

City of Mt. Angel Comprehensive Plan

Transportation Systems Plan

Adopted June 2, 1997

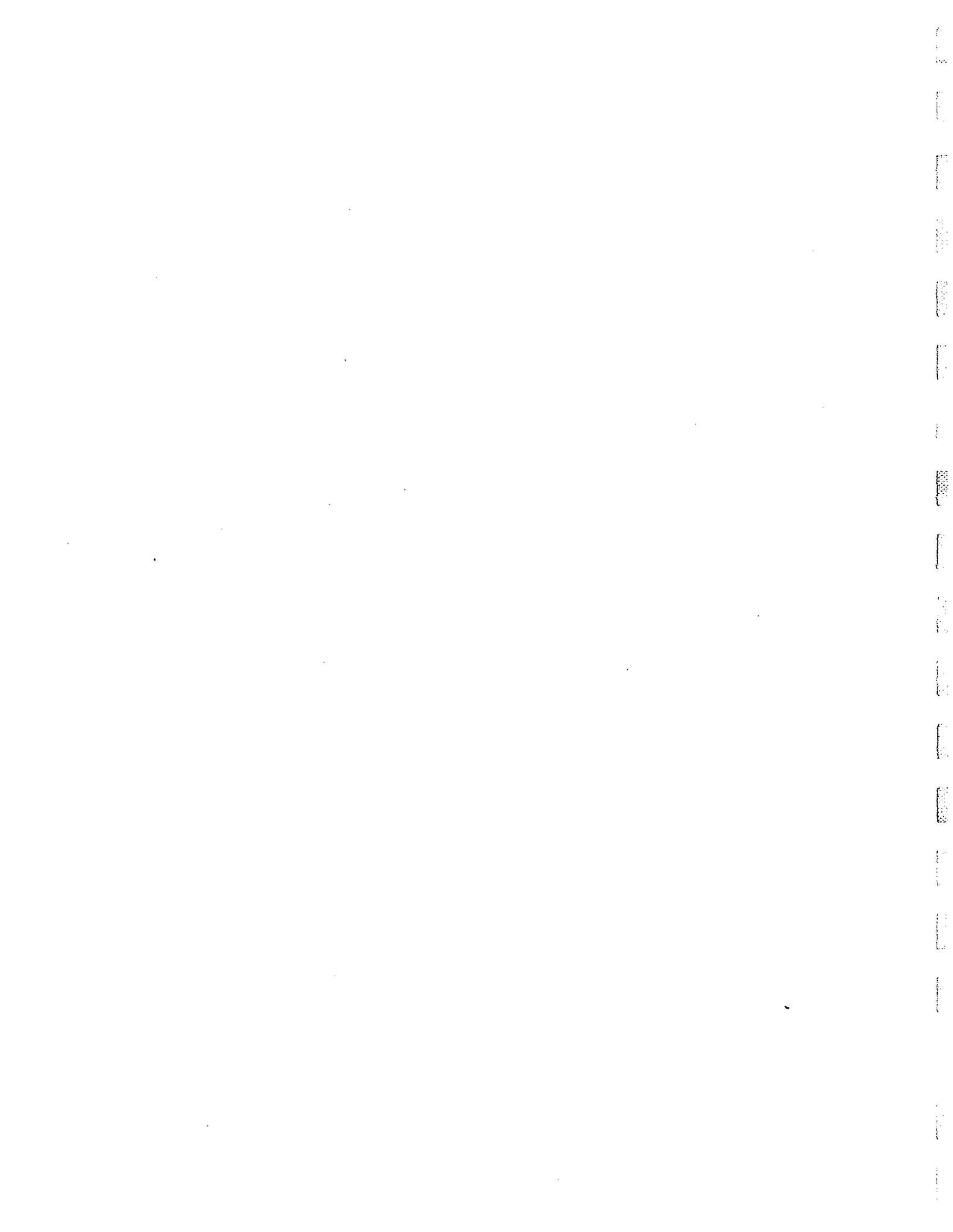
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The contents of this document do not necessarily reflect views or policies of the State of Oregon.

Contents

Executive Summary	1
Introduction	2
Background	2
Relevant Regulations	2
Planning Process	3
Review Existing Plans, Policies, and Standards	4
Determination of Need	4
Inventory Existing Transportation Systems	7
Streets	7
Public Transportation	7
Air, Rail, Water, and Pipeline	8
Bicycle/Pedestrian System	8
Goals, Objectives, and Policies	13
Street Plan	17
Background	17
Street Network	17
System Improvements	17
Future Streets	20
Connectivity	22
Functional Classification	22
Street Design Standards	23
Street Maintenance	28
Access Management	29
Bicycle/Pedestrian System	30
Background	30
Network	31
System Improvements	31
Related Projects	32
Public Transportation	34
Background	34
Needs	34
Future Services	35
Finance Plan	36
Street Bond	36
Systems Development Charges (SDCs)	36
Local Improvement Districts (LIDs)	36
Urban Renewal Districts	37
Exactions (Conditions of Development)	37
Miscellaneous	37
State	37



Appendices

Appendix A	Definitions and Acronyms
Appendix B	Document Listing
Appendix C	Street Survey
Appendix D	Sidewalk Inventory
Appendix E	Capital Improvements 2003-2023
Appendix F	Meeting Minutes
Appendix G	Technical Analysis of Highway 214/Main Street/ Church Street Intersection Alternatives

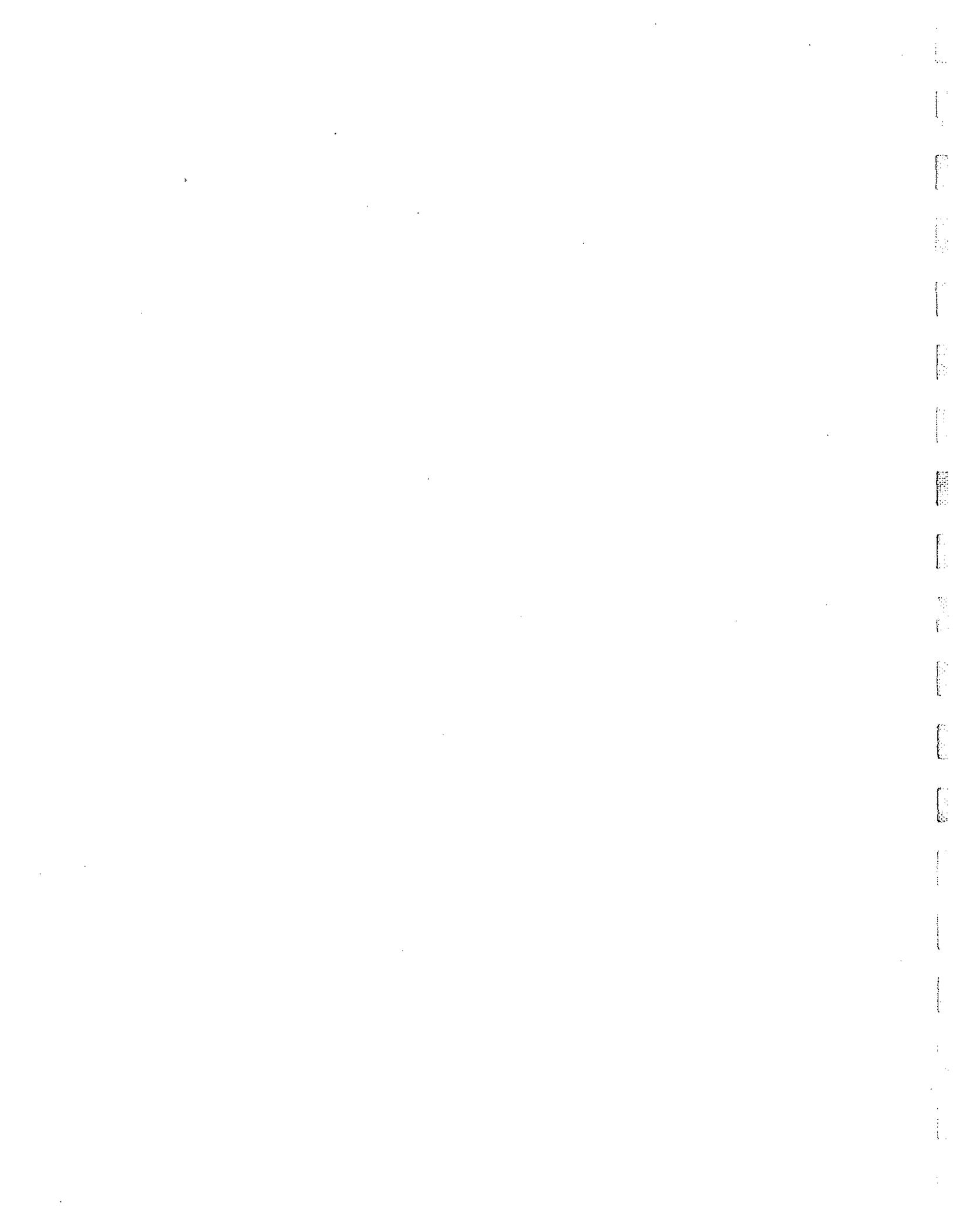


Executive Summary

The Mount Angel Transportation System Plan is a 20-year document addressing multimodal transportation systems: automobile, bicycling, pedestrian, public transportation, etc.

The primary goal of the Transportation Plan is “To provide and encourage a safe, convenient, and economic transportation system to serve the needs of the citizens of Mt. Angel.”

Appendix F contains a list of capital improvements and new facilities which will improve safety and accommodate growth for the next 20 years. Improvements to existing streets and sidewalks, six new streets (or street extensions), two multi-use paths, and a rideshare program constitute the most significant projects. Although not all of these projects require city funds, the total cost is estimated at approximately 4.0 million dollars. This is in addition to the more than three million dollars of maintenance and repair projects contained in the 1993 Streets Study (Appendix D). The city should review progress toward attaining the various plan aspects at five-year intervals. The city should strive to blend new construction with maintenance and repair to achieve a balance in its long-range transportation funding choices.



Introduction

Background

In April 1994, the city of Mt. Angel received a Transportation and Growth Management (TGM) grant from the Oregon Department of Transportation (ODOT). The grant is from a federally funded program developed to assist local governments in meeting new state and federal transportation planning requirements. Through this grant, the city completed its transportation system plan.

In May 1996, the city received a Periodic Review Grant from the Department of Land Conservation and Development (DLCD). A portion of this grant was to complete the transportation system plan by including a transportation financing element, and refining the public transportation and street design elements.

In March 2001, the DLCD remanded the TSP to the city to correct four (4) deficiencies that do not meet the requirements of Oregon's Transportation Planning Rule (TPR), Oregon Administrative Rule (OAR) 660-12. The four areas where the TSP does not yet meet the TPR requirements include: (1) developing land use and subdivision ordinance standards to provide for safe and convenient pedestrian, bicycle, and vehicular, circulation, (2) including bikeway and sidewalk improvements for arterial and collector streets in the list of future transportation improvements, (3) adopting narrower right-of-way and pavement widths for residential streets, and (4) identify and

plan for future additional local and collector streets.

In March 2002, the City received another TGM grant to correct these deficiencies in the TSP and update the plan as necessary.

The objective of these grant projects was to provide assistance to the city of Mt. Angel in the preparation of a Transportation System Plan (TSP) that meets the needs of the community and brings the city into compliance with the state Transportation Planning Rule and other state and federal regulations.

This TSP was created to meet the city's long-term (20-year) needs for transportation needs and services. It focuses on the development of a circulation network, and addresses the movement of people and goods by a variety of modes (including automotive, public transportation, bicycling, and foot traffic). The transportation system serves existing land uses and future development as it is improved and extended throughout the community.

Definitions, technical terms, and acronyms used in this TSP can be found in Appendix A.

Relevant Regulations

State

In April 1991, the Land Conservation and Development Commission (LCDC) adopted the Transportation Planning Rule (TPR)

(OAR 660-12-000 through 070) which specified how regional and local governments were to carry out the state's Goal 12 - Transportation: "to provide and encourage a safe, convenient and economic transportation system." The following TPR requirements are those which apply directly to Mt. Angel.

1. A determination of transportation needs.
2. A road plan for arterials and collectors and standards for the layout of local streets and other important noncollector street connections.
3. A public transportation plan.
4. A bicycle and pedestrian plan.
5. An air, rail, water, and pipeline transportation plan.
6. Policies and land use regulations for implementing the TSP as provided in OAR 660-12-045.
7. A transportation financing plan.

Federal Legislation

The adoption of Oregon's TPR preceded the Intermodal Surface Transportation Efficiency Act (ISTEA) which was signed into law on December 18, 1991. The federal act was intended to "... develop a National Transportation System that is economically efficient, environmentally sound, provides the foundation for the Nation to compete in the global economy and will move people and goods in an energy efficient manner." In addition to numerous other provisions of ISTEA the legislation included a

requirement that states use a statewide planning process to develop plans and programs.

The adoption of the TPR provided Oregon with a mechanism to comply with the new federal requirements. Furthermore, the adoption of the September 15, 1992 Oregon Transportation Plan (OTP) defined a statewide transportation policy and a comprehensive, long-range plan for a multimodal transportation system which encourages economic efficiency, orderly economic development, safety, and environmental quality.

In 1998, the Transportation Equity Act for the 21st Century (TEA-21) was signed into law. This act authorizes highway, highway safety, transit, and other surface transportation programs for a six-year period. TEA-21 builds on the initiatives established in the ISTEA. This Act combines the continuation and improvement of current programs with new initiatives to meet the challenges of improving safety, protecting and enhancing communities and the natural environment, and advancing America's economic growth and competitiveness domestically and internationally through efficient and flexible transportation.

TEA-21 assures a guaranteed level of Federal funds for surface transportation through FY 2003. Reauthorization of the bill is expected in 2003-04.

Planning Process

In 1994, the city began the process of acquiring information, reviewing existing plans, policies, and ordinances, and examining the current network of streets,

bikeways, and pedestrian facilities. The city and Mid-Willamette Valley Council of Governments (MWVCOG) staff worked with the Planning Commission and public to ensure the proposed plans and policies were consistent with the community's future vision. In addition to planning meetings, the city conducted a visioning process to identify community needs, concerns and desires for the future of the city. Marion County was consulted throughout the study to ensure state and regional coordination.

In 2002, MWVCOG staff began work on updating the TSP and addressing the deficiencies noted in the DLCDD Remand Order (No. 001290). The Planning Commission served as the steering committee for the TSP update – reviewing all proposed amendments.

Completion of the TSP represents the combined efforts of the Planning Commission, city staff, interested citizens, and affected governmental bodies to provide the city with a framework for a "safe, convenient, and economic transportation system."

Review Existing Plans, Policies, and Standards

This plan is partly based on the city's existing Comprehensive Plan which was adopted in June 1987. In addition, the city's 1966 and 1977 plans were reviewed to gain a thorough understanding of the current transportation system and past issues.

Although the 1987 Comprehensive Plan contains a transportation element that is generally consistent with Statewide Planning Goal 12, the TSP is necessary to update the comprehensive plan and bring it into

conformance with new state and federal transportation planning standards.

In addition to a thorough review of past and present comprehensive plans, existing city ordinances and public works standards were studied to gain a clear understanding of how future development is likely to occur. Based on that review, amendments have been recommended that provide for the better integration of transportation and land use issues.

Further, this study entailed a review of the related regional and state plans shown in Appendix B.

Determination of Need

Land Use, Population, and Transportation

To evaluate future transportation facility needs, and to determine whether existing and proposed facilities are capable of supporting existing and planned land use, a thorough review of existing land uses, vacant lands, and planned uses was conducted in October 1996, as part of the development of the Urbanization Section of the Mt. Angel Comprehensive Plan. For the next 20 years, it is estimated that Mt. Angel will need 65 more acres of land for single-family use and 15 more acres for multi-family use. Approximately 21 additional acres will be needed for commercial use and 50 acres for industrial development.

Under Oregon Revised Statutes (ORS) Section 195.036, each county in Oregon is required to "establish and maintain a population forecast for the entire area within its boundary for use in maintaining and updating comprehensive plans" and to "coordinate the forecast with local

governments within its boundary". On October 21, 1998, the Marion County Board of Commissioners adopted coordinated population projections for all cities within the county (Ordinance No. 1091). The adopted population projection for Mt. Angel for 2020 is 4,365 persons.

The 2000 Census showed that the city had a population of 3,121 persons. The City conducted additional population research to correct for undercounting in the Census. On April 24, 2003, the Oregon Department of Administrative Services certified a December 31, 2002 population for the city of 3,660 persons. Based on the end of 2002 certified population and the adopted 2020 population projection, Mt. Angel is projected to add some 705 new residents by 2020.

Transportation

Future traffic estimates for various locations along Highway 214 were made using

average annual growth rates for traffic at these locations between 1980 and 2000. In general, traffic has increased at an annual rate of approximately 2.5 percent during that period. Traffic counts and projected 2023 ADT are show in Table 1.

ODOT uses Volume to Capacity (v/c) ratio for intersections along state highways to determine how well such intersections function. ODOT's maximum adopted standard for intersections along Highway 214 is .85. Presently, the Marquam Street, Charles Street, and Church Street intersections on Highway 214 all operate at a v/c of less than .40. Volume to capacity ratios for theses intersections based on 2023 projected traffic volumes are all less than .65.

The city will work with ODOT to maintain v/c ratios of no more than .85 on all intersections on Highway 214.

Table 1
Average Daily Trips on Highway 214
Milepost 45.50 to Milepost 46.45
1980-2001 and 2023 Projected

Milepost	1980 ADT ¹	1990 ADT	2000ADT	2001 ADT	AAGR ² 1980-2001	2023 ADT (Projected)
MP 45.50 (North City Limits)	4,350	4,700	6,900	6,200	2.33%	10,299
MP 45.89 (0.01 mile north of Marquam St.)	4,650	5,300	7,500	N/A	N/A	N/A
MP 45.91 (0.01 mile south of Marquam St.)	5,250	5,500	7,900	7,000	2.06%	10,973
MP 46.13 (0.01 mile South of Charles St.)	5,800	6,800	8,700	7,900	2.05%	12,340
MP 46.18 (0.01 mile south of Church St.)	3,800	3,800	7,000	6,600	3.10%	12,924
MP 46.45 (0.01 mile south of Academy St.)	3,850	4,050	7,300	N/A	N/A	N/A

¹ ADT = Average Daily Trips

² AAGR = Average Annual Growth Rate

Source: Oregon Department of Transportation, Systems Monitoring Unit

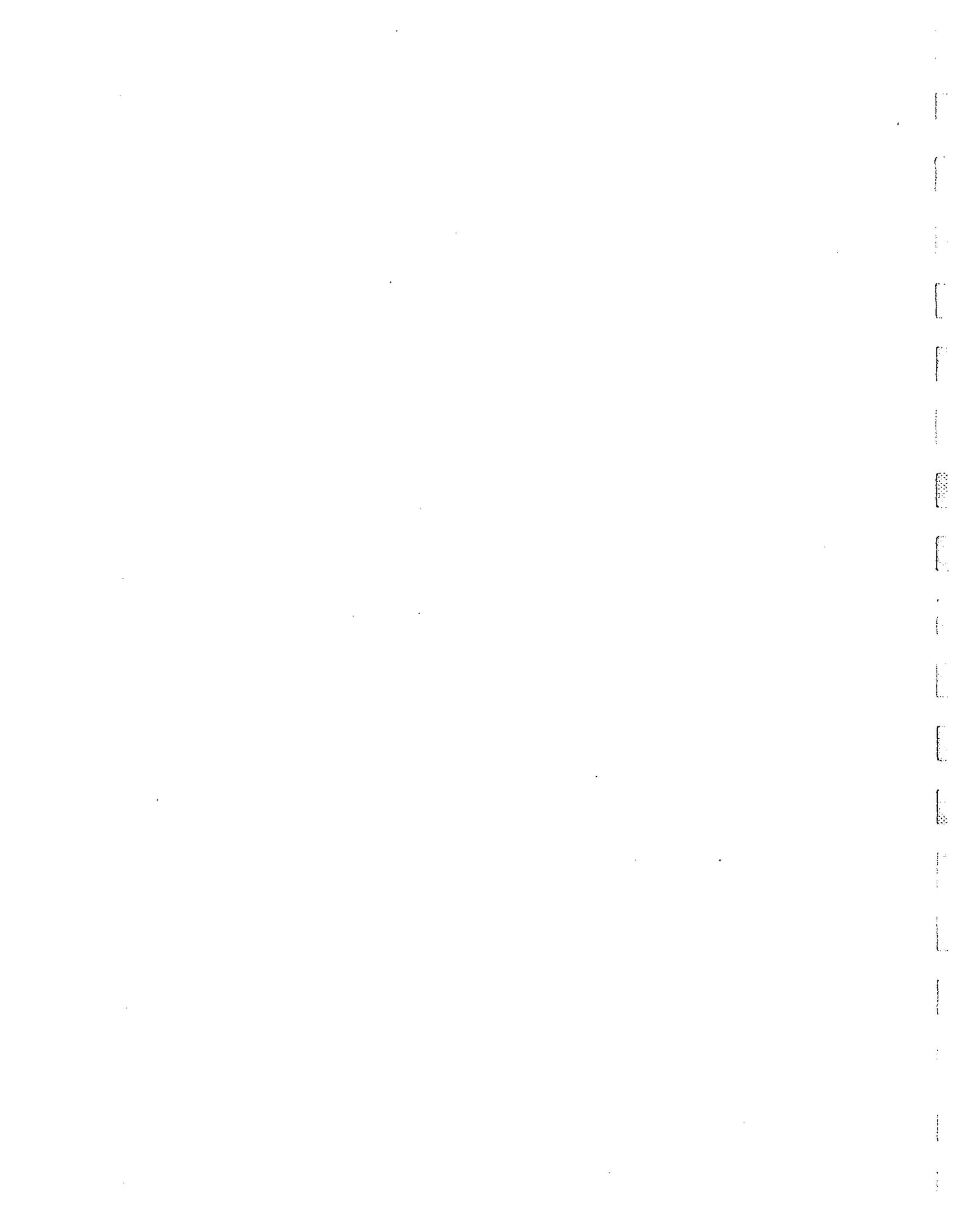
Table 2
Volume to Capacity Ratios
Highway 214 Milepost 45.50 to Milepost 46.45
2001 and 2023 Projected

Milepost	Estimated Daily Capacity	2001 ADT ¹	2001 V/C ²	2001 LOS ³	2023 ADT (Projected)	2023 V/C	2023 LOS
MP 45.50 (North City Limits)	22,000	6,200	0.28	C	10,299	0.53	D
MP 45.89 (0.01 mile north of Marquam St.)	22,000	N/A	N/A	N/A	N/A	N/A	N/A
MP 45.91 (0.01 mile south of Marquam St.)	22,000	7,000	0.32	C	10,973	0.59	D
MP 46.13 (0.01 mile South of Charles St.)	22,000	7,900	0.36	C	12,340	0.63	D
MP 46.18 (0.01 mile south of Church St.)	25,000	6,600	0.26	C	12,924	0.56	D
MP 46.45 (0.01 mile south of Academy St.)	25,000	N/A	N/A	N/A	N/A	N/A	N/A

¹ ADT = Average Daily Trips

² V/C = Volume to capacity ratio

Source: MWVCOG



Inventory Existing Transportation Systems

Streets

Inventories were conducted for all arterial and collector streets (Table 3). The street inventory divides the network of arterials and collectors into segments to show additional detail. The street inventory provides important information on controlling jurisdiction, right-of-way, pavement widths, surface material and condition, number of lanes, curbs, and bicycle and pedestrian facilities.

