 of the Canby TSP).
• Determination of transportation capacity needs (cumulative analysis, transportation gravity model)	Future p.m. peak hour traffic assignments were calculated using the travel demand model developed for the Canby TSP (see Appendix C). Operational analyses were conducted on the critical intersections evaluated in Chapter 3 to determine the levels of service, deficiencies and improvements needs under future conditions.
Other roadway needs (safety, bridges, reconstruction, operation/maintenance)	Chapter 2 of Canby's TSP summarizes the existing pavement inventory, pavement condition and plan for the maintenance and rehabilitation of streets within Canby's jurisdiction.
• Freight transportation needs	• The recommended transportation system plan in Chapter 4 will provide for adequate freight movement by rail and highway.
• Public transportation needs (special transportation needs, general public transit needs)	Public transportation issues are addressed in Chapters 2, 3 and 4.
Bikeway needs / Pedestrian needs	• Future bicycle and pedestrian improvements are to be made in conjunction with roadway improvements to provide cyclists and pedestrians with full accessibility to Canby's atrerial/collector street system. The proposed bicycle plan is illustrated in Figure 4-2.
Develop and Evaluate Alternatives	
Update community goals and objectives	Goals were established as part of the TSP development (see Chapter 3)
• Establish evaluation cirteria	Evaluation criteria was

	established aspart of the TSP development (see Chapter 3).
· Develop and evaluate alternatives (no-build system, all build alternatives, transportation system management, transit alternative/feasibility, improvements/additions to roadway system, land use alternatives, combination alternatives).	· Chapter 3 identified three transportation system alternatives to assess the long-term transportation needs, including 1) Do-Nothing Alternative, 2) Canby Comprehensive Plan System Improvements and 3) Unidentified Improvements Needed .
· Select recommended alternative	· The unidentified Improvements Needed Alternative (see Chapter 3) was chosen to mitigate the capacity deficiencies in the future. VMT reduction requirement is not applicable to Canby (see OAR 660-12-020). However, the recommended transportation system improvements will very likely result in less reliance on the auto and net reduction in VMT/capita.
Produce a Transportation System Plan	
· Transportation goals, objectives and policies	· Specific recommendations regarding transportation goals and policies are outlined in Chapter 4 and Appendix A.
· Streets plan element (functional street classification and design standards, proposed facility improvements, access management plan, truck plan, safety improvements)	· The streets plan element is outlined in Chapter 4, Section B.
· Public transportation element (transit route service, transit facilities, special transit services, intercity bus and passenger rail)	· The public transportation element is outlined in Chapter 4, Section E.
· Bikeway system element	· The bicycle plan is outlined in Chapter 4, Section D.
· Pedestrian system element	· The pedestrian plan is outlined in Chapter 4, Section C.

· Airport element (land use compatibility, future improvements, accessibility/connections/conflicts with other modes)	· The airport element is outlined in Chapter 4, Section G.
· Freight rail element (terminals, safety)	· The rail element is outlined in Chapter 4, Section F.
· Water transportation element (terminals)	· The water transportation element is outlined in Chapter 4, Section H.
· Transportation System Management Element	· TSM element not applicable per OAR 660-12-020(2)(f) and (g).
· Transportation Demand Management Element	· TDM element not applicable per OAR 660-12-020(2)(f) and (g).

IMPLEMENTATION OF A TRANSPORTATION SYSTEM PLAN

Plan Review and Coordination

Consistent with ODOT and other applicable plans	Upon completion of Highway 99E Access Management Plan

Adoption

• Is it adopted?	The Canby TSP was adopted by the City Council on April 19, 2000.

Implementation

Ordinances (facilities, services and improvements; land use or subdivision regulations)	See Appendix D
Transportation financing/capital improvements program	• The transportation finance plan is summarized in Chapter 5.

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Appendix A.

TABLE A-1
Roadway Classification and Physical Characteristics

Roadway	Section	Functional Classification	Cross-Section	Travel Lanes	Bike Lanes?	Side-walks
NE 2nd Avenue	N. Ivy St. to Dead End	Collector	50' - 57'	2	No	Partial
NE 3rd Avenue	N. Ivy St. to NE 4th	Collector	29' - 58'	2	No	Partial
NE 10th Avenue	N. Ivy St. to N Pine St.	Collector	39' - 40'	2	No	Partial
NE 22nd Avenue	City Limit to Country Club Dr.	Collector	33' - 40'	2	No	None
NW 1st Avenue	N. Ivy St. to N. Douglas St.	Collector	34' - 45'	2	No	Partial
NW 2nd Avenue	N. Ivy St. to N. Cedar St.	Collector	35' - 64'	2	No	Partial
NW 3rd Avenue	N. Ivy St. to N. Holly St.	Arterial	56'	2	No	Full
NW 3rd Avenue	N. Holly St. to Dead End	Collector	42' - 54'	2	No	Partial
NW 10th Avenue	N. Ivy St. to Dead End	Collector	40'	2	No	None
SE 13th Avenue	S. Ivy St. to Private Logging Road	Arterial	22' - 32'	2	No	Partial
SW 13th Avenue	S. Ivy St. to Dead End	Arterial	36' - 40'	2	No	Partial
Berg Avenue	SW 1st Ave. to End	Arterial	23' - 40'	2	No	None
N. Birch St.	NW Knights Bridge Rd to NW Territorial Rd	Collector	40'	2	No	Full
N. Cedar St.	NW 2nd Ave. to NW Knights Bridge Rd	Collector	22' - 40'	2	No	Partial
N. Elm St.	SW 1st Ave. to NW 1st Ave.	Collector	44'	3	No	Full
N. Grant St.	SW 1st Ave. to NW Knights Bridge Rd	Collector	40' - 64'	2 - 3	No	Partial
N. Holly St.	NW 3rd Ave. to City Limit	Arterial	34' - 63'	1 - 2	No	Partial
N. Ivy St.	SW 1st Ave. to NW 3rd Ave.	Arterial	28' - 36'	2 - 3	No	Full
N. Maple St.	NE 10th Ave. to Dead End	Collector	20' - 40'	2	No	Partial
N. Pine St.	NE 4th Ave. to City Limit	Collector	21' - 40'	2	No	Partial
NE Territorial Rd.	N. Locust St. to N. Territorial Pl.	Arterial	24' - 44'	2	No	Partial
NW Knights Bridge Rd.	N. Holly St. to Knights Bridge	Arterial	26' - 40'	2	No	Partial

TABLE A-1 (continued)

Roadway	Section	Functional Classification	Cross-Section	Number of Travel Lanes	Bike Lanes?	Side-walks
S. Elm St.	SW 1st Ave. to SW 13th Ave.	Collector	30' - 49'	2	No	Partial
S. Ivy St.	SW 1st Ave. to SW 13th Ave.	Arterial	40'	2	Partial	Partial
S. Pine St.	SE 1st Ave. to Gravel Rd.	Collector	28'	2	No	None
S. Pine St.	S. Township Rd. to Dead End	Collector	40'	2	No	None
S. Township Rd.	S. Ivy St. to City Limits	Collector	22-36'	2	No	Partial

TABLE A-2
Existing Levels of Service

Intersection	Unsignalized		Signalized/All-Way Controlled		
	Reserve Capacity	Level of Service	Average Delay (sec)	V/C	Level of Service
22nd Ave./Maple St.	921	A			
Highway 99E/Territorial Rd.	33	E			
Territorial Rd/Pine St.	753	A			
Territorial Rd/Maple St.	526	A			
Territorial Rd/Holly St.	595	A			
Territorial Rd/Birch St.	859	A			
Highway 99E/Redwood St.	304	B			
10th Ave./Pine St.	849	A			
10th Ave./Maple St.	911	A			
10th Ave./Holly St.	571	A			
Highway 99E/Pine St.	101	D			
7th Ave./Holly St.	496	A			
Knights Bridge Rd/Cedar St.	451	A			
Knights Bridge Rd/Birch St.	454	A			
3rd Ave./Ivy St.	510	A			
3rd Ave./Holly St.*			2.5	0.262	A
3rd Ave./Grant St.*			2.4	0.248	A
3rd Ave./Cedar St.	783	A			
1st Ave./Ivy St.*			9.4	0.759	B
1st Ave./Grant St.	496	A			
Highway 99E/Ivy St.			22.4	0.763	C
Highway 99E/Grant St.			14.0	0.485	B
Highway 99E/Elm St.			18.7	0.654	C
Highway 99E/4th Ave.	64	E			
Highway 99E/Berg Parkway			2.6	0.349	A
Township Rd./Pine St.	792	A			
Township Rd./Ivy St.	230	C			
13th Ave./Ivy St.	242	C			
13th Ave./Elm St.	646	A			
Township Rd./Mulino Rd.	551	A			
4th Ave./Elm St.*			3.8	0.432	A

* All-Way Stop Controlled

TABLE A-3
Signal Warrant Evaluation

Intersection	Warrant #1*	Warrant #2*	Warrant #11
Highway 99E/Territorial Rd.	NO	NO	NO
Highway 99E/4th Ave.	NO	NO	NO

* Assume 70% of Peak Hour Volumes for analysis

TABLE A-4
Accident Summary
Highway 99E Through City of Canby (1990 to 1992)

Intersection Roadway Section	Total Accidents	Accident Severity			Accident Type							Accident Rate	
		Fatalities	Injuries	PDO	Angle	Head-On	Turn	Rear-End	Fixed Object	Pedestrian	Side-swipe	Acc/ MEV	Acc/ MVM
Territorial Rd	8	0	7	4	2	0	6	0	0	0	0	0.48	
MP 19.36 - 20.22	10	1	10	4	0	1	4	2	0	1	2		0.74
Redwood St	1	0	4	0	0	0	1	0	0	0	0	0.06	
MP 20.24 - 20.61	7	0	8	2	0	0	2	1	1	1	2		1.24
SUMMARY	26	1	29	10	2	1	13	3	1	2	4		1.33
Pine St	6	1	2	4	2	0	4	0	0	0	0	0.36	
MP 20.67 - 20.92	11	0	5	6	0	0	8	0	2	0	1		2.83
Locust St	4	0	6	1	0	0	3	1	0	0	0	0.27	
MP 20.94 - 20.99	1	0	0	1	0	0	0	1	0	0	0		1.40
Knott St	3	0	3	2	0	0	2	0	0	1	0	0.27	
MP 21.01 - 21.06	2	0	0	2	0	0	1	0	0	0	1		2.81
Juniper St	3	0	0	3	1	0	1	0	0	0	1	0.20	
SUMMARY	30	1	16	21	3	0	19	2	2	1	3		3.65
MP 21.08 - 21.13	2	0	1	1	0	0	0	2	0	0	0		2.61
Ivy St	12	0	4	8	4	0	6	2	0	0	0	0.43	
MP 21.15 - 21.41	5	0	4	3	0	0	3	2	0	0	0		1.77
Elm St	8	0	3	5	4	0	1	2	0	1	0	0.35	
MP 21.43 - 21.50	5	0	1	4	0	1	2	0	1	0	1		3.98
SUMMARY	32	0	13	21	8	1	12	8	1	1	1		4.47
MP 21.51 - 21.75	1	0	1	0	0	0	1	0	0	0	0		0.23
4th St	5	0	6	3	1	0	4	0	0	0	0	0.28	
MP 21.77 - 21.82	1	0	1	0	0	0	0	1	0	0	0		1.17
Berg Parkway	4	0	3	2	1	0	2	1	0	0	0	0.23	
SUMMARY	11	0	11	5	2	0	7	2	0	0	0		1.94
MP 21.84 - 22.03	2	0	0	2	0	0	0	0	2	0	0		0.63
TOTAL	101	2	69	57	15%	2%	50%	13%	6%	4%	8%		

TABLE A-6
Future LOS - Unsignalized Intersections

Intersection	Unsignalized Intersections					
	Existing Conditions		2015 Unimproved Roads		2015 Comp. Plan Road Improvements	
	Reserve Capacity	Level of Service	Reserve Capacity	Level of Service	Reserve Capacity	Level of Service
22nd Ave./Maple St.	921	A	875	A	870	A
Highway 99E/Territorial Rd.	33	E	-139	F	-130	F
Territorial Rd/Pine St.	753	A	599	A	610	A
Territorial Rd/Maple St.	526	A	346	B	315	B
Territorial Rd/Holly St.	595	A	417	A	430	A
Territorial Rd/Birch St.	859	A	830	A	835	A
Highway 99E/Redwood St.	304	B	-257	F	-265	F
10th Ave./Pine St.	849	A	759	A	740	A
10th Ave./Maple St.	911	A	745	A	695	A
10th Ave./Holly St.	571	A	281	C	375	A
Highway 99E/Pine St.	101	D	-193	F	-400	F
7th Ave./Holly St.	496	A	384	A	485	A
Knights Bridge Rd/Cedar St.	451	A	331	B	330	B
Knights Bridge Rd/Birch St.	454	A	344	B	290	C
Ivy St./3rd Ave.	510	A	321	B	360	B
3rd Ave./Cedar St.	783	A	565	A	633	A
1st Ave./Grant St.	496	A	243	C	395	A
Highway 99E/4th Ave.	64	E	52	E	52	E
Township Rd/Pine St.	792	A	382	B	275	C
Ivy St./Township Rd.	230	C	-503	F	30	E
Ivy St./13th Ave.	242	C	-83	F	35	E
13th Ave./Elm St.	646	A	475	A	480	A
Township Rd./Mulino Rd.	551	A	88	E	414	A

TABLE A-7
Future LOS - Signalized and All-Way Stop-Controlled Intersections

Intersection	Signalized/All-Way Controlled Intersections								
	Existing Conditions			2015 Unimproved Roads			2015 Comp Plan Road Improvements		
	Avg. Delay	V/C	Level of Service	Avg. Delay	V/C	Level of Service	Avg. Delay	V/C	Level of Service
3rd Ave./Holly St.	2.5	0.262	A	4.4	0.54	A	3.0	0.31	A
3rd Ave/Grant St.	2.4	0.248	A	3.4	0.37	A	2.4	0.25	A
1st Ave./Ivy St.	9.4	0.759	B	18.6	0.91	C	17.6	0.89	C
4th Ave./Elm St.	3.8	0.432	A	3.8	0.43	A	5.4	0.51	B
Highway 99E/Ivy St.	22.4	0.763	C	O/F		F	46.7	1.05	E
Highway 99E/Grant St.	14.0	0.485	B	16.4	0.76	C	14.5	0.69	B
Highway 99E/Elm St.	18.7	0.654	C	30.4	0.97	D	21.8	0.85	C
Highway 99E/Berg Parkway	2.6	0.349	A	2.2	0.47	A	8.4	0.59	B

Note: Shading indicates all-way stop controlled intersections.

