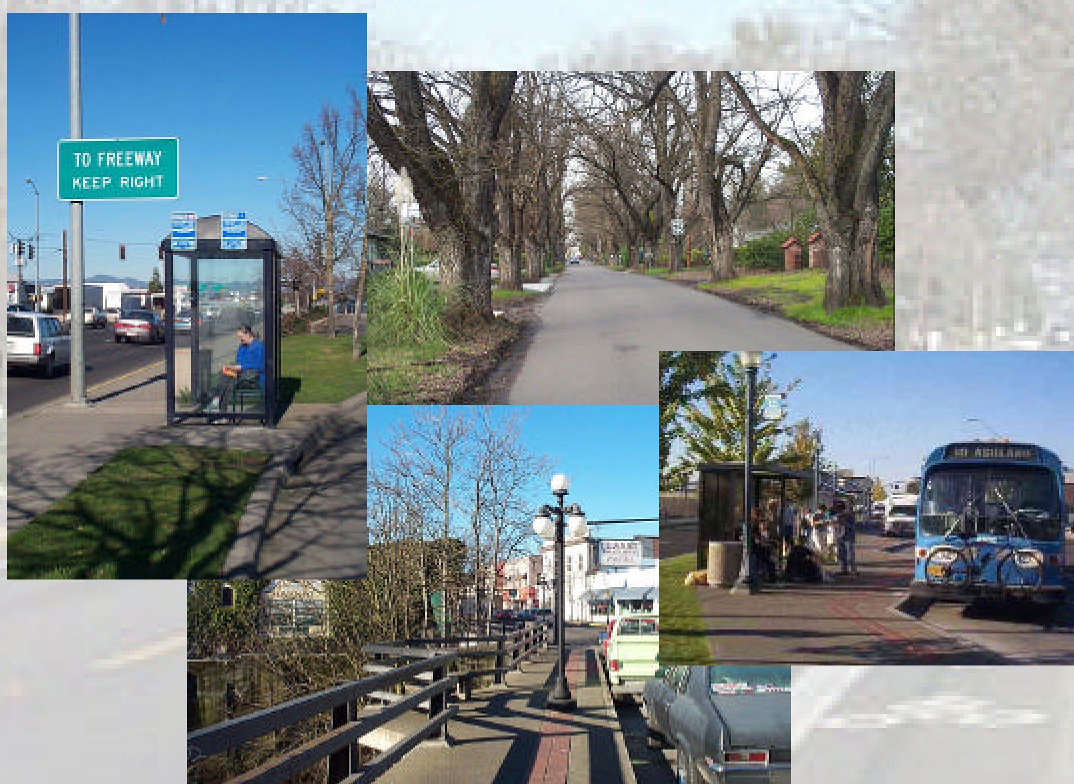
City of Medford
Transportation System Plan

Prepared for:

City of Medford



Prepared by:

Parametrix

City of Medford

Transportation System Plan

Adopted
November 20, 2003

Prepared for:

City of Medford

Prepared by:

Parametrix
700 NE Multnomah Street, Suite 1160
Portland, OR 97232
(503) 233-2400

Acknowledgments

Medford Planning Department
Mark Gallagher AICP, Principal Planner
Rob Scott AICP, Director, Suzanne Myers AICP, Associate Planner,
Steve Rehn, Assistant Planner, Michael Howard, Assistant Planner

Medford Public Works Department
Alex Georgevitch, Transportation Manager, Project Manager
Cory Crebbin, Director, Robert Janssen, Jerry Barnes, Kim Parducci

Technical assistance provided by:
Parametrix – Anne Sylvester, PTE, Senior Project Manager; Howard Roll, PE, Senior Transportation Planner; Jason Franklin, Senior Planner, Rory Renfro, Planner; Jennifer Bradford, GIS Coordinator, David Stocker, GIS Coordinator
JRH Engineering (traffic analysis) – Jim Hanks, Matt Zoll

Agency Participants:
Oregon Department of Land Conservation and Development – Steve Oulman
Oregon Department of Transportation – Peter Schuytema, Shirley Roberts
Rogue Valley Transportation District – Scott Chancey
Rogue Valley Metropolitan Planning Organization – Dan Moore, Dick Converse, Craig Anderson
Medford Urban Renewal Agency – Donald Burt, Eric Iverson
Jackson County – Pam Lind, Eric Niemeyer, Jay Harland

Citizen Advisory Committee:

Galen Anderson	Ben Bergreen	Curt Burrill	Mike Card
Steve DeCarlow	Bon Dysart	Seth Harriff	Edgar Hee
Susan McKenzie	John Statler	Bill Thomas	Ron Wallace

Joint Transportation Subcommittee:

Carl Bartlett, Chairman	Eileen Adee	Jason Anderson	Matthew Barnes
Bob Bills	Charley Bolen	Ernest Garb	Boyd Gibson
Skip Knight	Gene Martin	Susan McKenzie	Bill Moore
Robert Tull			

Planning Commission

Robert Tull, Chairman	Jason Anderson	Carl Bartlett	Boyd Gibson
Seth Harriff	Thomas (Tod) Hunt	James Kuntz	David McFadden
Norm Nelson			

City Council

Lindsay Berryman, Mayor	Ed Chun	Sal Esquivel	Jim Key
Skip Knight	John Michaels	Claudette Moore	Bill Moore
Bob Strosser			

This project was partially funded by a grant from the Transportation and Growth Management (TGM) Program, a Joint Program of the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development. TGM grants rely on federal Intermodal Surface Transportation Efficiency Act and Oregon Lottery funds.

TABLE OF CONTENTS

Chapter		Page
1	INTRODUCTION AND SUMMARY	
	Introduction	1-1
	Goals and Policies	1-2
	TSP Strategies	1-5
	Street System Plan	1-5
	Freight Plan	1-10
	Public Transit Plan	1-13
	Transportation System Management / Transportation Demand Management	1-17
	Air Transportation Plan	1-18
	Non-Motorized Transportation Plan	1-20
	Rail Plan	1-24
	Parking Management	1-25
	Funding and Implementation	1-26
	Transportation Revenue Forecasts	1-27
	Improvement Projects	1-28
2	PREVIOUS WORK/BACKGROUND STUDIES	
	Overview	2-1
	Summary of Plans	2-1
3	EXISTING CONDITIONS	
	Overview	3-1
	Existing Street Circulation System	3-1
	Jurisdictional Responsibilities	3-1
	Existing Street Functional Classification and Standards	3-4
	Existing Street Characteristics	3-6
	Existing Traffic Volumes	3-10
	Existing Traffic Operations	3-10
	Crash History	3-18
	Freight	3-21
	Truck Freight Service	3-22
	Pipeline Transportation	3-26
	Water Transportation	3-27
	Public Transit	3-27
	Rogue Valley Transportation District	3-27
	Taxi Service	3-33
	Elderly and Disability Service	3-33
	Intercity Bus Service	3-33
	Transportation System Management/Transportation Demand Management	3-33
	Transportation System Management	3-33
	Transportation Demand Management	3-34
	Air Transportation	3-36
	Rogue Valley International-Medford Airport	3-36
	Non-Motorized Transportation System	3-40
	Bicycle Transportation System	3-40
	Pedestrian Transportation System	3-42
	Multi-Use Paths	3-43

TABLE OF CONTENTS Continued

Chapter Page

3 EXISTING CONDITIONS Continued
Rail Service 3-44
Freight Rail Service........ 3-44
Existing Rail Crossings........ 3-46
Passenger Rail Service........ 3-47

4 TRANSPORTATION AND LAND USE
Overview 4-1
Population/Employment Growth and Transportation Forecasts........ 4-1
Medford Community Development Vision 4-1
Historic Trends........ 4-2
Future Projections 4-2
Vehicle Travel Demand 4-3
Land Use Policy in Relation to Transportation Demand 4-4
Medford Land Use Activities Influencing Changes in Transportation Demand 4-6
City Center Medford TOD 4-6
Southeast Medford TOD........ 4-9
West Medford TOD 4-10
North Medford TOD........ 4-10
Development Tracking 4-11
Neighborhood Activity Centers and Major Transit Stops........ 4-12
Arterial and Collector Street Frontages........ 4-12
Strategies 4-13

5 STREET PLAN
Overview 5-1
Policy Context and Background........ 5-1
Characteristics of the Medford Street System 5-3
Summary of Needs and Street System Deficiencies 5-3
Traffic Operations and Capacity Deficiencies at Signalized Intersections 5-3
Traffic Operation and Capacity Deficiencies on State Highways 5-12
Other Street Improvement Needs........ 5-15
Street System Strategies........ 5-18
Functional Classification and Street Standards........ 5-18
Access Management 5-24
Level of Service Standards 5-26
Street Improvements 5-27
Bridge Improvements........ 5-33
Safety Improvements 5-34
Summary of Improvements 5-36

6 FREIGHT PLAN
Overview 6-1
Truck Freight........ 6-1
Policy Context and Background........ 6-1
Needs and Deficiencies........ 6-2
Proposed City Freight Routes........ 6-4

TABLE OF CONTENTS Continued

Chapter | Page

6 FREIGHT PLAN Continued
Truck Freight-Related Improvements 6-6
Pipelines 6-7
Water Transportation 6-7

7 PUBLIC TRANSIT PLAN
Overview 7-1
Public Transit 7-1
    Policy Context and Background 7-1
    Needs 7-3
    Strategies 7-7
    Actions 7-11
Intercity Bus Service 7-14
    Needs 7-14
    Strategies 7-15

8 TRANSPORTATION SYSTEM MANAGEMENT / TRANSPORTATION DEMAND MANAGEMENT PLAN
Transportation System Management 8-1
    Intersection Traffic Control 8-1
    Intelligent Transportation System (ITS) Improvements 8-4
    Traffic Calming 8-5
    On-Going Traffic Monitoring 8-9
Transportation Demand Management 8-9
    Needs 8-9
    Strategies 8-10

9 AIR TRANSPORTATION PLAN
Overview 9-1
Policy Context and Background 9-1
Needs 9-2
    Demand For Airport Services 9-2
    On-Site Airport Improvement Needs 9-4
    Off-Site Airport Access Needs 9-5
    Land Use Issues 9-6
Strategies 9-6
    Airport Master Plan 9-6
    Off-Site Transportation System Improvement Strategies 9-7
Actions 9-8
    Airport Master Plan 9-8
    Off-Site Transportation System Improvements 9-9
    Land Use Issues 9-9

10 NON-MOTORIZED TRANSPORTATION PLAN
Overview 10-1
Bicycle Plan 10-1
    Policy Context and Background 10-1
    Needs 10-3

TABLE OF CONTENTS Continued

Chapter		Page
10	NON-MOTORIZED TRANSPORTATION PLAN Continued	
	Strategies	10-4
	Actions	10-6
	Pedestrian Plan	10-16
	Policy Context and Background	10-16
	Needs	10-18
	Strategies	10-21
	Actions	10-22
11	RAIL PLAN	
	Freight Rail	11-1
	Passenger Rail Service	11-1
	Needs	11-1
	Railroad Crossings	11-3
	Strategies	11-4
12	PARKING MANAGEMENT	
	Overview	12-1
	Policy Context and Background	12-1
	Parking Management Considerations	12-2
	Supply Strategies	12-3
	Demand Strategies	12-4
	Bicycle Parking	12-5
	Best Management Practices	12-5
	Parking Management Strategies	12-6
	On-Street Parking Management	12-6
	Off Street Parking Management	12-7
	Parking Supply Reduction	12-8
13	PLAN GOALS AND IMPLEMENTATION	
	Goals, Policies and Implementation Strategies	13-2
	Overall Transportation System	13-2
	Street System	13-3
	Public Transportation System	13-8
	Bicycle System	13-9
	Pedestrian System	13-11
	Air Transportation	13-12
	Freight Movement	13-13
	Transportation and Land Use	13-14
	Development and Evaluation of Transportation System	
	Alternative and Priorities	13-14
	Prioritizing Options	13-15
	Financing Transportation System Improvements	13-16
	Current Transportation Revenue Sources	13-16
	Projected 20-Year Transportation Revenues	13-18
	Costs and Action Plans	13-19

TABLE OF CONTENTS Continued

Chapter Page

13 PLAN GOALS AND IMPLEMENTATION Continued
Potential Sources of Additional Transportation Revenue 13-32
Summary of Potential Transportation Revenue Sources 13-33
Factors to Consider for Potential New Sources of Funding 13-35
Issues for Further Refinement Planning 13-36
Outstanding Issues 13-36

APPENDIX A: RVMPO Travel Model Inventory - Medford

APPENDIX B: RVTD Transit Stop Locations in the City of Medford

APPENDIX C: Existing Bike Paths and Shoulders

APPENDIX D: Arterial and Collector Street Segments Lacking Sidewalks

APPENDIX E: Crash Records and Crash Rate Calculations

APPENDIX F: Programmed/Planned Improvements from the Draft State Transportation Improvement Program (2004-2009) and the *2001-2023 Rogue Valley Regional Transportation Plan* (2002)

APPENDIX G: Level of Service Study Methodology and Results

APPENDIX H: Analysis of Functional Classification System Changes

APPENDIX I: Proposed Tracking Mechanism for Mixed Use Development

APPENDIX J: Overview of Compliance with Transportation Planning Rule (State Planning Goal 12)

LIST OF FIGURES

Number	Description	Page
1-1	2002 and 2023 Street System Deficiencies	1-8
1-2	Medford Street Functional Classification Plan	1-9
1-3	Planned Tier 1 Medford Transportation Improvements	1-11
1-4	Medford Designated Truck Routes and Other Freight Facilities	1-12
1-5	Medford Bicycle Facilities Plan	1-21
1-6	Medford Major Pedestrian Facilities Plan	1-23
2-1	North Medford Interchange Project – Build Alternative	2-18
2-2	South Medford Interchange Project – Build Alternative	2-19
3-1	Existing Street Functional Classification System	3-7
3-2	Existing Signalized Intersections	3-9
3-3	2000 Daily Traffic Volumes	3-11
3-4	Existing Freight Facilities	3-23
3-5	RVTD Public Transit Service and Facilities	3-28
3-6	Existing Bicycle Circulation System	3-41
3-7	Existing Pedestrian Circulation System	3-45
4-1	Medford Conceptual TOD Boundaries and Other Activity Centers	4-7
5-1	2002 and 2023 Street System Deficiencies	5-7
5-2	Medford Street Functional Classification Plan	5-21
6-1	Medford Designated Truck Routes and Other Freight Facilities	6-5
7-1	Medford Designated Major RVTD Transit Routes and Stops	7-12
10-1	Planned Bicycle Facilities	10-9
10-2	Medford Bicycle Facilities Plan	10-15
10-3	Medford Major Pedestrian Facilities Plan	10-25
13-1	Planned Tier 1 Medford Transportation Improvements	13-21
F-1	Programmed Bicycle/ Pedestrian Improvements (From RTP)	F-9

LIST OF TABLES

Number	Description	Page
1-1	Summary of City of Medford 20-year Revenue Estimates	1-28
2-1	Adopted Elements of The Oregon Transportation Plan	2-1
2-2	Alternative RTP Performance Measures for the Rogue Valley MPO	2-7
2-3	List of Other Transportation Studies with Relevance to Medford TSP	2-20
3-1	Jackson County Roads with the City of Medford	3-2
3-2	Medford Functional Classification Standards	3-5
3-3	Status of Existing Bridges in Medford UGB	3-8
3-4	Level of Service Definitions	3-12
3-5	Existing (2002) PM Peak Hour Levels of Service: Downtown Medford	3-13
3-6	Existing (2002) PM Peak Hour Levels of Service: State Highway Intersections	3-15
3-7	Existing (2002) PM Peak Hour Levels of Service: South of Jackson Street	3-16
3-8	Existing (2002) PM Peak Hour Levels of Service: North of Jackson Street	3-17
3-9	Existing (2002) PM Peak Hour Levels of Service at Unsignalized Intersections	3-18
3-10	Summary of Crash History for Major Intersections in Medford UGB	3-19
3-11	Summary of Crash History on State Highways in Medford UGB	3-21
3-12	Truck Freight Issues and Concerns	3-25
3-13	Summary of Existing RVTD Transit Service in Medford UGB	3-29
3-14	RVTD Passenger Ridership by Fare Category for 2001-2002	3-31
3-15	RVTD Annual Ridership Growth	3-31
3-16	Rogue Valley International-Medford Airport, Air Operations and Passengers	3-37
3-17	Rogue Valley International-Medford Airport, Air Cargo Activity	3-39
3-18	Summary of Medford Railroad Grade Crossings	3-47
4-1	Population, Housing and Employment Growth in Medford	4-3
4-2	Alternative RTP Performance Measures Related to Land Use Planning for the Rogue Valley MPO	4-5
5-1	Summary of 2023 PM Peak Period LOS Strategies	5-6
5-2	2023 Signalized Intersections with Volume-to-Capacity Ratio Equal to or Exceeding 1.00	5-8
5-3	Summary of Intersection Level of Service Improvement Strategies and Policy Criteria	5-10
5-4	2023 PM Peak Hour Signalized Intersections with Volume-to-Capacity Ratio Equal to or Exceeding State Highway Thresholds	5-12
5-5	Safety Need Assessments at High Crash Locations in Medford UGB	5-16
5-6	Major Street Cross-Sections and Dimensions	5-22
5-7	State Highway Access Management Guidelines within Medford UGB	5-25
5-8	Summary of Street System Capacity and Operations Improvements	5-27
5-9	Bridge Improvements	5-33
5-10	Potential Safety Improvements for High Crash Rate Intersections Not Addressed By Other Improvement Projects	5-34
6-1	RVMPO Freight-Related Street Improvements	6-4
7-1	Alternative RTP Performance Measures Related to Public Transit for the Rogue Valley MPO	7-3
7-2	Potential Public Transit Service Enhancement Strategies	7-8
7-3	Summary of Public Transit Service Enhancement Strategies and Policy Criteria	7-10
7-4	Major Transit Stops in Medford UGB	7-13
7-5	Transit Supportive Improvement Projects	7-14