Traffic volume data for key locations in Mt. Angel and vicinity is shown in Tables 1 and 2. A review of this data reveals traffic is heaviest on State Highway 214 (AKA Main Street NE and Wilco Highway NE) with an average daily traffic (ADT) count of 7,900 vehicles in 2001. This occurs just south of the intersection with Charles Street.

Table 4 shows traffic counts on County Roads near the city limits. These counts include totals shown in the original 1997 TSP as well as the most recent counts or estimates.

Accident history for State Highway 214 is provided in Table 5. This data, in association with historical information on traffic volumes, provided the advisory committee with a valuable point of reference for considering current and future transportation needs.

In addition to the street inventory, an inventory of public transportation facilities

was completed for use in evaluating the supply and demand for public transportation services.

Public Transportation

Public transportation into and from Mt. Angel includes CARTS fixed-route bus service and three paratransit providers: Oregon Housing and Associated Services (OHAS), Mt. Angel Training Center, and Silverton Hospital. OHAS operates "WHEELS" Community Transportation Services generally throughout Marion County. Services are designed to accommodate the elderly and disabled residents of the area and are available to the general public on a space available basis. All services are provided on a dial-a-ride basis and reservations are made by calling an 800 number.

Wheels service is available to those individuals in need of transportation for medical appointments, employment, education purposes, and nutritional shopping. In addition, service is provided for persons receiving medical assistance in Portland.

The Chemeketa Area Regional Transportation System (CARTS) is a partnership between Marion, Polk and Yamhill counties. The objective is the coordination of resources dedicated to providing its senior citizens, disabled and economically disadvantaged residents access to medical services, employment, educational, shopping and recreational opportunities. In response to community outreach forums and social

service agency needs, *Wheels* designed and now operates a network of CARTS point-deviated, fixed-routes that meet inter-regional connectivity needs. CARTS connects with the Salem Cherriots Bus System allowing additional flexibility for the traveler.

CARTS North County Route 1 currently provides a loop service to Silverton, Salem, Brooks, Gervais, Woodburn, Hubbard, Mt. Angel, and Silverton four times each weekday. Local stops include Lind's Market, The Orchard House, and City Hall.

The Mt. Angel Training Center provides service for 30 to 35 developmentally disabled clients. Using two vans on loan from WHEELS, the clients are provided service for employment and special needs.

Silverton Hospital provides dial-a-ride services to Mt. Angel for medical transportation to and from the hospital. For longer distance travel, Greyhound Lines operates a connection in Woodburn. Greyhound is available six times daily (three northbound and three southbound) on buses traveling the I-5 corridor. For travel in other directions, changes have to be made.

Air, Rail, Water, and Pipeline

Rail

Rail is an important resource to the community of Mt. Angel. It provides the most economical means of transporting materials for major local industrial uses including Mt. Angel Beverage Company, Cenex/Land-O-Lakes Feed Mill, and WILCO Local Farmers Cooperative. Rail enables these direct uses as well as related industries to minimize transportation costs and maintain good market access.

Cascade Scenic Railway, Inc, a nonprofit group, is working with the Willamette Valley Railway Company to establish excursion passenger service between Woodburn and Silverton. Eventual plans are to extend service to Stayton. Before passenger service can be established, the rail line must be upgraded, passenger cars must be leased or purchased and refurbished, and depots or passenger platforms built in Woodburn and Silverton. Plans also call for use of a steam engine on portions of the line.

The city should coordinate with both the state and Willamette Valley Railway Company in the continued maintenance and improvement of the Woodburn-Springfield branch line of the Southern Pacific Railroad.

Air, Water, and Pipeline

No significant aviation, water, or pipeline facilities exist within or adjacent to the Mt. Angel UGB.

Bicycle/Pedestrian System

There are no bicycle lanes on any of the streets in Mt. Angel. Most bicyclists ride in the street with automobile traffic. The Oregon Bicycle/Pedestrian Plan identifies Highway 214 as a state bikeway. In addition, Elm Street, between Taylor Street and College Street, is designated as a city bikeway. This section of Elm Street provides access to St. Mary's School and is closed to vehicular traffic during school hours. Bicycle/pedestrian connections exist between Cindy Lane and Lincoln Street and Alder Street and Mt. Angel Towers.

Sidewalks are present on only about one-half of the streets in the city. Sidewalks are required on all streets concurrent with new development. The Mt. Angel Downtown

Plan notes that sidewalks and crosswalks are present on Highway 214 in the downtown area. However, traffic volumes, including truck traffic, and speeds make it difficult for pedestrians to cross the highway. This is particularly evident at the Highway 214, Main Street, Church Street intersection where design problems contribute to the problem. As part of the TSP refinement process, Oregon Department of Transportation (ODOT) staff provided analysis providing analysis of several alternative designs identified in the Downtown Plan. Pedestrian needs are included in that analysis. The analysis is included as Appendix G.

Table 1 provides an inventory of bicycle and pedestrian facilities on arterials and collectors and indicates the deficiencies in the current network of streets. In spite of deficiencies in the current system of pedestrian amenities, figures available from the 2000 Census show that 74 people, or approximately 5 percent of local commuters, walk to work. This percentage is higher than the national average of 2.5 percent¹.

¹ U.S. Census 2001 Supplementary Survey

Table 3
Arterial/Collector Street Inventory

Street	Section	Functional Class	Length	Jurisdiction	ROW Width	Pavement Width	Surface	Condition	No. Lanes	Sidewalks		Curbs		Bikeways		Remarks
										Left	Right	Left	Right	Left	Right	
Alder	College to Taylor	Collector	1400	Mt. Angel	40		Com/Gravel	Fair/Unimp	2	N	N	N	N			Pedestrian Path E. Side of Park
Alder	Taylor to Marquam	Collector	900	Mt. Angel	40	33	AC/Concrete	0	2	N	Y	Y	Y			Stop Sign Petition
E. Church	Hwy 214 to Garfield	Collector	250	Mt. Angel	60	46	AC	0	2	Y	Y	Y	Y			
E. Church	Garfield to Cleveland	Collector	250	Mt. Angel	60	41	AC	2	2	1/4	Y	Y	Y			
E. Church	Cleveland to Oak	Collector	500	Mt. Angel	60	25	AC/Concrete	2	2	Y	Y	N	N			
W. Church	Railroad to Lincoln	Collector	600	Mt. Angel	60	40	AC	2	2	Y	1/2	Y	Y			Sidewalk end w/ residential dev.
W. Church	Lincoln to City Limits	Collector	3400	Mt. Angel	60	34	AC	1	2	Y	N	Y	Y			On-street Pkg Starts @ Elm
E. College	Oak to St. Marys	Collector	1000	Mt. Angel	60		AC		2	Y	Y	Y	1/2			Wide Park Strip - Room for B/P Imp
E. College	St. Marys to Alder	Collector	1200	Mt. Angel	60		AC	Fair	2	Y	Y	N	N			B/P Access to Abbey Paths
E. College	Alder to City Limits	Collector	1100	Mt. Angel	60		AC	Fair-Poor	2	N	Y	N	N			On-street Pkg. 2 crosswalks
N. Main (214)	Marquam to City Limits	Arterial	2112	ODOT	60	32-40	AC (AU)	0	2	1/2	1/2	1/2	1/2	SH	SH	3 crosswalks, 44' pave @ Church
N. Main (214)	Church to Marquam	Arterial	1426	ODOT	60	40	AC (AU)	0	2	Y	Y	Y	Y			1 Crosswalk, 40' pave CL
Hwy 214	W. Church to City Limits	Arterial	2587	ODOT	60	54	AC (AU)	0	2	1/2	N	Y	Y	SR	SR	Wide Rt Shldr - Rural B/P Access
S. Main	Church to City Limits	Collector	2800	Mt. Angel	60	40	AC	0	2	Y	Y	Y	Y			No Shldr Space
Mt. Angel-Gervais	Marquam to City Limits	Collector	2100	Marion Co.	50	20	AC		2	N	N	N	N			RR Xing
W. Marquam	N. Main to Railroad	Collector	700	Mt. Angel	60	40	AC	0	2	N	3/4	Y	Y			RR Xing, Full Imp to CL
W. Marquam	Railroad to Lincoln	Collector	600	Marion Co.	50	20	AC	1	2	N	1/2	Y	Y			RR Xing, Full Imp to CL
W. Marquam	Pershing to City Limits	Collector	2000	Marion Co.	50	20	AC	2	2	1/4	Y	Y	Y			RR Xing, Full Imp to CL
E. Marquam	Main to Elm	Collector	1250	Marion Co.	50	20	AC	0	2	N	Y	Y	Y	SR	SR	Gravel Shoulder (5')
E. Marquam	Elm to Alder	Collector	1250	Marion Co.	50	20	AC	0	2	N	Y	Y	Y	SR	SR	Gravel Shoulder (5')
E. Marquam	Alder to City Limits	Collector	900	Marion Co.	50	20	AC		2	N	N	N	N			Gravel Shoulder (5')
Academy	Hwy 214 to Leo	Local	1300	Public ROW	30	na	Gravel	Unimpr-Poor	1	N	N	N	N			City/Co. Maint. Agreement
Academy	Leo to Buchhest	Local	950	Marion Co.	40	34	Gravel	Very Good	2	N	N	N	N			
Academy	Buchhest to Humpert	Local	700	Marion Co.	40	34	AC	Very Good	2	1/4	N	Y	Y			Alley, Rec both Sides, B/P Access
Elm	Church to Taylor	Local	500	Mt. Angel	40	16	Concrete	5	1	N	N	N	N			No Shldr Space
Elm	Taylor to Marquam	Local	850	Mt. Angel	40	28	AC/Concrete	5	1	Y	1/2	Y	Y			Imp near Church St
Humpert Ln.	City Limits to College	Local	600	Marion Co.	40	22	AC	Very Good	2	N	N	N	N			Wide Rdwy - Good Collector
Leo	Academy to Church	Local	1500	Mt. Angel	40	na	AC/Gravel	Unimp	1	1/8	1/8	1/8	1/8			Fully Imp to Turn
Lincoln	W. Church to Marquam	Local	1350	Mt. Angel	60	34	AC	2	2	Y	Y	Y	Y			AC to PK, No Through, B/P to Park
N. Pershing	Marquam to end pavement	Local	1300	Marion Co.	40	30	AC	1	2	Y	1/2	Y	Y			Wide PK Strip, B/P Improve
Spruce	Marquam to End	Local	1300	Mt. Angel	40	34	AC/Gravel	Unimp	1	N	N	N	N			No Curb Sheridan to Garfield
Taylor	N. Main to N. Garfield	Local	250	Mt. Angel	40	39.2	AC	0	2	Y	Y	Y	Y			Pkg one side, B/P Imp School Crds
Taylor	N. Garfield to Oak	Local	750	Mt. Angel	60		AC		2	Y	Y	Y	Y			Parking Proposal Rejected
Taylor	Oak to Elm	Local	500	Mt. Angel	60-40		Concrete		2	Y	N	Y	N			
Taylor	Elm to Alder	Local	1200	Mt. Angel	40		Concrete		2	Y	Y	Y	Y			

Table 4
Traffic Volume Data: Mt. Angel and Vicinity

Road	Milepost	ADT*	Date	Source	ADT*	Date	Source	ADT*	Date	Source	Change	Comments
West Church Road NE	0.47	930	09/15/95	Estimate	870	11/2/99	Estimate	870	11/2/99	Estimate	-60	West of Evergreen Golf Club
	0.49	990	09/15/95	Estimate	820	12/2/02	Estimate	820	12/2/02	Estimate	-170	East of Evergreen Golf Club
NW Church	1.37	1,017	07/19/95	County	833	8/5/02	County	833	8/5/02	County	-184	@ Mt. Angel City Limits
E. College Road NE	0.85	1,062	06/29/94	County	1,177	7/24/02	County	1,177	7/24/02	County	+115	@ Mt. Angel City Limits
	2.14	1,040	09/08/94	Estimate	1,000	8/8/02	Estimate	1,000	8/8/02	Estimate	-40	West of May Road
	2.16	980	09/08/94	Estimate	900	8/8/02	Estimate	900	8/8/02	Estimate	-80	East of May Road
Main Street	2.99	973	07/25/94	County	878	7/31/02	County	878	7/31/02	County	-95	West of Meridian Road
	3.47	2,318	06/29/94	County	2,361	8/12/02	County	2,361	8/12/02	County	+43	@ Mt. Angel City Limits
Drake Road NE	4.02	3,673	06/27/94	County	3,700	12/2/02	Estimate	3,700	12/2/02	Estimate	+27	South of Highway 214
	4.03	378	09/15/95	Estimate	399	8/13/02	County	399	8/13/02	County	+21	@ Clackamas County line
Marquam Road NE	0.52	1,251	06/13/95	County	1,210	8/5/02	County	1,210	8/5/02	County	-41	@ Mt. Angel City Limits
	1.65	1,140	01/01/91	County	1,100	11/1/99	Estimate	1,100	11/1/99	Estimate	-40	West of Boehmer Road
	1.67	840	09/15/95	Estimate	1,000	11/1/99	Estimate	1,000	11/1/99	Estimate	+160	East of Boehmer Road
	2.66	787	09/15/95	Estimate	774	8/5/02	County	774	8/5/02	County	-13	West of Meridian Road
	2.68	474	08/16/95	County	424	8/5/02	County	424	8/5/02	County	-50	East of Meridian Road
	3.67	440	08/16/95	County	380	11/1/99	Estimate	380	11/1/99	Estimate	-60	West of Wagon Road
	3.74	400	09/15/95	Estimate	400	11/1/99	Estimate	400	11/1/99	Estimate	0	North of Drake Road
W. Marquam Street	4.26	1,060	09/15/95	Estimate	2,121	8/12/02	County	2,121	8/12/02	County	+1,061	@ End of County maintenance
Mt. Angel-Gervais Road	0.05	1,435	09/15/95	Estimate	1,739	7/8/02	County	1,739	7/8/02	County	+304	East of Howell Prairie Road
	0.42	1,400	07/08/96	County	1,420	11/2/99	Estimate	1,420	11/2/99	Estimate	+20	West of Miller Road
	0.44	1,310	09/15/95	Estimate	1,350	11/2/99	Estimate	1,350	11/2/99	Estimate	+40	East of Miller Road
	2.99	1,218	09/15/95	Estimate	1,332	8/12/02	County	1,332	8/12/02	County	+114	West of Baron Road
	3.05	1,020	07/17/95	County	1,115	8/12/02	County	1,115	8/12/02	County	+95	South of Dominic Road
	4.15	1,062	07/17/95	Estimate	1,084	8/5/02	County	1,084	8/5/02	County	+22	@ Mt. Angel City Limits
Mt. Angel-Scotts Mills Road	3.09	2,018	08/16/95	County	1,976	8/5/02	County	1,976	8/5/02	County	-42	East of Meridian Road
114 th Avenue NE	0.06	900	07/25/94	County	869	7/14/99	County	869	7/14/99	County	-31	North of Saratoga Drive

Table 5
Accident Summary
Highway 214 from Milepost 45.50 to Milepost 46.45
1997-2001

Type	Number
Total accidents	23
Accident Type	
Angle	8
Rear end	7
Turn	4
Sideswipe	2
Head-on	1
Pedestrian	1
Conditions	
Daylight	22
Location	
Intersection	14
Injuries & Fatalities	
Injury A (Most Severe)	1
Injury B (Moderate)	0
Injury C (Least Severe)	6
Fatalities	0

Source: ODOT, Crash Analysis and Reporting Unit, 2002

Goals, Objectives, and Policies

The following goals, objectives, and policies were developed from information contained in the 1987 Comprehensive Plan. They were later updated in 2003. They were revised to reflect new state and federal legislation as well as the growth-related changes that have occurred in the city over the past few years. These goals and objectives represent the community's vision for a system of transportation facilities and services that provide for the needs of the community and maintain the city's commitment to managing growth and preserving the quality of life. The development of these transportation goals and objectives provide the overall guidance necessary to complete all other elements of the Transportation System Plan. Furthermore, they serve as the criteria by which various transportation alternatives, from street alignments to land development regulations, are evaluated.

GOAL

To provide and encourage a safe, convenient, and economic transportation system to serve the needs of the citizens of Mt. Angel.

Objectives:

1. Identify streets, curbs, and sidewalks that need repair/construction. Prioritize and program the improvement into a capital improvements program (CIP) and budget.
2. Facilitate development of odd-shaped lots and underutilized land by considering a

reduction of street frontage standards in the creation of new parcels

Policies:

1. Maintain and upgrade the overall transportation system within the city to meet present and future needs of all users including the needs of the transportation disadvantaged.
2. The design of new roads, streets, and thoroughfares shall preserve and enhance natural and scenic resources.
3. The city shall take full advantage of public investment in the existing streets. New streets shall be developed consistent with the Transportation System Plan to improve traffic circulation, relieve traffic volume on existing streets, and provide for alternatives to and reduced reliance upon the automobile.
4. The city shall participate with federal, state, and regional agencies to promote an efficient transportation system within Mt. Angel, to include in particular, the implementation of the ODOT Statewide Transportation Improvement Program.
5. The city shall work with ODOT to maintain minimum Level of Service C for all intersections on Highway 214.
6. The city shall adopt a Transportation System Plan that it will utilize in the

- development and maintenance of the overall street network and in all land use planning and project development activities.
7. The city shall encourage differentiation in the street network in order to reflect the intended function of each facility. Streets should be designed to reflect their proposed use in order to maximize livability and efficiency.
 8. The city shall encourage the use of new street development techniques and standards that provide for the development of odd-shaped lots and under-utilized lands without jeopardizing the city's commitment to providing a multimodal transportation system that serves the present and future needs of all citizens.
 9. The city shall maintain the "restricted access" along Highway 214 from Garfield Street south. Commercial development could receive access to the city streets on the east.
 10. The city shall encourage access management techniques in order to increase traffic flow, reduce congestion, improve safety, and generally protect streets for their intended functions.
 11. The city shall explore a variety of options for financing improvements for the street system, and should select those options most applicable to the city. The program should be implemented within one year of the plan's adoption.
 12. The city will continuously upgrade its existing street system through a variety of funding sources.
 13. The city may participate in partial funding of residential streets, if such improvements satisfy a citywide need. Residential streets improvements will also be undertaken upon approval of a percentage of the owners of the street frontage as set forth in the City Charter. The city may participate in a portion of the expense for collector or arterial streets. The degree of participation will be determined on a case-by-case basis.
 14. The city shall require submittal of a traffic impact analysis study for any new developments that may significantly affect the function of the transportation system. Land uses that significantly affect the function of transportation system are those that:
 - (a) Result in levels of travel or access which are inconsistent with the functional classification of a transportation facility; or
 - (b) Would reduce the performance standards of the facility below the minimum acceptable level identified in the TSP.
 15. The city will seek outside governmental assistance in the funding, design, or construction of streets jointly owned by Mt. Angel and other jurisdictions.
 16. The city will establish a street reserve fund for capital improvement of streets, sidewalks, and drainage. Whenever possible, the allocation of this money will be linked to priorities established in the Transportation System Plan.
 17. The city supports continued operation of CARTS service connecting Mt. Angel to Salem and outlying cities.

18. The city encourages the retention and continued maintenance of the Woodburn-Springfield branch line of the Southern Pacific Railroad which serves the economic needs of Mt. Angel.
19. Mt. Angel supports establishment of passenger or excursion rail service between Woodburn and Stayton, with a stop in Mt. Angel.
20. Additional surface-level railroad crossings will be discouraged.
21. The city encourages a private transit carrier to provide regularly scheduled and/or chartered passenger and freight service to residents of Mt. Angel, both within the community and between Mt. Angel and surrounding cities.
22. Mt. Angel recognizes bicycling and walking as viable modes of transportation and will continue to support these modes through the development and implementation of a bicycle and pedestrian plan, and by considering such modes in all land development activities.
23. The following policies are established for evaluating and dealing with street vacations:
 - a. Street vacations may be initiated by petition of individual property owners or by the city.
 - b. Vacations will only be granted where it is shown that there will be no detrimental effect on the safe and efficient movement of present or future traffic in the area.
- c. The city shall be reimbursed for the right-of-way by the property owners that it transfers to. This reimbursement will be at fair market value on a per square foot basis.
- d. The city shall develop and adopt an ordinance that covers each of these points with specifics for criteria and procedure.
24. All streets within a new subdivision or development shall be fully improved to city standards.
25. The city will require improvements to existing streets that provide access to new subdivisions when those streets are not built to city standards.
26. In the improvement of unimproved streets, outside new developments, the city shall, subject to budgetary constraints, pay:
 - 20% of the cost of residential streets
 - 35% of the cost of collector streets
 - 60% of the cost of arterial streets.
27. The city will develop land use regulations and subdivision ordinances that allow needed transportation facilities and improvements and mandate development patterns that enhance opportunities for pedestrian and bicycle travel.
28. The city shall coordinate with affected transportation facility or service providers whenever a proposal for a plan or regulation amendment or development action would significantly affect a transportation facility. For

example, notifications will be provided to ODOT and Marion County for developments that access or significantly affect roads under their jurisdiction.

29. The city will work with the affected agencies with respect to traffic impacts associated with the Oregon Gardens project in Silverton.

Street Plan

Background

The automobile is the dominant mode of transportation in Mt. Angel, and streets comprise the most significant transportation facilities. As such, they represent a significant investment to be protected and maintained. The street plan element of the TSP accomplishes the following:

- Identifies a network of streets sufficient to meet current and future travel needs;
- Designates existing and proposed streets by functional classification;
- Recommends street design standards;
- Recommends access control measures.

Street Network

The development of the street network was a process of estimating future traffic growth and evaluating how well alternative transportation facilities might serve existing and planned development. The evaluation process consisted of reviewing how the proposed network of streets achieved stated goals and objectives in light of the projected build-out of the urban area.

Other criteria included environmental constraints, concerns of overlapping jurisdictions, impacts on rural/resource lands, and financial feasibility.

The street network plan provides the city and developers with guidance for future street locations, and ensures a safe and efficient circulation system. The street network plan should be used to assure the dedication or, in

some cases, the acquisition of adequate rights-of-way for streets and related facility improvements.

The street system improvements planned for Mt. Angel include both improvements to the existing street network and the location of general key future streets. These improvements are listed and defined below. The 1997 cost estimates do not include any right-of-way purchases which may be necessary, and are rough estimates which should be verified during any refinement studies.