TABLE A-8
Future LOS with Signalization

Intersection	2105 Unimproved Road Network			2015 Comp. Plan Improvements		
	Average Delay	V/C	Level of Service	Average Delay	V/C	Level of Service
Highway 99E/Territorial Rd.	11.1	0.64	B	9.3	0.62	B
Highway 99E/Redwood St.	13.2	0.76	B	13.3	0.78	B
Highway 99E/Pine St.	11.3	0.73	B	23.0	0.86	C
Ivy St./13th Avenue	16.2	0.69	C	15.1	0.54	C
Ivy St./Township Rd.	29.9	0.97	D	20.6	0.96	C

Appendix B.

TABLE B-1
Level of Service Definitions
(Signalized Intersections)

Level-of-Service	Traffic Flow Characteristics
A	Very low average stopped delay, less than five seconds per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	Average stop delay is in the range of 5.1 to 15.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
C	Average stopped delay is in the range of 15.1 to 25.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	Average stopped delays are in the range of 25.1 to 40.0 seconds per vehicle. The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle length, or high volume/capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Average stopped delays are in the range of 40.1 to 60.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume/capacity ratios. Individual cycle failures are frequent occurrences.
F	Average stop delay is in excess of 60 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation. It may also occur at high volume/capacity ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such high delay levels.
Note:	A signal cycle failure is considered to occur when one or more vehicles are forced to wait through more than one green signal indication for a particular approach.

TABLE B-2
Level of Service Criteria for Signalized Intersections

Level-of-Service	Stopped Delay per Vehicle (Sec)
A	<= 5.0
B	5.1 to 15.0
C	15.1 to 25.0
D	25.1 to 40.0
E	40.0 to 60.0
F	> 60.0
Source: 1985 Highway Capacity Manual	

TABLE B-3
Level of Service Definitions
(Unsignalized Intersections)

LOS	General Description
A	- Average delay per vehicle ranges between 0 and 10 seconds - Nearly all drivers find freedom of operation - Very seldom is there more than one vehicle in the queue
B	- Average delay per vehicle ranges between 10 and 20 seconds - Some drivers begin to consider the delay an inconvenience - Occasionally there is more than one vehicle in the queue
C	- Average delay per vehicle ranges between 20 and 30 seconds - Many times there is more than one vehicle in the queue - Most drivers feel restricted, but not objectionably so
D	- Average delay per vehicle ranges between 30 and 40 seconds - Often there is more than one vehicle in the queue - Drivers feel quite restricted
E	- Represents a condition in which the demand is near or equal to the probable maximum number of vehicles that can be accommodated by the movement - Average delay per vehicle ranges between 40 and 60 seconds - There is almost always more than one vehicle in the queue - Drivers find the delays to be approaching intolerable levels
F	- Forced flow - Represents an intersection failure condition that is caused by geometric and/or operational constraints external to the intersection

TABLE B-4
Level-of-Service Criteria for Unsignalized Intersections

Reserve Capacity (pcph)	Level of Service	Expected Delay to Minor Street Traffic
≥ 400	A	Little or no delay
300-399	B	Short traffic delays
200-299	C	Average traffic delays
100-199	D	Long traffic delays
0-99	E	Very long traffic delays
*	F	*

* When demand volume exceeds the capacity of the lane, extreme delays will be encountered with queuing which may cause severe congestion affecting other traffic movements in the intersection. This condition usually warrants improvement to the intersection.

Source: Transportation Research Board. "Highway Capacity Manual". Special Report 209 (1985)

Appendix C.

APPENDIX C

DEVELOPMENT OF A TRAVEL FORECASTING MODEL FOR THE CANBY URBAN AREA

The intent of the development of the Canby Travel Forecasting Model was to design a travel model using EMME/2 to forecast major arterial and collector travel flows in the Canby urban area under future year 2015 conditions using estimates of future land use and transportation system alternatives. Thus, it was necessary to assemble demographic and transportation data in an appropriate format to achieve this goal. Care was taken to include only the level of detail in the land use and transportation data inputs required for this purpose.

1.1 Creation of the Transportation Analysis Zone System

To facilitate development of travel forecasts, the household and employment data were assembled into 96 Transportation Analysis Zones (TAZ's # 1-8 are "external station" zones, TAZ's # 9-96 are zones internal to the Canby urban area). Boundaries for these TAZ's were established in an attempt to meet the following criteria:

- homogenous land use - current and future
- conformance with major boundaries
  - major transportation corridors
  - physical boundaries which prevent continuous development
- homogenous access of land use to transportation system (collector/arterial street system)

Figure 3-2 shows the locations of the TAZ's in the Canby urban area.

1.2 Creation of the Roadway Network

The location of all of Canby's arterial and collector street intersections were digitized in order to develop a computerized roadway network in the EMME/2 software. This was done to ensure that the simulation roadway network plots of collectors and arterials within the Canby urban area would conform to "real world" geography.

The future transportation network includes all collectors, arterials and state highways in the Canby area. New roadway connections identified by the Canby Comprehensive Plan were added to the future base network as an alternative. These include the following improvements:

- The extension of Pine Street to Township Road
- The extension of Redwood from Township Road to Ivy Street (west of the railroad)
- The extension of Redwood from Highway 99E to Township Road (east of the railroad)
- The full connection of Berg Parkway south of Highway 99E
- The extension of Berg Parkway from Highway 99E north to 3rd Avenue
- The extension of 10th Avenue west to Birch Street.

There are 96 centroids, 198 regular nodes (intersections) and 735 links (roadway segments) included in the future transportation network. All links in the study area were assigned the following characteristics based upon their existing function:

- **distance** (in hundredths of miles),
- **travel speed** (average free-flow, off-peak travel speed which includes potential delays at terminal intersections),
- **link type** all links were assigned one of 5 categories based on functional classification for arterials and collectors,
- **link capacity** one-hour roadway capacity based upon roadway functional classification.

A detailed explanation of the link classes is provided in Table C-1.

TABLE C-1
Canby Future Roadway Network
EMME/2 Link Class

Link Class	Definition	Speed (mph)	# of Lanes (one direction)	# of Links
1	Centroid Connector	15-20	1	266
2	State Highway	30-55	2	44
3	Arterial/Collector	25-35	1	367
4	Local Roadway	25	1	22
5	Future Roadway	25-35	1	36

Special note should be made of the handling of centroid connectors. The distance assigned to centroid connectors was computed by measuring the distance from the centroid to the nearest node in the collector/arterial network via the local roadway system. Centroid connectors are theoretically representative of the local access systems, and thus were considered to have adequate capacity to handle any volumes anticipated. Thus, centroid connectors were assigned a virtually infinite p.m. peak hour capacity of 9,999.

The travel model was designed to model future *vehicle trips* only. Therefore, all trips made using other modes (i.e. bicycle, walk, bus) were not considered in this model. It is understood that, in the future, transit, bicycles, and pedestrian modes of travel may play a more significant role within the overall Canby transportation system, but it was deemed that the effort involved in developing a separate non-auto mode model would not yield sufficient results to warrant a full mode-split model development.

1.3 Model Description/Computer Specifications

The transportation planning computer software used to develop the Canby Travel Demand Model was EMME/2. This modelling software was developed by INRO Consultants, Inc. in Montreal, Canada.

1.4 Trip Generation

The first major step in developing a model that forecasts future traffic conditions is estimating trip generation based on future year 2015 land use inputs (i.e. estimates of future levels of household and employees, etc.) Three basic trip tables were developed for the Canby area to reflect basic travel patterns of future Canby residents and workers including: home-based-work (HBW); home-based-other (HBO); and, non-home-based (NHB), and were supplemented with special external travel behavior trip purposes. Basic trip generation equations derived from national averages[1] of urban areas were used as a basis to calculate the HBW, HBO and NHB trip tables. The daily trip production equations for each trip purpose are shown below:

$$HBW_{PROD} = [(SF_{HH} * 1.79) + (MF_{HH} * 0.865)]$$

$$HBO_{PROD} = [(SF_{HH} * 2.76) + (MF_{HH} * 1.908)]$$

$$NHB_{PROD} = [(SF_{HH} * 1.005) + (MF_{HH} * 1.16)]$$

Where: HBW, HBO, NHB = Trip Purpose
$_{PROD}$ = Daily Vehicle Trip Productions
SF_{HH} = Single-Family Households
MF_{HH} = Multi-family Households

Trip attraction equations were calculated to ensure that total daily attractions within Canby matched total daily productions. The resultant daily vehicle trip attraction equations are shown below:

$$HBW_{ATT} = (TOTAL_{EMP} * 1.70)$$

$$HBO_{ATT} = [(RETAIL_{EMP} * 10.0) + (NON\text{-}RETAIL_{EMP} * 0.5) + (TOTAL_{HH} * 1.0)]$$

$$NHB_{ATT} = [(RETAIL_{EMP} * 2.0) + (NON\text{-}RETAIL_{EMP} * 2.5) + (TOTAL_{HH} * 0.5)]$$

Where: HBW, HBO, NHB = Trip Purpose
$_{ATT}$ = Daily Vehicle Trip Attractions
$TOTAL_{EMP}$ = Total No. of Jobs (FTE's)
RETAIL and $NON\text{-}RETAIL_{EMP}$ = Retail and Non-Retail Employees respectively

The trip production and attraction equations were then applied to 2015 Canby area land use and employment projections. Based upon the above trip generation equations, the Canby area will produce an estimated 75,940 new daily HBW, HBO and NHB vehicle trips.

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[1] *Quick-Response Urban Travel Estimation Techniques and Transferrable Parameters*, National Cooperative Highway Research Program Report #187, Transportation Research Board, 1978.

1.4 Trip Distribution

Home-Based Work, Home-Based Other, and Non Home-Based Trip Purposes

This section describes the calculations and eventual validation process which was used in the development of the Canby trip distribution model. To distribute future travel produced by new Canby households, the traditional approach, using the gravity model, was employed. The basic form of the gravity model used in the transportation planning process is as follows:

$$T_{ij} = \frac{P_i(A_j/(D^b + kD^a))}{SUM[Aj/(D^b + Kd^a)]}$$

Where: T_{ij} = trips produced in zone i and attracted to zone j
P_i = trips produced in zone i
A_j = trips attracted to zone j
$D^b + Kd^a$ =Distance function derived, or travel time factor that are a function of the spatial separation between the zones and the area wide effect of this separation on the level of trip interchange.

The calibration of a gravity model is the process of determining appropriate travel time factors which adequately reflect the effect of spatial separation between unique locations (zones). The process involved the development of an initial set of daily trip tables (by HBW, HBO and NHB trip purposes), a 2015 TAZ-to-TAZ travel cost matrix derived from the 2015 Canby travel network (within EMME/2 this is achieved by assigning a trip table with matrix cell of .01 trips to the network and saving the resulting zone-to-zone travel times).

1.5 P.M. Peak Hour vs. Daily Trip Characteristics and Directionality by Trip Purpose

The adjustment factors that were applied to the new daily trip tables to determine p.m. peak hour trips, by trip purpose, are summarized in Table C-2.

TABLE C-2
Peak Hour and Directionality Factors
by Trip Purpose

Trip Purpose	% Daily Trips in P.M. Peak Hour	Directionality	
		Outbound	Inbound
Home-Based Work	13.0%	8%	92%
Home-Based Other	9.1%	55%	45%
Non Home-Based	7.3%	50%	50%

The resulting p.m. peak hour trip tables were added to the "external" trips to determine total new travel generated in the Canby urban growth boundary during the p.m. peak hour. The number and distribution pattern of "external" trips were calculated based upon existing travel volumes.