LIST OF TABLES Continued

Number	Description	Page
8-1	2023 PM Peak Hour Level of Service Unsignalized Intersections in Medford UGB	8-2
8-2	Summary of Intersection Traffic Control Improvements	8-3
8-3	Summary of Potential Traffic Calming Techniques	8-6
8-4	Examples of Transportation Demand Management Strategies	8-9
9-1	Rogue Valley International-Medford Airport, Projected Air Operations and Passengers	9-3
9-2	Rogue Valley International-Medford Airport, Projected Air Cargo Activity	9-4
9-3	Rogue Valley International-Medford Airport, Improvement Alternatives Considered	9-7
9-4	Rogue Valley International-Medford Airport, Key Elements of Capital Improvement Program	9-8
10-1	Alternative RTP Performance Measures Related to the Bicycle System for the Rogue Valley MPO	10-3
10-2	Reported Bicycle Accident Locations, 1999-2001	10-4
10-3	Bicycle System Improvement Strategies	10-5
10-4	Summary of Evaluation of Bicycle System Improvement Strategies	10-7
10-5	New Bicycle Facilities Along Existing Streets	10-8
10-6	Alternative RTP Performance Measures Related to the Pedestrian System for the Rogue Valley MPO	10-17
10-7	Sidewalk Location on Arterial and Collector Streets in Medford TODs	10-18
10-8	Reported Pedestrian Accidents, 1999-2001	10-20
10-9	Pedestrian System Improvement Strategies	10-21
10-10	Summary of Evaluation of Pedestrian System Improvement Strategies	10-23
10-11	New Pedestrian Facilities	10-24
10-12	School Access Sidewalk Improvements	10-28
11-1	Southern Oregon Commuter Rail Service, Estimated System Capital Expenditures and Operating Costs	11-3
12-1	Typical Parking Demand Reductions Associated with Various Management Strategies	12-4
13-1	City of Medford 20-Year Annual Transportation Revenue Estimates	13-19
13-2	Tier 1 Transportation System Improvements, Medford UGB - Short Range (2004-2008)	13-20
13-3	Tier 1 Transportation System Improvements, Medford UGB - Medium Range (2009-2013)	13-24
13-4	Tier 1Transportation System Improvements, Medford UGB - Long Range (2014-2023)	13-26
13-5	Tier 2 Transportation System Improvements, Medford UGB Range (Unfunded)	13-28
13-6	Tier 3 Transportation System Improvements, Medford UGB Range (Beyond 2023)	13-30
F-1	Summary of Draft 2004-2007 STIP Programmed Improvements – City of Medford	F-1
F-2	Planned Short-Range Roadway System Improvements, Medford UGB	F-3
F-3	Planned Medium-Range Roadway System Improvements, Medford UGB	F-4
F-4	Planned Long-Range Roadway System Improvements, Medford UGB	F-5
F-5	Planned Bicycle/Pedestrian Improvements, Medford UGB	F-7
G-1	HCM Level of Service Designations for Signalized Intersections	G-4

LIST OF TABLES Continued

Number	Description	Page
G-2	HCM Level of Service Designations for Unsignalized Intersections	G-4
G-3	2023 PM Peak Hour Levels of Service: Downtown Medford	G-10
G-4	2023 PM Peak Hour Levels of Service: State Highway Intersections	G-11
G-5	2023 PM Peak Hour Levels of Service: South of Jackson Street	G-13
G-6	2023 PM Peak Hour Levels of Service: North of Jackson Street	G-15
G-7	2023 2nd Highest Hour Levels of Service: Downtown Medford	G-16
G-8	2023 2nd Highest Hour Levels of Service: State Highway Intersections	G-17
G-9	2023 2nd Highest Hour Levels of Service: South of Jackson Street	G-18
G-10	2023 2nd Highest Hour Levels of Service: North of Jackson Street	G-19
G-11	Signalized Intersections Requiring Mitigation with Each LOS Strategy	G-20
G-12	2023 PM Peak Hour Signalized Intersections with Volume-to-Capacity Ratio Equal to or Exceeding 1.00	G-21
G-13	Signalized Intersections with 2023 v/c Ratios between 0.95 and 1.00 (not on State Highways)	G-22
G-14	2023 PM Peak Hour Level of Service at Unsignalized Intersections in Medford UGB	G-22
H-1	Existing Functional Classification Standards	H-2
H-2	Functional Classification Evaluation Factors	H-4
H-3	Major Street Cross-Sections and Dimensions	H-5
H-4	Downtown Medford Proposed Street Standards	H-6
H-5	Summary of Changes in Existing Medford Functional Classification System	H-8
J-1	TRP Implementation Measures	J-1

Chapter 1
Introduction and Executive Summary

Introduction

A Transportation System Plan (TSP) establishes a city's goals in developing its transportation system for both the short and long term. The Plan identifies both existing and future needs, and includes improvements to meet those needs. The document is intended to serve as a blueprint or master plan to guide transportation decisions as development occurs in a City. The Medford TSP outlines a twenty-year plan to guide transportation improvements and enhance general mobility throughout the City. Presently with over 66,000 (2002) residents, the City will use this document to balance transportation needs and improvements in the coming decades.

The Medford TSP addresses Oregon Statewide Planning Goal 12 and the Oregon Transportation Planning Rule (TPR). The TPR directs cities and counties to develop balanced transportation systems addressing all modes of travel including motor vehicles, transit, bicycles and pedestrians. The TPR envisions development of local plans that will promote changes in land use patterns and transportation systems that make it more convenient for people to walk, bicycle, use transit, and drive less to meet their daily needs. A fundamental issue in local and regional transportation system plans is a strategy to reduce reliance on the automobile.

The *2001-2023 Rogue Valley Regional Transportation Plan* promotes a strategy of increasing investment in alternative modes and promoting land use patterns that will complement investment in alternative modes as the locally preferred approach to reducing reliance on the automobile. The regional plan calls for increasing investment in facilities for pedestrians, bicyclists, and transit users, and contemplates development of Transit-Oriented Development in key locations throughout the valley. To measure the effectiveness and success of this strategy, the regional plan includes a package of seven performance measures with targets for implementation that are phased in five-year increments through 2020. These performance measures have been approved by the Land Conservation and Development, and serve as a basis for development of local TSPs in the Rogue Valley.

Spanning a nine-month period, the TSP development process was initiated in September 2002. The process consisted of five main steps:

- Analyzing existing conditions,
- Assessing future needs,
- Evaluating future alternatives,
- Creating a Draft TSP document and code revisions, and
- Finalizing the TSP.

Several stakeholder groups participated in developing Medford's transportation system plan. Two committees were established specifically to guide the planning process; a Citizen Advisory Committee (CAC) and a Technical Advisory Committee (TAC). The CAC addressed goals and policies related to Medford's transportation system, addressed the general needs of each transportation mode, and reviewed improvement strategies and potential development alternatives. The TAC included a focus on technical and interagency issues, as well as reviewing policies, improvement strategies and recommendations. The City's previously established Joint Transportation Subcommittee (JTS) also participated in the development of the TSP. The JTS is comprised on city council and planning commission members as well as other individuals and is responsible for providing overall policy guidance for the planning process.

Three public meetings were also conducted. Taking place at the project's beginning, end, and midpoint; the meetings allowed Medford citizens to provide input regarding the City's future transportation network.

The TSP begins with an overview of existing plans and studies relevant to transportation planning in the Medford area. An inventory and assessment of existing conditions follows, along with a list of current goals and policies guiding transportation decision-making. Following is a discussion of the various development strategies and alternatives for each transportation mode, which also includes general and specific actions. The transportation modes examined in this document include:

- Motor vehicles,
- Public transit,
- Other surface transportation (including intercity bus and rail),
- Air transportation,
- Non-motorized,
- Freight, and
- Parking management.

The report concludes with a specific project list categorized into short-, medium-, and long-term timeframes. A funding and implementation plan also provides a guide for the transportation system plan components to become a reality.

Goals, Policies and Implementation Strategies

Several goals along with supporting policies and implementation strategies were developed for Medford's future transportation system. These goals, policies and implementation strategies reflect the key policy strategies established by the TSP. TSP goals and policies are presented below. Implementation strategies are presented in Chapter 13 of the TSP.

Overall Transportation System - GOAL 1: *To provide a multi-modal transportation system for the Medford planning area that supports the safe, efficient, and accessible movement of all people and goods, and recognizes the area's role as the financial, medical, tourism, and business hub of Southern Oregon and Northern California.*

Policy 1-A: The City of Medford shall manage projected travel demand consistent with community, land use, environmental, economic and livability goals.
Policy 1-B: The City of Medford shall use the *Transportation System Plan* as the legal basis and policy foundation for decisions involving transportation issues.

Overall Transportation System – Funding
Policy 1-C: The City of Medford's top priority for the use of transportation funds shall be to address the maintenance, operational, and safety needs of the transportation system.
Policy 1-D: The City of Medford's second priority for the use of transportation funds shall be to maximize efficient use of the existing transportation system through use of Transportation System Management (TSM) and Transportation Demand Management (TDM) measures prior to expending transportation funds on capacity improvements.
Policy 1-E: The City of Medford's third priority for the use of transportation funds shall be to fund capital improvements that add capacity to the transportation system. These improvements shall be prioritized based on availability of funds, reducing reliance on the automobile, improving safety, relieving congestion, responding to growth, and system-wide benefits.

Street System - GOAL 2: *To provide a comprehensive street system that serves the mobility and multi-modal transportation needs of the Medford planning area.*

Street System - Classification

Policy 2-A: The City of Medford shall classify streets so as to provide an optimal balance between mobility and accessibility for all transportation modes consistent with street function.

Policy 2-B: When classifying streets, the City of Medford shall consider impacts to neighborhood livability. Prior to upgrading a street classification in a residential area to a higher order classification, the City shall consider alternatives that would preserve the livability of the affected residential neighborhood. And, if reclassification proceeds, shall consider mitigation measures.

Street System - Design

Policy 2-C: The City of Medford shall design the street system to safely and efficiently accommodate multiple travel modes within public rights-of-way.

Policy 2-D: The City of Medford shall balance the needed street function for all travel modes with adjacent land uses through the use of context-sensitive street and streetscape design techniques.

Policy 2-E: The City of Medford shall design to enhance livability by assuring that aesthetics and landscaping are a part of Medford's transportation system.

Policy 2-F: The City of Medford shall bring Arterial and Collector streets up to full design standards where appropriate, and facilitate improving existing local streets to urban design standards where appropriate.

Street System – Transportation Demand Management

Policy 2-G: The City of Medford shall undertake efforts to reduce per capita vehicle miles traveled (VMT) and single-occupancy vehicle (SOV) demand through transportation demand management (TDM) strategies.

Street System – Transportation System Management and Safety

Policy 2-H: The City of Medford shall manage and maintain the transportation system in an efficient, clean, and safe manner.

Policy 2-I: The City of Medford shall promote transportation safety.

Street System – Parking Management

Policy 2-J: The City of Medford shall prohibit on-street parking on Arterial and Major Collector streets in order to maximize the capacity of the transportation system except in the Downtown Parking District, in adopted Transit Oriented Districts (TODs), or where permitted through the development and use of special plans adopted in the *Medford Comprehensive Plan*.

Policy 2-K: The City of Medford shall manage on-street parking in the Downtown and in other adopted Transit Oriented Districts (TODs) to assist in slowing traffic, facilitating pedestrian movement, and efficiently supporting local businesses and residences consistent with the land use and mobility goals for each street.

Policy 2-L: The City of Medford shall require an appropriate supply and design of off-street parking facilities to promote economic vitality, neighborhood livability, efficient use of urban space, reduced reliance on single occupancy motor vehicles, and to make certain areas, such as Transit Oriented Districts (TODs), more pedestrian friendly.

Policy 2-M: The City of Medford shall undertake efforts to contribute to a reduction in the regional per capita parking supply to promote the use of alternatives to the single occupancy motor vehicle.

Public Transportation System - GOAL 3: *To facilitate the increased use of public transportation in the Medford planning area, as the adequacy of transit service is a measure of the quality of life in a community.*

Policy 3-A: The City of Medford shall undertake efforts to increase the percentage of total daily trips taken in the Medford planning area by transit, consistent with the target benchmarks in the "Alternative Measures" of the *2001-2023 Rogue Valley Regional Transportation Plan* (RTP).
Policy 3-B: The City of Medford shall support the provision of convenient and accessible transit service to, from, and within the Medford planning area, especially to higher density residential areas, employment centers, and major commercial areas.
Policy 3-C: The City of Medford shall undertake efforts to increase the percentage of dwelling units in the Medford planning area located within one-quarter mile walking distance of transit routes, consistent with the target benchmarks in the "Alternative Measures" of the *2001-2023 Rogue Valley Regional Transportation Plan* (RTP).
Policy 3-D: The City of Medford shall link intercity passenger transportation facilities in central Medford to adequate pedestrian facilities, and strive to link all intercity passenger transportation facilities to transit, taxi, and/or shuttle services. The City shall encourage continued operations and future expansion of intercity bus service to and from Medford.
Policy 3-E: The City of Medford shall encourage efforts to make intercity passenger rail service available to the Medford planning area.

Bicycle System - GOAL 4: *To facilitate the increased use of bicycle transportation in the Medford planning area, as bicycle facilities are a measure of the quality of life in a community.*

Policy 4-A: The City of Medford shall undertake efforts to increase the percentage of total daily trips taken by bicycling in Medford consistent with the target benchmarks in the "Alternative Measures" of the *Regional Transportation Plan* (RTP).
Policy 4-B: The City of Medford shall undertake efforts to increase the percentage of Arterial and Collector street miles in Medford having bicycle facilities, consistent with the targeted benchmarks in the "Alternative Measures" of the *Regional Transportation Plan* (RTP).
Policy 4-C: The City of Medford shall encourage bicycling as an alternative mode of transportation as well as a recreational activity.

Pedestrian System - GOAL 5: *To facilitate the increased use of pedestrian transportation in the Medford planning area.*

Policy 5-A: The City of Medford shall develop a connected, comprehensive system of pedestrian facilities that provides accessibility for pedestrians of all ages, focusing on activity centers such as Downtown, other Transit Oriented Districts (TODs), commercial centers, schools, parks/greenways, community centers, civic and recreational facilities, and transit centers.
Policy 5-B: The City of Medford's first priority for pedestrian system improvements shall be access to schools; the second priority shall be access to transit stops.
Policy 5-C: The City of Medford shall undertake efforts to increase the percentage of total daily trips taken by walking in Medford consistent with the targeted benchmarks in the "Alternative Measures" of the *Regional Transportation Plan* (RTP).
Policy 5-D: The City of Medford shall undertake efforts to increase the percentage of Collector and Arterial street miles in Medford's adopted Transit Oriented District (TODs) having sidewalks, consistent with the targeted benchmarks in the "Alternative Measures" of the *Regional Transportation Plan* (RTP).
Policy 5-E: The City of Medford shall promote pedestrian safety and awareness.

Air Transportation - GOAL 6: *To facilitate the provision of efficient, safe, and competitive movement of people and goods to and from the Rogue Valley International-Medford Airport, recognizing the value of the Rogue Valley International-Medford Airport as a regional resource.*

Policy 6-A: The City of Medford shall encourage and support the operation, maintenance, and expansion of facilities and services provided at or near the Rogue Valley International - Medford Airport that accommodate domestic and international passenger air travel services, air cargo, charter flight operations, and airport shuttle service, while balancing adverse community impacts.

Freight Movement - GOAL 7: *To facilitate the provision of a multi-modal transport system for the efficient, safe, and competitive movement of goods and services to, from, and within the Medford planning area.*

Policy 7-A: The City of Medford shall promote accessibility to transport modes that fulfill the needs of freight shippers.
Policy 7-B: The City of Medford shall strive to balance the needs of moving freight with community livability.
Policy 7-C: The City of Medford shall promote accessibility to, protection of, and the appropriate location of regional pipeline systems.

Transportation and Land Use - GOAL 8: *To maximize the efficiency of Medford's transportation system through effective land use planning.*

Policy 8-A: The City of Medford shall facilitate development or redevelopment on sites located where best supported by the overall transportation system that reduces motor vehicle dependency by promoting walking, bicycling and transit use. This includes altering land use patterns through changes to type, density, and design.
Policy 8-B: The City of Medford shall undertake efforts to increase the percentage of dwelling units and employment located in Medford's adopted Transit Oriented Districts (TODs), consistent with the targeted benchmarks in the "Alternative Measures" of the *2001-2023 Regional Transportation Plan* (RTP).

TSP Strategies

The following pages summarize the specific strategies included in the TSP for each travel mode and transportation system component. Also included are strategies related to transportation and land use integration.

Street System Plan

This portion of the TSP documents an assessment of street system needs, deficiencies, and improvements affecting the street system within the Medford Urban Growth Boundary (UGB). This section of the TSP addresses:

- Summary of existing and future (2023) street system needs and deficiencies
- Street functional classification
- Access management
- Level of Service standards
- Roadway, intersection and bridge improvements
- Safety improvements

Summary of Street System Needs and Deficiencies

The street system in the Medford UGB consists of a one- and two-way grid system in the downtown and in the older urban core area located largely to the west of downtown. The City is bisected by Interstate 5, running in a northwest to southeast direction on the east side of downtown. There are two interchanges with I-5 that serve Medford; at Highway 62 at the north end of town (serving the airport, Rogue Valley Mall and other "big box" commercial areas, and the northwest industrial portion of the city), and Barnett Road at the south end of town serving much of the city's residential area, as well as the commercial node located in the interchange area.

On the east side of I-5, the City's street system follows a looser grid pattern and is characterized by a lack of higher order streets (arterial and collectors) that provide connections for longer distance, north-south through trips from one part of the city to another. Foothills Road/N. Phoenix Road on the eastern edge of the UGB provides the only arterial street connection that links the southern and northern portions of the UGB east of I-5. A partial north-south arterial connection is provided by Crater Lake Avenue, but this street truncates at Main Street east of the downtown core. A partial north-south collector connection has been designated along the Highland/Sunrise/Springbrook corridor, but the segment of this route between Main and Jackson Streets has not previously been designated for a collector street function. This plan proposes this section as a Minor Collector. Because of the lack of higher order street connectivity on the east side of town, traffic intrusion onto local streets is an identified problem. Better arterial and collector connections are available for east-west traffic on the east side of the UGB. The eastern portions of the UGB are also characterized by rolling topography and the street system is influenced by this factor.

Existing travel patterns within the Medford area focus on the major activity centers within the city and on several major travel corridors. Major activity centers include, but are not limited to such areas as the downtown core area, the Rogue Valley Mall, South Gateway Center, Crater Lake Plaza, the commercial strips along Biddle Road and Highway 99, and the airport area. Major travel corridors include Highway 99, Highway 62, McAndrews Road, Crater Lake Avenue, Barnett Road/Stewart Avenue, Columbus Avenue/Sage Road, Foothill/North Phoenix Roads, Biddle Road, and Table Rock Road. Pending improvements to the South Medford interchange with I-5 will add Garfield Street to the list of major travel corridors within the city.