System Improvements

Left-Turn Pocket (Highway 214 at Industrial Way)

Consistent with Highway 214's designation as an arterial, and the need to maintain the mobility and safety of the road, the city should pursue the establishment of a left-turn pocket at Industrial Way. Because Highway 214 is a two-lane arterial, trucks making a left hand turn onto Industrial Way block northbound traffic. The queuing of truck traffic causes congestion and creates safety concerns. Estimated cost: \$84,000.

Railroad Crossing Improvement (Marquam Street NW)

Marquam Street is designated as a collector street. It is one of two primary east-west routes within the urban area. Marquam Street is designated as a bikeway/pedestrian way because it provides access to parks and schools. As a primary east-west transportation route, it is essential for safety that the city work with the

ODOT Rail Division and the Willamette Valley Railway Company to signalize the railroad crossing. In addition, the city should work with the railroad and Marion County to improve the surface quality of the crossing when the street is resurfaced. Estimated cost: \$125,000.

Intersection Improvement (Church Street/Main Street/Highway 214/ Railroad Avenue)

When the TSP was originally adopted in 1997, this system improvement was identified as the city's most important objective. The city has worked with ODOT, ODOT Rail Division, and Willamette Valley Railway Company on preliminary designs for the improvement of this intersection. The intersection involves arterials, collectors, local streets and a railroad crossing and accommodates a significant volume of both local and through traffic. The redesign of this intersection would improve safety and traffic flow and would substantially improve operating conditions for the railroad.

In 2001, the city adopted a Downtown Plan that included several preliminary re-design alternatives for this intersection. These included a two roundabout options, a signalization alternative, and an interim alternative intended to provide an immediate improvement at the intersection at a relatively low expense.

As part of a 2003 update to the TSP, ODOT staff conducted a more thorough analysis of these redesign options for this intersection. The ODOT technical memoranda describing that analysis are included as Appendix G.

The ODOT analysis included the following alternatives:

No-Build Alternative: The No-Build alternative leaves the intersection in its existing

configuration, which includes four stop control intersections. The lane configurations are all single shared lane designs, except at the Church St/Highway 214 intersection that has an exclusive right turn lane for eastbound traffic.

This alternative has the advantage of familiarity to motorists. Although the intersection is complex, most drivers pass through it without incident, indicating that motorists traverse the intersection very cautiously.

The disadvantage of this alternative is that as the Highway 214 traffic increases, turning movements at Church and Main Streets become more difficult, particularly the left turns. The delays may have an adverse effect on safety as motorists may be inclined to use an unsafe gap to turn.

Signalized Intersection Alternative: This alternative includes realigning Main Street and Railroad Avenue to west of the existing intersection, extending the existing island, channelizing the Highway 214 southbound right turns from Highway 214 onto Church Street.

With this alternative the intersection meets the Oregon Highway Plan mobility standards for Highway 214, however traffic volumes are not projected to meet ODOT signal warrants until 2022.

Roundabout Alternative(s): This alternative includes two options both of which close off Railroad Avenue. Option One is a five leg/single-lane roundabout with the railroad crossing through it while Option Two is a four leg/single lane roundabout offset to east of the railroad.

The five-leg roundabout is simplest for improving the intersection with a potentially smaller requirement for right-of-way. This

option meets the mobility standard in the design year. The disadvantage of this option is when a train traverses the intersection, all legs of the roundabout will be shut down.

The four-leg/single lane roundabout intersection is offset to east of the railroad. With this option, the railroad will cross the east leg of the roundabout rather than crossing through the roundabout. This will allow some movements to function when a train traverses the intersection. Closing only the leg with the rail crossing may work if queues are not anticipated to back onto the circulatory roadway. If queues back into the circulatory roadway, then the roundabout will be shut down.

This option meets the mobility standard in the design year. However, due to the additional right-of-way needed this option would impact the Boschler's Hardware building on the east side of Highway 214.

The roundabout alternatives have some distinct disadvantages such as requiring a large right-of-way and the inefficiency and safety concerns when used with unbalanced flows on all intersection legs. There are also concerns for increased response times by emergency services when an incident occurs in the intersection, as this is the intersection of the two major vehicle routes through town and one of only three railroad crossings in town. In addition, the fountain located in the intersection may have to be relocated depending on the roundabout's placement.

Interim Alternative: This alternative would simplify the intersection by closing the Railroad Avenue connection to Church Street and changing the current two-way intersection of Main Street and Highway 214 to a one-way leg (right turns only from Highway 214 southbound to Church St./Main St.). The

existing landscaped island would be enlarged as part of the alternative. A left turn lane would be striped on Highway 214 at Church St. Side by side left turn lanes would be needed on Church St. between Highway 214 and Main St. (a wider cross-section on Church through the intersection). This design might possibly be developed to fit a future traffic signal alternative with minimal added impacts, although it is not possible to know actual signal design details until such time as the intersection meets appropriate warrants. Sidewalks and improved pedestrian crossings would be included. All intersection legs would be stop sign controlled

After reviewing the alternatives and analysis, the interim alternative was selected as the preferred alternative design for the intersection. This decision was based on the following findings:

- Properties near the intersection, in particular Napa Auto Parts and several residential properties, would be severally impacted by the roundabout design.
- Although not a direct property impact, the proposed roundabout would remove the loading area in the Highway 214 right-of-way currently used by Boschler's Hardware.
- In the event of an emergency, traffic within the roundabout could hamper the ability of emergency vehicles to travel through the intersection to reach an emergency scene.
- The location of the railroad within the roundabout would conflict with smooth and efficient vehicle use of the intersection. Trains moving through the roundabout would block all vehicle traffic within the roundabout. Endorsement of the roundabout design also conflicts with the TSP policy to

encourage future passenger and destination rail service.

- The roundabout design would be confusing to motorists.
- Although the existing intersection is confusing, it works well at present and does not merit a major re-design.
- The interim design could eventually be converted to a signalized intersection later when the intersection meets ODOT signal warrants. Ultimately, the signalization alternative is preferable to the roundabout options primarily because it would have less impact on property in the downtown.
- In conjunction with development of the interim design, the city will work with Marion County to explore options for developing a truck route that would eliminate truck traffic on South Main Street.

The city will continue to actively pursue reconstruction of this intersection. Design and construction of this project should involve a partnership between all affected parties, including ODOT, ODOT Rail Division, Willamette Valley Railway Company, Marion County and the city of Mt. Angel. Estimated Cost: \$410,000

General

The city, in keeping with identified transportation objectives, should prioritize streets for improvement projects. The city has a detailed inventory of streets which should be used to develop a street improvement and pavement management program. Streets of particular concern, in terms of future circulation needs, include Academy Street SE, Alder Street NE and Birch Street NE.

Intersection Improvement (Highway 214 and Marquam Street)

The east leg of this intersection is offset and needs to be realigned to create better traffic flow and safer conditions. The estimated cost of this improvement is unknown at this time.

Future Streets

While precise alignments will require detailed refinement studies, this plan generally identifies the future alignments and connections necessary to provide a safe, convenient, and economic transportation system, with adequate access to all planned land uses. The proposed street network plan provides a complete and continuous network and ensures satisfactory traffic movement within the city as well as access to and from the surrounding area.

East-West Street from Pershing Street NW to Marquam Street NW (Gervais-Mt. Angel Highway)

This street is proposed as the future access for the largely undeveloped portion of the Urban Growth Area (UGA). While future development of this low density residential area will likely result in more than one access between Pershing Street and Marquam Street, this proposal stresses the importance of that connection. This area has limited options for access because of the nearby railroad and park. The proposed connection would meet many of the access needs of the entire northwest section of the UGA. Estimated cost: \$560,000.

North-South Street from West Church Street to Marquam Street NW

This street is essential for north-south traffic movement on the west side of the city. The street will provide an important connection

between the city's two east-west collectors and would serve the access needs for the planned low-density residential development. Estimated cost: \$365,000.

May Street extension

The extension of May Street, west to a proposed new north-south collector street will ensure alternative access options south of West Church Street. May Street can serve as an alternate route to West Church for local trips. Estimated cost: \$420,000.

Winchester Street SW/Main Street SE Connection

It is important that the city develop an access to Main Street south of May Street to alleviate demand on May and Church Streets and improve access in the southwest portion of the UGA. Estimated cost: \$420,000.

Spruce Street extension

The extension of Spruce Street to a new north-south connection between Marquam Street NW and N. Pershing Street will serve low density residential development in the northwest portion of the UGA. Estimated cost: \$100,000.

North-South Street from Marquam Street NW to new north-south connection between Marquam Street NW and N. Pershing Street

The street will provide a critical link between Marquam Street and a proposed east-west collector in this area. This street is important for north-south traffic in the northwest portion of the UGA and will serve low density residential development in this portion. Estimated cost: \$400,000.

East-West Street from Highway 214 to City Limits

This street is essential for east-west traffic movement in the northeast portion of the city. The street will serve the access needs for the planned low-density residential development in that area and provide an important connection to Highway 214. Estimated cost: \$400,000

Maple Street extension

This street will provide another access option south of West Church Street. The street will serve the access needs for the planned low-density residential development in that area and provide an important east-west connection. Estimated cost: \$400,000

North-South Street from Maple Street extension to W. Church Street

This street will ensure alternative access options south of West Church Street. This street will serve planned low density residential development in a portion of the UGA and link both Maple Street and May Street with West Church Street. The proposed alignment will ensure a safe intersection with West Church, providing-adequate site distance in both directions. Estimated cost: \$400,000

Oak Street extension

The extension of Oak Street, south to Academy Street will serve planned low density residential development and ensure alternative access options south of East Church Street. Oak Street can serve as an alternate route to East Church for local trips. Estimated cost: \$350,000

The Marion County Department of Public Works reviewed these plans and conducted on-

site surveys to examine planned connections to the county street system. Marion County determined that all proposed street intersections (including conceptual street proposals) provide or can be modified to provide adequate sight distances at existing speed limits.

Connectivity

Although the street network plan identifies certain future streets of particular importance for traffic circulation, most local streets will be built as development occurs. It is important that the city require local streets to connect to existing and planned streets wherever possible. Multiple access points, achieved through a well connected street network, are important to ensure that emergency services are not cut off and that local access is not eliminated or greatly lengthened in the event that one access is closed. Further, a well connected street network, with numerous alternative routes, reduces the volume of traffic on any one route and provides a more bicycle/pedestrian friendly environment. The objective of good connectivity is achieved through the application of standards contained in the city's development code.

Functional Classification

Streets serve a variety of needs ranging from through transportation to direct property access. To serve this wide range of uses effectively, streets should be designed to serve a primary function within a hierarchical network, known as "functional classification." As defined by the Federal Highway Administration, functional classification is ". . . the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide." The street network plan (Figure 1), is based on this methodology. This method of functional classification, which attempts to achieve a

balance between the competing demands for mobility and access, has been tailored to suit the needs of the Mt. Angel urban area.

Mt. Angel uses three general classifications to describe its existing and proposed network of streets. The following three functional classifications effectively differentiate the range of streets needed to satisfy local and regional needs.

Arterial. A street that is the principal mover of traffic within and through the community. It interconnects the major traffic generators and links with important rural routes. An arterial should never penetrate neighborhoods and usually performs only a secondary land service function. Arterials generally emphasize mobility over land access. Access to arterials should be managed to protect the mobility function of the street as much as possible.

Collector. A street that allows traffic within an area or neighborhood to connect to the arterial system. It supplies abutting property with the same degree of land access as a local street but is given priority over minor streets in any traffic control installations. Collectors penetrate into all areas of a city, gathering traffic, and channeling it to arterials or rural collectors.

Local (Minor). A street not designated as one of the higher systems. It serves primarily to provide direct access to abutting land, offers the lowest level of traffic mobility. Through traffic movement is deliberately discouraged. While connectivity is encouraged on all streets, through traffic movement is not the intended purpose of a local street.

The classifications presented in this plan are consistent with those proposed by Marion County. Marion County is in the process of completing a TSP update and the city has made

initial proposals for rural road classification. This plan identifies the appropriate connections to that proposed system. The functional classifications shown in Table 1 and Figure 1 are based on each street's actual use, as well as the type of service they provide, given existing and planned land use and connections to the local and regional street network.

Street Design Standards

Since streets operate to provide different functions, design standards differentiate between the three functional classifications in terms of street dimensions and amenities. Street standards provide cities with a means of ensuring consistency, safety, and aesthetic quality in roadway design. In addition, design standards provide for ease of administration when new roadways are planned and constructed.

The street design standards in this plan are only shown for information and planning purposes. Their adoption is through the ordinance or resolution process.

Although it is important to have recognized street design standards, street projects often require evaluation individually. Blind adherence to these standards may not be practical in all situations considering existing development or other social, economic, and environmental constraints. Consistent with this option are the standards contained in the city's Infill Development Overlay Zone provisions. These standards recognize and allow for maximum use of lands within the UGB. Furthermore, there are other considerations that need to be evaluated when designing specific streets including distance between intersections, access points, and adjacent land uses.

ARTERIAL:

1. Access spacing: Access spacing standards along Highway 214 shall comply with ODOT standards.

Development of any new arterial street shall require an amendment to the Mt. Angel Transportation System Plan.

For any new arterial street access spacing standards shall be as follows:

Minimum spacing between intersections of public roads shall be 300 feet centerline to centerline. Minimum spacing between private drives is 150 feet centerline to center line (+/- 20% discretion). Combined access or access to local streets is preferred.

2. Minimum right-of-way: 80-feet

3. Minimum curb-to-curb width: 44 feet

4. Travel lanes: two

On-street parking: On-street parking should generally be prohibited on arterial streets. The elimination of on-street parking is a cost-effective means of increasing the capacity of a street.

While the city realizes the capacity/mobility benefits that can be gained through the elimination of on-street parking, it also realizes the unique character of the commercial district and the need for customer parking.

Sidewalks: Required, both sides, five-foot minimum width. (Eight-foot sidewalks should be provided on Highway 214 for all contiguous commercial properties. Commercial uses generate a greater concentration of pedestrian traffic than most other uses and, when grouped together, create an even higher demand for pedestrian facilities.)

7. Bike lanes: Required, five-foot bike lane, both sides

8. Park strip: required, five feet width, both sides

COLLECTOR:

1. Access spacing: Access to collectors will be permitted from streets and private drives. The city will encourage property owners to minimize collector street access, encouraging combined access or access to local streets wherever practical.

2. Minimum right-of-way: 60 feet

3. Minimum curb-to-curb width: 36 feet

4. Travel lanes: two

5. On-street parking: permitted, both sides

6. Sidewalks: Required, both sides, five-foot minimum width

7. Bike lanes: shared roadway

8. Park strip: required, five feet width, both sides

LOCAL STREET:

1. Minimum right-of-way: 50-55 feet

2. Minimum curb-to-curb width: 30-34 feet (a 30 foot wide narrow street option is available)

3. On-street parking: permitted, both sides

4. Sidewalks: required, both sides, five-foot minimum

5. Bike lanes: Shared roadway

6. Park strip: required, five feet width, both sides

INFILL STREETS:

Excerpt from the Infill Development Overlay Zone

Section 14.1 - Purpose: The purpose of the Infill Development Overlay Zone is to foster residential development in specific established neighborhood areas in order to achieve the following community objectives: reduction of pressure to expand the community's Urban Growth Boundary (UGB), more efficient use of existing infrastructure and services (i.e., streets, water, sewer, solid waste disposal), provision of affordable housing, and avoidance of secondary growth related to urban sprawl. Although development densities are based on the underlying land use zoning, the Infill Development Overlay Zone applies specific standards that encourage compatible development on vacant, underutilized, or partially used land.

Section 14.5 - Street, Access, and Pedestrian Way Standards: The following standards shall apply within the Infill Development Overlay Zone. Except as specifically provided in this Section, the standards and requirements of the underlying zoning, other Sections of this Ordinance, and the Subdivision Ordinance, shall apply:

14.5(a) Incentive Street Design Standards. Infill development meeting the 80 Percent Rule shall comply with the street, and private accessway standards set forth in Exhibit B, which are intended to allow greater flexibility in access width requirements for development.

14.5(b) Connectivity - Except at locations where connectivity is precluded by environmental or

topographic constraints or by existing development patterns, streets, residential lanes, and private accessways shall be designed to extend through the lot being served and abut adjoining property or streets, creating the opportunity to form a connected public access network. Private residential lanes, accessways, and access drives shall be covered by public access easements in a form approved by the Mt. Angel City Attorney. Cul-de-sacs, with maximum length not to exceed 400 feet, may only be allowed at locations where connectivity is precluded by environmental or topographic constraints or by existing development patterns.

14.5(c) Street Trees and Landscaping - On arterial, collector, and standard local streets, a planter strip with street trees and landscaping is required between the street and sidewalk. On all streets, residential lanes, and private accessways, a minimum of one street tree shall be provided for each 35 feet of public or private street frontage, or fraction thereof. Street trees shall be equally spaced to the extent possible. A five-foot-wide street landscaping easement shall be located immediately adjacent to the public access easements for residential lanes and private accessways.

14.5(d) Pedestrian Ways - Where a block is greater than 400 feet in length, a pedestrian way through the block, connecting with adjoining development, streets, or accesses shall be provided. Where a single-outlet access is necessary (i.e., a cul-de-sac or residential lane, private accessway, or access drive that cannot make a through connection in the future due to constraints), a pedestrian way connecting the single-outlet access with adjoining development, streets, or accesses shall be provided. Pedestrian ways shall have a minimum five-foot-wide, paved, all-weather surface within a minimum ten-foot-wide easement or tract.

14.5(e) Lighting - Pedestrian-scale lighting shall

be required as part of construction of infill local streets, residential lanes, private accessways, access drives, and pedestrian ways extending more than 220 feet between intersections with other transportation network elements.

14.5(g) On-street Parking - On-street parallel parking should be provided on collector and local streets.

Exhibit B
Infill Overlay Zone Street and Accessway Standards

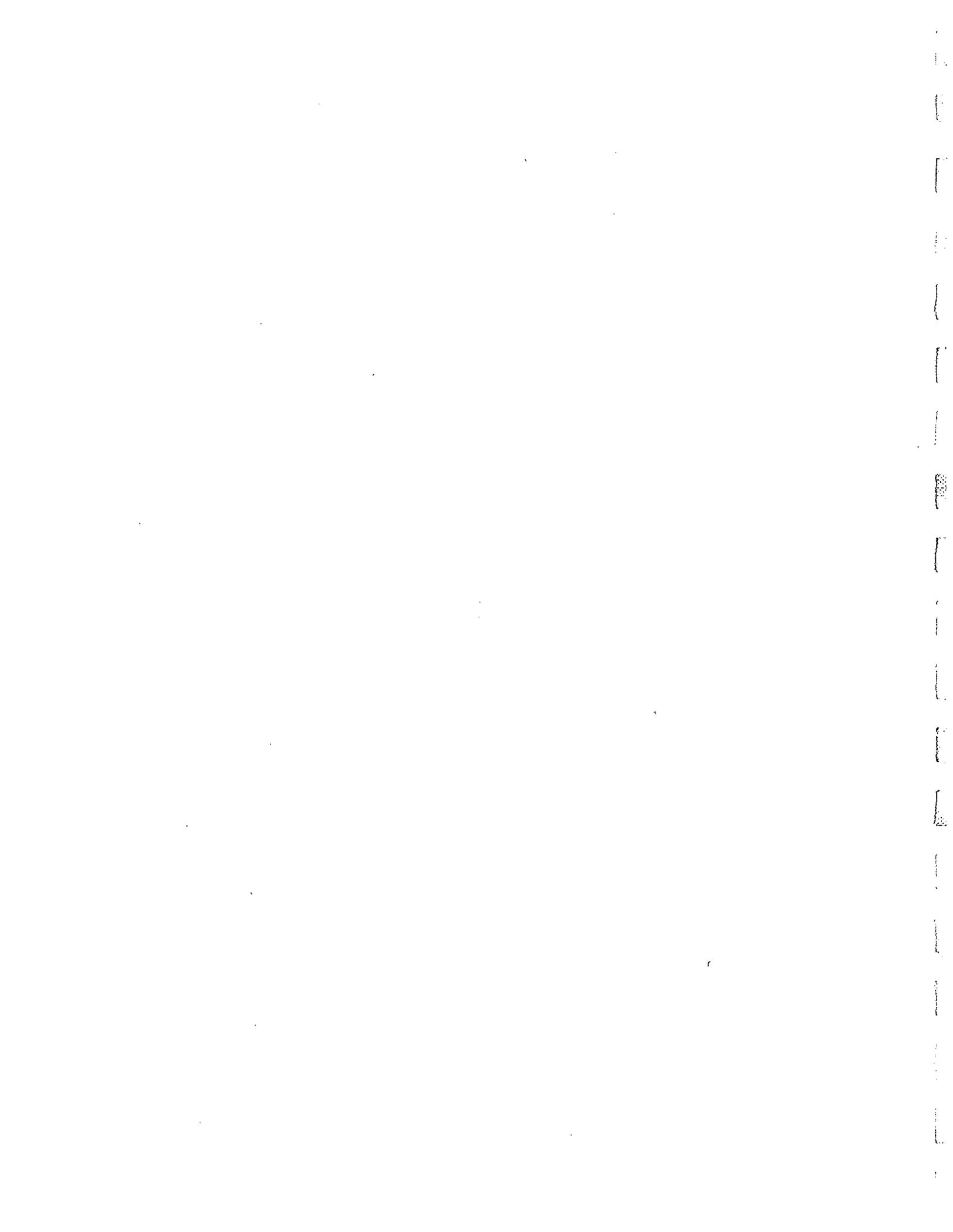
Street Type	Pavement Width	Travel Lane	On-Street Parking	Minimum R.O.W.	Sidewalk	Park Strip	Street Trees	ADT
Standard Local Street	30-34 feet ¹	2	2 sides	50 to 55 feet (up to 75 lots)	5 ft. min. both sides	5 ft. min.	yes	250-750
Infill Local Street	28 feet	2	1 side	35 to 40 feet (up to 25 lots)	5 ft. min. one side	not required	yes in easements	□250
Private Accessway	18 feet	2	no	20 feet (easement) (up to 4 lots)	none	none	yes in easements	□40

¹ Narrow Street Option (30 foot pavement width)

The Planning Commission shall allow use of the narrow street option for local streets if all of the following conditions are met:

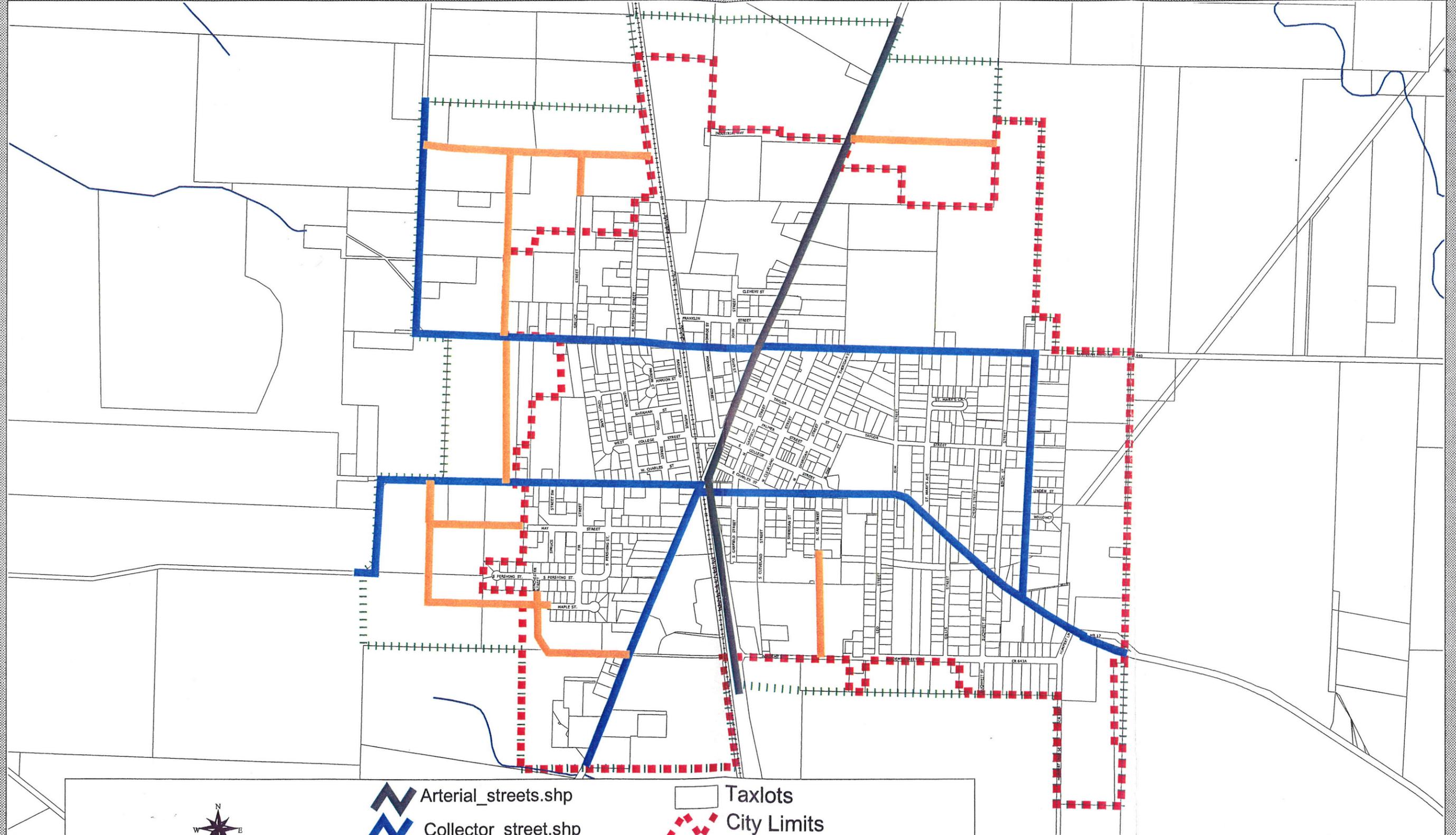
1. Not more than 600 feet in the block or street segment
2. Access for not more than 20 dwelling units on the block or street segment.
3. Only permitted on streets without significant through traffic, including but not limited to, cul-de-sacs.
4. No curves are present that would create sight-distance problems.
5. No other problems are present that would interfere with the proper functioning of a narrow street.

Figure 1
Street Network Plan



Mt. Angel

This map is illustrative and is only to be used for planning purposes.



500 0 500 1000 Feet

Mid-Willamette Valley Council of Governments, 105 High Street SE, Salem OR 97301 • (503) 588-6177 • mwvcog@open.org • www.mwvcog.org

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- Arterial_streets.shp
- Collector_street.shp
- Future_collector_street.shp
- Taxlots
- City Limits
- Urban Growth Boundary

Street Network Plan

Street Maintenance

While the Mt. Angel Transportation System Plan identified needs for new or expanded transportation infrastructure, an equally important component to the Plan is the preservation of the existing transportation system. We need to preserve the investment already made in transportation infrastructure. Mobility can not be achieved for our community if its streets and sidewalks exist in a state of crumbling, disrepair.

In 1993, the city engineer prepared a street survey of all the streets in Mt. Angel. This report analyzed city streets, county roads in the city, unimproved streets, and private streets. These streets are assigned one of three categories: "Need No Work Currently", "Need Maintenance", or "Need Reconstruction". The report has been updated for inclusion in the TSP. Cost estimates for projects in the report have also been updated.



Access Management

Specific standards for access requirements are contained in earlier sections of this document.

This section amplifies those with general guidance.

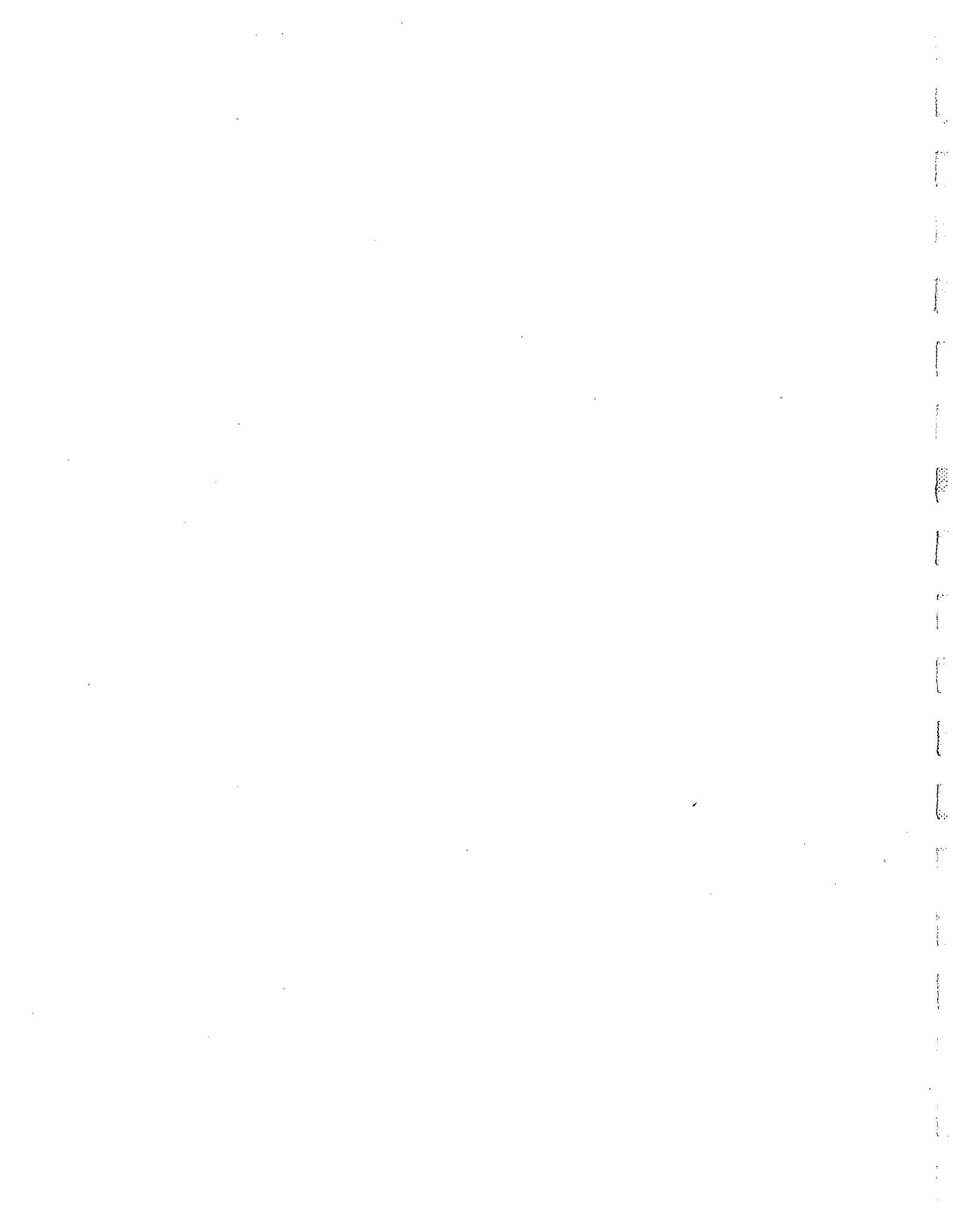
The goal of access management is to protect a street for its intended function by balancing access to developed land while ensuring movement of traffic in a safe and efficient manner. In Mt. Angel, access management is a tool to ensure that objectives of mobility and safety are preserved for Oregon Highway 214 and the county roads traversing the city. Highway 214 presents important challenges because of the need to balance commercial needs with the function of channeling traffic through the city. Because of the competing demands, the city needs to work with adjacent property owners to develop creative approaches to access management. State, county, and city efforts to protect road functions must recognize the access concerns of adjacent property owners but must also remain dedicated to the mobility and safety needs of area residents.

Highway 214 is owned and maintained by ODOT. Although the state has jurisdiction over the highway, the city has jurisdiction over land adjacent to the highway, and thus, has significant influence over access demands. Because of the overlapping jurisdictions, all development proposals that impact the roadway should be submitted for review by ODOT. The city, in cooperation with ODOT, can achieve the following objectives through a coordinated approach to access management:

- Maintain an acceptable level of service (good mobility).

- Minimize capital costs.
- Maintain safety by minimizing potential conflict points.

The city should remain flexible in its response to future development proposals on Highway 214 and county roads, considering creative access solutions, but maintaining a firm commitment to negotiating agreements that uphold the objectives of safety and mobility. The city has adopted standards in its development code that provide the authority to manage access on streets under city jurisdiction. These standards, in association with ODOT and Marion County access permit requirements will assist the city to maintain a high level of service on its arterial and collector streets.



Bicycle/Pedestrian System

This plan element responds to the stated requirements of the TPR as well as all other federal and state planning policies including ORS 366.514 (State Highways), the Americans with Disabilities Act (ADA) and ISTEA. The Oregon Transportation Plan and the Bicycle and Pedestrian Plan were consulted throughout the development of this element to ensure interjurisdictional consistency. Further, the city has combined planning efforts for both walking and bicycling because of recognized similarities in needs, service provision, and the economies of scale that can be gained through multi-use facilities.

The development of a bicycle/pedestrian plan reflects commitment to encouraging reduced reliance on the automobile, and a commitment to providing for the needs of all its citizens, including the transportation disadvantaged. The transportation disadvantaged includes a significant portion of the population who either do not have access to an automobile, cannot operate an automobile, or choose not to use an automobile. Bicycling and walking are a low-cost alternative.

Bicycle/pedestrian facilities provide a particularly valuable resource to parents of school-age children who face increasing costs of bus service, limited school funding and increasing demands for their time.

In recent years it has become even clearer that bicycling and walking provide a reasonable means of transportation for many local trips such as trips to school, various student activities and practices, visits to

friends or relatives, work errands and recreation.

Background

As far back as 1977, the city of Mt. Angel recognized the utility of bicycling and walking for more than recreational purposes. The 1977 Comprehensive Plan contained the following policies related to bicycle and pedestrian planning.

- "Bike paths or lanes and sidewalks should be provided to connect schools and parks, residential areas, and shopping and employment centers."
- "Allow residential development to occur around schools to lessen walking distance and busing needs, and to promote the "neighborhood concept" of schools."
- "Require subdivisions to provide mid-block pedestrian access adjacent to schools and parks."
- "Minimize vehicle and pedestrian traffic conflicts near school facilities."

Although the priorities of the later 1987 Comprehensive Plan provided less attention to bicycle and pedestrian facility development, it did indicate the city's renewed commitment to promoting alternatives to the automobile. The in-progress infill study contains provisions that where a block is greater than 400 feet in length, a pedestrian way through the block--connecting with adjoining development, streets, or accesses--shall be provided.

Where a single-outlet access is necessary (i.e., a cul-de-sac or residential lane, private accessway, or access drive that cannot make a through connection in the future due to constraints), a pedestrian way connecting the single-outlet access with adjoining development, streets, or accesses shall be provided. Pedestrian ways shall have a minimum eight-foot-wide, paved, all-weather surface within a minimum ten-foot-wide easement or tract. A common theme in all past planning efforts is a clear recognition that the community's small size and large open space resources provide an amiable environment for pedestrians and bicyclists. Through a more formal bicycle/pedestrian plan the city will be able to enhance its existing resources with appropriate bicycle and pedestrian facilities in order to encourage their use, both as a means of transportation and as a community resource.

Network

It is felt that the best way to accommodate these bicyclists and pedestrians is along the existing road network. The regularly traveled roadway provides an opportunity for an effective network of walkways and bike lanes because it is already in place and it already connects the various activity centers within the urban area. In addition, streets are very public, highly visible places where individuals feel safer for both themselves and their children.

The primary goal of this is to identify a network of bike lanes and walkways that offer safe and convenient access to all areas of the city. Specifically, the intention is to identify a system of streets and/or paths that connect the locations that attract the majority

of bicycle and pedestrian traffic. These areas include parks, schools, churches, businesses, regional bikeways, and rural roadways.

Most of the streets in Mt. Angel are "shared roadway" bikeways, where bicyclists and motor vehicles share a travel lane. This type of facility is appropriate in Mt. Angel due to its small size and low traffic volumes. Other routes, such as Highway 214, have identified bike lanes, which should be designated by striping and/or pavement markings for the preferential or exclusive use of bicyclists. Current conditions indicate that minor improvements to the arterial and collector streets would result in improved conditions for bicyclists without requiring the purchase of additional right-of-way. The Bicycle/Pedestrian Network Plan, Figure 2, represents the city's priorities for bicycle/pedestrian facility improvements. The low volumes on local streets will enable pedestrians and bicyclists to safely share streets with automobiles during the interim as the city pursues improvements.

The Bicycle/Pedestrian Plan reflects the city's priority for connecting schools, parks, and public meeting places. One project that may be of particular value is the proposed multi-use pathway that runs from the Oktoberfest site to Birch Street with the potential for continuation as a Marion County facility.

System Improvements

There are three multi-use paths contained in the bicycle/pedestrian plan. The first is from Birch Street, crossing East College Road NE, and connecting to South Cleveland Street. This route takes advantage of an old

railway and utility easement for part of its length. Estimated cost: \$25,000.

The second multi-use path is from Highway 214 to just east of Oak Street. Estimated cost: \$15,000.

The third multi-use path connects Lincoln Street to Cindy Lane. Estimated cost: \$5,000.

Bicycle and Pedestrian Improvements on arterial and collector streets:

The remainder of the improvements can be accomplished in various segments. For estimating purposes, the following rough figures may be used:

- (1) Sidewalks: \$3.60 per square foot
- (2) Retrofit curb ramp (2 edge) for handicapped: \$1,380
- (3) Sidewalks: \$30.00 per linear foot
- (4) Curb and gutter: \$10.00 per linear foot

The following bicycle and pedestrian improvements are needed for arterial and collector streets under the City's jurisdiction.

- Alder Street from College Street to Taylor Street - \$63,000
- Alder Street from Taylor Street to Marquam Street - \$51,000
- S. Main Street from Church Street to City Limits - \$27,000

- W. Marquam Street from N. Main to Railroad Avenue - \$30,000
- W. Marquam Street from Railroad Avenue to City Limits - \$90,000
- W. Church Street from Fir Street to City Limits - \$15,000

Related Projects

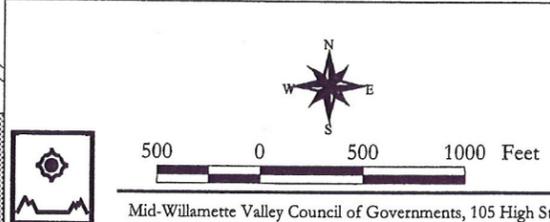
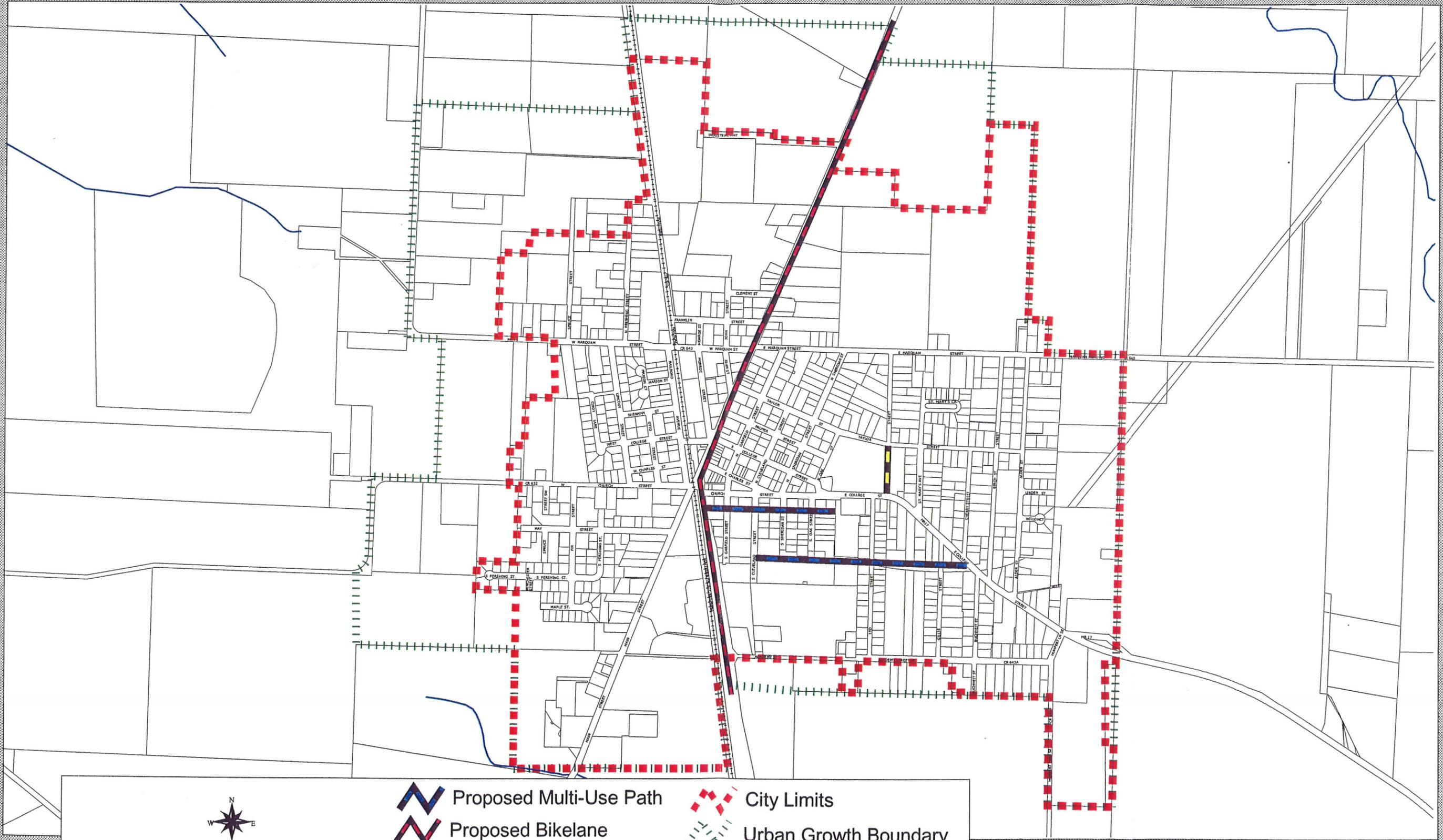
The goal of encouraging greater bicycle and pedestrian activity can be further supported through the provision of related facilities that encourage walking and bicycling such as well marked crossings and secure bicycle parking. Bicycle parking will be required, consistent with the requirements of the TPR, through the city's Development Code which specifies minimum standards for parking facility design. In addition, according to the requirements of the TPR, bicycle and pedestrian circulation issues will be addressed at the time of development review to ensure consistency with the TSP at a project level.

Education is another important means of encouraging bicycling and walking and of informing citizens of important safety issues. The city should encourage the development of educational programs promoting bicycle/pedestrian/motorist safety. The city could work with the school district and local police to promote safety and use.

Figure 2
Bicycle/Pedestrian Network Plan

Mt. Angel

This map is illustrative and is only to be used for planning purposes.



-  Proposed Multi-Use Path
-  Proposed Bikelane
-  Bikeway
-  City Limits
-  Urban Growth Boundary
-  Taxlots

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Bicycle / Pedestrian Plan

Public Transportation

Background

As mentioned in the Inventory section of this document, existing public transportation into and from Mt. Angel includes CARTS fixed-route bus service and three paratransit providers: Oregon Housing and Associated Services (OHAS), Mt. Angel Training Center, and Silverton Hospital. The existing level of these services does not have a significant impact on reducing traffic in the city, and it is unlikely that a fixed route (local bus) system within the city is financially supportable during the next 20 years. However, the CARTS regional system continues to function effectively.

Funding for paratransit services, for the elderly and disabled, is generally tied to specific programs. Four of these funding sources are:

- Special Transportation Funds (STF): State cigarette tax for the elderly and disabled.
- Title XIX: Federal funds for the medical transportation of the elderly, disabled, and disadvantaged.
- Section 16[16(B)(2)]: Federal funds to purchase vehicles and equipment for special transportation.
- Section 18(18): Federal funds to purchase and operate vehicles for public transportation systems in small cities and rural areas.

Needs

As the elderly population grows, there will be an increasing need to provide services to this group. In Marion County, from 1980 to 2000, the elderly population grew, as a proportion of the total population, from 12.6 percent to 16.8 percent. The total increase in elderly population within the county was nearly 11,000 persons. According to current studies, this group is expected to further increase as the "baby boomers" age.

The elderly are more likely to need and use public transportation than younger individuals. They are also more able, as retired persons, to meet schedules of a public transportation provider.

It is expected that Mt. Angel will also experience growth in the elderly population. Many of the new additions to this group will be immigrants to the community and less likely to have the informal social network of the long-term residents and therefore, cannot rely on friends, relatives, and neighbors to provide transportation. Thus, it is apparent that the need for paratransit services will continue to grow.

However, even as the need for providing these specialized services increases, it is also expected that the number of younger individuals will also increase. These individuals are those most likely to use single-occupancy vehicles, primarily for travel to work. It is also expected that much of the employment will be in larger cities such as Portland, Salem, and Woodburn.

The increase in SOV use cannot be countered by increasing paratransit services.

The needs of this group is for fast, reliable scheduled and operated, convenient service during early morning and early evening hours.

Future Services

The city should encourage the retention and expansion of existing public transportation services. The city can accomplish this by providing information on available services and by maintaining current information on existing funding sources. Further, the city should explore opportunities to coordinate public transportation services with the nearby cities of Silverton and Scotts Mills. Because of the proximity of these cities to each other in relation to the cities of Salem and Portland, any efforts to pursue future intercity bus service to those cities should be coordinated.