1.6 Trip Assignment

The total future p.m. peak hour trip table including future internal and external trips as well as existing traffic volumes, was assigned to the network using an equilibrium assignment algorithm. The resulting 2015 P.M. peak hour travel volumes are shown in Figure 3-3 and 3-4.

Appendix D.

INTRODUCTION

This section was prepared by W&H Pacific, Inc. for the City of Canby and is intended to help guide the City in updating their Comprehensive Plan and implementing ordinances in order to comply with the Transportation Planning Rule (TPR). It includes proposed revisions to the following documents:

- Comprehensive Plan (Originally published in 1984).
- Title 16, Land Development and Planning Ordinance, hereafter referred to as the "Development Ordinance."

The proposed code amendments are organized around the following TPR compliance issues:

A. Approval Process for Transportation Facilities
B. Assure Amendments are Consistent with the Transportation System Plan (TSP)
C. Recommended Regulations to Provide Notice to Public Agencies
D. Street Standards
E. Safe and Convenient Pedestrian and Bicycle Circulation
F. Bicycle Parking
G. Protecting Existing and Future Operation of Facilities

A brief discussion of the TPR compliance issues rationale for the proposed code changes introduces each subsection. A table identifying the proposed language and its suggested location(s) within the adopted Canby ordinances follows.

For both the comprehensive plan and development ordinance, proposed new code language is *italicized*, and existing code language remains in a regular font format. Those sections of the existing code proposed for deletion are distinguished with a ~~strikethrough~~, and proposed replacement language immediately follows.

The Transportation Planning Rule (TPR)

In 1991, the Oregon Transportation Planning Rule (TPR) was adopted to implement State Planning Goal 12-Transportation (amended in May and September 1995). The Transportation Planning Rule requires all jurisdictions to revise their land use regulations to implement a Transportation System Plan that addresses the following elements of the TPR:

- *Amend land use regulations to reflect and implement the Transportation System Plan.*
- *Clearly identify which transportation facilities, services, and improvements are allowed outright, and which will be conditionally permitted or permitted through other procedures.*
- *Adopt land use or subdivision ordinance measures, consistent with applicable federal and state requirements, to protect transportation facilities, corridors and sites for their identified functions, to include the following topics:*
  - *access management and control;*
  - *protection of public use airports;*

- *coordinated review of land use decisions potentially affecting transportation facilities;*

- *conditions to minimize development impacts to transportation facilities;*

- *regulations to provide notice to public agencies providing transportation facilities and services of land use applications that potentially affect transportation facilities;*

- *regulations assuring that amendments to land use applications, densities, and design standards are consistent with the Transportation System Plan.*

- *Adopt land use or subdivision regulations for urban areas and rural communities to provide safe and convenient pedestrian and bicycle circulation and bicycle parking, and to ensure that new development provides on-site streets and accessways that provide reasonably direct routes for pedestrian and bicycle travel.*

- *Establish street standards that minimize pavement width and total right-of-way.*

In addition to the development of a Transportation System Plan, local jurisdictions are required to create policies and ordinances that implement the Plan.

PROPOSED AMENDMENTS TO THE COMPREHENSIVE PLAN AND IMPLEMENTING ORDINANCES

A. APPROVAL PROCESS FOR TRANSPORTATION FACILITIES

Pursuant to the TPR, projects that are specifically identified in the Canby Transportation System Plan (TSP), which the City has made all the required land use and goal compliance findings, are permitted outright and subject only to the standards established by the TSP. A city may not allow outright an improvement that is listed in the TSP, but does not include site-specific decisions. Therefore, it is recommended that the City of Canby use the conditional use permit process to review those transportation projects not allowed outright within the Urban Growth Boundary. Adoption of the proposed code language will meet the requirements of OAR 660-12-045 (1).

Comprehensive Plan

Suggested Location	Proposed Language Change
Amend Transportation Element, Policy No. 12 to include the following policies.	*E. The city shall coordinate with the Department of Transportation to implement the highway improvements listed in the Statewide Transportation Improvement Program (STIP) that are consistent with the Transportation System Plan and comprehensive plan.* *F. The city shall consider the findings of ODOT's draft Environmental Impact Statements and Environmental Assessments (if any) as integral parts of the land use decision-making procedures. Other actions required, such as a goal exception or plan amendment, will be combined with review of the draft EA or EIS and land use approval process.*
Amend Transportation Element, Policy No. 1, to include the following policies	A) Adopt and prioritize as part of the City's overall Capital Improvement Program, the ~~following~~ list of City streets and County roads for major upgrading and improvements *identified in Chapter 4 of the Transportation System Plan.* *Delete existing table.*
Amend Transportation Element, Policy No. 2 to include the following policies	A) **Adopt and p**rioritize as part of the City's overall Capital Improvement Program, the ~~following~~ list of major new streets to be constructed *as identified in Chapter 4 of the Transportation System Plan.* *Delete existing table.*
Amend Transportation Element, Policy No. 3 to include the following policies	A) **Include with**in the Capital Improvement Program, in order based upon the priorities established for road upgrading and/or new construction, the ~~following~~ list of intersections needing major improvements *as identified in Chapter 4 of the Transportation System Plan.* *Delete existing table.*

Implementing Ordinances

Suggested Location	Proposed Language Change
Insert in Development Ordinance, General Provisions, Chapter 16.08.	***16.08.030 Standard Transportation Improvements*** *Pursuant to the TPR, projects that are specifically identified in the Canby Transportation System Plan (TSP), which the City has made all the required land use and goal compliance findings, are permitted outright and subject only to the standards established by the TSP. This section pertains to additional transportation projects that may not be identified in the Canby Transportation System Plan (TSP), and whether the use is permitted outright or permitted subject to the issuance of a conditional use permit.* *A. Except where otherwise specifically regulated by this ordinance, the following improvements are permitted outright.* *(1) Normal operation, maintenance, repair, and preservation of existing transportation facilities.* *(2) Installation of culverts, pathways, medians, fencing, guardrails, lighting, and similar types of improvements within the existing right-of-way.* *(3) Projects specifically identified in the Transportation System Plan as not requiring further land use regulation.* *(4) Landscaping as part of a transportation facility.* *(5) Emergency measures necessary for the safety and protection of property* *(6) Acquisition of right-of-way for public roads, highways, and other transportation improvements designated in the Transportation System Plan, except for those that are located in exclusive farm use or forest zones.* *(7) Construction of a local street or road as part of a subdivision or land partition approved consistent with the Development Ordinance.* *B. Except where otherwise specifically regulated by this ordinance, the following improvements are permitted as a conditional use.* *(1) Construction, reconstruction, or widening and other projects authorized by the TSP but not included in the list of projects in the TSP, shall comply with the Transportation System Plan and applicable standards, and shall address the following criteria. For State projects that require an Environmental Impact Statement (EIS) or EA (Environmental Assessment), the draft EIS or EA shall be reviewed and used as the basis for findings to comply with the following criteria:* *a. The project is designed to be compatible with existing land use and social patterns, including noise generation, safety, and zoning.* *b. The project is designed to minimize avoidable environmental impacts to identified wetlands, wildlife habitat, air and water quality, cultural resources, and scenic qualities.* *c. The project preserves or improves the safety and function of the facility through access management, traffic calming, or other design features.*

Suggested Location	Proposed Language Change
	d. The project includes provision for bicycle and pedestrian circulation as consistent with the comprehensive plan and other requirements of this ordinance. *(2) If review under this Section indicates that the use or activity is not clearly authorized by the Transportation System Plan or this ordinance, a plan amendment shall be undertaken prior to or in conjunction with the conditional permit review.*

B. ASSURE AMENDMENTS ARE CONSISTENT WITH THE TRANSPORTATION SYSTEM PLAN (TSP)

The Transportation Planning Rule requires that jurisdictions develop regulations to assure that all development proposals, plan amendments, or zone changes conform to the Transportation System Plan. Adoption of the proposed code language will meet the requirements of OAR 660-12-045(2)(g).

Comprehensive Plan

No changes recommended.

Implementing Ordinances

Suggested Location	Proposed Language Change
Insert in Development Ordinance, General Standards and Procedures, Chapter 16.88.	*16.88.190 **Conformance with the TSP*** *A. A plan or land use regulation amendment significantly affects a transportation facility if it:* *1. Changes the functional classification of an existing or planned transportation facility;* *2. Changes standards implementing a functional classification system;* *3. Allows types or levels of land use that would result in levels of travel or access that are inconsistent with the functional classification of a transportation facility; or* *4. **Would reduce the level of service of the facility below** the minimum acceptable level identified in the Transportation System Plan.* *B. Amendments to the comprehensive plan and land use regulations which significantly affect a transportation facility shall assure that allowed land uses are consistent with the function, capacity, and performance standards (e.g. level of service, volume to capacity ratio, etc.) of the facility identified in the Transportation System Plan. This shall be accomplished by one of the following:* *1. Limiting allowed land uses to be consistent with the planned function of the transportation facility;* *2. Amending the Transportation System Plan to ensure that existing, improved, or new transportation facilities are adequate to support the proposed land uses consistent with the requirement of the Transportation Planning Rule; or, Altering land use designations, densities, or design requirements to reduce demand for automobile travel and meet travel needs through other modes.* *C. A Traffic Impact Study may be required pursuant to 16.49.035*

C. RECOMMENDED REGULATIONS TO PROVIDE NOTICE TO PUBLIC AGENCIES

Review of land use actions is typically initiated by a Notice. A Procedures Ordinance or Notification Policy usually defines this process. The TPR requires a city to provide notice to ODOT regarding any land use action on or adjacent to a State facility. All actions by the city potentially affecting another jurisdiction's road should include notification of that jurisdiction's public works department. In addition, the notification policy should be to notify providers of public transit and recognized special interest transportation groups such as truckers, railroad, bicyclists, pedestrians, and the disabled on any roadway or other transportation project. Adoption of the proposed code language will meet the requirements of OAR 660-12-045(2).

Comprehensive Plan

Suggested Location	Proposed Language Change
Insert in the Comprehensive Plan, Transportation Element, Policy No. 1	*F. The city shall coordinate plan amendments, zone changes, and other land use decisions that affect transportation facilities and services with other providers of these services including ODOT and Clackamas County.*

Implementing Ordinances

Suggested Location	Proposed Language Change
Insert in the Development Ordinance, Public hearings, Section 16.88.130	D. Public Notice. 5. At least ten days prior to any public hearing … and nature of the pending application, *including the location of project access point(s)* 6. *Any application that involves access to the State Highway System shall be provided to Oregon Department of Transportation for their review and comment regarding conformance with state access management standards and requirements.*

D. STREET STANDARDS

The Transportation Planning Rule requires that cities balance mobility, access, and livability when specifying street standards. Historically, cities have tended to establish street dimensions based on highway standards. Many cities have found it increasingly expensive to construct and maintain very wide streets. In many cases, livability has been diminished because excessively wide streets make it difficult to walk, and community aesthetics decline as the landscape is dominated by roads and motor vehicles. As understanding of roadway function has increased, local governments have established standards for local streets and accessways that minimize pavement width and total right-of-way, while maintaining the operational needs of the facility. This reduces the costs of new construction and maintenance, and provides for more efficient use of urban land. The goal is to allow for emergency vehicle access while discouraging inappropriate traffic volumes and speeds, along with accommodating pedestrians and bicyclists. Adoption of the proposed code language will meet the requirements of Section 660-12-045(7).

Comprehensive Plan

Suggested Location	Proposed Language Change
Insert in the Comprehensive Plan, Transportation Element Policy No. 2	*F. Design standards for local streets and accessways shall minimize pavement width and total right-of-way, while maintaining the operational needs of the facility to reduce the costs of new construction and maintenance, and provide for more efficient use of urban land.*
Ibid.	*G. Existing streets that are to be widened or reconstructed should be designed to the adopted street design standards for the appropriate street classification. Adjustments to the design standards may be necessary to avoid existing topographical constraints, historic properties, schools, cemeteries, existing on-street parking, and significant cultural features. Whenever possible, the design of the street should be sensitive to the livability of the surrounding neighborhood.*

Implementing Ordinances

Suggested Location	Proposed Language Change
Insert in the Development Ordinance, Subdivisions Design Standards, Chapter 16.64.	**16.64.010 Streets** A. Generally *4. Consider opportunities to incrementally extend and connect local streets to provide for safe and convenient bike and pedestrian circulation.*
Ibid.	**16.64.020 Blocks.** B. Sizes. ~~**Blocks shall not exceed one thousand two hundred feet in length**~~ *... Limit block length to 600 feet in length, except for 800 feet on arterials. Exceptions to this prescribed block standard shall be permitted where topography, barriers such as railroads or freeways, or environmental constraints prevent street extension*
Ibid.	**16.64.030 Easements** C. Pedestrian Ways. In any block over ~~eight~~ *six* hundred feet in length, a pedestrian way with a minimum width of ten feet or combination pedestrian way and utility easement shall be provided through the middle of the block.