Existing and Future Congestion Deficiencies

Based on 2002 PM peak hour traffic volumes, existing traffic problems focus largely on the state highway system including key intersections along Highway 62 , and in the vicinity of the two I-5 interchanges. Five signalized intersections under the jurisdiction of ODOT currently do not meet the state's mobility standards. Three signalized intersections under the jurisdiction of the City of Medford or Jackson County exceed the City's level of service D standard. An additional ten unsignalized intersections currently experience significant delays for side street traffic (LOS E or F conditions). Eight of these intersections have been proposed for signalization to address the identified deficiencies, while the other two would be improved through larger street improvement projects.

By 2023, growth in population, employment and through traffic volumes in the Medford UGB will result in increased traffic congestion on city streets and county roads within the UGB. As the community grows, traffic volumes will also grow leading to a worsening of existing congestion problems and the addition of new problem locations. Significant improvements are planned to the North and South Medford interchanges with I-5 that will address many of the existing and projected future intersection congestion problems in the UGB. However, congestion problems are still anticipated to occur at seven signalized intersections along Highways 62, 99 and 238. An additional ten signalized intersections at various locations throughout the UGB are also anticipated to experience significant (LOS E or F) peak hour congestion by 2023.

Locations of existing and projected future (2023) traffic congestion problems are illustrated in Figure 1-1.

Crash History

From 1999 through 2001, 533 intersections within the Medford UGB experienced recorded vehicle crashes, with 153 intersections averaging at least 1.0 crash per year during the same time period. Analysis of crash rates reveals that 28 intersections had a rate equal to or higher than 1.0 crash/million entering vehicles (MEV) including five intersections each along Riverside and Central Avenues, four along 10th Street (in addition to the intersection of 10th at Central), three each along Barnett Road (in addition to the intersection of Barnett at Riverside) and Crater Lake Avenue, two and McAndrews Road (in addition to the intersection of McAndrews at Riverside) and two on Highway 62. Two intersections – Central Avenue/4th Street and Riverside Avenue/Jackson Street – experienced crash rates greater than 2.5 crashes/MEV.

Bridge Deficiencies

The status of existing bridges in the Medford UGB was assessed to identify functional obsolescence and structural deficiencies. The bridge assessment was conducted by ODOT for 33 structures. This assessment identified six locations where the existing bridge is structurally-deficient and four locations where the existing bridge is functionally obsolete. Three of the structurally deficient bridges are under the jurisdiction of the City of Medford including the crossings of Bear Creek on McAndrews Road, 10th Street and Barnett Road. The remaining three structurally deficient bridges are located on I-5 and are under the jurisdiction of ODOT. One of the ODOT structures has recently been improved (the I-5/Medford Viaduct) while the other two are slated for improvement in 2005 (north and south spans over Bear Creek).

Strategies

In summary, the Street Plan includes the following strategies:

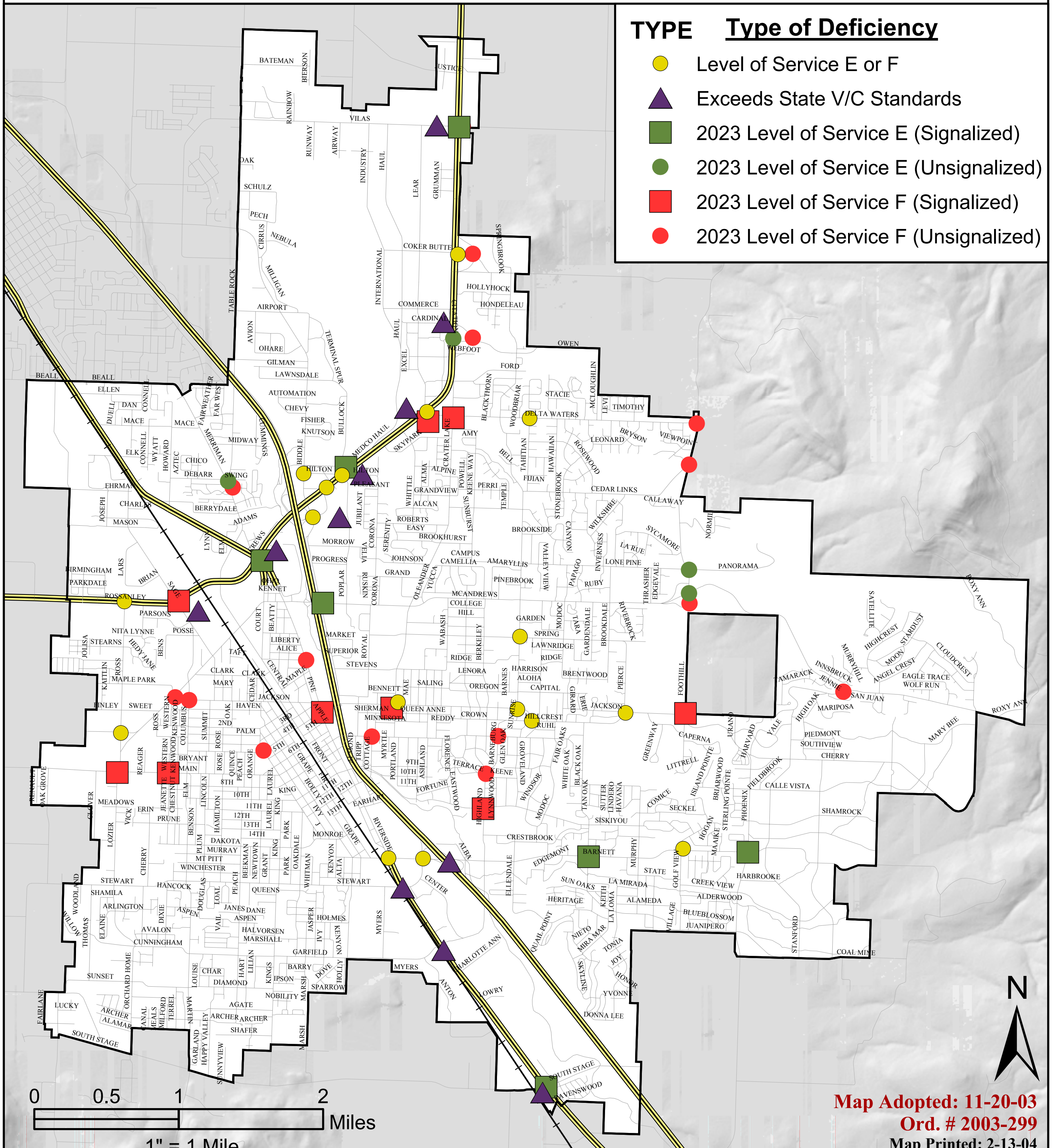
- Implement the street functional classification system and revised street standards. Consider neighborhood impacts, unique topography or neighborhood features and street connectivity needs, as well as opportunities for street design treatments such as boulevards or "main" streets. The functional classification system is presented in Figure 1-2. Street standards are shown in Table 5-6.

- Develop and adopt Neighborhood Circulation Plans to address local traffic issues.

- The City, County and ODOT should utilize access management, including access location and spacing, as a strategy to increase the capacity and safety of the transportation system. The City should adopt ODOT access management standards for state highways in Medford and revise City access management standards to maximize efficiency of existing and future street system appropriate to the street classification. ODOT access management standards are illustrated in Table 5-7.

- Maintain the current Level of Service "D" standard to identify needed congestion relief improvement projects. Further study revisions to transportation concurrency ordinance.

Figure 1-1: 2002 and 2023 Street System Deficiences



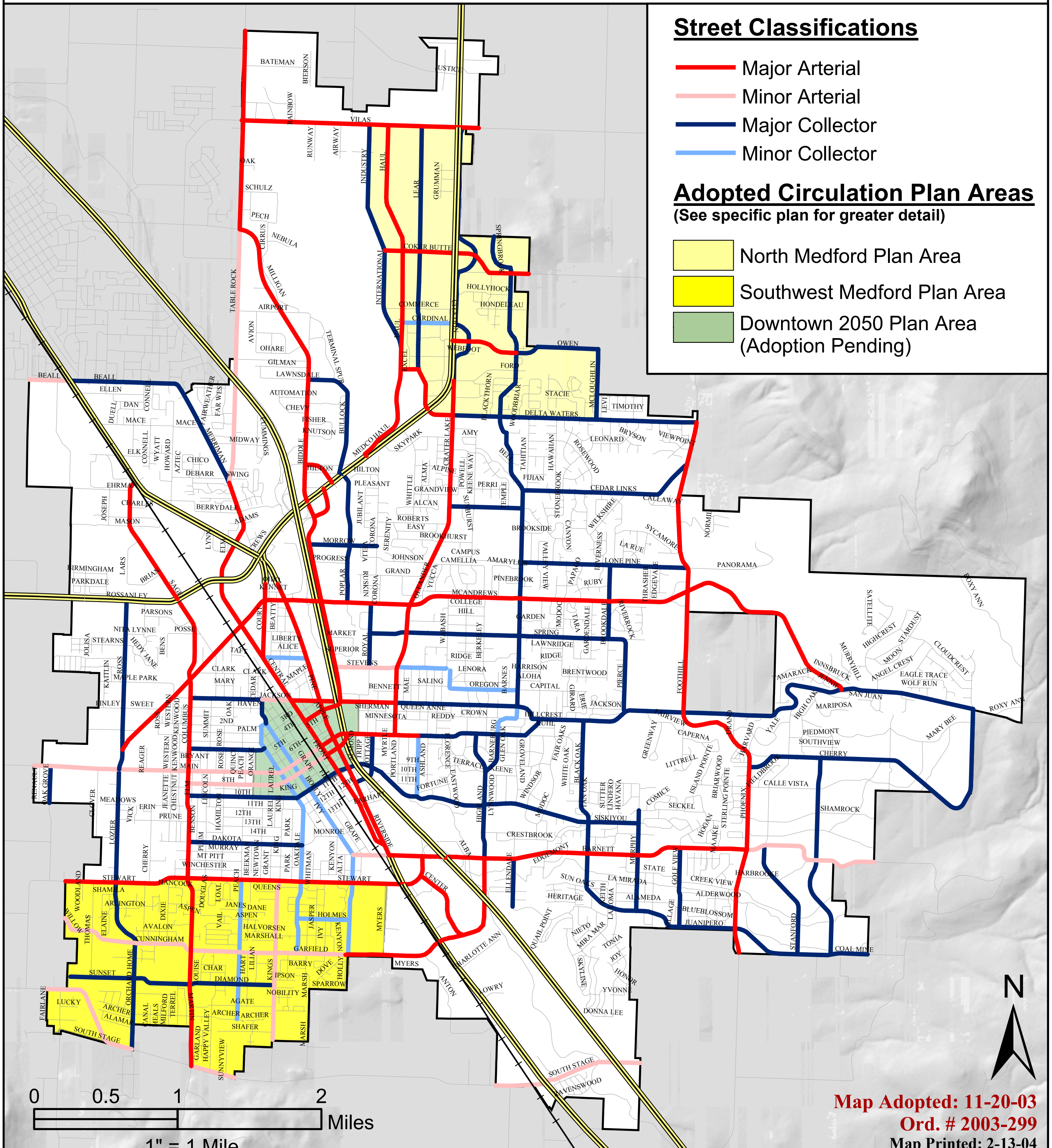
Other Streets
Highway
Railroad
UGB

CITY OF MEDFORD OREGON

The Geographic Information Systems (GIS) data made available on this map are developed and maintained by the City of Medford and Jackson County. GIS data is not the official representation of any of the information included. The maps and data are made available to the public solely for informational purposes.

THERE MAY BE ERRORS IN THE MAPS OR DATA. THE MAPS OR DATA MAY BE OUTDATED, INACCURATE, AND MAY OMIT IMPORTANT INFORMATION. THE MAPS OR DATA MAY NOT BE SUITABLE FOR YOUR PARTICULAR USE. THIS INFORMATION IS BEING PROVIDED "AS IS" OR "WITH ALL FAULTS". THE ENTIRE RISK AS TO THE QUALITY OR PERFORMANCE IS WITH THE BUYER AND IF INFORMATION IS DEFECTIVE, THE BUYER ASSUMES THE ENTIRE COST OF ANY NECESSARY CORRECTIONS OR SERVICING.

Figure 1-2: Medford Street Functional Classification Plan



Other Streets
Highway
Railroad
UGB

CITY OF MEDFORD OREGON

The Geographic Information Systems (GIS) data made available on this map are developed and maintained by the City of Medford and Jackson County. GIS data is not the official representation of any of the information included. The maps and data are made available to the public solely for informational purposes.

THERE MAY BE ERRORS IN THE MAPS OR DATA. THE MAPS OR DATA MAY BE OUTDATED, INACCURATE, AND MAY OMIT IMPORTANT INFORMATION. THE MAPS OR DATA MAY NOT BE SUITABLE FOR YOUR PARTICULAR USE. THIS INFORMATION IS BEING PROVIDED "AS IS" OR "WITH ALL FAULTS". THE ENTIRE RISK AS TO THE QUALITY OR PERFORMANCE IS WITH THE BUYER AND IF INFORMATION IS DEFECTIVE, THE BUYER ASSUMES THE ENTIRE COST OF ANY NECESSARY CORRECTIONS OR SERVICING.

- Implement roadway and intersection improvement projects as identified in Table 5-8. Action plan lists of short, medium and long-term projects identified for implementation over the 20-year planning period based on timing and funding availability are identified in Chapter 13 and illustrated in Figure 1-3. Roadway and intersection improvement projects include:

    - New roadways needed to serve developing areas;
    - Improvements to address traffic congestion that currently exceeds or is expected to exceed the Level of Service D standard or the applicable state highway volume-to-capacity (V/C) standard;
    - Urban upgrades of County roads to meet City design standards

- Implement bridge improvements to address existing city bridges that have been identified as structurally deficient. Bridge improvements are identified in Table 5-9. For deficient bridges within the city, federal Highway Bridge Rehabilitation and Replacement (HBRR) grant funding should be sought. Additionally, it will be important that traffic management plans be developed to accommodate current travel demand during the time that bridge improvements are under construction. Development of these plans should take into account current function of the bridge and any special needs such as freight routing and/or bicycle/pedestrian connections.

- Implement roadway safety measures including improvements to address existing safety problems and other relevant actions by the city to enforce existing municipal code provisions that enhance travel safety. Safety projects are included in Table 5-1.

Freight Plan

Medford's freight transportation system consists of streets and highways where the demand for access and circulation by large vehicles is expected to be the highest. The foundation of this system are the critical "backbone" routes identified by the Federal Highway Administration as the National Highway System, which includes Highways 62 and 99 and Interstate 5. The *Regional Transportation Plan* also identifies other routes regionally significant to the movement of freight.

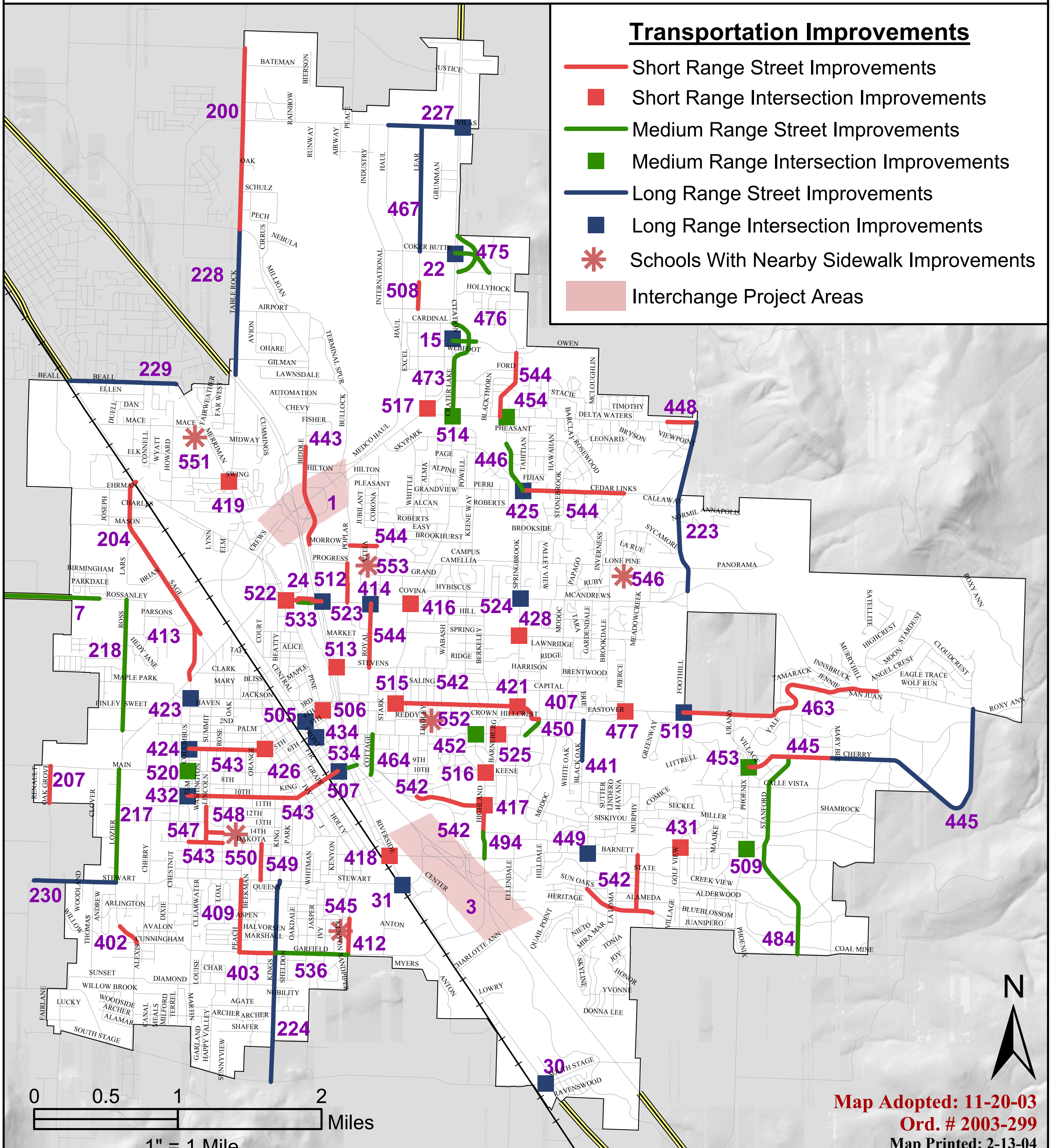
Strategies

Good freight mobility and accessibility is essential to the on-going economic vitality of the Medford/Jackson County region. While a detailed analysis of freight issues in currently underway by the Rogue Valley Metropolitan Planning Organization (RVMPO), several initial actions have been identified. Specific actions that should be taken by the City of Medford include the following:

- Approve the freight route system map, install signage and focus improvements on accommodation of large vehicles along these routes. Figure 1-4 reflects the proposed truck freight route system within the Medford UGB.