The Marion County Transportation Systems Plan recommends that a committee of transportation providers from Silverton, Mt. Angel, Woodburn, and OHAS be formed to explore ways to overcome individual

operating differences and to maximize resources by coordinating and exchanging services.

Working in a limited geographic area, and with small groups providing similar services is the best method to meet the demand for paratransit services. Mt. Angel will encourage and support efforts for this endeavor.

As mentioned earlier, the SOV commuters' needs are different. A traditional fixed-route system will not meet the needs of this group.

The most probable means of reducing use of the SOV to and from Mt. Angel is a rideshare program. One simple way of initiating such a program is to invest in a basic computer with a program for potential users to input these needs. Information contained in the Salem program is adequate. However, rather than use existing staff to maintain the program data, the computer should be located in a public service location, such as a library. Users will input or extract information as needed. Estimated cost: \$2,500.

Finance Plan

This portion of the TSP describes methods available for funding proposed projects. Some of the projects will require funding from more than one jurisdiction, even when only one jurisdiction has responsibility for and authority over the improvement being made. This situation results from a concept that cities and/or counties who wish a project to be constructed by the state can enhance the probability of the work being done if they contribute to project financing. Also, there is a concept that those who generate the need for improvements should either pay or share in the costs. Consequently, developers are also expected to share the expenses of new construction, either through right-of-way dedication or roadway construction, or both. It is to the city's advantage to participate in funding projects which directly or indirectly benefit city residents. This portion of the plan will address these possibilities.

Street Bonds

Some of the cities in Marion County use voter-approved general obligation bonds to fund street improvements. The taxing authority of the city is pledged to pay interest and principal to retire the debt. The bonds are backed by the city's full faith and credit, and are usually repaid by property tax revenues.

Systems Development Charges (SDCs)

Systems Development Charges for streets are collected from the developer as new development occurs. These fees are based on the estimated impact of the new development on the existing street system. ORS 223.297

requires local governments who impose SDCs to:

- Complete a plan that lists the capital improvements that can be funded by SDC fees and the estimated cost and timing of each improvement. This plan meets that requirement.
- Limit the expenditure of SDC fees/charges to those capital improvements that are required to increase capacity because of uses generated by current or projected developments.
- Place the SDCs collected in a separate account and provide an annual accounting of revenues received and projects that were funded.
- Use a resolution or ordinance to establish the methodology for calculating the charge and make it available for public inspection.

The city of Mt. Angel's Ordinance No. 570 adds the provisions necessary to implement a systems development charge for streets.

Local Improvement Districts (LIDs)

Another city option is formation of a local improvement district for the area in the study. This can be initiated by the property owners or by the city, subject to remonstrance (protests). These districts can be used when the benefit of the work is essentially confined to one area. With the LID, the cost of a project is distributed to each property according to the benefit that property receives. Since the work proposed in this

to determine benefit to properties that are not yet developing. The cost distributed becomes an assessment or lien against the property. It can be paid in cash or through assessment financing.

Urban Renewal Districts

Oregon Revised Statutes 457 allows an Urban Renewal District to be formed for the corridor area. This allows the district to issue tax increment bonds for the work. Since these bonds use dedicated property tax increases resulting from increased valuations of property in the district to pay for the public improvements, they are influenced by the property tax cap. Presently, there is no Urban Renewal District in Mt. Angel.

Exactions (Conditions of Development)

System improvements can be required as a condition of development. The process requires the city to demonstrate how the improvements required are necessary to accommodate the impact generated by the new development.

Depending on the nature and scope of the proposed development, the City Administrator or City Planner may require a traffic impact analysis report, prepared by a registered transportation engineer, including the following:

- (1) The total estimated vehicular, pedestrian, bicycle and other transit service trips to be generated from the proposed development;
- (2) The impact of the total estimated vehicular, pedestrian, bicycle and other transit service trips on the existing street,

sidewalk, bicycle and other transit systems within the City; and

- (3) The estimated level of improvement necessary to mitigate the total impact from the proposed development.

Miscellaneous

There are other mechanisms available to finance the projects. Gas tax and vehicle registration fees are the most traditional methods. However, the city typically exhausts these funds accomplishing ongoing maintenance, repair, and minor construction projects. The local jurisdictions do have authority to impose local gas taxes.

Some economic development programs also offer a source of funds. **The Immediate Opportunity Grant program** managed by ODOT provides a maximum of \$500,000 for public road work associated with an economic development related project of regional significance, provided the underlying project creates primary employment. Additionally, although lesser amounts will be considered, the grantee should provide an equal local match. Another economic development related source of funds is the **Special Works Public Works Fund**. This fund provides grants and loans for public work that supports private projects that result in permanent job creation or job retention. Loans are emphasized in this program and are available up to \$11 million for a maximum of 25 years, unless the project's life is shorter. The maximum grant is for \$500,000, but may not exceed 85% of the project cost.

State

The above methods of financing are those used by local, city, and county jurisdictions.

The state has fewer options and relies almost exclusively on gas tax, vehicle registration fees, and federal transportation programs for funding projects. However, the state has begun to enhance its funding by requiring contributions from local jurisdictions or cost sharing when developments have significant traffic impacts. The latter method is being used for improvements on U.S. Highway 101 near Lincoln City. These cost sharing techniques may become more prevalent if federal funds decrease in the future.

Federal funds are available through the Transportation Efficiency Act for the 21st Century (TEA-21). Several elements of TEA-21 can benefit main streets. The Enhancement Program provides federal highway funds for projects that strengthen the cultural, aesthetic, or environmental value of the transportation system. The funds are available for transportation enhancement activities specifically identified in TEA-21.

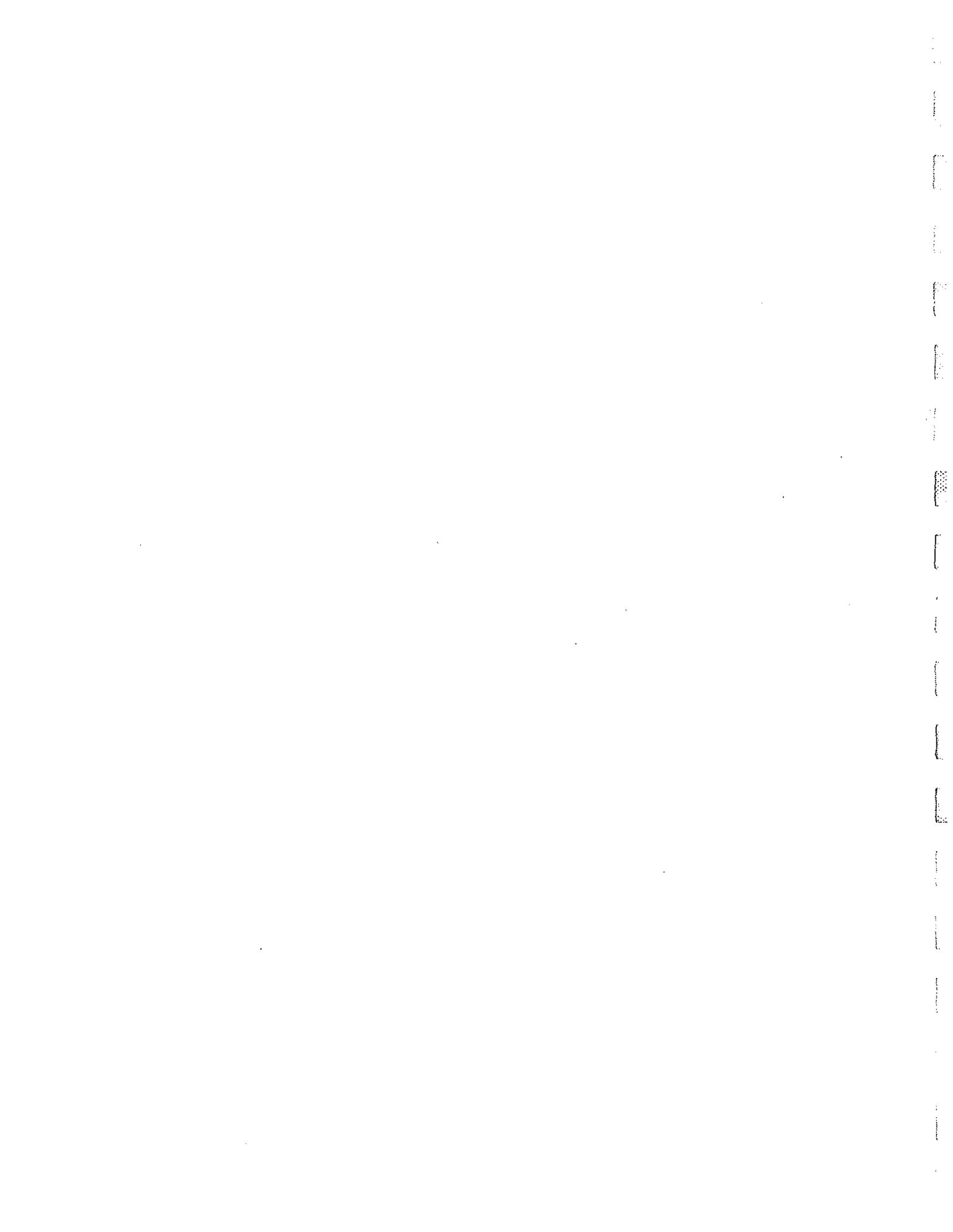
Enhancement funds are available only for special or additional activities not normally required on a highway or transportation project. They cannot be used for routine or customary elements of construction and maintenance, or for required mitigation.

This federally-funded program earmarks \$8 million annually for projects in Oregon. Projects must demonstrate a link to the intermodal transportation system, compatibility with approved plans, and local financial support. A 10.27 percent local match is required. Each proposed project is evaluated against all other proposed projects in its region.

Another element of TEA-21 that could benefit small communities is the Transit Enhancement Program which reserves a portion of public-transit funding for improvements such as pedestrian and bicycle

access to transit. In Oregon, TEA-21 funds are managed by ODOT.

ODOT also administers the Special Small City Allotment (SCA) Program. This program is restricted to cities with populations under 5,000. Unlike some other grant programs, no locally funded match is required for participation. Grant amounts are limited to \$25,000 and must be earmarked for surface projects (drainage, curbs, sidewalks, etc.). The program allows jurisdictions to use the grants to leverage local funds on non-surface projects if the grant is used specifically to repair the affected area. Criteria for the \$1 million in total annual grant funds include traffic volume, the 5-year rate of population growth, surface wear of the road, and the time since the last SCA grant. The SCA is managed by ODOT.



Appendix A: Definitions and Acronyms

Access Management: Measures regulating access to streets, roads, and highways from public streets or roads and private driveways. Measures may include but are not limited to restrictions on the siting of interchanges, restrictions on the type and amount of access to roadways, and the use of physical controls, such as signals and channelization including raised medians to reduce impacts of approach road traffic on the main facility.
(Ref. OAR 660-12-005)

Arterial: A street that is the principal route of traffic within and through the community.

Average Daily Traffic (ADT): The annual average two-way daily traffic volume. It represents the total traffic for the year, divided by 365.

Collector: A street that allows traffic within an area or neighborhood to connect to the arterial system.

Corridor Plan: A long-range plan for managing and improving transportation facilities and serves to meet needs for moving people and goods.

Demand Management: Actions which are designed to change travel behavior in order to improve performance of transportation facilities and to reduce need for additional road capacity. Methods may include but are not limited to the use of alternative modes, ridesharing and vanpool programs, and trip reduction ordinances.

Divided Highway: A two-way highway on which traffic traveling in opposite directions is physically separated by a median.

Elderly: People 60 years of age or older.

Frontage Road (Local Service Road): A local street or road located parallel to an arterial highway for service to abutting properties for the purpose of controlling access to the arterial highway.

FTA: Federal Transit Administration, formally Urban Mass Transit Administration (UMTA). A federal agency under USDOT charged with carrying out the transit provisions of the ISTEA of 1991.

ISTEA: The federally enacted Intermodal Surface Transportation Efficiency Act of 1991 which provided authorizations for highway, highway safety, and mass transportation for the following six years.

Level of Service: A qualitative measure of the effect of a number of factors on transportation service including speed and travel time, traffic interruptions, freedom of movement, safety, driving comfort, and convenience.

Local: A street not designated as one of the higher system. It serves primarily to provide direct access to abutting land, offers the lowest level of traffic mobility.

Modes of Transportation: Mass transit, air, water, pipeline, rail, highways, bicycle, and pedestrian. The terms "modes," "mode connectivity," and "intermodal" refer to these transportation means.

Paratransit: Flexible transportation services which are operated publicly or privately, are distinct from conventional fixed-route, fixed-schedule, and can be operated on the existing highway and street system, generally with low-capacity vehicles. Examples include shared-ride taxis and dial-a-ride, and other demand responsive type services.

Rural: Any area not included in a business, industrial, or residential zone of moderate or high density, whether or not it is within the boundaries of a municipality.

STF: The Special Transportation Fund for Elderly and Disabled. The fund is administered by ODOT and funded by Oregon cigarette tax revenues. Three-fourths of the dedicated revenue is distributed by population formula to counties and transportation or transit districts to finance transportation services for the elderly and disabled. One-fourth is discretionary and awarded on a competitive basis through the Community Transportation Program.

TEA-21: The Transportation Equity Act for the 21st Century (TEA-21) was signed into law in 1998. This act authorizes highway, highway safety, transit, and other surface transportation programs for a six-year period. TEA-21 builds on the initiatives established in the ISTEA. This federally-funded program earmarks \$8 million annually for projects in Oregon. Reauthorization of the ACT is expected in 2003.

Title XIX: State Medicaid Program Funds.

TPR: The state Transportation Planning Rule contained in Oregon's Administrative Rule, Chapter 660, Division 12, which

implements the statewide planning goal 12 (Transportation).

Transportation Disadvantaged: A term used to denote individuals without the ability or capability to use personal conveyances to travel. For example, these individuals may be the working poor, students, physically or mentally challenged.

UGA: Urban Growth Area. The land between the city limits and the Urban Growth Boundary.

UGB: Urban Growth Boundary. A line drawn around a geographic area which separates urban use lands from resource, or rural, use land.

Urban: Any territory within an incorporated area or with frontage on a highway which is at least 50% built up with structures devoted to business, industry, or residences for a distance of a quarter mile or more.

Urbanizing: Areas within an urban growth boundary that are undeveloped.

Appendix B: Document Listing

	<u>Publication Date</u>
State of Oregon	
1991 Oregon Highway Plan	June 1991
Oregon Transportation Plan	September 1992
State Agency Coordination Program	December 1990
2001 Statewide Transportation Improvement Program (Proposed)	January 1994
Oregon Bicycle and Pedestrian Plan	June 1995
Traffic Volume Tables	1989, 1990, 1991, 1992, 1993, 1994, 1995
Directory of Public Transportation Services	January 1996
Highway Compatibility Guidelines	June 1987
Willamette Valley Transportation Strategy - Phase One Report	May 1995
Transportation System Planning Guideline	August 1995
City of Mt. Angel	
Mt. Angel Comprehensive Plan Update	June 1987
City of Mt. Angel, 1993 Street Study	October 1993
Public Works Design Standards, Division 2, Streets 1996	
Ordinance No. 559, Street Tree	April 1989
Resolution No. 527 "Mt. Angel Street Tree List"	June 1989

Marion County

Marion County Draft Public Transportation Element		October 1996
Marion County Preliminary Rural Road Classification		March 1996
Marion County Department of Public Works, Engineering Standards		April 1990
Marion County's Draft Rural Transportation System Plan (chapters 3, 4, and 5)		January 2003

Miscellaneous

Transportation Services Utilization and Needs of the Elderly in Non-Urban Areas	USDOT	December 1994
Transit Planning and Research Programs	USDOT/FTA	March 1996
Implementing Effective Travel Demand Management Measures	USDOT	September 1993
1990 Census, Transportation Data	USDOC	1990
Oregon Intercity Passenger Timetables	ODOT	Fall, 1996

Appendix C: Street Survey

CITY OF MT. ANGEL
1993 STREET SURVEY

J.O. #447.224.0
October 15, 1993

Prepared by:

WESTECH ENGINEERING, INC.
3421 25th Street SE
Salem, OR 97302
(503) 585-2474

TABLE OF CONTENTS

- I. STREET CATEGORY SYSTEM
 - A. IMPROVED STREETS
 - B. COUNTY ROADS
 - C. UNIMPROVED STREETS
 - D. PRIVATE STREETS
- II. COST SUMMARY TO CITY STREETS
- III. SUGGESTED PRIORITY LIST

CITY OF MT. ANGEL STREET CATEGORY SYSTEM

A. CITY STREETS

Definition: Fully improved streets and arterial and collector streets. Require City maintenance.

1. Need no work currently
2. Need maintenance (crack sealing/overlay).
3. Need reconstruction.

B. COUNTY ROADS

Definition: Streets within County Road System. Require County maintenance.

1. Need no work currently.
2. Need maintenance.
3. Need reconstruction.

C. UNIMPROVED STREETS

1. Immediately improvable.
2. Require right-of-way.
3. Improvements not feasible.

D. PRIVATE STREETS

1. Private ownership and maintenance responsibility.

A. CITY STREETS

1. Need No Work Currently

STREET	FROM	TO
Buchheit	College	Academy
Clement	Main	John
Cleveland	Church	College
Fir	W. Church	Pershing

Garfield	Charles	Taylor
John	Main	Marquam
W. Marquam	Main	Railroad
St. Mary's	College	Taylor
Taylor	Garfield	Main
Academy	Buchheit	Humpert
Cleveland	College	Taylor

2. Need Maintenance (Crack Sealing/Overlay)

STREET	FROM	TO
Alder	Marquam	Taylor
Charles	Main	Church
W. Church	Main	City Limits
Church	Main	Cleveland
College	Garfield	Church
Elm	Taylor	Marquam
Garfield	Charles	Wilco Hwy.
Gilles	College	Academy
Lincoln	Marquam	W. Church
S. Main	W. Church	City Limits
Marion	Railroad	End
May	Fir	S. Main
Monroe	W. Marquam	Main
Pershing	May	End
Sheridan	College	Taylor
Winchester	Pershing	End

3. Need Reconstruction

STREET	FROM	TO
Birch	Marquam	Taylor
Church	Cleveland	College
College	Main	Garfield
College	Church	City Limits
Palmer	Garfield	Main

Railroad	W. Marquam	W. Church
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B. COUNTY ROADS

1. Need No Work Currently

<u>STREET</u>	<u>FROM</u>	<u>TO</u>
E. Marquam	Main	Alder

2. Need Maintenance (Crack Sealing/Overlay)

<u>STREET</u>	<u>FROM</u>	<u>TO</u>
N. Pershing	W. Marquam	End

3. Need Reconstruction

<u>STREET</u>	<u>FROM</u>	<u>TO</u>
W. Marquam	Railroad	City Limits

C. UNIMPROVED STREETS

1. Immediately Improvable

<u>STREET</u>	<u>FROM</u>	<u>TO</u>
May	Fir	West End
W. Charles	Railroad	Lincoln
College	Main	Lincoln
Franklin	Main	Railroad
John	Marquam	N. End
Garfield	Taylor	Marquam
Sheridan	Taylor	Marquam
Sheridan	College	S. End
Cleveland	Church	S. End
Palmer	Garfield	Sherman

2. Require Right-Of-Way

<u>STREET</u>	<u>FROM</u>	<u>TO</u>
Spruce	Marquam	N. End
Oak	College	Taylor

Cherry	College	Taylor
Birch	College	Taylor
Alder	College	Taylor
Leo	Academy	College

3. Improvements Not Feasible

<u>STREET</u>	<u>FROM</u>	<u>TO</u>
Spruce	W. Church	Pershing
Pershing	May	N. End

D. PRIVATE STREETS

1. Private Ownership and Maintenance Responsibility

<u>STREET</u>	<u>FROM</u>	<u>TO</u>
Tower Lane	E. College	End
Gregory Lane	E. College	End

II
CITY OF MT. ANGEL
CITY STREETS
1993 STREET SURVEY SUMMARY

<u>STREET</u>	<u>FROM</u>	<u>TO</u>	<u>CONDITION</u> <u>RAVING</u>	<u>STREET TYPE</u>	<u>OVERLAY</u>	<u>RECONSTRUCTION</u>	<u>COST</u>
ALDER	MARQUAM	TAYLOR	72	LOCAL	2 1/2 w./Fab.	=	\$24,970
BIRCH	MARQUAM	TAYLOR	62	LOCAL	=	Use Curbs	\$102,850
BUCHHEIT	COLLEGE	ACADEMY	92	LOCAL	=	=	\$0
CHARLES	MAIN	CHURCH	84	LOCAL	2 w/Fab.	=	\$14,685
W. CHURCH	MAIN	CITY LIMITS	81	COLLECTOR	2 1/2 w/Fab.	=	\$44,000
CHURCH	MAIN	CLEVELAND	75	COLLECTOR	2 1/2 w/Fab.	=	\$16,170
CHURCH	CLEVELAND	COLLEGE	60	COLLECTOR	=	New Curbs	\$72,600
CINDY LANE	LINCOLN	END	66	LOCAL	2 1/2 w/Fab.	Dig Out	\$29,480
CLEMENT	MAIN	JOHN	96	LOCAL	=	=	\$0
CLEVELAND	CHURCH	COLLEGE	98	LOCAL	=	=	\$0
COLLEGE	MAIN	GARFIELD	56	LOCAL	=	Use Curbs	\$27,500
COLLEGE	GARFIELD	CHURCH	66	LOCAL	2 1/2 w/Fab.	Grind Down	\$108,900
COLLEGE	CHURCH	CITY LIMITS	60	COLLECTOR	=	New Curbs	\$356,400
ELM	TAYLOR	MARQUAM	71	LOCAL	2 1/2 w/Fab.	=	\$17,545
FIR	W. CHURCH	PERSHING	93	LOCAL	=	=	\$0
GARFIELD	COLLEGE	CHARLES	99	LOCAL	=	=	\$0
GARFIELD	CHARLES	MAIN	79	LOCAL	2 1/2 w/Fab.	=	\$24,970
GILLES	COLLEGE	ACADEMY	86	LOCAL	2"	=	\$17,490
JOHN ST.	MAIN	MARQUAM	92	LOCAL	=	=	\$0
LINCOLN	MARQUAM	W. CHURCH	76	LOCAL	2 1/2 w/Fab.	=	\$38,170
S. MAIN	W. CHURCH	CITY LIMITS	84	COLLECTOR	2 1/2 w/Fab.	=	\$79,200
MARION	RAILROAD	END	86	LOCAL	2"	=	\$9,185
W. MARQUAM	MAIN	RAILROAD	93	COLLECTOR	=	=	\$0
MAY	FIR	S. MAIN	82	LOCAL	2 1/2 w/Fab.	=	\$26,455
MONROE	W. MARQUAM	MAIN	81	LOCAL	2 1/2 w/Fab.	=	\$24,970
PALMER	GARFIELD	MAIN	64	LOCAL	=	Use Curbs	\$27,500
PERSHING	MAY	END	79	LOCAL	2 1/2"	=	\$30,800
RAILROAD	W. MARQUAM	W. CHURCH	66	LOCAL	=	New Curbs	\$171,600
ST. MARY'S	COLLEGE	TAYLOR	97	LOCAL	=	=	\$0
SHERIDAN	COLLEGE	TAYLOR	90	LOCAL	1 1/2"	=	\$5,940
TAYLOR	GARFIELD	MAIN	99	LOCAL	=	=	\$0
TAYLOR	ALDER	ELM	70	LOCAL	2 1/2 w/Fab.	=	\$89,000
TAYLOR	ELM	GARFIELD	67	LOCAL	=	New Curbs	\$250,000
WINCHESTER	PERSHING	END	91	LOCAL	1 1/2"	=	\$990
				SUBTOTAL			\$1,611,370
				20% contingency Engineering & Administration			\$322,274
				GRAND TOTAL			\$1,933,644

III
SUGGESTED PRIORITY LIST (Updated 2003)

1. OVERLAY PROJECT

• Alder, Marquam to Taylor	\$31,170
• Charles, Main to Church	\$18,330
• W. Church, Main to City Limits	\$54,980
• Church, Main to Cleveland	\$27,130
• Cindy Lane, Lincoln to End	\$36,800
• College, Garfield to Church	\$135,950
• Elm, Taylor to Marquam	\$21,900
• Garfield, Charles to E. Marquam.....	\$31,170
• Gilles, College to Academy	\$21,830
• Lincoln, Marquam to W. Church	\$47,650
• S. Main, W. Church to City Limits	\$98,880
• Marion, Railroad to End	\$11,470
• May, Fir to S. Main	\$33,030
• Monroe, W. Marquam to Main	\$31,110
• Pershing, May to End	\$38,450
• Sheridan, College to Taylor	\$69,840
• Taylor, Alder to Elm	\$99,880
• Winchester, Pershing to S. End	\$1,240
	SUBTOTAL \$810,810
	20% Contingency, Engineering and Administration \$162,162
	GRAND TOTAL \$972,972

2.