Amend Development Ordinance, Regulations, Chapter 16.86.	**Section 16.86.020 General provisions.** A. The street circulation map of the Comprehensive Plan shall be used to determine which streets are to be arterials, collectors, and *connectors*. Based upon this, *new* arterial street rights-of-way shall be sixty feet in width, as specified in the TSP. *New* collector street rights-of-way shall have a minimum width of *sixty* feet. *New neighborhood connectors shall have a minimum right-of-way width of sixty feet. All new streets shall comply with the roadway standards shown in Section 16.86.040.* B. New local residential streets shall have a minimum right-of-way width of forty feet. Streets with new ROW requirements, versus existing streets with different ROW widths, will be identified on the TSP Street Functional Classification Map.
Ibid.	**16.86.030 Street Widening** ~~F. SW 2nd Avenue between S Elm Street and S Ivy Street~~ ~~I. S Birch Street between SW 4th Avenue and SW 5th Avenue~~

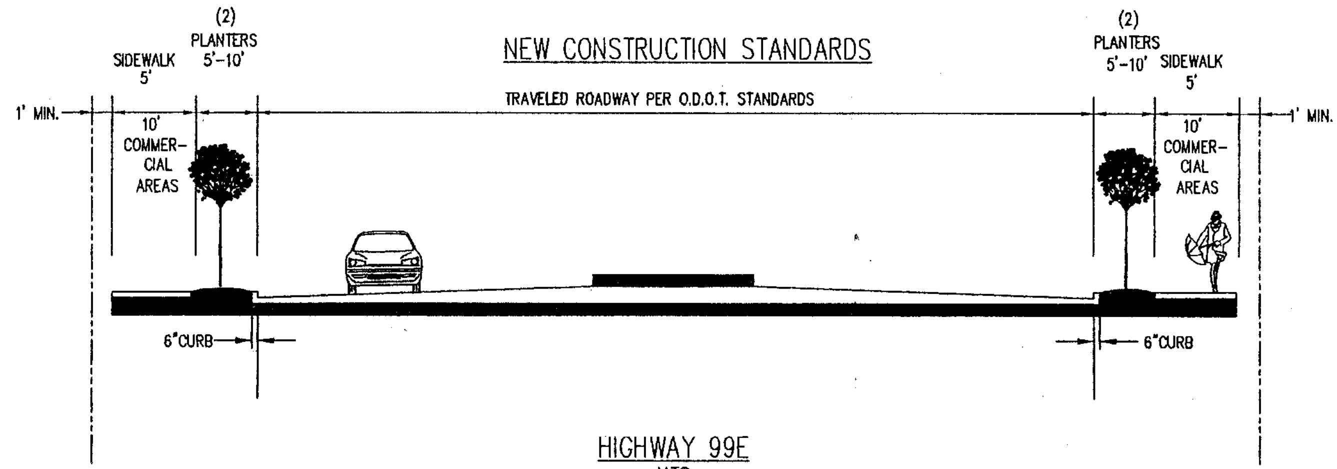
Suggested Location	**Proposed Language Change**
Amend Development Ordinance, Regulations, Chapter 16.86	**16.86.040 Recommended Roadway Standards** *See attached diagram of roadway cross-sections.*

City of Canby
Transportation System Plan

JANUARY 2000

Figure 4-1c
City of Canby Transportation System Plan
Recommended Street Standards

NEW CONSTRUCTION STANDARDS

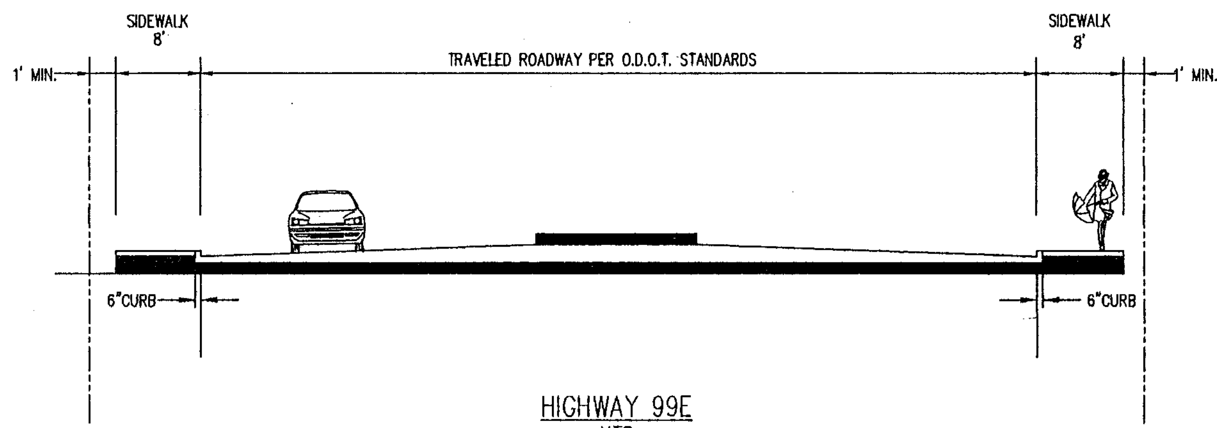


HIGHWAY 99E
NTS

NOTES:

(2) OPTIONAL IN COMMERCIAL AREAS IF SIDEWALK ≥ 10' WIDE

ADEQUACY STANDARDS



HIGHWAY 99E
NTS

0STSTD5 01/20/2000 15:51

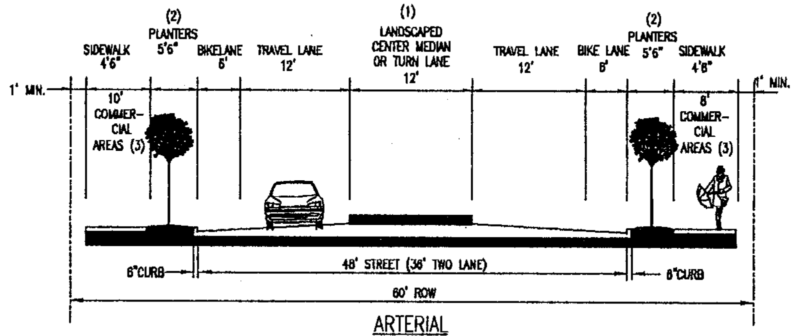
City of Canby
Transportation System Plan

JANUARY 2000

Figure 4-1a
City of Canby Transportation System Plan
Recommended Street Standards

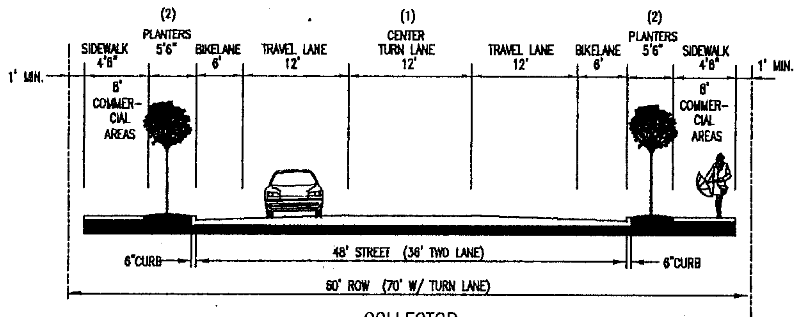
0BSTSTD3 01/21/2000 15:31

NEW CONSTRUCTION STANDARDS



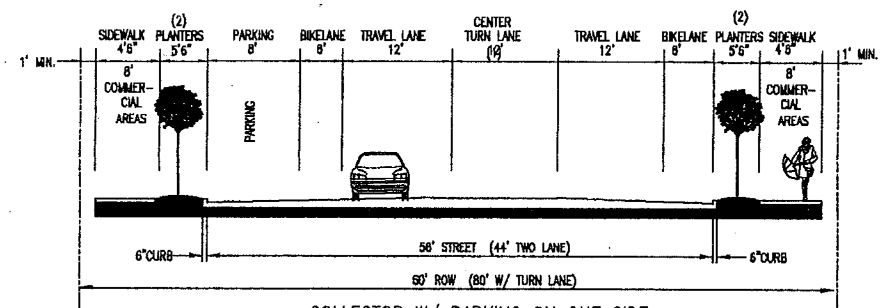
ARTERIAL
NTS

NOTES:
(1) IF PROJECTED ADT < 4,000, TURN LANE / MEDIAN NOT REQUIRED
(2) OPTIONAL IN COMMERCIAL AREAS IF SIDEWALK ≥ 12' WIDE
(3) DOWNTOWN COMERCIAL TO BE 10' SIDEWALK W/ REDUCED PLANTER



COLLECTOR
NTS

NOTES:
(1) AT ALL MAJOR INTERSECTIONS AND/OR IF PROJECTED ADT > 5,000
(2) OPTIONAL IN COMMERCIAL AREAS IF SIDEWALK ≥ 10' WIDE

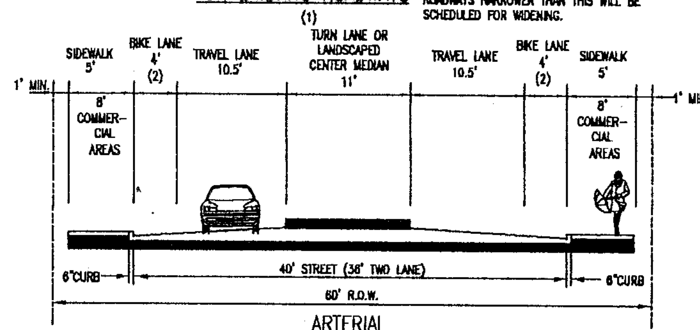


COLLECTOR W/ PARKING ON ONE SIDE
NTS

NOTES:
(1) AT ALL MAJOR INTERSECTIONS AND/OR IF PROJECTED ADT > 5,000
(2) OPTIONAL IN COMMERCIAL AREAS IF SIDEWALK ≥ 10' WIDE

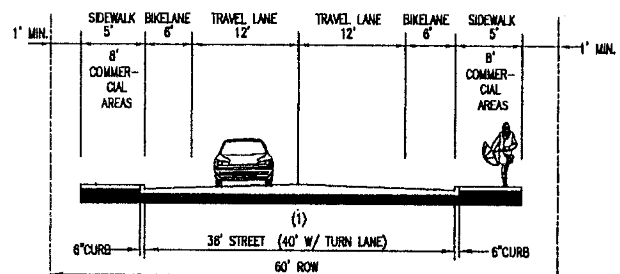
ADEQUACY STANDARDS FOR EXISTING ROADWAYS

NOTES:
MINIMUM WIDTHS FOR EXISTING ROADWAY SECTIONS. ROADWAYS NARROWER THAN THIS WILL BE SCHEDULED FOR WIDENING.



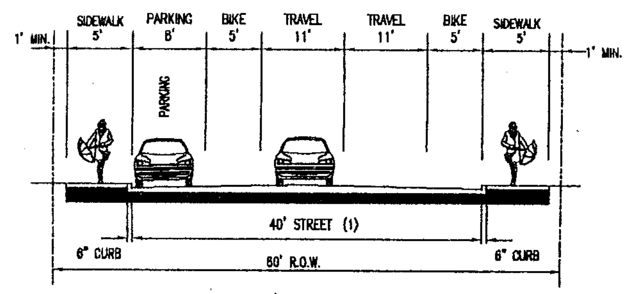
ARTERIAL
NTS

NOTES:
(1) IF PROJECTED ADT < 5,000, TURN LANE / MEDIAN NOT REQUIRED
(2) IF PROJECTED ADT < 5,000, BIKE LANE TO BE 6'



COLLECTOR
NTS

NOTES:
(1) TURN LANE NEEDED AT ALL INTERSECTIONS WITH ARTERIALS OR IF PROJECTED ADT >6,000, SEE ARTERIAL SECTION



COLLECTOR W/ PARKING ONE SIDE
NTS

NOTES:
(1) TURN LANE NEEDED AT ALL INTERSECTIONS WITH ARTERIALS OR IF PROJECTED ADT >6,000, SEE ARTERIAL SECTION

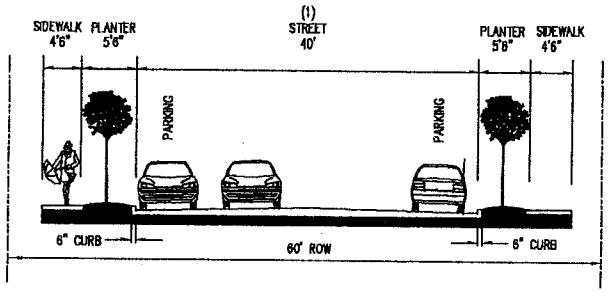
08STSTD4 01/20/2000 15:48

City of Canby
Transportation System Plan

JANUARY 2000

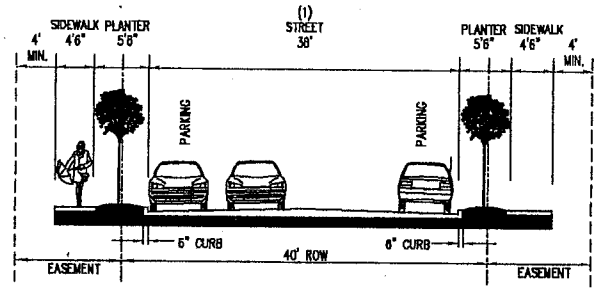
Figure 4-1b
City of Canby Transportation System Plan
Recommended Street Standards