- Remove inappropriate truck route signage in downtown Medford that directs motorists to the old route for Highway 238.

Figure 1-3: Planned Tier 1 Medford Transportation Improvements



999 = Project ID Number
(See Tables 13-2, 13-3 & 13-4 for project ID number detail)

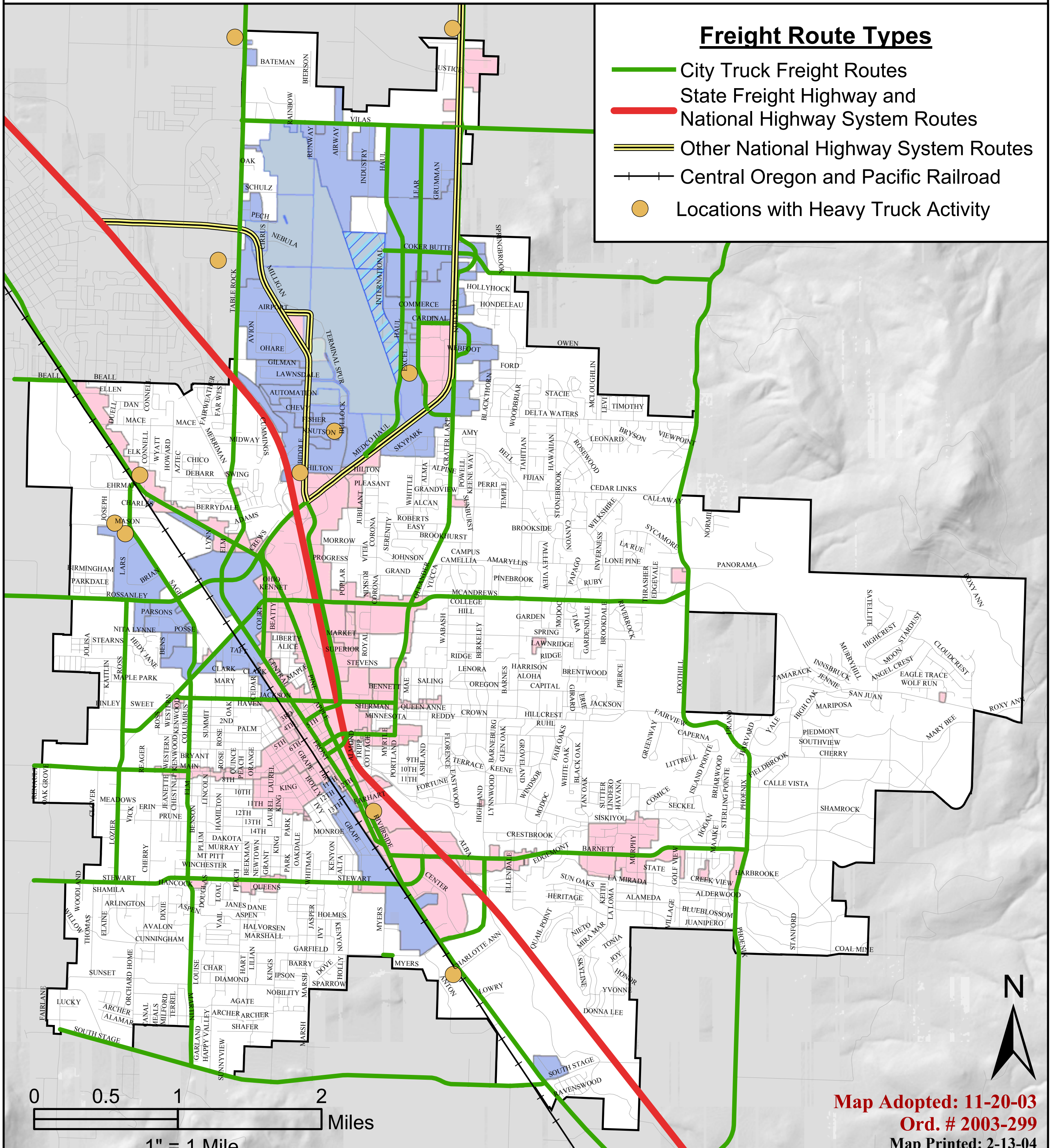
Other Streets
Highway
Railroad
UGB

CITY OF MEDFORD OREGON

The Geographic Information Systems (GIS) data made available on this map are developed and maintained by the City of Medford and Jackson County. GIS data is not the official representation of any of the information included. The maps and data are made available to the public solely for informational purposes.

THERE MAY BE ERRORS IN THE MAPS OR DATA. THE MAPS OR DATA MAY BE OUTDATED, INACCURATE, AND MAY OMIT IMPORTANT INFORMATION. THE MAPS OR DATA MAY NOT BE SUITABLE FOR YOUR PARTICULAR USE. THIS INFORMATION IS BEING PROVIDED "AS IS" OR "WITH ALL FAULTS". THE ENTIRE RISK AS TO THE QUALITY OR PERFORMANCE IS WITH THE BUYER AND IF INFORMATION IS DEFECTIVE, THE BUYER ASSUMES THE ENTIRE COST OF ANY NECESSARY CORRECTIONS OR SERVICING.

Figure 1-4: Medford Designated Truck Routes and Other Freight Facilities



Foreign Trade Zone

Rogue Valley International - Medford Airport

Commercial Zones

Industrial Zones

Other Streets

UGB

CITY OF MEDFORD OREGON

The Geographic Information Systems (GIS) data made available on this map are developed and maintained by the City of Medford and Jackson County. GIS data is not the official representation of any of the information included. The maps and data are made available to the public solely for informational purposes.

THERE MAY BE ERRORS IN THE MAPS OR DATA. THE MAPS OR DATA MAY BE OUTDATED, INACCURATE, AND MAY OMIT IMPORTANT INFORMATION. THE MAPS OR DATA MAY NOT BE SUITABLE FOR YOUR PARTICULAR USE. THIS INFORMATION IS BEING PROVIDED "AS IS" OR "WITH ALL FAULTS". THE ENTIRE RISK AS TO THE QUALITY OR PERFORMANCE IS WITH THE BUYER AND IF INFORMATION IS DEFECTIVE, THE BUYER ASSUMES THE ENTIRE COST OF ANY NECESSARY CORRECTIONS OR SERVICING.

- In cooperation with RVMPO, Jackson County and ODOT, identify street improvements that enhance freight mobility. Table 6-1 provides insight into a preliminary list of these improvements including locations where the City's LOS Study identifies specific improvement needs. Establish a priority list of improvements for implementation and secure funding.

- Address deficient bridges along freight routes, in particular, McAndrews Road over Bear Creek including assigning weight restrictions as necessary. Evaluate and develop improvement projects to address these deficiencies, secure necessary funding, and manage freight traffic during construction to minimize adverse impacts on both freight mobility and local multi-modal traffic circulation.

- Work cooperatively with freight providers and other jurisdictions to balance freight mobility with community livability including:
    - Increase freight transport safety awareness
    - Reduce the number and severity of commercial transport-related accidents
    - Enforce regulations related to safe transport of hazardous materials
    - Address issue of commercial vehicles blocking travel lanes on arterial and collector streets while loading or unloading during peak travel periods
    - Reduce through truck traffic on residential streets

The freight system also includes air freight (which is discussed under Air Transportation Plan), freight rail (which is discussed under Rail Plan), pipelines and water transportation. As there are no navigable waterways in the Medford UGB, this mode is not addressed in the Medford TSP. Pipeline strategies include:

- That the City establish policy to promote accessibility to, protection of and siting of appropriate locations for regional pipeline systems within the City.

Public Transit Plan

Public Transit Needs and Deficiencies

The Rogue Valley Transportation District (RVTD) currently provides public transportation in the Medford area, and between Medford and its surrounding communities in Jackson County. Service includes nearly 300 miles of fixed route and paratransit service. Over 2.7 million passenger miles are traveled annually with approximately 848,000 fixed route passengers and nearly 70,000 paratransit passengers carried in 2001-2002. RVTD also promotes alternative transportation through various travel demand management (TDM) strategies such as ridesharing, a "bikes on buses" program, telecommuting, and other activities. RVTD works with major employers in the area to provide a variety of different incentives, including a guaranteed ride home program to increase the use of fixed route bus service by employees.

RVTD's fixed route service typically radiates outward from downtown Medford, connecting this portion of the city to a variety of other destinations. With the exception of the east/west service within Medford that is currently provided by Routes 2 and 4, fixed route service is primarily designed to provide intercity service that connects central Medford to the communities of Ashland, Phoenix, Central Point, Jacksonville, Talent and White City. The existing route structure generally provides very good coverage within 1/4 mile of most activity centers in the greater Medford area. However, connections between activity centers are not easily made and there is limited or no service in much of the eastern (and largely residential) portion of the city, including the SE Medford TOD and in the southwestern portion of the urban area. Additionally, little or no service is provided to the northwest industrial portion of the city and to the southwest, largely residential area. Service to the Rogue Valley International-Medford Airport is provided upon request only. Figure 3-5 in Chapter 3 shows the existing RVTD fixed route structure and ¼ mile service coverage area.

RVTD operates eight fixed routes generally from 7:30 am to 6:00 pm. Service is currently provided Monday through Friday and there is no weekend service. Of the eight fixed routes currently operated by RVTD, only four operate on 30 minute frequencies. The rest operate with one hour service frequency, with the exception of Jacksonville (Route 30) with a total of only nine runs per day. RVTD has designated bus stops and in many locations has installed amenities for passengers. However, there are existing problems with inadequate waiting areas and pedestrian access to many other stops throughout the UGB.

A passenger survey conducted by RVTD in November 2001 indicated that the following service deficiencies were identified by current riders:

- Riders want weekend service, especially on Routes 10 (between Medford and Ashland) and 60 (White City) so that riders who work Monday to Friday can shop on the weekend after they have been paid.
- One Route 10 bus is needed for evening service (e.g., as late as 9 PM for those working late who need to get home).
- One express bus run during each of the morning and evening peak hours on Route 10. A slightly higher fare would be acceptable.
- Regular, all day service on Route 30 rather than 9 times/day as is currently provided.
- Expanding or modifying existing route structure to reach pockets of elderly housing to minimize walking distances to bus stops for these individuals.

According to the *2001-2023 Rogue Valley Regional Transportation Plan*, the existing hours of operation do not fully meet the demand for general public transit service, particularly for Southern Oregon University students, Rogue Community College students, Bear Creek Corporation employees, residents living at the Veteran's Domiciliary in White City, Rogue Valley Medical Center, Providence Hospital and the Rogue Valley Manor. Modifications are needed to provide transportation to employees whose shifts begin early in the morning and for employees who work graveyard shifts.

To achieve the transit ridership goals identified in the Alternative Measures contained in the *2001-2023 Rogue Valley Regional Transportation Plan* (RTP) for reduction of reliance on single occupant automobiles, RVTD must significantly increase the amount of intracity service within the RVMPO area. The first step toward meeting these goals was taken when the RVMPO, acting on behalf of its member local governments, chose to dedicate half of the federal Surface Transportation Program (STP) funds expected to be received in the region over the next 18 years to funding improved RVTD service. This commitment is expected to meet the financial obligation identified in Measure 7 of the RTP Alternative Measures. A recent service improvement financed through the use of STP funds dedicated to transit was the increased service frequency on Route 60 (White City). In 2003, increases in service frequency will also be implemented on Routes 4 (East Medford) and 40 (Central Point).

In addition to the region's financial commitment to improved public transit service within the Rogue Valley area, achieving transit ridership goals will require strong community support and adherence to the policies set forth in the public transit component of the City's *Transportation System Plan*. It will also require integration of transit improvements with improvements identified under other TSP components including Transportation Demand Management, Bicycle, and Pedestrian Components that include policies and strategies designed to support and encourage the use of public transit by improving access to transit. In addition, achieving transit ridership goals will require land use actions designed to strengthen the activity centers (including TODs) where RVTD intends to emphasize high quality service.

Public Transit Strategies

To meet City and regional goals of encouraging the development of public transit as a viable form of transportation in the Medford UGB, the City and RVTD will work cooperatively to identify specific actions involving the City that would encourage transit use. These actions include:

Short-Term Actions (0 to 5 years)

In cooperation with the Rogue Valley Transportation District (RVTD), the City should use support the provision of convenient and accessible transit service to meet travel needs in the Medford UGB through the short-term implementation of the following actions:

- Support efforts to implement funding strategies that provide adequate, long-term and stable revenue sources for transit

- Support efforts by RVTD to develop and implement a transit system that effectively combines components of radial, neighborhood and circumferential services with a minimum of transfers.

- Support efforts by RVTD to increase transit service including increasing the frequency of service, extending hour of operations, expanding weekend service and providing express bus service during peak travel periods.

- Assure that land use planning activities promote transit service viability and accessibility. These activities could include:
    - Locating mixed-use development within ¼ mile of transit corridors. To this end it is recommended that the City complete and adopt a land use/transportation plan, design guidelines, street and streetscape standards and implementing ordinances for the SE Medford Transit Oriented District (TOD), the West Medford TOD, the Delta Waters TOD and other mixed use areas including neighborhood centers and major transit stops.

    - Requiring transit-supportive improvements as part of the land development process to facilitate the use of transit. This could include installing passenger amenities, bus signs and other information displays, improved sidewalk access between the stop and the adjacent development, bus pullouts and/or other features as necessary.

    - With the designation of major transit routes and major transit stops in the TSP (see Figure 7-1) focus enforcement of the transit-supportive land use and site design provisions in sections 10.806 through 10.808 of the Medford Municipal Code.

- Provide transit-supportive street system including:
    - Providing financial or other appropriate support to RVTD to retrofit existing major bus stops to add amenities such as paved, ADA-compliant waiting areas, bus signs and other information displays, improved sidewalk access between the stop and major destinations, bus shelters, bike racks, trash cans, benches, lighting, bus pullouts and/or other features as necessary. RVTD priorities for adding these amenities should be considered. An initial project list is included in Table 7-5.

    - Evaluating locations and appropriate operational strategies for transit signal priority treatments. One example of where these treatments might be successfully implemented is in the Highway 62 corridor where such treatments have been considered as part of the overall corridor improvement strategy. Transit signal priority treatments can make transit service more attractive to riders by increasing its reliability through reductions in travel time and missed transfers.

- In designing and constructing improvements to the arterial and collector street system, the City should incorporate transit-supportive components that promote pedestrian connectivity, convenience, and safety, along with operational components to enhance transit vehicle movement.

- Working in partnership with RVTD to address the planning and development of future transit service within the Medford UGB, including sharing costs of surveys, studies, and research needed for long range planning.

- Working with RVTD to ensure that transit transfer stations and park-and-ride facilities are accessible by pedestrian, bicycle, transit, and motor vehicle travel modes, including provisions for secured bicycle parking, passenger loading, and taxi service.

- Work with employers to increase commuter transit ridership through employer-based incentives, such as subsidized transit passes.

Longer-Term Actions (5-20 years)
All of the foregoing, short-term strategies should continue to be implemented. In addition, the City of Medford should:

- Consider entering into an agreement with RVTD for focused and specific service improvements that would be funded by direct city financing. Such service improvements could include the options discussed in Table 7-2 above or other strategies that become important to the city.

- Increase coordination between RVTD staff and City staff in planning for and the development of needed transit routes and services, and in securing financial resources to meet long-term goals and policies for encouraging the use of transit as part of a complete multi-modal transportation system.

Intercity Bus Needs
Intercity bus service between Medford and other destinations in Oregon and elsewhere in the United States is provided by Greyhound Bus Lines. As described in Chapter 3, existing Greyhound service is offered seven days a week in both northbound and southbound directions, with service focused on the I-5 corridor. There are six buses each day to and from the north (including the Willamette Valley and Portland) and five buses each day to and from the south. In Greyhound Bus Depot is located in downtown Medford a few blocks from RVTD's Front Street station (the hub of all RVTD fixed route service) and is accessible via the local RVTD bus system. No significant improvements are proposed for expansion of the existing privately-operated intercity bus service or facilities.

Intercity Bus Strategies
To support the continued availability of intercity bus service to/from the Medford area, the City should consider the following actions:

- Ensure that the existing intercity passenger facilities in downtown Medford are connected to adequate pedestrian facilities.

- Ensure that there is continued availability of transit, taxi and/or shuttle services to connect with all intercity passenger facilities.

- Encourage the continued operations and future expansion of intercity bus service to and from Medford.

Transportation System Management / Transportation Demand Management

Transportation System Management Needs

Transportation System Management (TSM) improvements include actions designed to maximize efficient use of the existing transportation system. TSM strategies include actions such as traffic signalization, signal synchronization to improve traffic progression (particularly along major arterial streets, signal retiming, channelization improvements, one-way streets, parking prohibitions, turn prohibitions and other actions. Analysis of TSM-related deficiencies in the Medford UGB focused on identifying locations for traffic signal coordination, traffic signal upgrades and modernization, traffic signal installation, stop sign control, installation of Intelligent Vehicle Transportation System (ITS) measures, and traffic calming.

Transportation System Management Strategies

Along with showing street and intersection improvements, Figure 1-3 also presents Tier 1(funded) improvements to traffic signal control in the City. Included are signal installations at currently unsignalized intersections, signal upgrades where appropriate, and other appropriate improvements such as all-way stop control or roundabout treatments. These improvements are also depicted in Table 8-2.

- Improve traffic signal coordination in the Medford UGB by establishing priorities for and implementing coordinated traffic signal timing plans (these could generally be based on traffic volumes and/or street hierarchy). Employ signal timing plans that maximize operational efficiency during different time periods.

- Continue to modernize traffic signal equipment and to improve its efficiency by ultimately connecting all signals to a centralized traffic control management center.

- Install traffic signal or other traffic control improvements as identified in Table 8-2.

- Install a fiber-optic ring within the city to provide enhanced communications for operations of the traffic signal system;

- Install permanent electronic traffic counters at key intersections to provide current information about rapidly growing segments of the existing collector and arterial street system to facilitate better management of traffic signal operations. Currently permanent counters have been installed at three locations and installation of three to five more counters is anticipated.

- Add 40 to 60 traffic monitoring cameras over the next 20 years at critical locations in the city's street system. These cameras can be used to modify traffic signal timing in response to actual conditions. They can also be connected with a web site such as ODOT's Trip Check for use by motorists to evaluate road conditions before they leave home so they can plan travel routes accordingly.

- Install ITS equipment at selected intersections to facilitate traffic flow and enhance system communications.