• Church, Cleveland to College	\$90,600
• College, Church to City Limits	\$445,000
	SUBTOTAL \$535,600
	20% Contingency, Engineering and Administration \$107,120
	GRAND TOTAL \$642,720

3.

• Taylor, Elm to Garfield	SUBTOTAL \$312,000
	20% Contingency, Engineering and Administration \$62,400
	GRAND TOTAL \$374,400

4.

• Railroad, W. Marquam to W. Church	SUBTOTAL \$214,200
	20% Contingency, Engineering and Administration \$42,840
	GRAND TOTAL \$257,040

5.			
	• Palmer, Garfield to Main		\$34,330
	• College, Main to Garfield		\$34,330
		SUBTOTAL	\$68,660
		20% Contingency, Engineering and Administration	\$13,730
		GRAND TOTAL	\$82,390
6.			
	• Birch, Marquam to Taylor	SUBTOTAL	\$128,400
		20% Contingency, Engineering and Administration	\$25,680
		GRAND TOTAL	\$154,080
	TOTAL FOR ALL OVERLAY PROJECTS		\$2,483,602

ASPHALT PAVEMENT RATING FORM

STREET OR ROUTE _____

CITY OR COUNTY _____

LENGTH OF PROJECT _____

WIDTH _____

PAVEMENT TYPE _____

DATE _____

(Note: A rating of "0" indicates defect does not occur)

DEFECTS	RATING
Transverse Cracks	0-5 _____
Longitudinal Cracks	0-5 _____
Alligator Cracks	0-10 _____
Shrinkage Cracks	0-5 _____
Rutting	0-10 _____
Corrugations	0-5 _____
Raveling	0-5 _____
Shoving or Pushing	0-10 _____
Pot Holes	0-10 _____
Excess Asphalt	0-10 _____
Polished Aggregate	0-5 _____
Deficient Drainage	0-10 _____
Overall Riding Quality (0 is excellent; 10 is very poor)	0-10 _____
Sum of Defects	_____

Condition Rating = 100 - Sum of Defects
 = 100 - _____

Condition Rating =

Figure 1. Asphalt pavement rating form.

Appendix D: Sidewalk Inventory

Location	Sidewalk Needed
May Street	Fir Street intersection to end – both sides
N. Pershing Street	Mid-block to city limits – east sides
John Street	Entire length – both sides
Clement Street	Entire length – both sides
Franklin Street	Entire length – both sides
Monroe Street	Marquam Street to Franklin Street – both sides Marquam Street to Fire Station – west side
College Street	Highway 214 to Railroad Avenue – south side
Marquam Street	Railroad Avenue to Lincoln Street – south side
W. College Street	Railroad Avenue intersection to end – both sides
W. Church Street	Fir Street intersection to city limits – north side
Fir Street	W. Church Street to Pershing Street – west side
S. Pershing Street	May Street south to 90° turn – both sides
Lincoln Street	W. Church Street to W. College Street – east side
Sheridan Street	Taylor Street to Marquam Street – west side
Highway 214	Marquam Street to John Street – west side
Palmer Street	N. Garfield Street to Sheridan Street – both sides Sheridan Street to Oak Street – south side
N. Oak Street	Taylor Street to College Street – east side
Taylor Street	Elm Street to Oak Street – south side
E. Marquam Street	Highway 214 to city limits – north side
Alder Street	E. College Street to E. Marquam Street (except for Ebner Park) – west side Willow Street to E. Church Street – east side
S. Garfield Street	Portions – both sides
Leo Street	E. College Street to Academy Street – portions on the east side
Birch Street	E. Marquam Street to mid-block north of Taylor Street – both sides E. College Street to Ebner Park – east side
N. Cleveland Street	Palmer Street to E. College Street – west side
E. College Street	Alder Street to city limits – both sides
Garfield Street	Taylor Street to E. Marquam Street – both sides
Academy Street	Entire length – both sides
Gilles Street	Academy Street to E. College – both sides

Appendix E: Capital Improvements 2003-2023

Improvement Project	Estimated Cost	Estimated Year
Intersection improvements (Church/Main/Highway 214/Railroad Avenue)	\$410,000	2010
E. Church Street reconstruction from Cleveland Street to College Street	\$130,000	2010
E. College Street reconstruction from Church Street to City Limits	\$560,000	2013
Railroad crossing improvements (Marquam Street NW)	\$125,000	2013
Left-turn pocket (Highway 214 @ Industrial Way)	\$84,000	2023
East-West Street from Pershing Street NW to Marquam Street NW	\$560,000	2003-2023 as development occurs
North-South Street from West Church Street to Marquam Street NW	\$365,000	2003-2023 as development occurs
North-South Street from Marquam Street NW to new north-south connection between Marquam Street NW and N. Pershing Street	\$400,000	2003-2023 as development occurs
East-West Street from Highway 214 to City Limits	\$400,000	2003-2023 as development occurs
Maple Street extension	\$400,000	2003-2023 as development occurs
North-South Street from Maple Street extension to W. Church Street	\$400,000	2003-2023 as development occurs
Spruce Street extension	\$100,000	2003-2023 as development occurs

Improvement Project	Estimated Cost	Estimated Year
Oak Street extension	\$350,000	2003-2023 as development occurs
May Street extension	\$420,000	2003-2023 as development occurs
Winchester St SW/Main St SE connection	\$420,000	2003-2023 as development occurs
Multi-use path Highway 214 to just east of Oak Street	\$16,850	2006
Multi-use path (Birch St to S. Cleveland St)	\$28,000	2007
Alder Street bike & ped improvements (College St to Taylor St)	\$63,000	2015
Alder Street bike & ped improvements (Taylor St to Marquam St)	\$51,000	2012
W. Church Street bike & ped improvements (Fir St to City Limits)	\$15,000	2015
S. Main Street bike & ped improvements (Church St to City Limits)	\$27,000	2010
W. Marquam Street bike & ped improvements (N. Main St. to Railroad Ave.)	\$30,000	2010
W. Marquam Street bike & ped improvements (Railroad Ave. to City Limits)	\$90,000	2015
Rideshare Computer/Program	\$2,500	2004
Multi-use path Lincoln St to Cindy Lane	\$5,600	2007
Realignment of the Highway 214/Marquam St intersection	unknown at this time	2003-2023

Appendix F: Meeting Minutes

**Excerpt From Minutes Of
City Of Mt. Angel
Planning Commission
Thursday, November 17, 1994
Council Chambers**

TGM GRANT- MWVCOG PRESENTATION

Shawn Loughran from the Mid-Willamette Valley Council of Governments made a presentation to the Planning Commission on the Transportation System Planning. The MWVCOG has received a grant for Oregon Department of Transportation on behalf of the City of Mt. Angel. This program was initiated by the State to assist cities in their requirements of transportation planning policies. The transportation planning rules and the administrative rules as a City will be required to comply with, and developed in a coordinated effort of the Oregon Department of Transportation and the Land Conservation and Development, with the intention of explaining how local governments can implement these goals. Mr. Loughran passed out an agenda, proposed transportation policy amendments, general standard of subdivision ordinance #462, and a Mt. Angel arterial/collector street inventory for the Commission's review. He basically wants to obtain feedback on the proposed plans on how the City wants to go ahead with this and would like any recommendations from the Commissioners. These plans will revise the transportation elements now in the City of Mt. Angel with the State requiring some bicycle and pedestrian paths to be installed, and identifying arterial and collector streets. The Planning Commission needs to help determine who else needs to be consulted about these plans.

The City Administrator told the Planning Commission that the City Comprehensive Plan has within it a number of transportation planning goals, the finished product that is desired is modification and rewriting of those goals that will fit into the complete revision of the Comprehensive Plan which is probably another two years out.

The proposed Transportation Policy Amendments is a draft of the revisions that are felt to be necessary to existing transportation goals, in terms of objectives. A map of showing logical street designation uses as major arterials and collector streets was shown to the Commission, which had been compiled after an examination of the City's current transportation plan. It laid out proposed elements of bicycle and pedestrian ways and viewed future connections for parks and schools.

Chairman Bochsler questioned if there were any decisions that need to be made at this meeting? Mr. Loughran indicated he would like to meet again after the holidays and after everyone has had a chance to review all the proposals and are ready to discuss some future ideas. He would be available to arrive an hour or two before the meeting for preliminary discussion and suggestion and would welcome any comments from the public at meeting would be possible providing there are no hearings on the agenda. This meeting will probably be scheduled in January 1995 and begin at 7:00 PM instead of 7:30 PM. It was suggested that anyone else who might be interested in attending this meeting should be notified, such as Council, Fire Department, schools, interested towns people.

DISCUSSION ITEMS

City Administrator Van Orman reviewed an updated report on the Otto Street Pedestrian Mall. This report is for the Commissioners to read and let hi know if they have any additions or changes to the report. The City Administrator is planning to write a letter to Mr. Jones to basically state, "here's where we are Mr. Jones, do you agree? Before anything else is done these are the resolves that need to be made...."

Commissioner Lucas stated that when the maintenance agreement is drawn up, that it should contain some indemnity provisions, to avoid the City from being exposed to any liability that could be created by the way the area is maintained.

The City Administrator indicated in the near future we will have a City attorney on board, and can get legal advice regarding these types of matters.

Commissioner Kelley asked if the remonstrance agreement on West College needs to also be addressed. Thought we discussed Railroad Avenue at the prior meeting and need to do some thing about that also.

Commissioner Schiedler asked if anyone had viewed the sidewalks that have been done in the Otto Street Mall area? These sidewalks have not been put in very well and thought might be to add some explicit sidewalk standard requirements to the letter.

City Administrator Van Orman indicated that the Visioning Plan RFP has been sent out and responses are being received. The discussion on the transportation revision part of the Comprehensive Plan that was discussed this evening, opposed to the part of the Comprehensive Plan that will be revised by the Visioning project, touch on each other but don't really overlap. Both projects do not need to be running simultaneously.

**Excerpt From Minutes Of The
City Of Mt. Angel
Planning Commission
Thursday, January 19, 1995
Council Chambers**

WORK SESSION - TRANSPORTATION SYSTEM PLANNING

Sean Loughran was introduced and he made a presentation on the Transportation System Planning project to date. He expressed his disappointment that a full planning commission was not present and also that the City Administrator's attendance was probably crucial to any decision making. It was understood by all why the City Administrator was not attending. He still felt he should go over the network of street layouts with those present. He asked if anyone had had a chance to read over the goals and policies that he had handed out at the last meeting which was basically discussed at that time.

What was planned for this meeting was to go over some of the changes that he is recommending and try to explain why the need for these changes. Mainly some things like consider relaxation of the street standards to encourage development of odd shaped lots and better utilizing the land. He is proposing to adopt some design standards that would resolve what the City is trying to accomplish. The policies should be gone over one at a time to determine what ones need to be eliminated and what ones can be put into the proposal, but this discussion should wait until more people can attend and give input.

Sean presented a large map showing the layout of streets and bike paths and projected streets and paths based on comments from the last meeting. The map showed a network of arterial and collector streets. The City has arterial streets and some collector streets now. The suggestion has been that the City adopt a standard design for arterial streets, collector streets, and an additional standard design for arterial streets, collector streets, and an additional standard where a narrow right-of-way is acceptable. Key intersections have been discussed in the past. The intersection of Hwy 214 and Marquam is a very important one as it handles traffic circulation East and West through the City. The City Administrator and Sean have a meeting with Marion County next week to discuss this portion of the road between the railroad tracks and the highway which is not under the jurisdiction of the County. Sean is recommending the County take over that area, but the County will probably want something in exchange for taking it over. One area that has been discussed as an exchange is Academy Street. The Church and College intersection is also a key intersection and Sean suggested a more traditional intersection would be better. It would still have 40 feet of right-of-way, still have adequate room for on street parking and if aligned straight a left hand turn lane could be installed. The Planning Commission was also presented two proposals from the City Administrator for alterations of that intersection but those two proposals eliminated any on street parking. The intersection of Main and Church, which has just been repaired at the railroad crossings, is a problem intersection. Sean spoke with ODOT today to talk about that intersection and some drawings were done. The problem is that they don't want to have to pay for the whole thing. The County, the railroad, the City and ODOT all have interest in this intersection, so it could be possible for all to contribute. The main thing to do that that intersection would be to restructure the island. There are a couple of proposals suggested such as closing Railroad Ave to not exit into the intersection or circulate it in some other direction. Another possibility is to get rid of the fountain and the island all together.

The map layout Sean presented is pretty much the existing transportation network in the City and the assumption is that it is functioning well and circulating the traffic at present. May wants for some future connections to various points in the City and landlocked areas and in between some of the current streets. We need to look at the policies to make sure they are quite clear and the ordinances to make sure everything is out in the open. The pedestrian and bike path are all geared to tie all the parks together if possible. Everyone appeared to be of the consensus that a "T" type intersection might be a good approach to Birch Street at Humpert Park, which would slow the traffic down through there. There is need to write into the City code that more streets need to connect, not have so many cul de sacs and dead end streets.

It is felt that the School District and Volkswalk people should have some input into the layout of pathway location. This constitutes the need to put this matter to a public discussion, possibly at the next meeting.

Some additional handouts were given to the Commissioners for further study. Included was an inventory of the streets. The street standards of Mt. Angel have been compared to those of the Salem area. It is not required by the transportation planning that the City adopt these street standards but since it has been along time since anyone has looked at the Mt. Angel street system this will give a good chance to make changes and work in whatever they want. What the sidewalks should look like if they want parking strips between roadways and sidewalks, those various types of designs.

In the landlock areas there could be a standard for a narrower street to allow entry to these parcels. The way the ordinance now reads the Planning Commission can allow a street of less than a 60 foot right-of-way, but the sentence right after that statement say the streets should not be less than 50 feet. There is a standard in the public works book that says when a street is less than 60 feet a 5 foot utility easement will be required on either side. A 60 foot right-of-way is far more than is needed especially is the street is going into a dead end or a cul de sac. Really only need about 22 feet, big streets are only 32 streets. Standards could be mixed such as parking on one side only, parking on both sides, no parking, etc. The object would be to adopt a overall standard so that each street does not have to be presented and discussed by the Planning Commission every time.

Other handouts by Sean was information on traffic counts through the City on Hwy 214 and changes needed in zoning areas. Transportation planning rules requires governments to do certain things such as installing pedestrian and bicycle access in all types of new developments, improvements on all pedestrian circulation, etc. These requirements need to be considered when going over the revision of the ordinance.

Further updating and reporting on this project will be put on the agenda for the next planning commission meeting in February.

**Excerpt from Minutes of the
City of Mt. Angel
Planning Commission
February 2, 1995
(continuation of January 19 meeting)**

Complete review of the Transportation Goals, Policies and Objectives. The Planning Commission endorsed/approved the recommended amendments with the following comments and changes:

- Revisit objective 3, the PC feels that the intention of this policy is important but that the wording needs to be clarified (consistent with ODOT plans for the Hwy?)
- Revisit language in policy 6, the existing policy may intend to support differentiation of street design standards by type of land use, a concept the PC supports.
- Policy 8 should not be eliminated. It is important for the City to control access along this particular piece of Hwy.
- Policy 10, 11 and 12 deal with the City financing of streets. The PC was informed that TPR has not funded an examination of funding issues but would like to at least address finance in terms of goals and objectives.
- Policy 22 was of special concern to the PC. Richard feels it is exactly opposite o what should happen with the property (access). The PC is interested in what issues were involved in the development of this policy and would like to look at the minutes from the public hearing.
- The PC suggested eliminating policy 25 because it is unlikely that the city would ever be able to contribute the proposed percentage toward street improvements.

Hand out information on street design.

Discussed issue of narrow street standards to open land locked parcels to development.

Hand out information on minimum requirements for subdivision and zoning ordinance.

**Excerpt from Minutes of the
City of Mt. Angel
Planning Commission
Thursday, April 13, 1995**

TRANSPORTATION PROGRAM

Sean Loughran stated that Marion County has started its transportation system and are hiring a consultant at this time. The transportation plan continues to be revised so there could be more changes forthcoming as we go along. Some of the changes being looked at that will affect the City are thinking about requiring local governments to reduce their street standards. The City is going through periodic review and have received their notices and Sean wanted to know the deadline for completion. The City Administrator stated that was subject to us submitting a schedule. By May 31st we have to indicate whether we need a periodic review and given what they have already told us there is no way that there is ever any way we can say we don't need a review. By September 15th we are supposed to tell them how it is that we are going to go about addressing periodic review. We have received from the Council of Governments the proposal from their planning section to do all the preliminary work involved with one answering the May 31st deadline for preparing a proposal, preparing the work program and how it would be in the budget and then actually going after the funds to fill the budget. We have a proposal from the Council of Governments to do this work for cost to be in the neighborhood of about \$2500. Some of that money would be expended in this fiscal year in order to meet the May 31st deadline. The answer to the question of timing is all hinged on that whole project. The visioning becomes part of it, what Sean is doing now is part of it. The water plan that is to be done by June 30th under OCDBG grant that is being done by Newton and Associates becomes part of it and the sewer plan that was done two years ago becomes part of it.

There will be a notice published in the May 3rd Mt. Angel News for a public hearing which will be held on May 18th at the next Planning Commission meeting, for the periodic review.

Sean passed out some new information handouts to the Planning Commission which were discussed during the meeting. He feels the City should adopt some policy regarding cul-de-sacs to say they only go in certain instances where there the best type of development. The City is not required to do this but as far as trying to get a better connected street system that provides more alternatives as far as routes and so forth.

DISCUSSION ITEMS

Chairman Bochsler stated that on the Budget Committee we set aside a reserve for comprehensive plan update but there is not enough money there to do it. If changes are wanted we need to bring proposals together for ordinance changes. Maybe we can add to that reserve fund next year. The City Administrator stated there are some things already under way, but would find it very difficult to get it done for less than \$15,000. We still need at least \$2500 more to do what we have to do before September 15th.

The City Administrator stated that he wanted to throw one proposal on the floor when we go into the complete comprehensive plan revision. That is to see from the consultant, or who ever is doing

it, there are a number of communities, most on the East coast, that have gone into a program where every type of individual land use change except for very narrow little activities, comes before the Planning Commission basically as a conditional use. What this does is say everything is unique although there are some standards applied. Every development is looked at on a design review basis regardless of standards.

Chairman Bochsler stated he felt all these items that have been brought up should be discussed at the next meeting. City Administrator Van Orman inserted one thought, which is what is scary about the proposal. If you up the size of the lot by 20%, LCDC is going to say where is the 20% added to the urban growth boundary? Where are you going to put the people who you have said are going to come here? That is the way they will be thinking.

November 8, 1994

Don West
Plush Brush Hair design
230 E Charles
Mt. Angel, Oregon 97362

Dean Don:

Thank you for taking the time to speak with me the other day about volkswalking. As I mentioned, I am currently conducting a comprehensive examination of the Mt. Angel transportation system including existing pedestrian and bicycle facilities and potential projects.

I would be interested in any information on volkswalking, especially as it relates to the Mt. Angel community, as well as any other information or insights you may have about popular walking routes, system deficiencies (safety), and potential improvements. Enclosed is a map on which I have identified some corridors I felt would provide good pedestrian and bicycle access to major points of interest such as parks, schools, and other civic areas. I would appreciate your comments on these proposals as well as any additional ideas you may have (feel free to make notes on the map).

Please call me if you have any questions or would like to discuss some of these proposals.

Sincerely,

Sean K. Loughran
Associate Planner

Appendix G: Technical Analysis of Highway 214/Main Street/ Church Street Intersection Alternatives

Oregon

DEPARTMENT OF
TRANSPORTATION

TECHNICAL SERVICES BRANCH
TRAFFIC MANAGEMENT SECTION
PRELIMINARY DESIGN UNIT

INTEROFFICE MEMO

DRAFT

DATE: January 31, 2003

TO: Lisa Nell
TGM Grant Mgr.

FROM: Dave Warrick
Sr. Designer
Preliminary Design

SUBJECT: Mt. Angel Refinement Plan (TGM 2i-01/19366)
Technical Evaluation of Alternatives
Hillsboro-Silverton Hwy/Church St./Main St. Intersection
Marion County

Preliminary Design has completed evaluation of the alternatives suggested in the Mt. Angel Downtown Plan for possible intersection improvements. We have taken the three basic ideas from that report and applied ODOT geometric criteria. We have also coordinated with TPAU, Traffic Section, and ODOT Rail specialists to determine whether fatal flaws or special problems are present. The possibility of a No-Build Alternative is also discussed in this memo. TPAU analyzed the no-build condition as well.

Existing Conditions

The subject intersection is located in the heart of Mt. Angel, at M.P. 46.17 on the Hillsboro-Silverton Highway. In its current configuration it is a six-legged intersection, bisected by a railroad crossing. A photo of the existing intersection area is shown as Figure 1.