NEW CONSTRUCTION STANDARDS



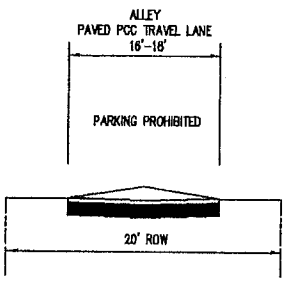
NEIGHBORHOOD CONNECTOR
NTS

(1) STREET WIDTH IS 40' WITH PARKING ON BOTH SIDES, 36' WITH PARKING ON ONE SIDE



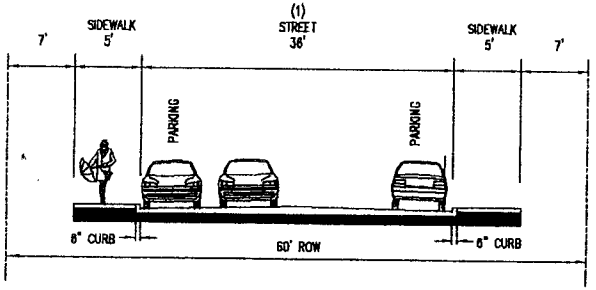
LOCAL STREET
NTS

(1) STREET WIDTH IS 36' WITH PARKING ON BOTH SIDES, 32' WITH PARKING ON ONE SIDE

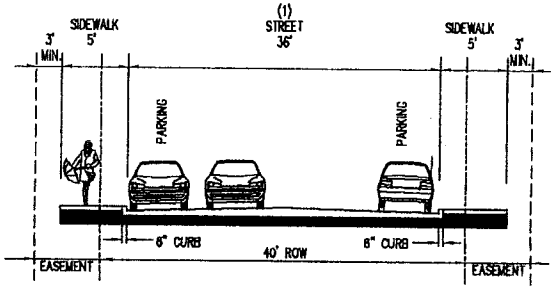


ALLEY
NTS

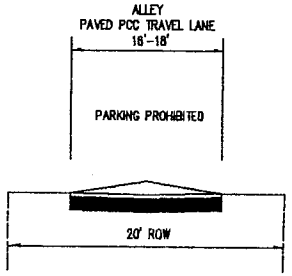
ADEQUACY STANDARDS FOR EXISTING ROADWAYS



NEIGHBORHOOD CONNECTOR
NTS



LOCAL STREET
NTS



ALLEY
NTS

E. SAFE AND CONVENIENT PEDESTRIAN AND BICYCLE CIRCULATION

Bicycling and walking are often the most appropriate mode for short trips especially in smaller cities where the downtown area is compact, walking and bicycling can replace short auto trips, and thus reduce the need for construction and maintenance of new roads. However, the lack of safe and convenient bikeways and walkways can discourage pedestrian and bicycle travel. The Transportation Planning Rule (660-12-045(3)) requires that urban areas and rural communities plan for bicycling and walking as part of the overall transportation system.

In order for walking and bicycling to be viable forms of transportation, the proper facilities must be supplied. In addition, certain development patterns, such as orienting commercial uses to the street and placing parking behind the building, make a commercial district more accessible to non-motorized transportation and to existing or future transit. The Transportation Planning Rule specifies that, at a minimum, sidewalks and bikeways be provided along arterials and collectors in urban areas. Separate bicycle and pedestrian facilities should be provided, as they provide a "short cut" and could safely minimize trips distances. Adoption of the proposed code language will meet the requirements of OAR 660-12-045(3)(b), (c), and (d)

Comprehensive Plan

Suggested Location	Proposed Language Change
Insert in the Transportation Element, a new Finding No. 13	***Finding No. 13*** *Bicycling and walking are often the most appropriate mode for short trips. Especially in smaller cities where the downtown area is compact, walking and bicycling can replace short auto trips, and thus reduce the need for construction and maintenance of new roads. However, the lack of safe and convenient bikeways and walkways can discourage pedestrian and bicycle travel.* *In order for walking and bicycling to be viable forms of transportation, the proper facilities must be supplied. In addition, certain development patterns, such as orienting commercial uses to the street and placing parking behind the building, make a commercial district more accessible to non-motorized transportation and to existing or future transit. The Transportation Planning Rule specifies that, at a minimum, sidewalks and bikeways be provided along arterials and collectors in urban areas. Separate bicycle and pedestrian facilities should be provided, as they provide a "short cut" and could safely minimize trips distances.*
Insert in the Transportation Element, a new Policy No. 13.	*POLICY NO. 13 Develop a network of streets, accessways, and other improvements, including bikeways, sidewalks, and safe street crossings to promote safe and convenient bicycle and pedestrian circulation within the community. This shall be done through the implementation of the TSP and review of new development proposals.*
Ibid.	*A) Require streets and, where appropriate, accessways to provide direct and convenient access to major activity centers, including downtown, schools, shopping areas, and community centers.*

Ibid.	*B) In areas of new development, the city shall investigate the existing and future opportunities for pedestrian and bicycle accessways. Many existing accessways such as user trails established by school children distinguish areas of need and should be incorporated into the transportation system.*
Ibid.	*C) Maintenance and repair of pedestrian accessways (including sidewalks) and existing bikeways should be given equal priority to the maintenance and repair of motor vehicle facilities.*
Ibid.	*D) Bikeways and pedestrian accessways shall connect to local and regional travel routes. Design and construction of such facilities shall follow the guidelines established by the Oregon Bicycle and Pedestrian Plan.*
Ibid.	*E) Bike lanes shall be included on all new arterials and collectors within the Urban Growth Boundary as specified in the TSP.*
Ibid.	*F) Arterial and major collectors shall include bike lanes except as otherwise specifically provided for in the TSP. Neighborhood Connectors accommodate bicycles by allowing for shared use of travel lanes.*

Implementing Ordinances

Suggested Location	**Proposed Language Change**
Insert in the Development Ordinance, Definitions, Chapter 16.04.	*16.04.045 Accessway. A walkway that provides pedestrian and bicycle passage either between streets or from a street to a building or other destination such as a school, park, or transit stop. Accessways generally include a walkway and additional land on either side of the walkway, often in the form of an easement or right-of-way, to provide clearance and separation between the walkway and adjacent uses. Accessways through parking lots are generally physically separated from adjacent vehicle parking or parallel vehicle traffic by curbs or similar devices and include landscaping, trees, and lighting. Where accessways cross driveways, they are generally raised, paved, or marked in a manner that provides convenient access for pedestrians.*
	16.04.075 Bicycle Facilities. A general term denoting improvements and provisions made to accommodate or encourage bicycling, including parking facilities and all bikeways.
	16.04.435 Neighborhood Activity Center. An attractor or destination for residents of surrounding residential areas. Includes, but is not limited to existing or planned schools, parks, shopping areas, transit stops, and employment areas.
	16.04.516 Reasonably direct. A route that does not deviate unnecessarily from a straight line or a route that does not involve a significant amount of out-of-direction travel for likely users.
	16.04.545 Safe and convenient bicycle and pedestrian routes are: *a. Reasonably free from hazards, and* *b. Provides a reasonably direct route of travel between destinations, considering that the optimum travel distance is one-half mile for pedestrians and three miles for bicyclists.*
	16.04.671 Walkway. A hard-surfaced area intended and suitable for pedestrians, including sidewalks and the surfaced portions of accessways.

Suggested Location	Proposed Language Change
Insert in the Development Ordinance, C-1 Downtown Commercial Zone, Chapter 16.22	**16.22.030 Development standards.** F. Other regulations: *4. New commercial buildings, particularly retail shopping and offices, shall be oriented to the street, near or at the setback line. A main entrance shall be oriented to an abutting street.* *5. Where feasible, off-street motor vehicle parking for new commercial developments shall be located at the side or behind the building(s).*
Insert in the Development Ordinance, Regulations, Chapter 16.86	**16.86.020 General provisions.** *H. Bikeways and bike lanes shall be provided along arterial and collector streets as specified in the TSP.*
Ibid.	**16.86.020 General provisions** *I. Sidewalks shall be required along arterials, collectors, connectors, and local streets.*

F. BICYCLE PARKING

The lack of safe and convenient bicycle parking can discourage bicycling as a transportation mode. The following are recommended to comply with Section 660-12-045 (3) of the TPR.

Comprehensive Plan

Suggested Location	Proposed Language Change
Amend Transportation Element, Policy No. 7 to include the following policy.	*F) Bicycle parking facilities shall be provided at all new residential multifamily developments of four units or more, commercial, industrial, recreational, and institutional facilities.*

Implementing Ordinances

Suggested Location	Proposed Language Change
Insert in the Development Ordinance, Off-Street Parking and Loading, Chapter 16.10	***16.10.030. Parking Reductions*** *H. The number of vehicular spaces required in Table 16.10.050 may be reduced by up to 10% if one of the following is demonstrated to the satisfaction of the Planning Director or Planning Commission:* *(a) Residential densities greater than nine units per gross acre (limit parking to no less than one space per unit for multi-family structures).* *(b) The Planning Director or the Planning Commission conclude that the proposed development is pedestrian oriented by virtue of a location which is within convenient walking distance of existing or planned neighborhood activities (such as schools, parks, shopping etc.) and the development provides additional pedestrian amenities not required by the code which, when taken together, significantly contribute to making walking convenient (e.g. wider sidewalks, pedestrian plazas, pedestrian scale lighting, benches, etc.)*
Insert in the Development Ordinance, Off-Street Parking and Loading, Chapter 16.10	***Table 16.10.100 Bicycle Parking*** Institutional Schools - Elementary ~~4 spaces per classroom~~ *To be determined through design review* Schools - Jr. High/Middle School ~~4 spaces per classroom~~ *To be determined through design review* Schools - Sr. High ~~8 spaces per classroom~~ *To be determined through design review* College ~~1 space per 4 students (plus 1 space per student housing room/unit)~~ *To be determined through design review*

G. PROTECTING EXISTING AND FUTURE OPERATIONS OF FACILITIES

The Transportation Planning Rule requires that jurisdictions protect the future operation of transportation corridors. For example, an important arterial for through traffic should be protected from incompatible land uses in order to meet the community's identified needs. Other future transportation facilities that small jurisdictions may wish to address include right-of-ways or other easements for accessways, paths, and trails. Additionally, space and building orientation necessary to support future transit may also be an important issue.

Protection of existing and planned transportation systems can be provided by ongoing coordination with other agencies, adhering to the road standards, and to the access management policies and ordinances suggested below. Adoption of the proposed code language will meet the requirements of OAR 660-12-045(2).

Comprehensive Plan

Suggested Location	Proposed Language Change
Amend Transportation Element, Policy No.1 to include the following policy	*G) The city shall protect the function of existing and planned roadways as identified in the Transportation System Plan.*
Amend Transportation Element, Policy No.2 to include the following policy	*H) The city shall include a consideration of the impact on existing or planned transportation facilities in all land use decisions.*
Ibid.	*I) The city shall protect the function of existing or planned roadways or roadway corridors through the application of appropriate land use regulations.*
Ibid.	*J) The city shall consider the potential to establish or maintain accessways, paths, or trails prior to the vacation of any public easement or right-of-way.*
Ibid.	*K) The city shall preserve right-of-way for planned transportation facilities through executions, voluntary dedication, or setbacks.*

Implementing Ordinances

Suggested Location	Proposed Language Change
Insert in the Development Ordinance, Definitions, Section 16.04	*16.04.041 Access. A way or means of approach to provide pedestrian, bicycle, or motor vehicular entrance or exit to a property.*
	16.04.042 Access Classification. A ranking system for roadways used to determine the appropriate degree of access management. Factors considered include functional classification, the appropriate local government's adopted plan for the roadway, subdivision of abutting properties, and existing level of access control.
	16.04.043 Access Connection. Any driveway, street, turnout or other means of providing for the movement of vehicles to or from the public roadway system.
	16.04.044 Access Management. The process of providing and managing access to land development while preserving the regional flow of traffic in terms of safety, capacity, and speed.
	16.04.137 Corner Clearance. The distance from an intersection of a public or private road to the nearest access connection, measured from the closest edge of the pavement of the intersecting road to the closest edge of the pavement of the connection along the traveled way.
	16.04.145 Cross Access. A service drive providing vehicular access between two or more contiguous sites so the driver need not enter the public street system.
	16.04.223 Frontage Road. A public or private drive which generally parallels a public street between the right-of-way and the front building setback line. The frontage road provides access to private properties while separating them from the arterial street. (see also Service Roads)
	16.04.265 Joint Access (or Shared Access). A driveway connecting two or more contiguous sites to the public street system.
	16.04.315 Lot Depth. The average distance measured from the front lot line to the rear lot line.
	16.04.318 Lot, Flag. A lot that does not meet minimum frontage requirements and where access to the public road is by a narrow, private right-of-way.
	16.04.321 Lot Frontage. That portion of a lot extending along a street right-of-way line.
	16.04.438 Nonconforming Access Features. Features of the property access that existed prior to the date of ordinance adoption and do not conform with the requirements of this ordinance.
	16.04.959 Stub-out (Stub-street). A portion of a street or cross access drive used as an extension to an abutting property that may be developed in the future.