- Identify and provide for traffic calming street improvements focused on non-arterial or collector streets to achieve program objectives.

- Utilize design techniques for local streets, such as reduced widths and lengths, curb extension and other traffic calming measures to achieve the objectives identified above.

Transportation Demand Management Needs
Transportation Demand Management (TDM) is any action that helps to improve the performance and efficiency of the transportation system by reducing reliance on the single occupant vehicle during peak travel periods. TDM measures involve a wide range of potential strategies including the use of transit, carpooling, vanpooling, working flexible hours and/or a compressed work week, bicycling, walking, working from home using communications technology, and preferential parking for rideshare vehicles. Land use actions, particularly higher density and mixed-use development, are also TDM measures when located along transit routes.

Implementation of TDM measures will be an important component of a coordinated, comprehensive plan to reduce reliance on the single occupant automobile in the Medford area and to achieve the goals in the Alternative Measures set forth in the *2001-2023 Rogue Valley Regional Transportation Plan*.

Transportation Demand Management Strategies
The City should build upon actions currently being taken by the Rogue Valley Transportation District (RVTD) to encourage use of TDM strategies in the Medford area. More specifically,

- The City should promote the use of alternative commute options to reduce motor vehicle travel generated by employment sites and schools by serving as a role model for the community by joining the Medford area Transportation Management Association (TMA) and actively supporting its mission.

- The City should support the use of transit among major employers in the Medford area by encouraging purchase of individual or subsidized group transit passes, or other actions to meet requirements for employee commute trip reductions.

- The City should encourage the development of discount transit fare programs and shuttle services by offering to share start-up costs with employers, schools and special event sponsors.

- The City should participate in public outreach to raise awareness about the use of TDM strategies and should actively market groups having the greatest potential for reducing single occupancy vehicle trips such as large employment sites and commuting students.

Air Transportation Plan

Air Transportation Needs and Deficiencies
The Rogue Valley International/Medford Airport is the area's only provider of regularly-scheduled commercial airline service providing a national and international connection for the region. The airport is also the focal point for regional air cargo activity and employment growth in the adjacent Foreign Trade Zone (FTZ) and other business parks. The airport also provides for the air freight needs of the Rogue Valley area.

The *Rogue Valley International-Medford Airport Master Plan* serves as the primary guide to future development at the airport. The document identifies facility improvements and additions that the airport will need in the coming decades to sufficiently handle increases in passenger and freight activity while also meeting Federal Aviation Administration requirements. While growth in passenger volumes largely dictates the timing of airport improvements, the *Master Plan* includes a prioritized list of improvements based on short-, intermediate-, and long-term planning horizons. In addition, the City's Level of Service

Study that identified street system needs and deficiencies throughout the Medford UGB, addresses airport landside access issues, and deficiencies.

Along with issues related to airport on-site development needs to meet anticipated travel demand for this mode and the off-site airport landside access needs as identified above, airports typically can have significant impacts on land uses in their vicinity. These impacts include not only potential safety issues related to both aircraft operations and risks to surrounding land uses, but also potentially neighborhood quality of life issues related to airport noise. The economic and transportation needs associated with airport use and development must be balanced against these potential land use issues.

To address airport area land use issues, the Oregon Administrative Rules (Section 660-013-Airport Planning) requires local agencies with planning authority for one or more airports or for areas within safety or compatibility zones around airports to adopt comprehensive plan and land use regulations for airports consistent with the requirements to that division and ORS 836.600 through 836.630. These plans and regulations are intended to encourage the long-term viability and compatibility of airports with their surrounding communities. Medford currently has provisions in its Municipal Code to address airport compatibility issues including Airport Approach (A-A) and Airport Radar (A-R) Zoning Districts. However, review of these code provisions is appropriate to ensure that they meet all of the requirements of OAR 660-013.

Air Transportation Strategies

Improvements at or in the vicinity of the Rogue Valley International/Medford Airport include those related to on-site enhancement, off-site improvements, and land use compatibility.

- On-site - The City of Medford should work with the Jackson County Airport Authority (the owner/operator of the airport) to implement the recommendations of the *Rogue Valley International-Medford Airport Master Plan*.

- Off-site - Improvements in the vicinity of the airport to enhance off-site transportation system access include the following:

    - Construct the North Medford Interchange improvements included in the Highway 62 Unit 1 strategy.
    - Improve existing and likely future traffic operations at the intersection of Highway 62 with Poplar Drive by adding additional vehicle turning lanes. Further consideration of potential of grade-separation of this intersection should be made as part of the on-going study for Highway 62 Unit 2 improvements.
    - Improve the intersections of Highway 62 with Delta Waters Road and West Vilas Road.
    - Address long-term improvement needs at the existing at-grade intersection of Highways 99, 62 and 238 which could include future grade-separation.
    - Extend and provide bicycle and pedestrian facilities along Biddle Road to the airport terminal access roads.
    - Support and encourage provision of public transportation services to the airport to meet the travel needs of passengers, employees and other airport visitors.
    - Work with Jackson County to develop an appropriate long-term strategy for airport terminal area access (identified in the *Airport Master Plan* as a future grade separation).

- Land Use - To address land use compatibility issues in the vicinity, the City of Medford should work cooperatively with the Jackson County Airport Authority to evaluate the City's current Comprehensive Plan and Code to ensure the following:

- That the types and levels of public facilities and services needed to support development located at or planned for the airport are provided;
- That there is adequate mapping of the airport area as required by OAR 660-013;
- Develop and consider any ordinances necessary to carry out the requirements of OAR 660-013 consistent with applicable statewide planning requirements. This might include revisions to the City's existing Airport Approach (A-A) and Airport Radar (A-R) Zoning Districts if these are determined to be inadequate to meet the requirements of OAR 660-013 for the safety provisions of an Airport Overlay Zone;
- Consider land use plans in the vicinity of the airport to minimize potential safety and noise related impacts associated with the airport.

Non-Motorized Transportation Plan

Bicycle System Plan

Although bicycle facilities are located on several arterial and collector streets in the Medford UGB, the majority of streets presently lack bicycle amenities. The facilities that do exist cover only a limited geographic area and, in most cases, are disconnected from each other. In addition, there is a general absence of connectivity between major destinations such as schools and employment areas, as well as an absence of such amenities as bicycle detection devices to facilitate travel through signalized intersections. Improvement of the bicycle circulation system is a key goal of the TSP, as well as the *Regional Transportation Plan's* (RTP) Alternative Measures to reduce reliance on the single occupant automobile. The RTP has established specific targeted benchmarks for incorporating bicycle facilities (shoulders or lanes) along the arterial and collector street system in the Rogue Valley region.

Strategies

To enhance bicycle safety and to encourage the use of bicycling as a viable travel mode and an alternative to the single occupant automobile, the City of Medford should implement the strategies identified below. Priorities for bicycle system improvements as identified in the goals and policies for this mode are to serve major destinations (such as schools, parks, shopping and employment areas) while filling in gaps to create an interconnected system. Figure 1-5 illustrates a complete bicycle circulation network including existing facilities, facilities that would be added as a part of the roadway improvement projects, and facilities that will fill gaps and serve activity centers.

- Construct new bicycle lanes as part of roadway improvements.

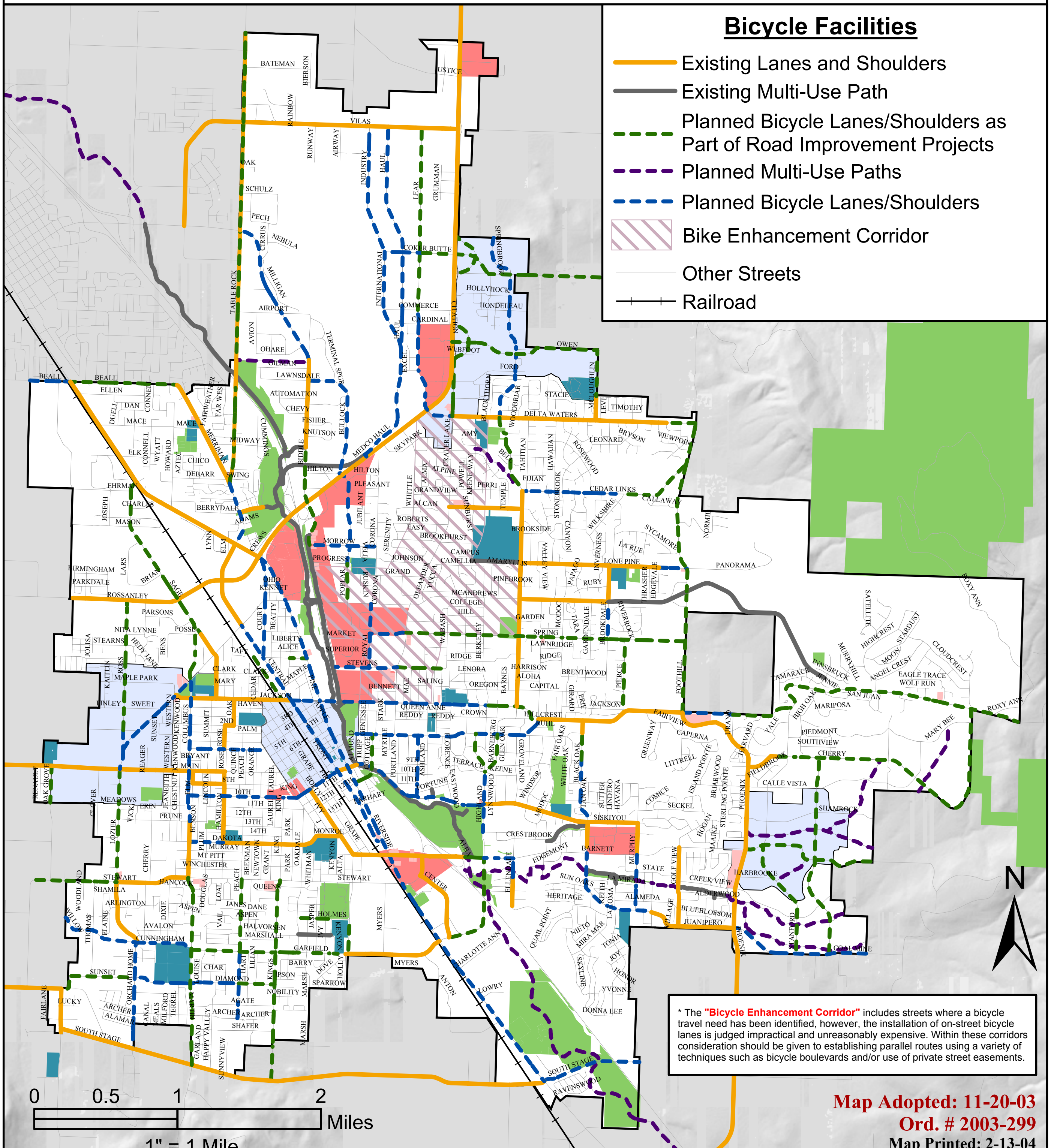
- Retrofit bicycle lanes onto existing streets by parking removal, street widening, narrowing travel lanes, or providing additional space through other means.

- Complete Bear Creek Greenway path, the Larson Creek Greenway path, limited segments of a greenway path along Lone Pine Creek (particularly near the Kennedy School) and identify other opportunities for multi-use paths.

- Overcome barriers to bicycle circulation through the use "bicycle boulevards", accessways, multi-use paths or easements, or other creative strategies.

- Evaluate the contributing causes of bicycle accidents to identify needed street or intersection improvements, such as those affecting sight distance, clear rights-of-way, etc."

Figure 1-5:
Medford Bicycle Facilities Plan



Commercial Employment Centers
Neighborhood Commercial Centers
Schools
TOD Boundaries
Parks
UGB

CITY OF MEDFORD OREGON

- Implement operational improvements such as installing bicycle loop detectors at signalized intersections where bicycle lanes are present

- Create a City Bicycle Advisory Committee to prioritize bikeway improvements, advocate and advise on bicycle issues and needs, and encourage bicycle education

- Improve the general bicycling environment:
  - Support facilities like parking and safe storage, “share the road” signage or others
  - Routine maintenance of bicycle facilities
  - Encourage RVTD’s “Bikes on Buses” and similar programs
  - Support efforts to encourage safe bicycle use through staff training, data collection about bicycle use, public education and outreach, and other activities.

Pedestrian System Plan

Medford’s sidewalk system varies widely from neighborhood to neighborhood. Sidewalks exist in most of the downtown area and in surrounding older neighborhoods, particularly to the west and south of the downtown core. However, many of the older neighborhoods on the east side of the City either do not have sidewalks or have only a limited and disconnected sidewalk system. Improvement of the pedestrian circulation system is a key goal of the TSP, as well as the *2001-2023 Regional Transportation Plan’s* (RTP) Alternative Measures to reduce reliance on the single occupant automobile. The RTP has established specific targeted benchmarks for incorporating pedestrian facilities (sidewalks) along the arterial and collector street system in the Transit-Oriented Developments proposed for the Rogue Valley region.

Strategies

Pedestrian system strategies range from the physical expansion of facilities to TSM and safety improvements. Physical improvements are generally focused on the arterial and major collector street network as shown in Figure 1-6. Priorities established for pedestrian improvements focus first on providing safe routes to schools, then access to major transit stops, followed by general accessibility to activity centers like shopping and employment.

The City of Medford shall implement the following pedestrian system strategies:

- Construct new and/or setback sidewalks (wherever possible) as part of roadway improvement projects.

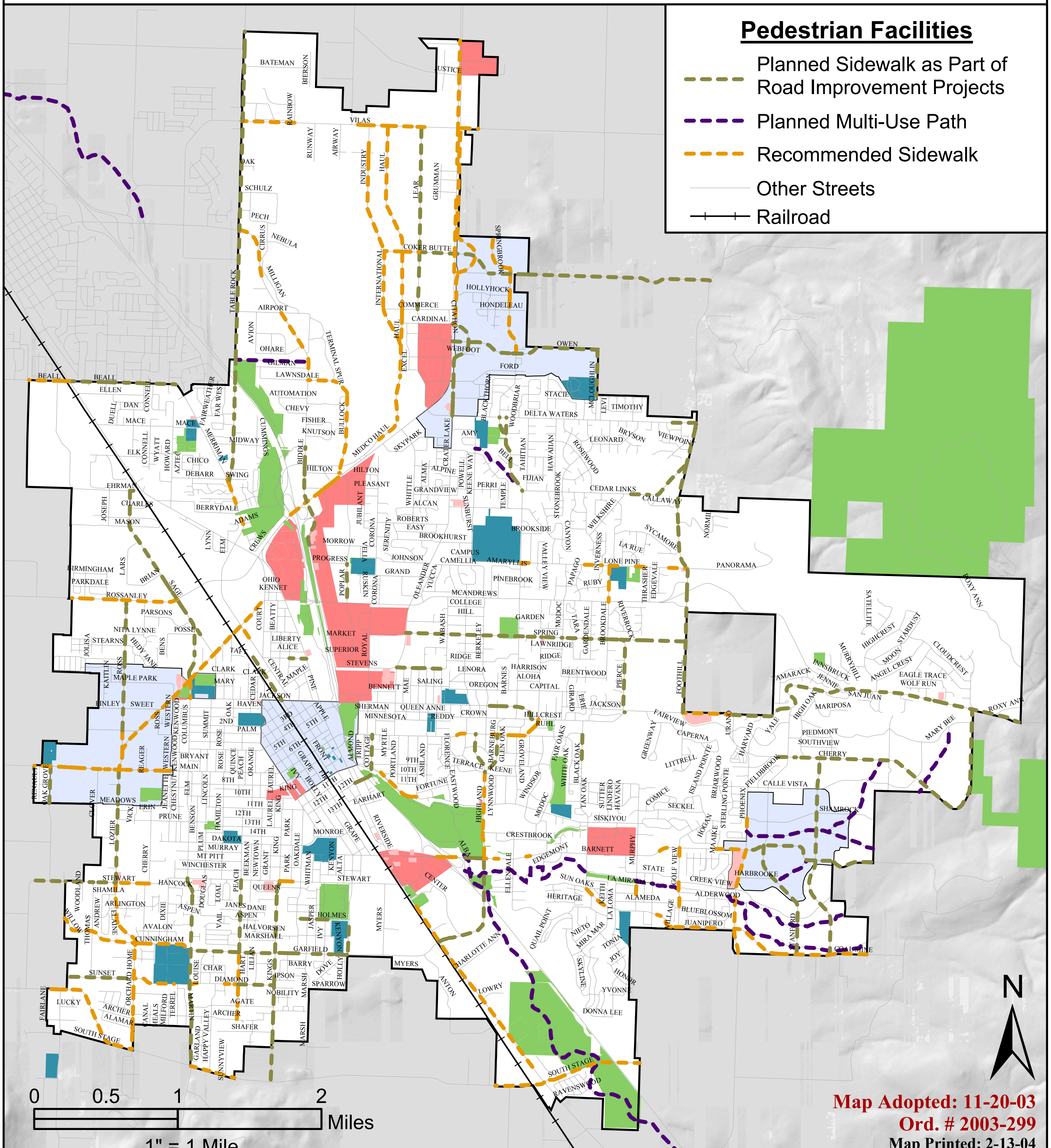
- Add new sidewalks or pathways along existing arterial and major and minor collector streets to fill in gaps and connect to schools, transit stops and other important pedestrian destinations (see Figure 10-3). Use adaptable sidewalk standards that fit the environment considering available right-of-way, adjacent land use, and speeds and volumes of traffic on the adjacent street.

- Overcome barriers to pedestrian circulation through the use of accessways, multi-use paths or easements or other creative strategies. Ensure ADA compliance on pedestrian facilities.

- Complete Bear Creek Greenway, Larson Creek Greenway, selected improvements along Lone Pine Creek, and identify other opportunities for multi-use paths.

- Implement safety improvements such as evaluating and addressing where possible the contributing causes to existing pedestrian accidents to identify appropriate street or intersection improvements (this could include sight distance, lack of clear right-of-way, or other factors).

Figure 1-6: Medford
Major Pedestrian Facilities Plan



Commercial Employment Centers
Neighborhood Commercial Centers
Schools
TOD Boundaries
Parks
UGB

CITY OF MEDFORD
OREGON

The Geographic Information Systems (GIS) data made available on this map are developed and maintained by the City of Medford and Jackson County. GIS data is not the official representation of any of the information included. The maps and data are made available to the public solely for informational purposes.