The main road is the Hillsboro-Silverton Highway, which runs basically North-South. The principal cross street is Church St., which runs East-West. Church St. is intersected by two other local streets (Main St. and Railroad Ave.) right smack dab in the area where it crosses the Highway. The result is a complex series of skewed two-way connections that have limited storage distances and overlapping movements as well as rail crossing issues. Buildings on some legs restrict clear lines of sight. Although this intersection is complex and somewhat confusing, the majority of users are local and very familiar with the situation. These users approach the intersection with added caution and help to keep the accident rate low (0.41 in the year 2001 – compared to a statewide average of 2.87 for similar facilities).

Hillsboro-Silverton Highway (Highway 214) is the principal arterial in the Mt. Angel street system, and is a District Level Highway in the Oregon Highway Plan. Main St. and Church St. function as major collectors. Railroad Ave. is a local street. None of the legs of the intersection are currently experiencing V/C ratios that are unacceptable, considering the functional classifications. TPAU has prepared report on traffic conditions, both existing and projected (to the year 2022). This report is attached to this narrative as Attachment "A".

The highway also serves local access needs for business located immediately adjacent to it. There are several private access points located near the intersection. Delivery vehicles also use the highway shoulder as a parking area between Church St. and Charles St. NB.

Typical vehicles using the intersection include a mix of personal autos and pickup trucks, medium sized tractor-trailers, farm equipment (tractors & implements, combines, etc.), large tractor-trailers from Mallories Dairy and the Mt. Angel Bottling Co. (Pepsi-Cola), and manufactured homes being moved from the Redman Homes factory in Silverton. Any potential improvements to the intersection need to accommodate the larger vehicles and the movements they need to make. Pedestrian safety is a major concern as well.

The Willamette Valley RR crossing is a major issue in evaluating the relative merits and safety of intersection alternatives. ODOT Rail personnel have been reviewing the proposed alternatives. The volume of rail traffic is low on this line, and the trains are short (6-10 cars each). Intersection blockages and operational effects are likely to be brief and manageable. A greater issue will be how to design the crossings to

accommodate protective equipment. Some alternatives are more accommodating than others in this respect.

Evaluation Criteria

We have used the following criteria to evaluate the alternatives for the intersection:

- ◆ Safety – for both vehicles and pedestrians
- ◆ Operational qualities – including ability to absorb occasional increased demands
- ◆ Ability to meet ODOT geometric design requirements
- ◆ Ability to meet Oregon Highway Plan criteria for mobility
- ◆ Impacts to property, access, and parking/delivery areas
- ◆ Ability to meet Traffic Section requirements (signal warrants)
- ◆ Compatibility with rail crossing needs

The criteria aren't necessarily listed in relative order of importance. We've also relied heavily on the TPAU report for evaluating the operational characteristics of alternatives.

Alternatives

The following alternatives have been considered and compared to the evaluation criteria:

- ◆ No-Build (keep the intersection "as-is")
- ◆ Interim Improvements (may or may not be permanent)
- ◆ Signalized Intersection
- ◆ Roundabout Intersection (both a four-legged and five-legged version)

Each of these is described in more detail in the following section.

No-Build Alternative

This alternative would leave the existing intersection in place and not make any real changes to the current design. All legs that intersect the highway will continue to be stop controlled. It is possible that some minor changes to signs and pavement markings could take place, but no physical changes would be made to the roads. Existing lane configurations would remain, and no movements that are currently allowed would be changed. Pedestrian crossings would remain basically "as-is". It's possible that some private access points would need to be modified or eliminated if traffic volumes increase to the point where they become either unsafe or practically unusable.



FIGURE 1

The No-Build alternative is likely to become less safe for vehicles and peds as traffic volumes increase. Increased volume will lead to greater delays and likely more impatience among drivers. People are likely to take more risks in certain situations, such as accepting unsafe gaps in through traffic to make turn maneuvers or paying less attention to peds. Increased traffic volumes over time are expected to lead to a high V/C ratio (1.97 by the year 2022) for the WB Church St. leg of the intersection. Other legs are expected to become more congested by the year 2022, but not to an unmanageable level. Since no changes are proposed to the roadways, there is no opportunity to “clean up” the geometric design around the intersection (e.g., improved curb radii and ped crossings, existing sight distance restrictions). The Oregon Highway Plan mobility standard for Hillsboro-Silverton Highway (Highway 214) is attainable, at the expense of the local street connections. No R/W would be required for this option, unless some minimal site improvements are made to corner radii or ped crossings. There would not be a direct impact to any of the private access points in the immediate area, although increasing traffic may render some of them functionally obsolete. Parking and delivery areas along the highway and local streets may suffer a similar fate over time. If the intersection remains unchanged, the rail crossing treatment will likely remain unchanged

as well. Once again, as traffic volumes increase, this crossing may have to change to accommodate the situation.

Interim Intersection Improvements

This alternative proposes to simplify the intersection by closing the Railroad Avenue connection to Church Street and changing the current two-way intersection of Main Street and Highway 214 to a one-way leg (right turns only from SB 214 to Church St./Main St.). The existing landscaped island (which contains the fountain) would be enlarged to help make this change. A left turn lane would be striped on Highway 214 at Church St. Side by side left turn lanes will be needed on Church St. between Highway 214 and Main St. (a wider cross-section on Church through the intersection). Figure 2 shows the approximate design. This design might possibly be developed to fit a future traffic signal alternative with minimal added impacts, although we can't be sure of actual signal design details until such time as it meets appropriate warrants. Sidewalks and improved ped crossings will be included. All legs will be stop sign controlled. We have developed a design that meets minimal ODOT design criteria. We are fairly confident in this, but when actual surveys are done, there will probably be some adjustments.

This alternative will likely improve some aspects of safety in the area. The existing Main St. two-way connection (between Church St. and Highway 214) is heavily skewed to the highway and leads to some difficulty in seeing approaching traffic to the south. On the other hand, the existing leg also allows for a better view of the highway to the north. The removal of the Railroad Ave. connection will remove a number of traffic conflict points in the intersection, as will changing the Main St. "extension" from two-way to one-way. This alternative will provide for marginally safer ped movements, with improved crossings that are more clearly visible. There are some ped movements tradeoffs, however. The cross-section of pavement on Church St. that peds will have to cross will be wider than it is today. The Interim Alternative will not deal directly with restricted sight distance on some legs and other streets in the area such as Charles St./Highway 214.

The principal operational changes from the Interim Alternative will be the removal of the direct Railroad Ave. connection (alternate side streets are available for this low-volume local movement) and the restriction of major turning movements to one location (at the Church St./Highway 214 intersection). The biggest change would be for those drivers going EB on Church St. or NB on Main St. that want to continue on to NB Highway 214. They would be required to go through the Church St./Highway 214 portion of the intersection instead of using the Main St. leg as many now do (and as most large trucks must do). Main St. drivers in particular would have to divert more to continue on to the north. They would have to turn right onto Church St. and move into a left turn lane, wait in line, and then pick a safe gap in through traffic to make a left turn onto Highway 214 NB. This will be particularly awkward for the large trucks coming NB on Main from Mallories Dairy. These large vehicles require a lot of room for making

their turns, and other traffic will have to yield room to them to facilitate the move. They also need a larger gap in through traffic on the Highway to be able to make a safe left turn. This operational change may not be as beneficial as time goes by and traffic volumes increase. The TPAU report indicates that the V/C ratio for WB Church St. will be about 1.97 in twenty years - no improvement over the No-Build Alternative. In addition the EB Church St. leg will have a high V/C ratio - over 2.0 - due to the fact that all NB Main St. traffic will also have to use that leg. When the levels of congestion are this severe it will likely have a negative effect on safety (for both vehicles and peds).

Minimal ODOT geometric design criteria can be met with this alternative. The need to accommodate large trucks has a major impact on the layout, especially on the Main St./Church St./Highway 214 movements.

OHP mobility standards for the highway and intersection as a whole can be attained. The Church street approaches will be heavily congested in order to maintain Highway traffic flow.

There will be direct impacts to private access points (NAPA, the old Wilco warehouse property, and the house in the SE corner of the Church St./Highway 214 intersection). On-street parking on Church St. will have to be removed between Lincoln St. and Garfield St. Private parking spaces at the NAPA store will be directly impacted, as well as some of the parking area in front of the warehouse (along Main St.). Parking along Highway 214 for delivery vehicles will no longer be feasible. Although direct physical impacts to buildings are not a sure thing, there is a chance that the NAPA building will be impacted, and a lesser chance that the warehouse building will have some impact as well. Changes to the traffic island will require the fountain to be moved to a different spot, possibly still on the island, but more desirably in a place where peds don't have to put themselves in jeopardy to look at it up close. To sum up - it might be necessary to buy the NAPA building and the house due to impacts to access and parking, if not the actual buildings. It may be necessary to pay for some loss of parking in front of the warehouse building.

The Interim Alternative would likely not require huge changes to the rail crossing compared to the No-Build Alternative. A train would stop the westerly leg of Church St. and Main St.. Through traffic on Highway 214 could continue to move pretty much normally even if the other legs are blocked, provided that vehicles waiting at the crossing don't back up onto the Highway.

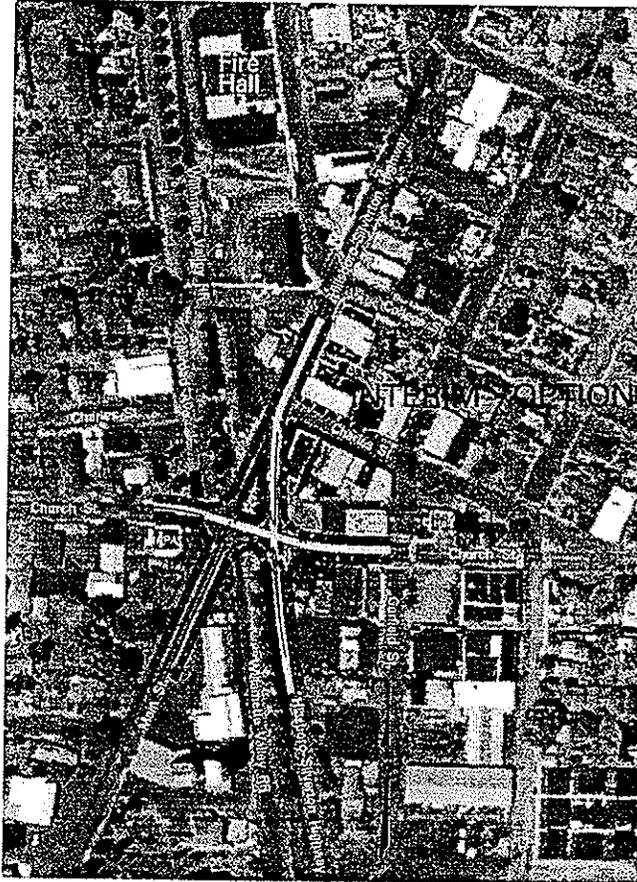


FIGURE 2

Signalized Intersection Alternative

This alternative, shown in Figure 3, would be similar to the Interim Alternative, except that Main St. would have to be realigned to move that intersection further from the Church St./Highway 214 intersection (where the actual signal would be located). Additional roadway widening will be required along Church St. between Lincoln St. and Garfield St. (to accommodate turning and vehicle storage lanes). In essence, the current "mega-intersection" would be split into two intersections. The intersection of Main St. and Church St. will be relocated some 150-200 feet west of its current location. This is necessary to provide for Traffic Signal needs, provide adequate storage room for vehicles waiting at the signal, and to remove conflict points which would prevent a signal from functioning.

The Signalized Intersection Alternative likely will increase safety at the Highway 214/Church St. intersection. A signal will meter the flow of traffic in a more uniform way and likely reduce the frequency of some types of accidents. There are normally some tradeoffs in the types of accidents, however. Turning movement accidents are likely

to decrease, but rear-end accidents and sideswipes (where side-by-side turn lanes are present) may increase. Removing the Main St. leg from the rest of the intersection will reduce the number of conflict points directly at the primary intersection and hopefully increase safety. Ped safety should be improved by providing improved crossings and gaps in traffic flow. Some ped crossing distances would be increased, so there could be a safety tradeoff at those points.

The Signalized Intersection Alternative is expected to improve the operation of the overall intersection of Highway 214/Church Street. The TPAU report indicates that it will easily meet the OHP V/C criteria. The realigned Main St./Church St. intersection would continue to be stop-controlled, and is expected to have acceptable V/C ratios even in twenty years. This Alternative will have some of the same issues with large trucks that are present in the other Alternatives. Large trucks will sometimes block other lanes as they negotiate the turns to and from Main St. and Highway 214. These lane blockages will impact the operation of the signal, although probably not in a huge way.

Preliminary Design, in consultation with ODOT Traffic Management Section, has determined that minimal geometric design criteria can be met with this Alternative. There are some significant restraints on operations when the design is this compact, and when the Main St. intersection is located so close to the primary intersection. Providing for movement of large vehicles constrains the design significantly. The issue of providing for large trucks (and for that matter, the relatively large demand for all traffic) moving between Main Street and Highway 214 is still a big constraint on operations. With limited distance available for storing vehicles waiting at the signal, it may be tricky to time the signal without backing up vehicles too much. Traffic Section concurrence that this is a workable Alternative is crucial – State Traffic Engineer approval is required before a signal can be placed on Highway 214.

This Alternative will require removal of on-street parking and loading zones on the Highway, on Church St. between Lincoln and Garfield Sts., and on the realigned portion of Main Street. Roadway widening will be necessary on Church Street. The required widening and realignments will impact several buildings along Church Street and Main Street, possibly including the Post Office. The NAPA building and those immediately adjacent will be directly impacted by Main Street realignment and Church St. widening. The house in the SE corner of the Highway 214/Church Street intersection, the tavern next to it, and the vacant land on the opposite side of Church Street will be directly impacted by roadway widening. Private access will be restricted on Church Street between Lincoln and Garfield, on Main Street in the realigned portion, and on Highway 214 from Charles Street to the point where Garfield St. connects to it.

TPAU's report indicates that preliminary traffic signal warrants will be met at the Highway 214/Church Street intersection by the year 2022. This doesn't necessarily mean that a signal would be installed, only that it can be seriously considered as a solution. We have many locations on State Highways where some signal warrants are met, but for

other reasons a signal isn't considered the best solution for the problem. At any rate, preliminary warrants need to be met before State Traffic Engineer approval (required by law) can be obtained.

The rail crossing situation would likely be similar to the No-Build and Interim Improvement Alternatives, except that its operation would need to be tied to the traffic signal. Traffic backups due to the crossing being full would affect the timing of the signal, although probably not for significant amounts of time.

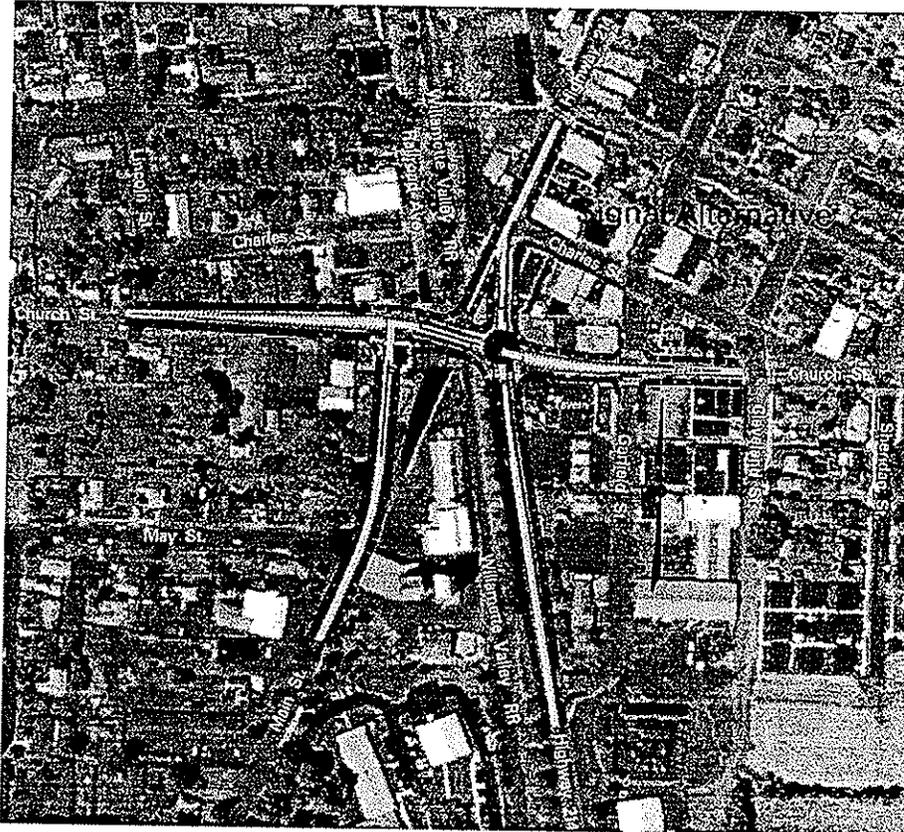


FIGURE 3

Roundabout Alternative(s)

Preliminary Design has developed designs for an intersection using Roundabout control. We have determined that it would be feasible to provide either a four-legged or a five-legged design. A four-legged design will require removing one connection, most likely the Main Street leg, from the intersection. Main Street would have to be realigned as in the Signalized Alternative, although the realignment would need to be more drastic. Figures 4A and 4B illustrate some of the difficulties with removing a leg from the intersection. Roundabouts have specific and distinct geometric design requirements. Meeting those requirements is what drives the need to either shift Main Street drastically,

as shown in Figure 4A, or shift the position of the main intersection as shown in Figure 4B. An alternate way of moving Main St. would be to extend either Garfield or Academy St. across the highway and the railroad to Main Street. The severed portion of Main St. could be used for local access. This idea may be beneficial for either the Roundabout Alternative or the Signal Alternative.

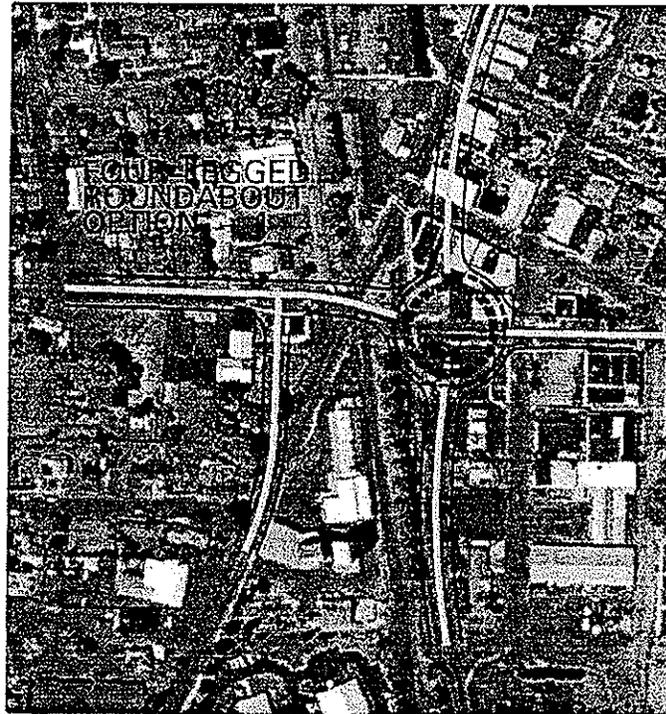


FIGURE 4A

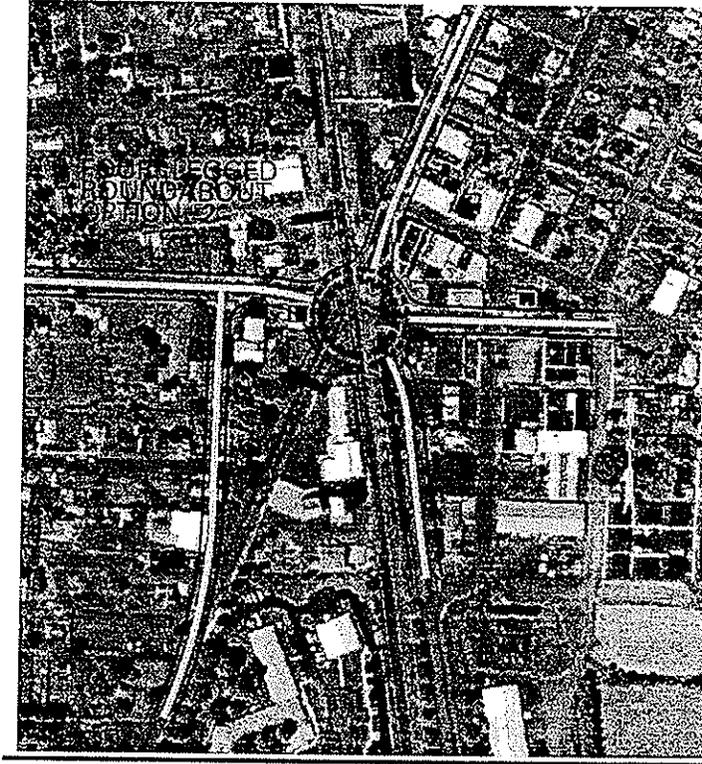


FIGURE 4B

One possible advantage of a four-legged design is that the rail crossing would only block one leg, possibly allowing for some continued traffic flow during blockages. Depending on the origin and destination of the vehicles entering the roundabout, there could still be delay and blockage of the central circulating roadway. Neither of the two ideas for a four-leg design were pursued in great detail, as the impacts were deemed to be too great. If there is a great willingness to pursue the extension of Garfield or Academy Street, it may be worthwhile to develop the ideas further.

The Roundabout Alternative we have developed in detail, shown in Figure 5, is for a five-legged intersection. We have determined that it is possible to locate a roundabout at this location that would meet ODOT geometric design criteria. In general a roundabout should improve safety in the intersection for both vehicles and peds. Operating speeds are lower and there are fewer conflict points to manage at each leg of the intersection. Pedestrian crossings are shorter and refuge islands are provided on all legs. All of the approach legs are basically at right angles to the circulating roadway, which will help with sight distance. Roundabouts generally can be expected to have less severe accidents than other forms of intersection control. Full provision of sidewalk will help ped safety, and should help to “calm” traffic. The mere presence of the roundabout will also have some calming effects.

TPAU's report indicates that a five-legged roundabout would have good operational characteristics and V/C ratios in the 2022 design year, and that OHP mobility criteria can be met with this design. A key feature of roundabouts is the requirement for entering vehicles to yield right-of-way to those already in the central circulating roadway. Roundabouts tend to operate most effectively when traffic volumes are balanced between all legs. When one or two movements have relatively heavy volumes compared to others, they tend to dominate the use of the circulating roadway. Relatively minor movements can sometimes find it difficult to find a suitable gap in traffic to enter the intersection. In this situation volumes are not so high, even for major movements, that they are likely to cause big delays, even during peak traffic times. TPAU estimates that there may be times when as many as four or five vehicles are stacked up on one leg, waiting to enter the central roadway. An added advantage to a roundabout is its greater ability, at least in this case, to absorb "blips" in traffic flow. This doesn't mean during Oktoberfest, just in everyday situations where traffic gets a little heavier for some reason.