Amend the Development Ordinance, Site Plan Review, Section 16.48	**16.48.020 Plot plans – information required** A. 5. Parking layout, including specially designated areas for economy cars and spaces for the handicapped. The patterns of vehicular traffic shall be shown, including ingress and egress points onto adjacent streets. *The development shall include the number and type of bicycle parking facilities required in Section 16.10.100. The location and design of bicycle parking facilities shall be indicated on the construction plan;*
Amend the Development Ordinance, Site and Design Review, Section 16.49	**16.49.035 Application for Site and Design Review** (E)(3) General Information n. Bicycle paths, bicycle parking, ... *The following information shall be shown on the site plan.* *i. The internal walkway system shall be extended to the boundaries of the property to adjoining properties developed or zoned for commercial, public or multi-family uses. The walkway shall be located connect to an existing walkway system on adjoining property or be located so as to provide for development of a logical connection in the future when the adjoining property is developed or redeveloped.* *ii. On-site facilities shall be provided to accommodate safe and convenient pedestrian and bicycle access within new subdivisions, multi-family developments, planned development, shopping centers, and commercial districts, and connecting to adjacent residential areas and neighborhood activity centers. Residential developments shall include streets with sidewalks and accessways.* *iii. For new office parks and commercial developments:* *(a) At least one sidewalk connection between the proposed development and each abutting commercial or office property shall be provided. One connection shall also be provided to each neighborhood.* *(b) Walkways shall be provided to the street for every 300 feet of developed frontage.* *(c) Walkways shall be direct with minimal driveway crossings.* *(d) Walkways shall be linked to the internal circulation of the building.* *(e) Walkways shall be at least five feet wide and shall be raised, have curbing, or have different paving material when crossing driveways.*
Amend the Development Ordinance, Access Limitations on Project Density, Section 16.46	***16.46.040 Access Connection*** *A. Spacing of Accesses on City Streets-* *The number and spacing of accesses to City Streets shall be as specified in the table below. Proposed developments or land use actions that do not comply with these standards will be required to obtain conditional access approval from the City of Canby. This conditional approval applies to properties that have no reasonable access or cannot obtain reasonable alternative access to the public street system.*

Access Management Guidelines for City Streets

Functional Classification	*Minimum Spacing*	*Residential Use*	*Commercial and Industrial Use*
Highway 99E	As provided in Appendix G of the Transportation Systems Plan.		
Arterial	300 feet	No direct access for new private drives serving fewer than five dwellings	Shared access driveways required if spacing standard not met; encouraged otherwise. Major street left turn lanes determined through review.
Collector	150 feet	Shared access driveways are encouraged where appropriate to meet spacing standards.	Shared access driveways are encouraged. Major street left turn lanes determined through review.
Neighborhood Connector	One access per lot	Shared access driveways are encouraged.	Maximum of one 45-foot wide access per 200 foot of frontage or fraction thereof.

Suggested Location	Proposed Language Change
Insert in the Development Ordinance, Access Limitations on Project Density, Chapter 16.46. **AND** Recommend Changing Title of Chapter 16.46 to Access (Limitations)	***16.46.030 Joint and Cross Access.*** *Any developments requiring site plan review that do not meet access spacing requirements are subject to these requirements. In these cases, the following information shall be shown on the site plan.* *A. Adjacent commercial or office properties classified as major traffic generators (e.g. shopping plazas, office parks), shall provide a cross access drive and pedestrian access to allow circulation between sites.* *B. A system of joint use driveways and cross access easements shall be established wherever feasible and shall incorporate the following:* *1. A continuous service drive or cross access corridor extending the entire length of each block served to provide for driveway separation consistent with the access management classification system and standards.* *2. A design speed of 10 mph and a minimum width of 20 feet to accommodate two-way travel aisles designated to accommodate automobiles, service vehicles, and loading vehicles;* *3. Stub-outs and other design features to make it visually obvious that the abutting properties may be tied in to provide cross-access via a service drive;* *4. A unified access and circulation system plan for coordinated or shared parking areas is encouraged.* *C. Shared parking areas may be permitted a reduction in required parking spaces if peak demands do not occur at the same time periods.* *D. Pursuant to this section, property owners shall:* *1. Record an easement with the deed allowing cross access to and from other properties served by the joint use driveways and cross access or service drive;* *2. Record an agreement with the deed that remaining access rights along the roadway will be dedicated to the city and pre-existing driveways will be closed and eliminated after construction of the joint-use driveway;* *3. Record a joint maintenance agreement with the deed defining maintenance responsibilities of property owners.* *E. The city may reduce required separation distance of access points where they prove impractical, provided all of the following requirements are met:* *1. Joint access driveways and cross access easements are provided in accordance with this section.* *2. The site plan incorporates a unified access and circulation system in accordance with this section.* *3. The property owner enters into a written agreement with the city, recorded with the deed, that pre-existing connections on the site will be closed and eliminated after construction of each side of the joint use driveway.* *F. The Planning Department may modify or waive the requirements of this section where the characteristics or layout of abutting properties would make a development of a unified or shared access and circulation system impractical.*

Suggested Location	Proposed Language Change
Ibid.	***16.46.050 Nonconforming Access Features*** *Legal access connections in place as of (date of adoption) that do not conform with the standards herein are considered nonconforming features and shall be brought into compliance with applicable standards under the following conditions:* *(1) When new access connection permits are requested;* *(2) Change in use or enlargements or improvements that will significantly increase trip generation.*
Ibid.	***16.46.060 Amount of Access Points*** *In the interest of promoting unified access and circulation systems, the number of access points permitted shall be the minimum number necessary to provide reasonable access to these properties, not the maximum available for that frontage. All necessary easements, agreements, and stipulations shall be met. This shall also apply to phased development plans. The owner and all lessees within the affected area are responsible for compliance with the requirements of this ordinance and both shall be cited for any violation.*
Ibid.	***16.46.070 Exception Standards for City Facilities*** *A. The granting of the exception shall be in harmony with the purpose and intent of these regulations and shall not be considered until every feasible option for meeting access standards is explored.* *B. An exception may be allowed from these standards, if the applicant can provide proof of unique or special conditions that make strict application of the provisions impractical. Applicants shall include proof that:* *1. Indirect or restricted access cannot be obtained;* *2. No engineering or construction solutions can be reasonably applied to mitigate the condition; and* *3. No alternative access is available from a street with a lower functional classification than the primary roadway.* *C. No exception shall be granted where such hardship is self-created.*
Ibid.	***16.46.080 State Highway Standards*** *A. Refer to Appendix G of the Transportation Systems Plan.*

Suggested Location	Proposed Language Change
Insert in the Development Ordinance, Subdivisions Design Standards, Chapter 16.64	**16.64.040 Lots** I. Flag Lots or Panhandle-shaped Lots *5. Flag lots shall not be permitted when the result would be to increase the number of properties requiring direct and individual access connections to the State Highway System or other arterials.* *6. Flag lots may be permitted for residential development when necessary to achieve planning objectives, such as reducing direct access to roadways, providing one legal connection to a residential street, or preserving natural or historic resources, under the following conditions:* *a. The flag lot driveway shall have a minimum width of 10 feet and maximum width of 20 feet.* *b. The lot area occupied by the flag driveway shall not be counted as part of the required minimum lot area of that zoning district.* *c. Each flag lot shall have access to a public street.*
Insert in the Development Ordinance, Subdivisions Design Standards, Chapter 16.64.040	A. Size and Shape The lot size, width, shape, ... *To provide for proper site design and prevent the creation of irregularly shaped parcels, the depth of any lot or parcel shall not exceed 3 times its width (or 4 times its width in rural areas) unless there is a topographical or environmental constraint or an existing man-made feature such as a railroad line.*
Ibid.	C. Lot Frontage All lots shall meet the requirements specified in Division III … *Lots that front on more than one Major Street shall be required to locate motor vehicle accesses on the street with the lower functional classification.*
Insert in the Development Ordinance, Access Limitation on Project Density, Chapter 16.46	***16.46.090. Shared Access onto State Highway*** *(1) Subdivisions with frontage on the state highway system shall be designed into shared access points to and from the highway. Normally, a maximum of two accesses shall be allowed regardless of the number of lots or businesses served. If access off of a secondary street is possible, then access should not be allowed onto the state highway. If access off of a secondary street becomes available, then conversion to that access is encouraged, along with closing the state highway access.* *(2) New direct accesses to individual one and two family dwellings shall be prohibited on all State Highways, unless doing so would deny reasonable access to an existing legal lot of record.*

Insert in the Development Ordinance, Site Plan Review, Chapter 16.48	**16.48.020 Plot plans – information required.** A. *(16).* *a. Location of existing and proposed access point(s) on both sides of the road where applicable;* *b. Distances to neighboring constructed access points, median openings (where applicable), traffic signals (where applicable), intersections, and other transportation features on both sides of the property;* *c. Number and direction of lanes to be constructed on the driveway plus striping plans;* *d. All planned transportation features (such as sidewalks, bikeways, auxiliary lanes, signals, etc.);* *e. Parking and internal circulation plans including walkways and bikeways;* *f. A detailed description of any requested variance and the reason the variance is requested.*
Insert in the Development Ordinance, Site and Design Review, Chapter 16.49.	**16.49.035 Application for Site and Design Review** E. Site Plan Information *5. Connectivity. The following information shall be shown on the site plan* *a. The street and accessway system of proposed subdivisions shall be designed to connect with existing, proposed, and planned streets and accessways outside of the subdivision. The following information shall be shown:* *i. extension of existing streets,* *ii. connections to existing or planned streets, and* *iii. connections to neighborhood destinations.* *b. Wherever a proposed development abuts unplatted land or a future development phase of the same development, street stubs shall be provided to provide access to abutting properties or to logically extend the street system into the surrounding area. All street stubs shall be provided with a temporary turn-around unless specifically exempted by the Public Works Director, and the restoration and extension of the street shall be the responsibility of any future developer of the abutting land.* *d. Minor collector and local residential access streets shall connect with surrounding streets to permit the convenient movement of traffic between residential neighborhoods or facilitate emergency access and evacuation. Connections shall be designed to avoid or minimize through traffic on local streets. Appropriate design and traffic control such as four-way stops and traffic calming measures are the preferred means of discouraging through traffic.* *d. All access must be internalized using the shared circulation system of the principal development or retail center. Driveways shall be designed to avoid queuing across surrounding parking and driving aisles.*

Amend the Development Ordinance, Subdivisions and Design Standards, Chapter 16.64.	**16.64.070 Improvements** C. Streets *4. If any lot abuts a street right-of-way that does not conform to the design specifications of this ordinance, the owner may be required to dedicate up to one-half of the total right-of-way width required by this ordinance.* *5. The proposed use shall not impose an undue burden on the public transportation system. For developments that do not meet the standards outlined in Chapter 16.49.035(C), the applicant shall provide adequate information, such as a traffic impact study to demonstrate the level of impact to the surrounding street system. The developer shall be required to mitigate impacts attributable to the project.* *6. The determination of impact or effect and the scope of the impact study should be coordinated with the provider of the affected transportation facility.* *7. Dedication of land for streets, transit facilities, sidewalks, bikeways, paths, or accessways shall be required where the existing transportation system will be impacted by or is inadequate to handle the additional burden caused by the proposed use.* *8. Improvements such as paving, curbing, installation or contribution to traffic signals, construction of sidewalks, bikeways, accessways, paths, or streets that serve the proposed use where the existing transportation system may be burdened by the proposed use.*
Insert in the Development Ordinance, Subdivisions and Design Standards, Chapter 16.64.	***16.64.015 Access*** *1. Any application that involves access to the State Highway System shall be reviewed by the Oregon Department of Transportation for conformance with state access management standards (See appendix G of the Transportation Systems Plan).* *2. All proposed roads shall follow the natural topography and preserve natural features of the site as much as possible. Alignments shall be planned to minimize grading.* *3. Access shall be properly placed in relation to sight distance, driveway spacing, and other related considerations, including opportunities for joint and cross access.* *4. The road system shall provide adequate access to buildings for residents, visitors, deliveries, emergency vehicles, and garbage collection.* *5. Streets should have sidewalks on both sides. Pedestrian linkages should also be provided to the peripheral street system.* *6. Access shall be consistent with the access management standards adopted in the Transportation System Plan.*

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Appendix E.

TECHINICAL STEERING COMMITTEE MEMBERS

BOB HOFFMAN, City of Canby Planning Director

ROY HESTER, City of Canby Public Works Supervisor

MIKE JORDAN, City of Canby City Administrator

CURT MCLEOD, Contract Engineer for the City of Canby

BOB RAPP, Canby Utility Board

JERRY GIGER, City of Canby Police Chief

JACK STARK, Canby Fire Department Fire Marshall

STEVE MILLER, Superintendent of Canby High School District

BOYD APPLEGARTH, Superintendent of Canby Elementary School District

LAURIE NICHOLSON, Oregon Department of Transportation

BOB CORTRIGHT, Oregon Department of Land Conservation and Development

RON WEINMAN, Clackamas County - Transportation and Development

JENNIFER GERLACH, Tri-Met

Consultants

ANDY MORTENSEN, Kittelson & Associates, Inc.

BUD FURBER, Pavement Services, Inc.

DEBBIE DAVIS/BILL BLOSSER, CH2M Hill, Inc.

Appendix F.