THERE MAY BE ERRORS IN THE MAPS OR DATA. THE MAPS OR DATA MAY BE OUTDATED, INACCURATE, AND MAY OMIT IMPORTANT INFORMATION. THE MAPS OR DATA MAY NOT BE SUITABLE FOR YOUR PARTICULAR USE. THIS INFORMATION IS BEING PROVIDED "AS IS" OR "WITH ALL FAULTS". THE ENTIRE RISK AS TO THE QUALITY OR PERFORMANCE IS WITH THE BUYER AND IF INFORMATION IS DEFECTIVE, THE BUYER ASSUMES THE ENTIRE COST OF ANY NECESSARY CORRECTIONS OR SERVICING.

- Improve the general pedestrian environment:
  - Incorporate planter strips or other separation from vehicle traffic into pedestrian improvement projects
  - Address the need for pedestrian connectivity and accessibility through the land use/land development process including development of pedestrian-friendly mixed-use development and pedestrian-friendly building/site orientation and design
  - Develop accessways between buildings to shorten walking distances
  - Provide street lighting
  - Conduct routine maintenance of pedestrian system

- Encourage schools, safety organizations and law enforcement agencies to provide information/instruction regarding pedestrian safety.

- Implement operational improvements such as crosswalks where active pedestrian protection can be provided (such as a signal or flashing beacon), curb extension to reduce street crossing distances for pedestrians, adequate signal timing for safe pedestrian street crossing, pedestrian detection such signal pushbuttons or other devices as appropriate

- As appropriate, use an established city transportation committee, such as the proposed Bicycle Advisory Committee to help identify and prioritize pedestrian system improvement projects, to advocate and advise of pedestrian issues, and to encourage pedestrian education

Rail Plan

Freight Rail

Freight Rail service in the Medford area is provided by the Central Oregon & Pacific Railroad (CORP). The City of Medford has no direct responsibility for the development, operations, or maintenance of the CORP or for the provision of freight rail service in the Rogue Valley. However, there are specific actions that the city can take to ensure safety around existing rail trackage and general land use compatibility with the freight rail corridor. The City can offer support and encourage the CORP and ODOT in securing state and/or federal funding to improve existing rail trackage and service. The City can also offer support if and when market forces should dictate the need for developing rail reload or intermodal facilities in the Medford area. Specific actions for the City to take include the following:

- Consistent with *Oregon Rail Plan* recommendations, establish city policy that:
  - Seeks to avoid or minimize the number of future railroad at-grade crossings when new streets are planned for growing portions of the community;
  - Avoids creating intersections of major streets and railroads where possible;
  - Locates new parallel streets at least 500 feet from railroads to allow for industrial development between the tracks and the highway;
  - Plan community development (particularly residential uses) with sensitivity to rail noise and other potential conflicts.

- Consider adding additional railroad crossing protection at existing Clark, Joseph and Fir Street crossings.

- Improve at-grade railroad crossing on South Stage Road.

- Provide for on-going maintenance and repair of streets at existing at-grade crossings.

- Work with railroads and appropriate state agencies to minimize the blockage of public streets at railroad crossings to facilitate traffic movement, especially emergency service vehicles.

Passenger Rail

Passenger rail service is not presently available in Medford. The City should encourage efforts to make intercity passenger rail service available to the Medford area.

Parking Management

The Medford *Transportation System Plan* must address the state transportation planning requirement that local governments adopt land use and subdivision regulations to reduce reliance on the automobile through the use of parking management strategies. As indicated in OAR 660-01209945 (5(c) requires that these regulations implement a parking plan that *"achieves a 10 percent reduction in the number of parking spaces per capita in the MPO area over the planning period"*. This reduction can be achieved through a variety of means including a reduction in the number of new parking spaces, redevelopment of existing parking spaces for other uses, or other strategies.

It has long been known that the availability of free parking in our cities has contributed significantly to many of the quality of life problems experienced by these same cities. Free parking contributes to the choice to drive rather than seek an alternative means of travel, leading to increased congestion, air pollution, energy consumption and a degradation of neighborhoods. Free parking consumes substantial acreage in our city centers and suburban areas, and creates an environment that is often hostile to transit riders, bicyclists and pedestrians. The challenge in meeting the required parking reduction goal is to reduce the parking supply in ways that not only help to achieve multi-modal travel and quality of life goals, but which is also equitable for all parties involved.

Strategies

Strategies for parking management are segregated into three categories including: on-street parking management, off-street parking management, and general strategies affecting parking supply reduction:

On-Street Parking Management

The use of street space for parking is a conscious choice about the use of a valuable community resource. This same space could be used for multiple other purposes including vehicle travel lanes, bicycle lanes and/or widened sidewalks that could enhance the pedestrian-friendly appearance of a street. Thus, the decision to use this space for on-street parking should be based on a managed approach that seeks to maximize overall community return on investment. Accordingly, the following approach should be taken to managing the City's current and future on-street parking supply:

- Prohibit on-street parking on arterial and major collector streets to maximize street capacity.
- Manage on-street parking in the downtown and TODs to slow traffic, support businesses and facilitate pedestrian movement.
- Provide on-street carpool/vanpool parking spaces in preferential locations.
- In all decisions about on-street parking strive to achieve a balance among parking needs, congestion, and safety for all users including pedestrians.
- Consider allowing use of available on-street parking to satisfy parking requirements for development.

Off-Street Parking Management

City management of off-street parking includes both facilities that are owned by the city and those that are owned privately but subject to land use review and approval by the City. Key issues with off-street parking include both the supply (does existing code require an excessive supply) and design (not only should it be safe for vehicles, but also safe and friendly for pedestrians and bicyclists). Consistent with the approach of balancing competing community goals discussed above for on-street parking, the following strategies are made for management of the City's off street parking supply:

- Require the appropriate supply and design of off-street parking facilities to address the need for balance between parking supply and achieving community goals
.
- Undertake review of existing parking demand patterns in Medford to facilitate review of the Municipal Code for the purpose of establishing parking maximums that represent typical daily needs for specific land uses.
- Develop a pricing management strategy for City-owned public parking facilities with a particular focus on long-term, employee parking demand.
- Consider offering parking incentives for carpools or vanpools.
- For off-street parking lots over 3 acres in size, provide street-like features along major driveways (including curbs, sidewalks, and street trees or planting strips) to enhance pedestrian safety.
- Provide bicycle parking at major developments

Parking Supply Reduction

As part of the regional effort to meet the state goal of a 10 percent per capita reduction in the parking supply over the net 20 years, the City of Medford should undertake the following actions:

- Monitor existing parking supply on an ongoing basis to determine goal compliance.
- Allow non-residential development to satisfy the off street parking requirements currently in the City Municipal Code by developing and implementing a Transportation Demand Management program to increase the use by employees and/or customers of travel modes other than the single occupant auto.
- Permit and encourage major facilities with high parking demand (particularly high seasonal demand) to meet their parking needs through a combination of shared, leased and new off street parking facilities.
- Encourage employers to charge their employees for parking in the downtown and at other locations where good transit service is available.

Funding and Implementation

The overall goal of Medford's *Transportation System Plan* is to provide for a multi-modal transportation system that supports the safe, efficient and accessible movement of people and goods while achieving the City's vision for its future as an outstanding livable community. This goal recognizes that Medford plays a unique role in Southern Oregon as the financial, medical, tourist and business hub for a large geographic area. The goal also recognizes the importance of all travel modes to ensure that viable alternatives to auto travel are available and that the community's economic needs for transportation services are met. In addition, the TSP is a key component of the City's plan for encouraging compact urban development to reduce vehicle miles of travel and improve existing air quality problems.

Modal plans for walking, bicycling, transit, automobile, rail, air transportation, and freight truck were developed as part of the TSP and include action plans for projects, programs, policies and ordinances. These modal plans are founded on the guidance provided by the 2002 community visioning process that lead to the *Vision Strategic Plan*.

The funding and implementation discussion includes a synthesis of the modal plans with an emphasis on identifying the timing and costs associated with the necessary improvements, and the availability of transportation revenues to carry out the strategies. Included is a brief summary of:

- Transportation revenue forecasts and anticipated revenue shortfall;
- Strategies for project funding and timing (e.g., short, medium or long term).

Transportation Revenue Forecasts

Based on data provided by the City's Public Works and Finance Departments, total revenue expected to be received from all existing and reasonably predictable transportation revenue sources is projected to be approximately $195 million over the next 20 years[1]. Of this amount, slightly more than $171 million are needed for fixed expenditures including operations (including staff, indirect, non-road capital expenditures), repayment of the revenue bonds issued for the 17-project list, street maintenance (between 65 and 70 percent of all fixed expenditures), and local match for the South Medford Interchange improvement project. This leaves about $24 million. Coupled with the expected revenue carryover from fiscal year 2003, a total of $34 million is expected to be available for transportation improvement projects over the 20-year planning period.

A review of the project lists in the modal plans (which are summarized by time period anticipated for implementation in Chapter 13 of the TSP) indicates that transportation funding needs for the City are estimated at nearly $120 million. This leaves a gap between available funding from existing sources and transportation needs identified for implementation during the 20-year planning period of about $86 million. Beyond these needs, an addition $82 million in projects has been identified for potential implementation beyond the 20-year planning period or if significant additional transportation revenues become available.

Most of the revenue available for transportation improvements would be concentrated over the next ten to fifteen years. Under the City's adopted ordinances for SDCs and street utility fees, annual revenues from both programs are scheduled to decrease beginning in 2014. SDC revenue is scheduled to decrease by 50 percent between 2014 and 2017 when the revenue bond repayments are complete. The street utility fund is slated to decrease by 35 percent between 2016 and 2019. Without an increase in transportation revenue, it is anticipated that, beginning in about 2019, existing revenues would be insufficient to maintain current levels of transportation operations and maintenance. No revenue would be available for capital improvements during the latter portion of the 20-year planning period. Without additional revenue increases, many of the basic safety, congestion relief, urban upgrade or multi-modal (e.g., bicycle and pedestrian) improvement projects that have been identified in the modal plans could not be constructed.

Based on policy direction received during development of the TSP and to partially fund the anticipated revenue gap, it was assumed that increases of 3 percent per year for the entire 20-year planning period

[1] Per spreadsheets from Cory Crebbin, Public Works director dated 6/20/03. Grants and other miscellaneous income includes assumed HUD (CBDG) and CMAQ grant funding for sidewalk improvements; a grant from ODOT for installation of fiber optic communications equipment; and approximately $600,000 from the Medford Urban Renewal Agency (MURA) as that agency's share of transportation improvements in the downtown core.

would be authorized by the City for both Street Utility Fees and System Development Charges. While not entirely eliminating the anticipated gap between identified transportation needs and available financial resources, these revenue increases would provide sufficient funding to implement a wide variety of multi-modal improvement projects. Typical projects included in the TSP multi-modal action plan include the remainder of the 17-project list; safety projects that address existing high crash rate locations and other potentially high risk safety needs; projects that address current and anticipated congestion problem locations; projects to encourage the use of alternative travel modes such as walking, bicycling and transit through the provision of needed infrastructure; economic development projects; and projects that make more efficient use of the existing transportation system.

Revenue estimates based on existing funding sources, pending legislation to increase state transportation revenues (Medford's estimated share) and the SDC and Street Utility increases are summarized in Table 1-1.

Table 1-1
Summary of City of Medford 20-Year Revenue Estimates

Item	2004-2008	2009-2013	2014-2023
Estimated Revenue from Existing Sources	$51,533,000	$56,789,000	$87,347,000
Estimated Revenue from Anticipated Sources[1]	$4,146,000	$7,012,000	$23,338,000
Total Estimated Revenue	**$55,679,000**	**$63,801,000**	**$110,685,000**
Fixed Expenditures	$36,207,000	$39,090,000	$96,268,000
Balance Carried Forward	$10,000,002	$0	$0
Total Revenue Available for Capital Projects	**$29,474,000**	**$24,711,000**	**$14,417,000**

[1] Includes pending State transportation revenue increase and 3 percent per year increase in both the city's System Development Charges (SDCs) and Street Utility Fee.

Improvements

Based on the existing and anticipated revenues from pending state legislation and/or locally-controlled revenue sources that can be increased to meet funding needs, a 20-year transportation improvement program of approximately $68.6 million is proposed. Referred to as Tier 1 or "funded" projects, specific transportation projects are presented in the tables detailing short, medium and long-term funding priorities in Chapter 13 of the TSP. These priority lists include not only projects that would be implemented by the City of Medford, but also those that would be implemented by ODOT or Jackson County within the Medford Urban Growth Boundary.

In summary, the City of Medford projects include the following:

- Completion of the 17-project list except for the N. Front Street extension. With an estimate of $8.7 million, refinement planning should be conducted to identify the most cost-effective approach to meeting the goals of this project. Total share of the 20-year improvement program = 27 percent.

- Address all congestion relief improvement projects identified in the City's Level of Service Study (except where the need appears to be beyond 20-years or part of the Highway 62 Unit 2 improvement program). Total share of the 20-year improvement program = 14 percent.

- Address all high crash rate or potential high safety need locations (including some bicycle lane and/or sidewalk projects in areas of potential high risk). Total share of the 20-year improvement program = 20 percent.

- Substantial improvements in alternative transportation modes including sidewalks, bicycle lanes and transit. During the first five years of the 20-year program, approximately $3 million of sidewalk improvements are proposed as part of the "Safe Routes to School" program. Other projects include urban street upgrades to add sidewalks and bicycle lanes (along with street reconstruction to add curbs and gutters), some retrofit bicycle lane and sidewalk projects along existing streets (with specific priorities to be refined by the proposed Bicycle Advisory Committee), and some transit bus stop improvement projects (approximately $45,000 per year which could fund 6 to 8 bus stop improvements each year). Total share of the 20-year improvement program = 14 percent (including 4 percent for non-defined stand alone bicycle and sidewalk improvements, 2.5 percent for specific "safe route to school" projects, 1.5 percent for transit, and 6 percent for street upgrades).

- A variety of other projects including:
  - Traffic signal communications systems to improve traffic flow
  - Projects focused on access to developing industrial area to help stimulate economic development or improve freight mobility
  - Portions of the basic street system in the SE Medford TOD
  - Local match for federal funding to repair Medford's structurally deficient bridges
  - More urban upgrades to bring former county roads up to City street standards including curbs, gutters, sidewalks and bike lanes

In addition to the Tier 1 (funded) projects, an additional $53 million of Tier 2 projects have been identified. These projects reflect identified improvement needs that are typically less urgent than those funded under Tier 1. Should additional improvement funding become available during the planning period, projects from the Tier 2 list can be moved onto the Tier 1 list and implemented.

As indicated previously, there is also a Tier 3 list of approximately $82 million representing project needs that are not anticipated to require mitigation within the 20-year planning period, projects which constitute a significant investment of resources for which no revenue source has been identified, or projects which require further refinement planning to determine need, feasibility and optimal solutions.

Chapter 2
Previous Work/Background Studies

Overview

The purpose of this chapter is to review existing plans and to identify important transportation and land use issues that need to be considered in the preparation of the Medford *Transportation System Plan* (TSP). A variety of transportation studies, transportation plans, and other transportation-related documents have been produced in the past. The relevance of each of these documents in relation to the preparation of the Medford TSP varies widely. This chapter will provide a synopsis of the following documents: Oregon Transportation Plan, all State modal plans, 2004-2007 Statewide Transportation Improvement Program (STIP), Jackson County *Comprehensive Plan Transportation Element*, *Medford Bicycle Master Plan*, *Jackson County Bicycle Master Plan*, *2001-2023 Rogue Valley Regional Transportation Plan* (RTP) and modal components, Transit Oriented Design and Development (TOD) Study, *Southern Oregon Commuter Rail Study*, *Southeast Medford Plan*, *City Center Design Concept '99*, *Downtown 2050 Plan*, *Medford in the 21st Century Vision Strategic Plan*, Highway 62 Corridor Solutions project, South Medford Interchange project, *Rogue Valley International-Medford Airport Master Plan*, and various other transportation studies. In addition, the City's *Public Facilities Element* of the *Comprehensive Plan* contains goals and policies for the city related to transportation. The salient components of each study are described below.

Summary of Plans

State of Oregon Transportation Plan

The Oregon Department of Transportation (ODOT) utilizes several planning documents to guide transportation planning efforts and transportation system improvements in the state. The Oregon Transportation Plan (OTP) is ODOT's policy guiding document. The OTP and its modal components represent the State's Transportation System Plan and drive all transportation planning in Oregon. The plans provide a framework for cooperation between ODOT and local jurisdictions and offer guidance to cities and counties for developing local modal plans. The following table lists the different modal plans that have been established and the year the plan was adopted by the Oregon Transportation Commission (OTC).

Table 2-1
Adopted Elements of the Oregon Transportation Plan

Oregon Transportation Plan or Plan Element	Year Adopted
Oregon Transportation Plan	1992
Aviation System Plan	2000
Bicycle/Pedestrian Plan	1995
Transportation Safety and Action Plan	1995
Public Transportation Plan	1997
Highway Plan	1999
Rail Freight and Passenger Plan	2001

Oregon Transportation Plan (1992)

The Oregon Transportation Commission adopted the Oregon Transportation Plan in September 1992. The OTP has three elements: (1) Goals and Policies; (2) Transportation System; and (3) Implementation. The OTP meets a legal requirement that the OTC develop and maintain a plan for a multimodal transportation system for Oregon. Further, the OTP implements the Federal Intermodal Surface Transportation Efficiency Act (ISTEA) requirements for the state transportation plan. The OTP also meets land use planning requirements for State agency coordination and the Goal 12 Transportation Planning Rule. This rule requires ODOT, the cities, and the counties of Oregon to cooperatively plan and develop balanced transportation systems.

Oregon Aviation System Plan (2000)

The Aviation System Plan has been adopted in increments. It provides forecasts and inventories for public access airports in the state. Some key issues that affect development of the aviation component of the Medford TSP are the following:

- Local governments own most airports.
- The federal government owns most of the navigational system.
- FAA determines funding levels and prioritization of expenditures.

Oregon Bicycle and Pedestrian Plan (1995)

The goal of this Plan is to provide safe, accessible and convenient bicycling and walking facilities in the state, and to support and encourage increased levels of bicycling and walking. The plan identifies policies, classification of bikeways, construction and maintenance guidelines, and suggested actions to achieve these objectives. These actions address the need to: (1) provide bikeway and walkway systems that are integrated with other transportation systems; (2) create a safe, convenient, and attractive bicycling and walking environment, and (3) develop education programs that improve bicycle and pedestrian safety.

Oregon Transportation Safety and Action Plan (1995)

This plan established the safety priorities for Oregon by identifying 70 actions relating to all modes of transportation and the roadway, driver and vehicle aspects. Included in this plan is a specific action regarding the way safety issues should be considered in local transportation planning.