The Roundabout Alternative will require restricting private access, removing parking, and removing loading zones on all legs of the intersection. No parking can be allowed in the central circulating roadway. Some roadway widening will be necessary on Church Street and Main Street, resulting in impacts to the NAPA building, the Wilco warehouse, and possibly the house in the southeast corner of the intersection. There is also a possibility that the Post Office building and the tavern building will be directly impacted by roadway work. The vacant land in the northeast corner would be impacted as well. Some minor work on the intersection of Charles Street and Highway 214 will be done (sidewalks and curb radii) as part of the work on the Highway 214 leg approaching the roundabout. No R/W or buildings should have to be taken at Charles Street.

Although private access is not normally allowed to a roundabout, it may be feasible to provide access for delivery vehicles to the northeast corner of the intersection. Figure 6 illustrates a possible scenario for this, using a driveway that would be for the use of service vehicles only (fire, garbage, utility, or delivery trucks). ODOT would likely require some sort of gated protection for this driveway to prevent its use by the general public.

The fountain that is now located in the traffic island will need to be relocated. Although aesthetic treatment of the central island in a roundabout is highly desirable, pedestrian traffic is not. Leaving the fountain on the island would likely encourage some people to make the unsafe trip across the circulating roadway to take a closer look. Again, ped traffic on the circulating roadway is very unsafe and not recommended.

The Roundabout Alternative would require approval from the State Traffic Engineer, similar to the Signalized Alternative. We have had preliminary discussions with Traffic Section, and they are receptive to the possibility of using roundabout control at this location (the five-legged version is what we in Preliminary Design have shown

them and recommended). As always, preliminary discussions don't necessarily mean final approval is assured. This Alternative is definitely considered viable.

Preliminary discussions with ODOT Rail Crossing specialists have been held. In general, they are more favorable toward this Alternative than the others being considered. The crossings and protection will be simpler, shorter, and probably easier to manage than the crossings in the Interim and Signalized Alternatives.

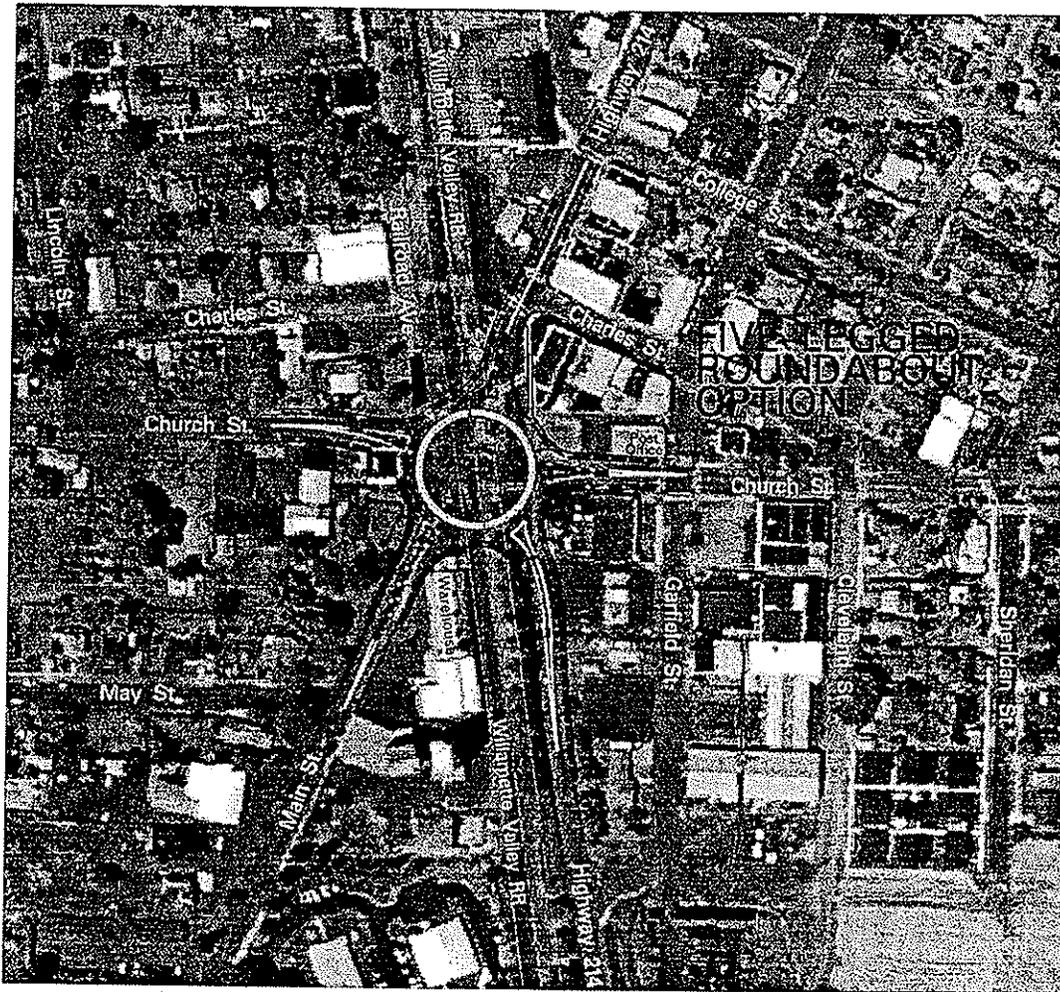


FIGURE 5

Summary

None of the proposed alternatives for dealing with this complex intersection appear to be fatally flawed. All alternatives except the No-Build will likely improve safety and operations for both vehicles and pedestrians. The Signalized and Roundabout Alternatives will allow us to meet OHP mobility standards. The Interim Alternative will help the Highway, but the Church St. legs will become more congested over time. The No-Build Alternative will not help ease congestion on the Highway or the local street connections.

The Signalized and Roundabout Alternatives have the greatest level of impact to buildings, parking, and private access. They also require the most new Right of Way. The Interim Improvement Alternative will require additional Right of Way and impact to parking and access, but a lesser degree than the first two. The No-Build Alternative would not have Right of Way impacts, but increasing traffic congestion may require that some restrictions be made to private access and parking.

Each of the Alternatives except the No-Build could be developed to acceptable geometric standards. Design requirements make additional Right of Way impacts unavoidable. The Roundabout Alternative in particular has very specific requirements. The Signalized Alternative may require impacts in addition to those shown in Figure 3 if operational considerations determined that more storage distance is needed for turning vehicles.

The Signalized and Roundabout Alternatives will both require State Traffic Engineer approval before they could be implemented. The intersection appears to meet preliminary signal warrants in the year 2022, which will help in gaining that approval. Discussions with Traffic Management Section indicate that they are very open to the Roundabout Alternative, assuming that it can be configured to meet appropriate criteria.

ODOT Traffic Management Section has some reservations about the Signalized Alternative since the Main Street/Church Street intersection would be so close as to significantly affect the signal operation. Signs and pavement markings will be more complicated for a Roundabout, but since most users are local, this shouldn't be major issue.

The rail crossings in the No-Build, Interim, and Signalized Alternatives will be fairly similar to one another. The Interim and Signalized Alternatives would create a single crossing that is substantially wider than the existing. The Roundabout Alternative would have two crossings, and would be pretty much bisected by the railroad. ODOT Rail personnel have indicated a marginal preference for the Roundabout Alternative.

Based on the criteria listed earlier in this memo, I think the **Roundabout Alternative** seems to have the most potential for overall improvement to this complex

intersection. The level of physical impact to buildings and property is similar to the Signalized Alternative, but the Roundabout will probably have more reserve capacity and offer clearer, smoother operations. The level of Right of Way impact will be substantial, and may in fact prove to be a fatal flaw from the perspective of local citizens. The rail crossing is an unusual feature, but short trains operating infrequently will likely not be a significant problem. I also recommend that the issue of extending an existing local street (Garfield or Academy) across the Highway and Willamette Valley R.R. to Main St. be given serious consideration. There will be some R/W impact, and getting an added at-grade crossing of the W.V.R.R. may not be feasible. The potential benefit to the principal intersection will be substantial.

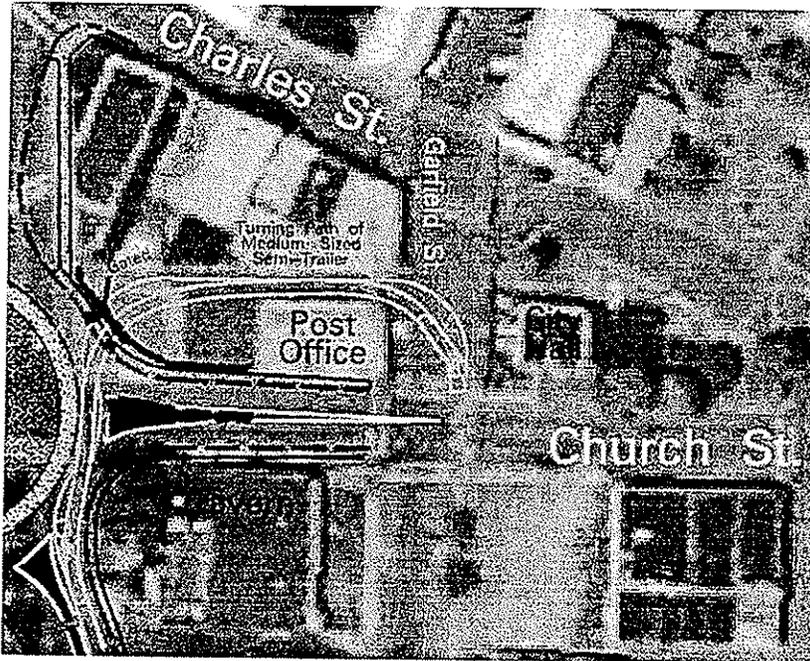


FIGURE 6

STATE OF OREGON

INTEROFFICE MEMO

DRAFT DRAFT DRAFT DRAFT DRAFT

Department of Transportation

Planning Section

Mill Creek Office Park

555 13th Street NE

Salem, Oregon 97301-4178

(503) 986-4121 FAX (503) 986-4174

File Code: PLA

Date: August 23, 2002

TO: Lisa Nell and Dan Fricke
Region 2 Planners

FROM: Thanh N. Nguyen, Transportation Analyst
Dorothy Upton, P.E., Senior Transportation Analyst
Transportation Planning Analysis Unit

SUBJECT: Mt. Angel Intersection Analysis (File No. 2I-01)
Hillsboro-Silverton Highway # 140 (OR 214), MP 46.17

This memo is to provide the transportation analysis results for the impacts of changing the intersection of Hillsboro-Silverton Highway No. 140 (OR 214) with Main and Church Streets (MP 46.17) in the City of Mt. Angel. The work done for their Transportation System Plan (TSP) identified this intersection as the most important project in the city. This analysis work is being done as part of a refinement plan paid for by a TGM grant that wanted three options evaluated.

The evaluation of four alternatives has been completed for the Mt Angel Intersection Analysis Project. The purpose of this analysis work is to determine the adequacy of the three proposed alternatives described below along with a No-Build alternative:

- Interim Intersection Alternative: removing a confusing turn lane by prohibiting right and left turns off of Main St onto OR 214, closing the Railroad Ave connection to Church St, and extending the existing island.
- Signalized Intersection Alternative: realigning Main St & Railroad Ave to west of the existing Main St/Church St/Railroad Ave intersection, extending the existing island, channelizing the OR 214 southbound right turns off of OR 214 onto Church St, and signalizing the new Main St/Church St/Railroad Ave intersection and OR 214/Church St intersection.
- Roundabout Alternative: two options which are a five leg roundabout with railroad track crossing through it (option 1), and a four leg roundabout which is offset to east of railroad track (option 2).

Based on our analysis, TPAU recommends that the signalized intersection alternative is the best solution for the intersection. The roadway geometry changes can be done prior to the signal being warranted, so when it does, a signal can be installed. Although the roundabout alternatives function, there are major issues to be dealt with for them to be constructed.

Background

This complex intersection is located at the southern end of downtown Mt. Angel. Mt. Angel has a population of 3,130 and is located eighteen miles northeast of Salem. Mt. Angel offers several attractions including the annual Oktoberfest celebration that attracts 350,000 visitors each year, the Mt. Angel Abbey, and a Bavarian-theme downtown. The Highway 214 divides the town and provides connections to the Portland metro area to the north and Silverton to the south. OR 214 is a District/Local interest road through the study area with a posted speed of 30 MPH. Main and Church Streets are local roads connected to OR214 with the posted speed of 25 MPH. The 1999 Oregon Highway Plan (OHP) requires operating at a Volume to Capacity (V/C) ratio equal to or less than 0.85 for the signalized intersection and the minor unsignalized approaches inside Urban Growth Boundary (UGB). And the roundabout mobility standard is 0.80.

Traffic Volumes

The base year traffic volumes were developed from a 14-hour manual count taken in February 2002. Historic traffic data was used to develop a linear growth rate of 2.0 percent/ year. This growth rate was used to project base year traffic volumes to design hour traffic volumes (year 2022). Figure 1 shows the no-build 2002 30th Highest Hour Volumes and Figure 2 shows the no-build 2022 Design Hour Volumes. Figures 3 to 6 show the 2022 Design Hour Volumes for the Interim Intersection Alternative, the Signalized Intersection Alternative and the Roundabout Alternative respectively.

Analysis Results

No-Build Alternative: The No-Build alternative leaves the intersection in its existing configuration, which includes four stop control intersections (See Figures 1 & 2). The lane configurations are all single shared lane except at the Church St/OR 214 intersection that has an exclusive right turn lane for eastbound traffic. This alternative has the advantage of remaining the same to motorists. Although the intersection is complex, most drivers pass through it without incident, indicating that motorists traverse the intersection very cautiously.

The disadvantage of this alternative is that as the OR 214 traffic increases, turning movements at Church and Main Streets become more difficult, particularly the left turns. The delays may have an adverse effect on safety as motorists may be inclined to use an unsafe gap to turn. This is shown by the volume to capacity ratios reported in Table 1. The effects at unsignalized intersections have been analyzed using Synchro and SimTraffic. Synchro is used to determine Volume to Capacity (V/C) ratios and delays (as the 2000 Highway Capacity Manual) at a macro

level, while SimTraffic is used to simulate and animate the conditions to determine the problems that will not be realized with a macro-level model.

Table 1. No-Build V/C Ratios

Intersection Location	Direction Description	Studied Year V/C Ratios	
		2002	2022
OR214/Church Street	Church St westbound approach	0.75	1.97
	Church St eastbound left/through	0.24	0.58
OR2142/Main Street	Main Street left	0.32	0.74

These v/c ratios indicate motorists on the westbound approach will suffer much longer delays in year 2022 at the OR 214/Church St intersection.

Interim Intersection Alternative: This alternative simplifies the intersection by eliminating uncomfortable vehicle movements, removing a confusing turn lane by prohibiting right and left turns off of Main St onto OR 214 completely, closing the Railroad Ave connection to Church St, and extending the existing island (See Figure 3). The lane configuration has a single shared lane on each approach except at the Church St/OR 214 intersection which has an exclusive eastbound right turn lane, and at the Main St/Church St intersection which has exclusive left turn and right turn lanes with through traffic prohibited. This alternative will add more traffic on the eastbound approach of the Church St/OR 214 intersection. This intersection meets preliminary signal warrants with the 2022 traffic volumes, so a signal may be installed in the future.

Using Synchro and SimTraffic the volume to capacity ratios at the Church St/OR214 intersection are shown in Table 2 for 2022.

Table 2. Interim Intersection V/C Ratios

Intersection Location	Direction Description	Studied Year V/C Ratio (2022)
OR214/Church Street (UNSIGNALIZED)	Church St westbound approach	1.97
	Church St eastbound left/through	>> 2.0
OR214/Church Street (SIGNALIZED)	Whole intersection	0.71

As shown in Table 2, if the OR214/Church St intersection is unsignalized, motorists on the minor approaches, especially the eastbound, will incur long delays. If this intersection is signalized, its operation will be greatly improved.

Signalized Intersection Alternative: This alternative includes realigning Main St & Railroad Ave to west of the existing intersection, extending the existing island, channelizing the OR 214 southbound right turns off of OR214 onto Church Street. With the 2022 traffic volumes, the OR 214/Church Street intersection meets preliminary signal warrants while the Main St/Railroad

Ave/Church Street intersection does not meet any warrants. See Figure 5 for the lane configurations of these intersections.

In the analysis, the Main St/Railroad Ave/Church St intersection will be two way stop-controlled on Main St and Railroad Ave while the Church St/OR 214 intersection will have a two-phase signal. Because the railroad track crosses Church St between the two intersections, the Main St/Railroad Ave/ Church St intersection may need a two-phase signal while Church St/OR 214 intersection has a two-phase signal in the analysis. Table 3 shows the v/c ratios from Synchro and SimTraffic.

Table 3. Signalized Alternative V/C Ratios

Intersection Location	Direction Description	Studied Year V/C Ratio (2022)
Main St/Railroad Ave/Church St (UNSIGNALIZED)	Church St westbound left	0.19
	Main St approach	0.33
	Railroad approach	0.08
Main St/Railroad Ave/Church St (SIGNALIZED)	Whole intersection	0.48
OR214/Church Street (SIGNALIZED)	Whole intersection	0.62

As shown in Table 3, the V/C ratios meet the OHP required mobility standards even with or without a two-phase signal at Main St/Railroad Ave/Church St intersection. The disadvantage of this alternative is a signal will not be considered until it meets a signal warrant which is some time around the year 2022.

Roundabout Alternative(s): This alternative includes two options both of which close off Railroad Avenue. Option One is a five leg/single lane roundabout with the railroad crossing through it while Option Two is a four leg/single lane roundabout offset to east of the railroad. Both options were analyzed using AASIDRA 2.0 and GERMAN G2. The actual operation of the roundabout will be somewhere between AASIDRA 2.0 and GERMAN G2 methodology results. See Figure 6 and Figure 7 for traffic volumes and lane configurations.

The single lane roundabout will be 115 ft (35 meters) wide curb-to-curb and will have a single 18-foot (5.6-meter) circulatory lane. An 8 feet (2.4 meters) wide truck apron constructed adjacent to the inside edge of the circulatory roadway will provide the extra width required for trucks traveling through the roundabout. Each approach to the roundabout will have a single 13-foot (4-meter) entry lane. Vehicles entering the roundabout must slow down to approximately 15 miles per hour (25km/h).

During the workweek, trains traverse the intersection twice daily. Each train has 6 to 10 cars and travels approximately 10 miles per hour. The total time between closing and opening the crossing

gates is approximately 2 minutes. This means queues are anticipated to back onto the circulatory roadway and all legs. With the 2022 volumes, it will take approximately 3 minutes to disperse queues after the crossing gates opens. The roundabout alternatives have some distinct disadvantages such as requiring a large right-of way, the inefficiency and safety concerns when used with unbalanced flows on all intersection legs. There are also concerns for increased response times by emergency services when an incident occurs in the intersection (since this is the intersection two of the major routes through town) and one of only three railroad crossings in town. Also, the fountain may have to be relocated depending on the roundabout's placement.

Option 1: A five-leg/single lane roundabout intersection with a railroad crossing is an unusual design for Oregon. The five-leg roundabout is simplest for improving the intersection with a potentially smaller requirement for right-of-way. The disadvantage of this option is when the train traverses the intersection, all legs of the roundabout will be shut down. Table 4 shows the 2022 v/c ratios.

Table 4. 2022 Five-leg/Single lane Roundabout V/C Ratios

Approach	AASIDRA 2.0					GERMAN G2				
	South	East	North	West	South West	South	East	North	West	South West
Volume to Capacity Ratios	0.50	0.50	0.59	0.22	0.31	0.52	0.45	0.72	0.19	0.29
95% Queue Length (ft)	85	89	128	33	49	N/A	N/A	N/A	N/A	N/A

The result shows that a five-leg /single lane roundabout will meet the mobility standard in the design year. Because vehicles enter the roundabout at low speed so this will stack vehicles about 128 feet on the southbound (north approach) leg.

Option 2: A four-leg/single lane roundabout intersection is offset to east of the railroad. The purpose of this option is instead of having a railroad crossing through the roundabout, the railroad will cross the east leg of the roundabout. This will allow some movements to function when a train traverses the intersection. Closing only the leg with the rail crossing may work if queues are not anticipated to back onto the circulatory roadway. If queues back into the circulatory roadway, then the roundabout will be shut down. Table 5 shows the 2022 v/c ratios.

Table 5. 2022 Four-leg/Single lane Roundabout V/C Ratios

Approach	AASIDRA 2.0				GERMAN G2			
	South	East	North	West	South	East	North	West
Volume to Capacity Ratios	0.42	0.43	0.55	0.37	0.50	0.43	0.70	0.33
95% Queue Length (m)	20	20	31	17	N/A	N/A	N/A	N/A

The result shows that Option 2 will meet the mobility standard in the design year. The disadvantage of this option is a larger right-of-way requirement, because of being into the building with Boschler's Hardware on the eastside of OR 214.

Summary

The intersection with its existing configuration currently operates within OHP mobility standards. As traffic flows grow, problems will increase. The selected improvement should promote safety and efficient traffic flow through the intersection.

The interim intersection alternative does not work at this intersection in the design year. It simplifies the intersection and eliminates the most difficult vehicle movements with relatively low cost. Since traffic will continue to grow on OR 214, the motorists will incur long delays, especially eastbound if the OR 214/Church St intersection remains unsignalized. The signalized intersection alternative works better in the design year. The motorists will not incur long delays if a signal is installed at the OR 214/Church St intersection.

The roundabout alternative meets the OHP required mobility standards. Because traffic is continuously flowing at low speed, the roundabout has a high capacity. Roundabouts operate most effectively and safely where there are balanced traffic flows on all legs of an intersection. Vehicles exiting the roundabout leave gaps in the circulating roadway for vehicles entering the roundabout from other legs. The traffic flows on the legs of this intersection are very unbalanced. There will be a tendency for OR 214 traffic flows to dominate the circulatory lane.

The recommendation is that the signalized intersection alternative is the best solution for this intersection. The roadway geometry changes can be done prior to the signal being warranted, so when the signal meets warrants it can be installed. Based on the mobility standpoint, both roundabout and signalized intersection alternatives meet the mobility standards in the design year. The roundabout alternatives was not recommended based on the following reasons:

- The proposed roundabout options eliminate the loading area for Boschler's Hardware that is located on the northeast corner between OR 214 and Church Street, and needs a large right-of-way requirement.
- Fountain needs to be moved.
- Stopping the highway traffic as a train crosses the intersection.

- When an incident occurs in the intersection, as the main route through town, this could create major problems for emergency service providers.

cc: Tim Burks, Traffic Management
Craig Riley, Rail Crossing Section
Robert Fynn, Region 2 Traffic Manager