Further Description of Functional Classification

The Canby Street Functional Classification system map and policies determine the intended use of each street in the City's street system. A street's functional classification indicates what type of traffic should use the street —regional, intra-city, or neighborhood. The type of traffic, combined with expected traffic volumes, determine whether a street is an arterial, collector, neighborhood connector, or local street. It is important to note that traffic volumes alone do not determine the functional classification of a street; all of the characteristics of the street and the area it serves play a role in the determination. Once the street's function is determined, design characteristics are assigned —the number of travel lanes, access controls, on-street parking, bicycle lanes, and right-of-way width, consistent with its classification.

The City of Canby uses the Street Functional Classification system to reserve future rights-of-way, determine street design , and develop future street improvement projects. This system provides the "blueprint" of how the City wants its street system to develop and function over the next 20 years and beyond.

Table F-1 describes the different characteristics that comprise each of the recommended street classifications in the Canby Urban Area. The following attributes have been identified for each of the recommended classifications:

- an assigned function or purpose;
- an ADT (average daily traffic) design range of volumes;
- parameters to be used in the design of future streets;
- guidelines for access control;
- allowance, or not, for on-street parking;
- required widths.

These classifications are used to guide the development of new roads as they are brought into the system, as well as determining the types of improvements needed for existing streets.

Once a classification has been assigned to an individual street it needs to be designed in a manner that allows it to perform its function. Each street classification has a typical cross-section design, which is the Construction Standard. This design determines how a street of that classification should be built. For a variety of reasons, not every street with a given classification is planned to be built to the construction standard, and these exceptions are planned to be built to the adequacy standard. Chapter 4 shows the streets for which the adequacy standard is applicable, and the construction standard is to be used for all other streets. Figures 4-1a,b, and c show typical cross sections for each type of street.

Table F-1
Street Characteristics by Functional Classification

	Arterial	Collector	Neighborhood Connector	Local Street	Alley
Planned Travel Speed[1]	25-45 mph	25-35 mph	25 mph	15-25 mph	10 mph
Forecast ADT	2,500 - 15,000	1,000 - 9,000	500 - 2,500	1,000 max	250 max
Curb-to-curb width[2] (two way)	36-48 ft.	36-56 ft.	24 - 40 ft.	20 - 36 ft.	N/A
Parking	Not typical	Permissible	Permissible	Yes	No
Traffic calming	Not typical[3]	Permissible/ not typical	Permissible	Permissible	Not Typical
Minimum Centerline Radius	450 feet	275 feet	175 feet	100 feet	40 feet
Design Sight Distance	400 feet	250 feet	150 feet	150 feet	50 feet
Street Lighting Mounting Height	35 feet	30 feet	25 feet	20 feet	N/A
Preferred adjacent land use	High intensity	Med to high intensity	Med to low intensity	Low intensity	Low intensity
Access control (**See Table 4-1**)	Yes	Some	Little	No	No
Through-traffic connectivity	Primary function	Typical function	Not typical function	Discouraged	Discouraged
Maximum grade	7%	8%	9%	10%	10%

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1. Arterial speeds in the central business or other commercial districts in urban areas may be 20-25 mph. Traffic calming techniques, signal timing, and other efforts may be used to keep traffic within the desired managed speed ranges for each Functional Class. Design of a corridor's vertical and horizontal alignment will focus on providing an enhanced degree of safety for the managed speed.

2. Street design for each development shall provide for emergency and fire vehicle access. Neighborhood connector/local street widths of less than 36 feet may be applied as a development condition through the subdivision and/or planned development process (see applicable code sections). The condition may require the developer to make the choice between improving the street to the 36 ft. standard or constructing the narrower streets with parking bays placed intermittently along the street length. Fire suppression systems may be required for developments with narrow street accesses.

3. Curb extensions may be used on arterials and collectors with parking to facilitate pedestrian crossing.

Appendix G.

Highway 99-E Access Management Policies

For the Oregon Department of Transportation, access management is essential to preserving the 'functional integrity' of the state highway system. In the case of Highway 99E through Canby, there is a need to accommodate higher speeds and longer distance travelers while also accommodating local travel needs and business interests. The goal is to promote multi-modal travel options for both local movement and longer trips in a safe and efficient manner.

The policies included in this section, created by the Highway 99-E Access Management Citizens Committee, the City of Canby, and ODOT will serve as policy for access management along Highway 99-E and be used in combination with the state access regulations under Oregon Administrative Rules 734-051 for Transportation Operations ("Division 51"). The policies include revised code language and actions necessary for the City's access management program. It is important to emphasize the economic impacts of access management and to consider this impact along with public safety and road function. Through the adoption of these access management policies, it is not the goal of the City to force median placement, driveway closure, or driveway consolidation. Canby presents a unique situation due to the existing spacing of streets and driveways along the Highway, and the presence of the Railroad, which constricts access on the north side of Highway 99-E. These policies provide a balance between maintaining functional integrity and preserving access to businesses.

BACKGROUND

An Access Management plan for Highway 99-E was initially developed in 1995 for the City of Canby. There was a general sense among the Canby business community that the Plan was generated without adequate public comment and review. Because of this, many citizens voiced concerns about the plan, which resulted in the plan being delayed and revisited. A new planning effort was initiated in August 1998 with the formation of a new citizen task force and new staff.

This Citizens Committee, made up of property owners, business owners, and citizen representatives has been working diligently with the City and the Oregon Department of Transportation (ODOT). Representatives from this group met with Grace Crunican, ODOT Director, in 1997 and discussed the access management situation in Canby. Following this meeting, the citizens and staff have been working with ODOT Region 1 in drafting a unique access management policy which is specific to Canby. The citizens advisory committee was made up of the following individuals:

HIGHWAY 99E ACCESS MANAGEMENT CITIZENS ADVISORY COMMITTEE

Gail Curtis
Oregon Department of Transportation, Region 1

Catherine Davis
Signature Tours and Cruises

Mike Donnell
Highway 99E Mini-Storage

Adrian Fisher
Fisher Pump & Supply

Dudley Gee
Auto Rite

Lila Gottman
Canby Bicycle and Pedestrian Advisory Committee

John Harpster
Birch Street Animal Clinic

Kathy Henderson
Canby Area Chamber of Commerce

Mike Jordan
Clackamas County Commissioner

Jason Kruckeberg
City of Canby Planning Director

Brian Olson
Ernie Graham Oil

Ken Pellett
Millars Highway Tire

Don Peterson
Peterson Canby Pharmacy

Jerry Pineau
Canby Community Development Director

Jean Tallman
Canby Planning Commission

Interviews were conducted with members of the committee in 1998 to ascertain what the most substantial access issues along the Highway. Following the interviews, the group was formed and held a number of meetings during 1998-1999. Various experts from the Department of Transportation were invited to the meetings to provide information. The group focused on developing access management policies which would advance the following goal (adapted from the 1995 Plan):

Develop access management policies that will preserve the integrity of Highway 99-E and enhance operations and safety, while also preserving the City of Canby's economic development potential and maintain existing business interests.

The culmination of the committee's work are the City's access management policies for Highway 99-E.[1]

The Oregon Highway Plan and ODOT's Policy for Canby

At the current time there are no ODOT initiated road improvement projects identified for Canby. This includes no plans for installation of medians, signals, or additional crosswalks. Absence of specific construction plans means that changes in access (if necessary) will occur with property redevelopment or through a locally funded project. ODOT is not initiating improvements to Highway 99E through Canby due to lack funding and largely, due to lack of support for a gas tax increase. The only exception to this is if there is a serious safety problem that causes unusually high fatality rates. In this case, ODOT would look for resources to correct the problem. The one identified safety priority area in Canby is the intersection of Highway 99-E and NE Territorial Road. A feasibility study has been completed by Clackamas County to develop a plan to reconstruct and signalize this intersection.

The Oregon Department of Transportation (ODOT) adopted the Oregon Highway Plan on March 18, 1999. The Highway Plan provides statewide policies on the management of roads, alternative travel methods, access management, and other functions of the statewide Highway system. Regarding access management, the goal of the Oregon Highway Plan is:

To employ access management strategies to ensure safe and efficient highways consistent with their determined function, ensure the statewide movement of goods and services, enhance community livability and support planned development patterns, while recognizing the needs of motor vehicles, transit, pedestrians and bicyclists.

In addition to the Oregon Highway Plan, the state has adopted administrative rules for access management through section 734-051 of the Oregon Administrative Rules. Commonly referred to as "Division 51," the rules provide standards and regulations for highway approaches, access control, spacing standards, and medians. The City's access management policies are consistent with the rules contained in Division 51.

1

As was mentioned above, the original Highway 99-E Access Management Plan, completed by Kittelson & Associates in 1995, was never adopted. The text of the of the Highway 99-E Access Management Plan will be used as a background document to provide data, graphics, and existing access information.

The Oregon Highway Plan describes the allowed standards for driveway spacing, street spacing, and medians, depending on the road classification. Highway 99-E through Canby is classified as a Regional Highway. For jurisdictions like Canby, the Highway Plan establishes several alternatives. First, the Oregon Highway Plan allows a process for "deviations" from the standards. Deviations allow for a reduction in driveway spacing requirements. Additionally, cities can be defined as an "Urban Business Area" or "Special Transportation Area", which allows further reduction in spacing standards.

Canby's Highway 99-E business community is built on shallow lots with limited frontage. In many cases, these lots do not have alternative access. In addition, the rail on the north side of 99E effectively reduces turning movements along 99E. For these reasons, the City is requesting that ODOT recognize that Canby's business community is unique, and that future driveways may need deviations from the access management standards in order to be permitted. In these cases, the City will need to utilize the following section of the Oregon Highway Plan:

Where a right of access exists, access will be allowed to a property at less than minor deviation limits if that property does not have reasonable access and the minor deviation limits cannot be accomplished. If possible, other options should be considered, such as joint access.

If properties meet these requirements, access will be allowed to these lots at less than the minor deviation limits.

The City has worked closely with ODOT Region 1 on the formation of these polices. The letter from ODOT Region 1, printed on page G-5, describes ODOT's policies toward Canby.

Oregon
John A. Kitzhaber, M.D., Governor

Department of Transportation
Region 1
123 NW Flanders
Portland, OR 97209-4037
(503) 731-8200
FAX (503) 731-8259

August 12, 1999

Mayor Taylor and Citizens of Canby
City of Canby
P.O. Box 930
Canby, OR 97013

FILE CODE: 2A-Canby-leg

Dear Mayor and Citizens:

I would like to both commend and thank the community of Canby for developing Access Management Policies for 99E through Canby. The citizen committee has helped to change and clarify several points from the earlier, 1995 draft. The current planning effort was in part a result of a meeting held with a group of Canby citizens and Grace Crunican, Director of ODOT. It was agreed at that meeting that taking a new approach would better reflect the needs of Canby.

The proposed policies achieve a new approach in a couple of ways and clarify the following:

ODOT has no intention of closing driveways. Driveway closures will only occur when property redevelopment occurs or if there is an unusually high accident rate.

ODOT has no intention of installing medians along 99E through Canby. However, medians may be installed as a part of property redevelopment mitigation or if there is unusually high accident rate.

The proposed plan provides for a case by case analysis of access to the highway with a clear bottom line: *Where a right of access exists, access will be allowed to a property at less than minor deviation limits if that property does not have reasonable access and the minor deviation limits cannot be accomplished. If possible, other options should be considered, such as joint access.* 1999, Oregon Highway Plan

The proposed access plan outlines a permit process where the City of Canby coordinates the review and ODOT retains permit authority. We believe this collaborative effort with the implementation of the state's revised access rules, once adopted, will result in a better product for Canby. The proposed plan for 99E supports the Highway Plan and does not conflict with the proposed access rules. Both Canby's plan and the revised access rule formalize the role of local government in the permit process and provide a greater amount of certainty for property owners.

The department encourages community support of the Access Management Policies for 99E developed jointly with ODOT and the citizens of Canby.

Sincerely,

Kay Van Sickel

Kay Van Sickel
Region 1 Manager

HIGHWAY 99-E ACCESS MANAGEMENT POLICIES

This section describes access management polices for Highway 99-E. These polices have been developed to balance business interests with road safety and road function. Policies have been developed for the following elements of access management:

- Canby/ODOT Collaborative Permitting Process
- Driveway Configuration and Consolidation
- Median Placement
- Traffic Signals
- Internal Driveway Connections
- Pedestrian Connections

Canby/ODOT Collaborative Permitting Process

The City, ODOT, and the Citizens Advisory Committee agreed that a new, collaborative process should be instated to help permitting and ensure the access management policies are followed. As has been discussed by the Citizens Advisory Committee, Canby Planning staff will work with property owners in negotiations regarding access. This section introduces a new way of obtaining access permits from ODOT. Community values are reflected through local planning policy and zoning regulation.

The Canby/ODOT collaborative permitting process contains the following steps:

1. Discuss preliminary site plan with the City of Canby Planning staff. City staff will advise applicant on local and state regulations to help identify plan deficiencies.

2. City staff will coordinate meetings with applicant and ODOT staff as necessary. (Application of ODOT standards is the responsibility of the District Office not the City of Canby).

3. Following this coordination, applicant applies for access permits through the ODOT District Office. Local site plan approval is required before the state will issue a final access permit. Applicants may obtain a statement of intent to issue access permit from the District office pending local approval.

4. Access approach requests that do not meet the applicable access management standards will be subject to the state's Division 51 deviation request process. This access management plan will be used as a policy base to help support deviations.