Local transportation plans, as well as modal and corridor plans should consider the following:

- Involvement in the planning process of engineering, enforcement, and emergency service personnel as well as local transportation safety groups.
- Safety objectives.
- Resolution of goal conflicts between safety and other issues.

Oregon Public Transportation Plan (1997)

The plan is primarily focused on public transportation in metropolitan and urban areas. The minimum public transportation level of service standards (for communities with a population of at least 2,500 located within 20 miles of an urban central city) that apply for conditions in 2015 are as follows:

- Coordinate intercity senior and disabled services with intercity bus and van services open to the general public.
- Coordinate local public transportation and senior and disabled services to intercity bus services.
- Provide an accessible ride to anyone requesting services.
- Provide at least 1.7 annual hours of public transportation service per capita with fixed-route, dial-a-ride or other service types.
- Provide at least one accessible vehicle for every 40 hours of service.

- Provide backup vehicle for every 3.5 miles.
- Provide daily peak hour commuter service to the core areas of the central city.
- Provide a guaranteed ride home program to all users of the public transportation system and publicize it well.
- Provide park and ride facilities along transit route corridors to meet reasonable peak and off-peak demand for such facilities.
- Maintain vehicles and corresponding facilities in a cost-effective manner and replace vehicles when they reach suggested retirement age.
- Establish ridematching and demand management programs in communities of 5,000 where there are employers with 500 or more workers who are not already covered by a regional ridematching/demand management program.
- Establish ridematching and demand management programs in communities of 10,000.

In addition to public transportation, the plan also describes minimum level of service standards for intercity bus and passenger rail.

Oregon Highway Plan (1999)

This plan defines policies and investment strategies for Oregon's state highways for the next 20 years. It further refines the goals and policies of the Oregon Transportation Plan and is part of Oregon's Statewide Transportation Plan. The Highway Plan has three main elements:

1. The **Vision** presents a vision for the future of the state highway system, describes economic and demographic trends in Oregon, future transportation technologies, summarizes the policy and legal context of the Highway Plan, and contains information on the current highway system.

2. The **Policy Element** contains goals, policies, and actions in five policy areas: system definition, system management, access management, travel alternatives, and environmental and scenic resources.

3. The **System Element** contains an analysis of state highway needs, revenue forecasts, descriptions of investment strategies, implementation strategy, and performance measures.

The Highway Plan gives policy and investment direction to corridor plans and transportation system plans that are being prepared around the state, but it leaves the responsibility for identifying specific projects and modal alternatives to these plans.

Specifically relevant to the Medford area are the level of service and access management standards for Highway 99, Highway 238 and Interstate 5 that are included in the Highway Plan.

Oregon Rail Freight and Passenger Plan (2001)

This plan presents an overview of the rail system in Oregon. It outlines the State rail planning process and examines specific rail lines in detail that may be eligible for State or Federal financial assistance. The plan examines the trend of service on low-density rail lines increasingly provided by the short haul (Class III) railroads. In addition, the plan describes minimum level of service standards for freight and passenger rail systems in Oregon. Relative to the Medford area, this plan describes use patterns of the Union Pacific route that passes through Medford.

The previously adopted Passenger Policy and Plan (1994) is now a component of the Oregon Rail Freight and Passenger Plan.

Statewide Transportation Improvement Program (STIP), 2004-2007

Oregon's Statewide Transportation Improvement Program is the state's transportation capital improvement program, which fulfills the requirements of the Transportation Equity Act for the 21st Century (TEA-21). The STIP lists the schedule of transportation projects for the four-year period from 2004 to 2007. It is a compilation of projects utilizing various federal and state funding programs, and includes projects on the state, county and city transportation systems as well as projects in the National Parks, National Forests, and Indian Reservations. Also included are projects fully funded by the metropolitan planning organizations (MPOs) that are of regional interest or significance.

The improvement projects programmed in the 2004-2007 STIP for the Medford Urban area are illustrated in Table F-1 of Appendix F.

The STIP is not a planning document; it is a project prioritization and scheduling document developed through various planning processes involving local and regional governments, transportation agencies, and the interested public. Through the STIP, ODOT allocates resources to those projects that have been given the highest priority in these plans.

I-5 State of the Interstate Report (2000)

The Oregon Department of Transportation (ODOT) completed the I-5 State of the Interstate Report in June, 2000. The report provides an assessment of the existing and forecasted safety, geometric, and operating conditions along the entire length of Interstate 5 from California to Washington. The document covers a wide range of issues, including:

- Overview of related plans, policies, and studies
- Trends in population, employment, land use, and transportation
- Existing and forecasted conditions for each I-5 interchange and mainline freeway segment
- Environmental conditions and potential development impact areas
- Opportunities for short-term improvements

Within ODOT's Region 3 – which encompasses southern Oregon, including Medford – the report states that travelers will experience significant congestion on I-5 by 2020. Many interchanges in this region are expected to have one or more components (i.e. ramp terminal intersection or ramp junction) operating at an unacceptable level of congestion, if no improvements are made. The problems associated with interchanges are expected to occur in more the populated portions of the corridor. The South Medford Interchange was specifically referenced as a potential problem area.

Jackson County Comprehensive Plan Transportation Element (1994)

The *Transportation Element* of the Jackson County *Comprehensive Plan* was adopted in June 1994, and serves as the primary transportation planning document for Jackson County. The *Transportation Element* addresses all modes of transportation in the county over a 20-25 year planning period. It sets forth policies and implementation measures that include related plans and programs designed to maintain and improve the transportation system. The element includes twenty specific findings, policies and implementation strategies for those policies.

The goal stated in the *Transportation Element* is:

GOAL: To provide and encourage a safe, convenient, energy efficient and economical transportation system, by:

- *Providing citizens of the county and surrounding areas safe and efficient airport facilities for commercial and general aviation use;*

- *Providing a road system that permits safe, convenient, and economical transportation of goods and people consistent with planned development, natural resource use and environmental protection in coordination with other agencies;*
- *Improving the roads that connect the various communities and resources in Jackson County;*
- *Maintaining county roads and bridges in a good or better condition than as at present;*
- *Providing for non-automotive travel modes in conjunction with the road system; and,*
- *Encouraging the streamlining of public agencies and departments to maximize the effect of limited tax dollars to maintain the public investment in transportation facilities.*

One component of the Jackson County *Transportation Element* of key importance to the City of Medford is the potential transfer of ownership and maintenance responsibility of several roads from the County to the City. Upon improvement to city standards or receipt of cash in lieu of improvements, several of these roads will be transferred to city jurisdiction. A summary of the street segments in Medford that are currently maintained by Jackson County will be presented with a discussion of the existing transportation system in Chapter 3. It should be noted that the County is currently updating its transportation plan.

Jackson County Bicycle Master Plan (1996)

Jackson County's Bicycle Master Plan was completed in May 1996 and adopted August 1996. The County Bicycle Committee, established by the Board of Commissioners in 1978, played a vital role in the development of this Plan. In developing the Plan, the Board of Commissioners asked the Committee to assume the following responsibilities:

- Promote all forms of bicycling in Jackson County
- Promote safety and education in bicycling
- Promote public awareness of all aspects of bicycling
- Evaluate and provide for the increasing variety of bicycling including, but not limited to, recreational riding, touring, commuting, mountain bicycling and racing.
- Evaluate and designate bicycle facility improvements and maintenance in the county.
- Evaluate the financial and personnel resources available to help implement the Bicycle Master Plan.
- Keep the Bicycle Master Plan current and viable.

The Jackson County Bicycle Master Plan includes an inventory of bicycle facilities in the County, a list of system deficiencies, as well as goals, policies and implementation strategies. The Master Plan identifies twelve priority bicycle projects that are needed in the County to complete a countywide bicycle system.

2001-2023 Rogue Valley Regional Transportation Plan (RTP)

Overview

The intention of the RTP is to provide a coordinated framework for identifying and meeting transportation needs within the Medford metropolitan area for the next twenty years. The RTP takes a snapshot of the current situation, and provides the best projection for future growth and development based on current trends and approved land uses, policies and ordinances. The RTP looks at the different types of transportation opportunities that are available and determines what improvements and/or services would be beneficial and useful in the future: automobiles, bicycles, pedestrian activities, air travel, rail and other combinations of travel opportunities or "modes". The RTP takes a comprehensive approach that evaluates how all the pieces should fit together and identifies what other opportunities might be available to develop a coordinated and contiguous system in the future.

Current RTP Status

The *2001-2023 Rogue Valley Regional Transportation Plan* (RTP) was adopted by the Rogue Valley Metropolitan Planning Organization (MPO) Policy Committee in January 1997, updated in April 2000, and again in April 2002. The current RTP, identified as the *2001-2023 Rogue Valley Regional Transportation Plan,* serves as a guide for the management of existing transportation facilities, and for the design and implementation of future transportation facilities through 2023.

To guide the RTP planning effort and to ensure that the adopted Plan would comply with the State Transportation Planning Rule's (TPR) for provisions to reduce per capita automobile travel, the Rogue Valley Metropolitan Planning Organization (RVMPO) requested Department of Land Conservation and Development (DLCD) concurrence with seven alternative measures designed to reduce the region's reliance on single-occupant automobiles and to encourage the use of alternative transportation modes. These measures include five actions to be measured by the MPO, and two by the three cities in the MPO region (Medford, Phoenix and Central Point).

As the largest city in the Rogue Valley region, Medford will have a significant responsibility for carrying out the mandated measures assigned to the three cities which include development of bicycle lanes and sidewalks on collectors and arterials. This responsibility will influence the types of projects that are advanced to implementation by the city, including a greater emphasis on facilities and services for bicycles, pedestrians, and transit users than was the case in the past.

The seven alternative measures and accompanying benchmarks are summarized in Table 2-2.

Preferred Transportation System Alternative

The RTP's "preferred" transportation alternative includes the following system components: transportation systems management (TSM) strategies, transportation demand management (TDM) actions, street and highway improvements, parking, bicycle and pedestrian facilities, transit, and land use strategies. For each component, the RTP identified policies local governments should consider as they develop their TSPs. Following is a summary of each component of the preferred transportation system alternative of the RTP.

Transportation System Management Component

The Transportation System Management (TSM) Component focuses on strategies that would result in better management of the existing street and highway system such that more traffic can be accommodated by the same facilities. The TSM component identifies ten policies that local governments within the MPO should consider as they develop transportation system plans.

Policy 1: *Local governments shall adhere to the mobility standards contained in their local Transportation System Plans, and where applicable, those in the Oregon Highway Plan.*

Policy 2: *Wherever financially possible, local governments shall update existing signals and signal systems to improve traffic flow.*

Policy 3: *Local governments shall provide regular maintenance to all of the traffic control devices within their inventory to optimize their functionality.*

Policy 4: *Wherever financially possible and technically justified under local standards, local governments shall interconnect and coordinate signals and link them to a master control system for optimizing the traffic flow along the street system wherever such systems are not already being used.*

Table 2-2
Alternative RTP Performance Measures for the Rogue Valley MPO

Measure	How Measured	Current 2000	Benchmark 2005	Benchmark 2010	Benchmark 2015	Target 2020
Measure 1: Transit and bicycle/ pedestrian mode share	The % of total daily trips taken by transit and the combination of bicycle and walking (non-motorized) modes. Determined from best available data (e.g., model output and/or transportation survey data).	% daily trips transit: 1.0 bike/ped: 8.2	% daily trips transit: 1.2 bike/ped: 8.4	% daily trips transit: 1.6 bike/ped: 8.4	% daily trips transit: 2.2 bike/ped: 9.8	% daily trips transit: 3.0 bike/ped: 11.0
Measure 2: % Dwelling Units (DU's) w/in ¼ mile walk to 30-min. transit service	Determined through GIS mapping. Current estimates are that 12% of DU's are within ¼ mile walking distance of RVTD transit routes.	12%	20%	30%	40%	50%
Measure 3: % Collectors and arterials w/ bicycle facilities	Determined through GIS mapping. Current estimates are that 21% of collectors and arterials in the MPO have provisions for bicyclists.	21%	28%	37%	48%	60%
Measure 4: % Collectors and arterials in TOD areas w/ sidewalks	Determined through GIS mapping. Current estimates are that 46% of collectors and arterials in TOD areas have sidewalks.	47%	50%	56%	64%	75%
Measure 5: % Mixed-use DU's in new development	Determined by tracking building permits – the ratio between new DU's in TODs and total new DU's in the region.	0%	9%	26%	41%	49%
Measure 6: % Mixed-use employment in new development	Estimated from annual employment files from State – represents the ratio of new employment in TODs over total regional employment.	0%	9%	23%	36%	44%
Measure 7: Alternative Transporta-tion Funding *	Estimated from annual employment files from State – represents the ratio of new employment in TODs over total regional employment.	N/A	$950,000	$2.5 million	$4.3 million	$6.4 million

Source: *2001-2023 Rogue Valley Regional Transportation Plan*, 2002 and Land Conservation and Development Commission, OAR 660-012-0035(5), April 3, 2002.
* Dollars are cumulative from 2000 through 2020.

Policy 5: Local governments shall remove traffic signals where they are no longer justified due to land use changes and the resultant change in traffic patterns.

Policy 6: Local governments shall consider intersection geometric improvements that would increase capacity and safety for all road users, including motorists, pedestrians, and bicyclists.

Policy 7: Local governments shall consider prohibition of turn movements at major intersections to increase vehicular capacity and minimize conflict among motorists, pedestrians, and bicyclists.

Policy 8: Local governments shall develop access management plans for the major street system where such plans have not already been adopted.

Policy 9: Local governments shall consider the installation of new traffic signals when warranted at major intersections in the metropolitan area. New traffic signal locations shall be identified based on guidelines established in the Manual of Uniform Traffic Control Devices (MUTCD).

Policy 10: ODOT in consultation with local governments, shall consider the installation of ramp signals at freeway on-ramps to meter the amount of traffic entering the freeway, thereby maintaining optimum flow conditions on the freeway system.

Policy 11: Local governments shall consider goods movement management strategies along the major arterial streets in commercial and industrial areas.

Policy 12: Where warranted by traffic speed, volume, and average dwell time and where approved by RVTD, local governments shall facilitate implementation of bus bays on congested arterial streets as a means of facilitating traffic flow during peak travel periods.

Policy 13: Local governments shall give priority to removal of or timed prohibition of on street parking over street widening as a means of enhancing capacity on congested arterial streets.

RTP signal projects in the City of Medford are presented in Appendix F.

Transportation Demand Management Component

The Transportation Demand Management (TDM) Component of the RTP focuses on actions that reduce the demand for peak hour travel, particularly by single-occupant automobiles. The TDM component identifies four policies local governments should consider as they develop their TSPs.

Policy 1: The implementation of a regional transportation demand management program shall be an important component of a comprehensive strategy to reduce demands placed on the transportation system.

Policy 2: Local governments and major employers (greater than 50 employees) shall encourage work arrangements providing an alternative to the 8-to-5 work schedule. These arrangements shall include, but not be limited to, employee flex-time programs, staggered work hours, and compressed work weeks.

Policy 3: Local governments and major employers shall encourage telecommuting.

Policy 4: Local governments and major employers shall encourage ridesharing by subsidizing ridesharing or by making ridesharing more convenient.

Policy 5: Local governments shall encourage major employers to adopt trip reduction goals designed to reduce site vehicular trip generation.

Street System Component

The street system component of the RTP includes maps and a detailed list of improvement projects on the street system to enhance mobility and safety for motorists, bicyclists and pedestrians. This list identifies improvements needed on the region's arterial and collector (or major) street system. The needs of the local street system will be addressed in City and County TSPs. The street and highway project list has two tiers; Tier 1 represents needed projects for which funding is likely to be available based on existing revenue sources, and Tier 2 represents needed projects that exceed the region's current financial capabilities. RTP street system projects in the City of Medford are presented in Appendix F.

Parking Component

Oregon's TPR was amended on September 18, 1998, to give metropolitan areas the option of adopting new parking regulations in place of the previous requirement to reduce parking spaces by 10 percent per capita over the next 30 years. A number of parking reduction strategies are proposed in the RTP to help the Medford metropolitan area meet the requirements of the TPR. These include parking code and policy changes, redesignation of existing parking spaces, and enhanced management of roadway space. Medford has chosen to use a policy approach to reduced per capita parking spaces. This approach will include implementation of such strategies as parking minimums and maximums, use of shared parking, reduction in required number of parking spaces associated with development where TDM programs are implemented, and other activities. The parking policies of the RTP that are relevant to the Medford TSP include:

Policy 1: Local governments shall consider establishing maximum parking requirements (or parking caps) in their current zoning codes to reduce the amount of off-street parking supply provided by businesses.

Policy 2: Local governments shall consider establishing lower minimum parking requirements in their current zoning codes to encourage in-fill development and the use of alternative travel modes.

Policy 3: Local governments shall consider the imposition of parking fees as an indirect measure aimed at decreasing the amount of parking provided by new developments. Such fees may be levied on the developer, the tenant or the end-user.

Policy 4: Local governments shall consider the redesignation of existing, general-use parking spaces to a different, special use so as to encourage the use of alternative transportation modes.

Policy 5: Local governments shall manage the roadway space so as to have a measurable impact on the amount of parking in the region. Such strategies include the redesignation of parking spaces to other uses such as bike lanes, bus stops, turn lanes, and no parking zones, and the revision of street standards allowing for narrower street widths.

Policy 6: Local governments shall consider parking optimization strategies that would make better use of parking that remains following implementation of parking reduction required by the TPR. Such strategies include, for example, the lowering of the minimum parking requirements, establishing parking maximums, levying parking fees on developers, tenants or end-users, allowing shared parking among adjacent businesses, and forming Parking Management Associations (PMAs) in specific areas such as downtown Medford.

Bicycle and Pedestrian System Component

The purpose of the bicycle and pedestrian component is to provide viable, safe transportation alternatives to the automobile. The RTP contains five policies for local jurisdictions to consider when preparing TSPs.