Driveway Configuration and Consolidation

At the time of any review of driveways and accesses, the City's goal will be to balance economic impact, safety, and road integrity. Again, it is not the City's goal to require driveway consolidation or closure. In some cases, driveway consolidation may place a hardship on property owners by eliminating accesses. However, the consolidation of driveways can be an excellent way to enhance safety while maintaining Highway access to properties. As we have stated, one of the unique aspects in Canby is the fact that the railroad on the north side of Highway 99-E reduces the potential number of driveways onto the Highway. In addition, Canby's business community along 99-E is built (for the most part) on shallow lots with limited frontage. Many of these lots have no alternative access other than the Highway. The Oregon Highway Plan and Division 51 regulations acknowledge situations like Canby's and provide methods of granting deviations from the standards to allow access to lots if a right of access exists. **PLEASE NOTE THAT CONFIGURATION OF DRIVEWAYS WILL BE EVALUATED ON A CASE BY CASE BASIS.**

It is also important to realize that ODOT views the downtown, between Redwood Street and Berg Parkway as unique. Outside of these boundaries, ODOT will enforce access management standards as provided in the Oregon Highway Plan.

Review of accesses and driveway spacing will take place under the following scenarios:

1) Development or Re-development of property: "Development or Re-development" of property refers to any development which will require the City's site and design review process. The site and design review threshold is as follows: Except for single family dwellings or duplexes, all new buildings or major remodeling is required to go through site and design review if the project results in one of the following:

A) Major remodeling of above 60% of the building's value,
B) More than 5,000 feet of additional gross floor area in a one year period, or
C) Any construction activity which results in a decrease in pervious area in excess of 2,500 square feet (except for paving or parking lot projects).

These criteria cover the majority of new construction. Along with site and design review, a traffic impact study is required if the development leads to more than 100 trips per day.

2) Change in use: If the building changes type of use, at the time of any permit issuance (including business license or building permit) the City will work with ODOT to determine if the use requires any traffic mitigation. ODOT and/or the City may require that a traffic generation study be submitted (see definition below). If a development is anticipated to generate a significant amount of traffic, a traffic impact study may be required. The difference between a generation study and an impact study is described below:

Traffic Generation Study: An analysis of the number of vehicle trips generated by a development proposal. Trip generation for commercial/industrial/ residential/ institutional projects are estimated through the Institute of Traffic Engineer's Manual (ITE Manual). The results of the trip generation study will determine the need for a Traffic Impact Analysis. If the trip generation study determines the use will generate more than 100 vehicle trips per day, the City Traffic Engineer may require a Traffic Impact Analysis.

Traffic Impact Analysis: A comprehensive traffic analysis of a development proposal which includes trip generation, analysis of access/egress, accident analysis, intersection analysis, and traffic flow analysis.

3) Hazardous Traffic Situation: If a situation were to develop which ODOT and/or the City deemed an unacceptable safety hazard, mitigation, reconfiguration, or turning movement restriction may be required by ODOT and/or the City. To determine safety priorities, ODOT has the Safety Priority Index System (SPIS). It is used to identify and rate hazardous locations in the state highway system. The SPIS has three components: accident frequency, accident rate, and accident severity. Together, these criteria provide the total SPIS value which serves to equitably allocate funds for safety improvements. The SPIS values are calculated on segments of the state highway system where there are 3 or more accidents or one of more fatalities in a three year period. Currently, there are more locations that qualify for the SPIS funding than available funding. Region 1 alone (Canby, Portland metro, Columbia and Hood River Counties) has over 3000 SPIS sites. To better manage the problem, the 3,000 sites have been organized into 400 locations needing safety improvements. Of the 400, about 10 projects will be funded during a biennium and this assumes some of the projects are relatively small requiring only signage and/or striping.

There is one SPIS site in Canby (NE Territorial Road and Highway 99-E). It is currently ranked 170 out of 400. All hazardous situations will be reviewed on a case by case basis.

The process of reviewing accesses for mitigation, consolidation, or closure will include the following steps:

Step 1: Shared Access Review

The most desirable option is for driveways to be shared or consolidated. Ideally, joint access will be required and crossover access easements supplied along Highway 99-E. If there is an opportunity to create shared or consolidated access, the property owner, the City and ODOT will explore this potential as the preferred alternative. If the shared or joint access option is utilized, the property owner may avoid additional costs, time delays, and analysis created by access management review. Provision of shared or joint use access may include agreements between the property owner, City and ODOT to remove existing driveways when joint-use driveways are established. If shared or consolidated accesses cannot be provided, additional review will be necessary from the City and ODOT through the site and design review process and/or a traffic impact analysis. Depending on the results of the traffic impact analysis and site and design

review process, additional mitigation may be required.

Parking reductions shall be allowed if crossover parking easements are provided and adequate findings are provided through the design review process. The extent of the parking reduction will be determined by the Planning Commission through the site and design review process.

Step 2: Evaluate other mitigation options
The City and ODOT will review the proposed access and determine mitigation which may need to be provided. A traffic impact study may be required which would explore alternatives for the access and determine safety concerns.

Step 3: Begin Deviation Process
Allow proposed access without mitigation or shared access if it proves impractical or unnecessary to require shared/consolidated access or any mitigation efforts (as outlined by the Oregon Highway Plan and the state's rules contained in Division 51). Through the Division 51 regulations, access may be allowed through a granted deviation from ODOT.

Median Placement

Median placement for the full length of Highway 99-E is not the City's goal. While medians reduce turning conflicts and can create safer roadways, they may also have the undesirable effect of limiting customer access to businesses. For these reasons, it is important to balance economic impacts with safety impacts when considering median placement. Similar to driveway spacing, there are safety thresholds or "warrants" which have been established by ODOT for median placement. It is important to recognize that simply because a median may be "warranted", this does not mean it is required. The Highway Plan lists the following "warrants" for medians:

- Forecasted average daily traffic is 28,000 vehicles per day on 99-E within the next 20 years.
- Annual accident rate is greater than statewide annual average accident rate for similar roadways.
- Pedestrians are unable to safely cross the Highway, as demonstrated by
- accident rate greater than the statewide average.
- Sight distance problems as a result of road alignments or topography.

Currently, Canby meets the first warrant (regarding number of trips per day) for requiring medians. At this time, the City does not have a high accident rate (see section below) or sight distance problems. However, Highway 99-E through Canby will have 28,000 trips per day in 20 years (see traffic count section below). Only one recent project has resulted in a median being placed along Highway 99-E (the Gramor/Fred Meyer development). The City and ODOT will not be advocating the placement of medians along Highway 99-E outside of the following two procedures:

1) Development or Re-development: The most likely method of median placement is through development or re-development of properties. In this case, the medians would be privately financed and would be required by ODOT and the City through the development review or permitting process. This includes medians which could be placed along the highway as a mitigation measure to avoid closure of a driveway. For example, the Gramor project included a median along 99-E to restrict turning motions into the Fred Meyer development.

2) Identified Safety Hazard: Medians could also be installed by the City or ODOT if an unacceptable safety risk is identified (such as multiple turning movements and conflicts with car stacking and the lane configuration). Medians placed to alleviate safety risks would typically be site specific and designed to reduce the safety risk while impacting as few properties as possible.

The Oregon Highway Plan provides the following language for jurisdictions which may have alternatives to median placement:

> *Reasons for not using nontraversible medians when these criteria (listed above) are present must be documented and reviewed and approved by the Region Manager.*

Traffic Signals

Traffic signals along Highway 99E shall be spaced according to current ODOT standards. Existing signals that are spaced less than this standard are exceptions and will remain. Future exceptions may be requested through the state engineer. The City and Clackamas County have both identified Territorial Road and Highway 99-E as an intersection in need of signalization. A feasibility study has been completed which identifies options for re-design of this intersection and suggests cost allocations to various jurisdictions. This intersection is in the high priority project list from the City's perspective.

Internal Driveway Connections

For new development, opportunities for at least one potential vehicular connection shall be provided between adjacent commercial, office, and institutional developments. If connections are currently not available, then planned connections shall be designed to provide an opportunity to connect adjoining developments. At the time of redevelopment of property, the possibility of connections between developments will also be explored. If there are physical circumstances which prevent the connection of properties, this issue will be reviewed during site and design review or through a variance process (specific requirements for internal driveway connections are found in LDPO 16.46.030).

Pedestrian Connections

Connections to the Right-of-Way: Every commercial, office, and institutional building shall include a pedestrian walkway connected to the public right-of-way. A walkway shall be provided for every 300 feet of street frontage (specific requirements are found in LDPO 16.49.035).

Internal Walkways: Walkways shall be designed to connect with internal circulation patterns within buildings. The walkways shall meet City standards for sidewalk construction and shall not be less than five feet in width unless physical constraints do not allow for five feet of sidewalk to be constructed. Walkways shall be as direct as possible to limit out-of-direction travel to not more than 100 feet or 50% of the total distance of the connection, whichever is less. If adjacent to a parking area where vehicles will overhang the walkway, wheel stops or a seven-foot-wide walkway shall be provided. The walkways shall be separated from parking areas and internal driveways using curbing, landscaping, or distinctive paving material (specific requirements are found in section 16.49.035).

List of Possible Access Management Strategies to Promote Safety

As has been stated, it is not the intent of this plan to advocate the construction of physical access management strategies throughout Canby. However, there are situations where access management-strategies are necessary. Below, we provide lists of possible access management strategies. This list is not intended to promote any of these techniques for Canby, they are simply listed for reference purposes.

Techniques Used by the Oregon Department of Transportation to Limit Conflict Points

- Install median barrier with no left-turns at the median opening.
- Install raised median divider with left-turn deceleration land.
- Install one-way operations on the highway.
- Install traffic signal at high volume driveways.
- Optimize traffic signal spacing and coordination.
- Channelize median opening to restrict left-turn ingress or left-turn egress.
- Median closure to eliminate left-turn ingress or left-turn egress.
- Install divisional island to discourage entry into left-turn ban when weave area is inadequate.
- Install median channelization to control merge or left-turn egress vehicles.
- Offset opposing driveways.
- Locate driveway opposite a three-leg intersection or driveway and install traffic signals where warranted.
- Install two two-way driveways with limited turns in lieu of two standard two-way driveways.
- Install driveway divisional island to prevent driveway encroachments conflicts.
- Regulate the maximum width of driveways.

Techniques used by the Oregon Department of Transportation to Separate Conflict Areas

- Regulate minimum spacing of driveways.
- Regulate minimum corner clearance.
- Regulate minimum property clearance.
- Optimize driveway spacing in the permits authorizing stage.
- Regulate maximum property clearance.
- Consolidate access for adjacent properties.

Techniques Used by the Oregon Department of Transportation to Maintain Traffic Movement and Speeds

- Install visual cures of the driveway.
- Improve driveway sight distance.
- Regulate minimum sight distance.
- Optimize driveway location during site planning of land development through permit process.
- Increase the effective approach width of the driveway.
- Improve the vertical geometrics of the driveway.
- Regulate driveway construction (performance bond) and maintenance.
- Install right-turn acceleration lane.
- Remove turning vehicles form through lanes.
- Buy abutting properties.
- Consolidate existing access whenever separate parcels are assembled under one purpose, plan, entity, or usage.
- Designate the number of driveways to each existing property and deny additional driveways regardless of future subdivision of that property.
- Require access on adjacent cross-street in lieu of driveways on major highway.

Data on Highway 99-E Traffic Counts and Accident Counts

Traffic Counts

Below are preliminary traffic counts (ADTs, or average daily travel) completed in 1998 by ODOT for Highway 99-E through the Canby city limits between miles points 20.56 and 22.03. The ADTs represent an average number of vehicles that pass a particular point in a 24 hour period. The numbers have been adjusted for trucks and the time of the year the count was taken. ADT numbers represent a total of both directions. The traffic counts are made every three years.

Canby Location	Mile Point	1994 ADT	1995 ADT	1996 ADT	1997 ADT	1998 ADT
East city limits, 0.04 mi. e. of Neff	20.56	16600	16700	17400	17700	18000
0.01 mile north of Ivy Street	21.13	17700	18000	18700	19100	19400
0.01 mile south of Ivy Street	21.15	16600	18700	19400	19800	20200
0.01 mile south of Elm Street	21.43	17700	19800	20600	21000	21400
West city limits, Molalla River	22.03	16600	23200	24100	24600	25100

Accident Counts

Below are accident counts supplied by ODOT from 1984 to 1996 along Highway 99-E. From 1984 to 1996, traffic accident rates for Canby have been below the state average in seven years and above for the other six years. During this time period, the City experienced an average of 29 reported accidents per year. Frequency has varied from 2 accidents in 1993 to 45 in 1985. Three-quarters of total accidents in the City were rear end (15) and turning accidents (17). ODOT is trying to minimize accidents through access management policy.

Year	Accidents- north City limits to Ivy Street	Accidents- Ivy Street to south city limits	TOTAL ACCIDENTS
1984	16	22	38
1985	13	32	45
1986	14	17	31
1987	9	14	23
1988	18	8	26
1989	18	15	33
1990	18	17	35
1991	16	5	21
1992	11	9	20
1993	1	1	2
1994	11	20	31
1995	8	20	28
1996	22	18	40