Policy 1: *Local governments shall complete a bikeway network that serves bicyclists needs, especially for travel to employment centers, commercial districts, transit centers, institutions, and recreational destinations. In urban areas, bike lanes shall be provided on all arterial and major collector streets; all other urban streets shall be constructed such that the pavement is wide enough to allow safe travel by both vehicles and bicycles on the shared roadway (OAR 660-012-045(6)). In rural areas, arterial and collector streets shall include four to six foot shoulders on each side.*

Policy 2: *Local governments shall work with ODOT to improve bicycling on state highways within their boundaries.*

Policy 3: *Local governments shall provide regular maintenance of existing bicycle facilities, including pavement management and sweeping as part of the regular pavement-sweeping schedule.*

Policy 4: *Local governments shall require or provide sidewalks/pedestrian pathways along all streets within the urban growth boundary. Sidewalks and walkways should be required in new developments in the metropolitan area and they should be provided in connection with most major street improvement projects (OAR 660-12-045(3)(B)). Pedestrian walkway or accessway connections shall be required between adjacent developments when roadway connections cannot be provided. Also, a systematic approach to filling gaps in the sidewalk system and an annual allocation for construction is recommended.*

Policy 5: *The location and design of all sidewalks shall comply with the requirements of the Americans with Disabilities Act.*

Policy 6: *Local governments shall provide sidewalks and other amenities to make pedestrian access to bus stops easier. RVTD shall provide bicycle racks on buses, and bicycle racks and lockers at transit stations to improve bicycle access to transit.*

Policy 7: *Where applicable, local governments shall revise their zoning codes to require the provision of amenities to help meet bicyclist and pedestrian needs, including the provision of bicycle storage facilities.*

Policy 8: *Local governments shall support bicycle and pedestrian safety, both through enforcement of safety laws and regulations and through support of programs that provide bicycle and pedestrian safety education.*

Policy 9: *All signalized intersections in urban areas shall have marked crosswalks.*

Policy 10: *Local governments shall make use of the media, bicycle committees, bicycle plans, and other methods to promote use of bicycling and walking for transportation purposes.*

Transit System Component

Rogue Valley Transportation District (RVTD) is the provider of transit service within the Rogue Valley Metropolitan Area. RVTD provides a combination of services including a fixed-route, fixed-schedule bus system; a shuttle service (the Valley Feeder) that transports passengers from their neighborhoods to the bus stops; and paratransit service (Valley Lift) that provides a specialized service for people with disabilities that prevent them from riding the bus. RVTD provides an important service to the community by providing mobility for the economically disadvantaged, elderly, youth and disabled residents. Overall, RVTD provides between one half and one percent of the total daily trips within the metropolitan area, and about the same percent of the trips during the a.m. and p.m. peak periods.

The RTP identifies the following transit policies:

Policy 1: RVTD should periodically review ridership and service throughout the region and adjust routing to maximize ridership potential and ensure service availability.

Policy 2: Where practical and financially possible, RVTD transit services shall be routed to provide service coverage within ¼-mile walking distance of urban residences.

Policy 3: When financially possible, the Rogue Valley Transportation District (RVTD) shall operate all transit routes with route headways no greater than one-half hour during peak periods.

Policy 4: When financially possible, the Rogue Valley Transportation District (RVTD) shall continue to provide off-peak mid-day services on all routes, or a guaranteed ride home program should be available and publicized.

Policy 5: Rogue Valley Transportation District (RVTD) shall periodically evaluate the addition of new routes to increase the area of coverage.

Policy 6: Local governments shall work with major employers to encourage transit use by their employers through fare subsidies and other programs.

Policy 7: RVTD and local governments shall cooperate to the maximum extent to identify and include features beneficial to transit riders and transit district operations when developing plans for roadway projects.

Policy 8: RVTD and local governments shall encourage connectivity between different travel modes, including accessibility of major transit facilities to bike, pedestrian, and automobile traffic.

Policy 9: RVTD and local governments shall promote the use of transit services to residents and businesses as an alternative mode of travel.

Land Use Component

The Land Use Component of the RTP addresses existing and projected future demographic and socio-economic features of the Medford metropolitan area and discusses the influence of these factors on travel demand and levels of congestion. The RTP also addresses the close relationship between land use policies and decision-making, and the management and improvement needs of the transportation system.

The RTP recommends local jurisdictions consider the following land use policies when preparing a TSP:

Policy 1: Local governments shall utilize transit-oriented design strategies to encourage the use of local public transportation and discourage reliance upon single-occupancy vehicles.

Policy 2: Local governments shall consider ordinances or amendments to their Comprehensive Plans to protect and preserve corridors for transportation purposes.

Policy 3: Local governments shall amend their Comprehensive Plans to promote mixed or higher density developments in areas that would lower the vehicular demand on the regional transportation system.

Policy 4: *Local governments shall discourage cul-de-sac or dead-end street designs whenever an interconnection alternative exists. Development of a modified grid street pattern shall be encouraged for connecting new and existing neighborhoods during subdivisions and partitions.*

Policy 5: *Wherever possible, subdivisions and any approved cul-de-sacs shall be designed to provide pedestrian connectivity between neighborhoods.*

Policy 6: *Where appropriate, local governments shall consider the use of traffic calming techniques and reduced street widths to minimize negative impacts of traffic on neighborhoods.*

Air Transportation Component

The Medford metropolitan area, Jackson County and a large area of southern Oregon is served by the Rogue Valley International-Medford Airport which is located north of the City and east of I-5, between Crater Lake Highway and Table Rock Road. This airport is owned and operated by Jackson County and provides both passenger and air freight service, as well as serving numerous private aircraft operations. The airport has been designated a foreign trade zone (FTZ) which is intended to help the airport develop to its fullest potential and boost the local economy in the southern Oregon region. The FTZ is projected to increase employment in the immediate vicinity of the airport and produce an annual increase in revenue of more than $3 million. The recently-adopted Rogue Valley International - Medford Airport Master Plan Update provides guidance for future development at the airport including both landside and airside facilities. The RTP identifies the following air transportation policy:

Policy: *Local governments shall take actions to promote air transportation in the region and its connections with the other areas in the state, nation and abroad. This includes ensuring that good ground transportation is available for passengers and freight, and that the Airport Master Plan is periodically updated as necessary.*

Rail Transportation Component

Rail freight service in the Medford area is provided by the former Southern Pacific Railroad Siskiyou Line (now owned by the Union Pacific Railroad) that runs from Springfield, Oregon to Black Butte, California. This line has a total length of slightly more than 300 miles, of which about 250 miles are in Oregon. Freight service on this line is provided by Central Oregon & Pacific (CORP), six days per week.

Rail passenger service is not provided directly to Medford. North-south rail passenger service in the California-Oregon-Washington corridor is provided through Klamath Falls, bypassing the Rogue Valley region. Intercity bus service is operated between Medford and Eugene or Portland, connecting to the Amtrak Cascades high speed rail corridor.

The RTP identifies the following rail transportation policy:

Policy: *Local governments shall take actions to promote rail transportation in the region and its connections with the other areas in the state and nation. This includes ensuring that good ground transportation and intermodal connections are available for freight. Local governments shall explore passenger service as part of statewide rail transportation planning efforts.*

Freight Transportation Component

This section of the RTP addresses freight transportation on the highway system. The key to providing good freight movement in the region is to ensure that the collector and arterial street systems provide an adequate level of service and continuous connections to link intermodal facilities with inter-regional routes, such as the Access Oregon Highways. Designated truck routes in the metropolitan region include I-5, Crater Lake Highway (Highway 62), and Lake of the Woods Highway (Highway 140).

The RTP identifies the following freight transportation component policy:

Policy: *Local governments shall take actions to promote access to all modes of transportation for freight movements to serve the needs of residents and businesses in the RVMPO planning area. Local actions include ensuring access to freight facilities via the local street system and actively supporting the freight transportation policies set forth in the Oregon Highway Plan, including: (1) Identifying roadway obstacles and barriers to efficient truck movements on state highways (2)encouraging commercial vehicle regulations that improve safety, (3) supporting Intelligent Transportation System Commercial Vehicle Operation technology, (4) maintaining and improving roadway facilities serving intermodal freight facilities, (5) supporting the establishment of stable funding or financing resources to improve the efficiency of freight movement, (6) improving planning coordination between public investments in highways and other investments in the freight movement infrastructure, and (7) supporting the maintenance and improvement of non-highway infrastructure that provides alternative freight-moving capacity in critical corridors.*

Traffic Safety Component
Traffic safety is an important component in any effort to improve the existing transportation system. RTP policies regarding traffic safety are consistent with the safety goals of the local jurisdictions within the MPO area. These policies address a range of safety-related issues including:

Policy 1: *Local governments shall work with other agencies to promote traffic safety education and awareness.*

Policy 2: *Local governments shall work to increase traffic safety by actively enforcing the City and State motor vehicle codes.*

Policy 3: *Local governments shall work to increase traffic safety by requiring private property owners to maintain vision areas adjacent to intersections and driveways clear of fences, landscaping and foliage that obstruct the necessary views of motorists, bicyclists, and pedestrians.*

Policy 4: *Improving vehicular, bicycle and pedestrian safety issues will be a high priority consideration in the selection, development, and construction of street projects.*

Financial Component
The Transportation Equity Act for the 21^{st} Century (TEA-21) requires that the RTP demonstrate the consistency of proposed transportation investments with already available and projected sources of revenue. Those estimated revenues would be obtained from existing and proposed funding sources, and should reasonably be expected to be available for the life of the plan. Oregon gas tax receipts are the primary source of transportation modernization revenue for Medford. System development charges (SDCs) and street utility fees supplement the Medford street fund. In air quality non-attainment areas, such as the Rogue Valley metropolitan area, the RTP must address specific financial strategies to ensure that the implementation of projects and programs will help the area to reach air quality compliance.

The region's needs exceed the available resources. As noted in the discussion of the Street and Highway Component, projects are identified in two tiers. Tier 1 projects fall within the current financial capabilities of the implementing agencies. Tier 1 represents projects that meet the financially constrained criteria for federal and state funding and air quality analysis. Tier 2 projects represent projects that exceed the region's current financial capabilities. Tier 2 projects were not included in the air quality conformity analysis conducted for the RTP because these projects exceed the financial constraints of the region.

Street utility fees are the primary source of transportation modernization revenue for Medford. System development charges (SDCs) and street utility fees supplement the Medford street fund.

Air Quality Conformity

Federal transportation planning requirements include components designed to help implement provisions of the Clean Air Act related to achieving the National Ambient Air Quality Standards (NAAQS). Prior to adoption of the *Regional Transportation Plan* and Plan Updates, the RVMPO is required to evaluate the air quality impacts associated with implementing the Plan's recommendations and to certify that the RTP will not adversely impact the region's ability to achieve and/or maintain the NAAQS. In other words, the RTP must "conform" with the NAAQS. Any federally-funded roadway improvement project must be included in the RTP and be subjected to air quality conformity analysis as a condition of receiving the federal dollars.

Transit-Oriented Design and Development (TOD) Study

The *Transit Oriented Design and Transit Corridor Development Strategies* (or TOD Study) is designed to bring the RTP into compliance with the TPR. This study was conducted to ensure that the 1997 Rogue Valley *Regional Transportation Plan* (RTP) would adequately address state transportation planning (TPR) requirements for reducing reliance on the automobile and targeting a 5 percent reduction in vehicle miles of travel (VMT) per capita in 20 years. The objectives of the TOD Study were to:

- Identify and designate major transit service routes supportive of transit oriented development.
- Identify and assess principal activity centers throughout the RVTD boundary capable of supporting transit activity centers and transit corridors.
- Develop model ordinances, zoning and design guidelines that support the planning principles necessary to enhance transit activity centers and corridors.
- Amend the *Regional Transportation Plan* in order to bring it into compliance with the TPR.

The TOD study was completed in August 1999. MPO member jurisdictions are charged with implementing the recommended TOD sites. The City of Medford is implementing the TOD site located near the intersection of Barnett Road and North Phoenix Road through the Southeast Plan process. The Medford Urban Renewal Agency (MURA) is currently implementing actions in the downtown Medford TOD. The region is seeking funding assistance to implement other identified TOD sites. Chapter 4 will include more discussion of the Medford TODs including location, and current planning and development activity.

Southern Oregon Commuter Rail Study

The 1999 Oregon Legislature asked ODOT to study the feasibility of providing frequent local passenger rail service between Grants Pass and Ashland. The primary goal of the study was to provide useful information to assist legislators, state and local governing bodies and the general public in making a decision on the feasibility of developing a commuter rail system to serve the growing population in the Rogue Valley. Specific goals included:

- Identify realistic capital and operating costs, including equipment.
- Provide estimate of potential passenger revenues.
- Identify environmental issues.
- Identify benefits and impacts of rail commuter service to communities on route
- Identify and examine any jurisdictional issues that could hinder commuter operations, including railroad operating agreements.

With the assistance of ODOT, the Rogue Valley Transportation District and the Rogue Valley Metropolitan Planning Organization, this study was guided by two advisory groups, the Steering Committee and the Technical Advisory Committee. The Steering Committee had elected officials from all jurisdictions along the rail corridor, including the City of Medford and Jackson County. The Technical Advisory Committee was comprised of planners and public works staff from those same jurisdictions. Two ODOT Rail Division consultants researched the rail system and produced study information for review by these two groups. In June of 2001, a final study report was presented to members of both advisory groups.

Southeast Medford Plan

The City of Medford received a grant from the Transportation and Growth Management Program (TGM) – a joint effort of the Oregon Department of Transportation (ODOT) and the Oregon Department of Land Conservation and Development (DLCD) – to refine a plan that will guide multi-modal development in the Southeast area of the City. An update to the City's Southeast Plan, this plan is intended to create a livable community of approximately 10,000 residents that encourages walking and cycling to nearby destinations and shorter automobile trips. One of the key objectives of this plan is to provide direction toward meeting the RTP Alternative Measures for increasing the amount of mixed use development in the city with accompanying pedestrian, bicycle and transit amenities to encourage greater use of these travel modes. The report displays a proposed street grid along with a detailed list of improvements necessary to maintain mobility on the surrounding transportation network.

City Center Design Concept '99

The project is intended to assist the Medford Urban Renewal Agency in updating the planning and conceptual design component of the downtown revitalization program. Because several developments are anticipated for the downtown core, the main task consisted of working with project stakeholders to identify sites and recommend general design characteristics for projects. The report established several principles to guide the location, design, and implementation of future downtown projects, including:

- Historic character,
- Smart/transit-oriented development principles, and
- Pedestrian emphasis

Downtown 2050 Plan

The Downtown 2050 Plan was developed by the Medford Urban Renewal Agency (MURA) to provide vision and a series of design standards and guidelines for development within downtown Medford. The purpose of the standards and guidelines is to ensure that the unique historic and pedestrian character of the downtown core is preserved and enhanced. The policy framework for the 2050 Plan includes six topical areas that are described in more detail in Chapter 4:

- Regional Position
- Community Character
- Housing
- Transportation
- Historic Preservation
- Partnerships

In the spring of 2003 the Medford City Council approved the Downtown 2050 Plan including a policy framework, design standards and guideline ordinances for downtown along with a *Comprehensive Plan* amendment to include a special plan designation for Downtown. An important part of the downtown plan is the Evergreen Street project which would provide increased street connectivity in the downtown while adding on-street parking and pedestrian enhancements to serve commercial and institutional development on the east side of downtown.

Medford in the 21st Century Vision Strategic Plan

The Vision Strategic Plan is intended to fulfill the City's transportation vision statement. The vision statement describes Medford as being "served by a safe, accessible, efficient, and well planned transportation system". This document contains nine "components" aimed at meeting the City's circulation needs in the coming decades. Within each component are specific actions that lay out a blueprint for achieving transportation-related goals and objectives. The components listed in the Vision Strategic Plan include:

- An efficient arterial street system provides north-south and east-west travel as well as alternatives to use of the freeway for local travel.
- Shopping and work opportunities are close to neighborhoods.
- Medford works in partnership with the region to provide frequent transit service with longer hours of operation and more passenger amenities.
- The transportation system is enhanced through a combination of planning, community education, secure funding and diligent implementation.
- The community has access to competitive freight and passenger rail service

Highway 62 Corridor Solutions Project – North Medford Interchange Draft Environmental Assessment

Overview

The north Medford interchange is located at the junction of I-5 with Oregon Highway 62 (the Crater Lake Highway) The interchange area presently experiences heavy traffic congestion during peak periods of the day. ODOT, in conjunction with FHWA and RVMPO, is proposing to improve the traffic movement in the area by implementing a number of major roadway improvements. Overall guidance and decision making for this project is being provided by the Highway 62 Solutions Team, made up of individuals involved in the project from both the public and private sectors. In addition, a Citizen's Advisory Committee composed of residents, local business representatives, and others potentially impacted by the proposed projects have provided input to the Solutions Team. The Environmental Assessment (EA) prepared for this project was originally conceived as an Environmental Impact Statement (EIS) for the Highway 62 Corridor beginning at the I-5 interchange and continuing northeast to White City. Due to funding constraints, the project was reduced in scope to include only the Highway 62/I-5 interchange and the scope of environmental analysis changed from an EIS to an EA.

Current Status

The Highway 62 Corridor Solutions Project submitted the North Medford Interchange Preliminary Draft Environmental Assessment (EA) in February 2001 for review by the project Study Committee. Upon completion of the final document, designs will continue to be refined with construction scheduled to begin in the fall of 2003. After completion of the EA and identification of a preferred alternative, the RVMPO initiated a land use and transportation planning study for the Highway 62 corridor. The objectives of this study were:

- To identify strategies that help ensure the long-term functioning of a potential new expressway parallel to and west of Crater Lake Highway;
- To develop design recommendations for how Crater Lake Highway could eventually serve as a boulevard to better accommodate local travel, if a regional expressway is built; and

- To determine how the intended use of the potential expressway should influence surrounding land uses and development.

Reaching these objectives have entailed: Identifying a system of roadways in the area, developing conceptual plans for the potential expressway with respect to lane uses near potential interchanges, and proposing designs for key areas along Crater Lake Highway that could serve as transit centers and provide convenient facilities for pedestrians and cyclists. Preliminary recommendations have been identified pending full environmental review. No funding source for these improvements has been identified.

Preferred Alternative

The central component of the preferred Build Alternative is a new design for the north Medford interchange that would address traffic congestion and safety issues in the project area. As part of the Build Alternative, a number of improvements to bicycle and pedestrian lanes have also been proposed. The preferred north Medford interchange design consists of three main components: the Highway 62 and I-5 interchange, the Highway 62 and Biddle Road interchange, and other improvements necessary to support the safe, effective and efficient operation of these facilities. In addition, due to increased impervious surface in the project area as a result of the proposed project, a water treatment facility is proposed to treat runoff. A map of the preferred build alternative is shown in Figure 2-1.

South Medford Interchange Project

Overview

The South Medford Interchange is located on Interstate 5 (I-5) serving Barnett Road, a major east-west connector in Medford. The interchange serves as the south gateway to the city, and is a key link to future expansion of the city's economic base. The increased use of the facility has resulted in high levels of congestion and ODOT has responded by proposing closure of the existing interchange and construction of a new interchange to the south intersecting the easterly extension of Garfield Road and the southerly extension of Highland Drive.

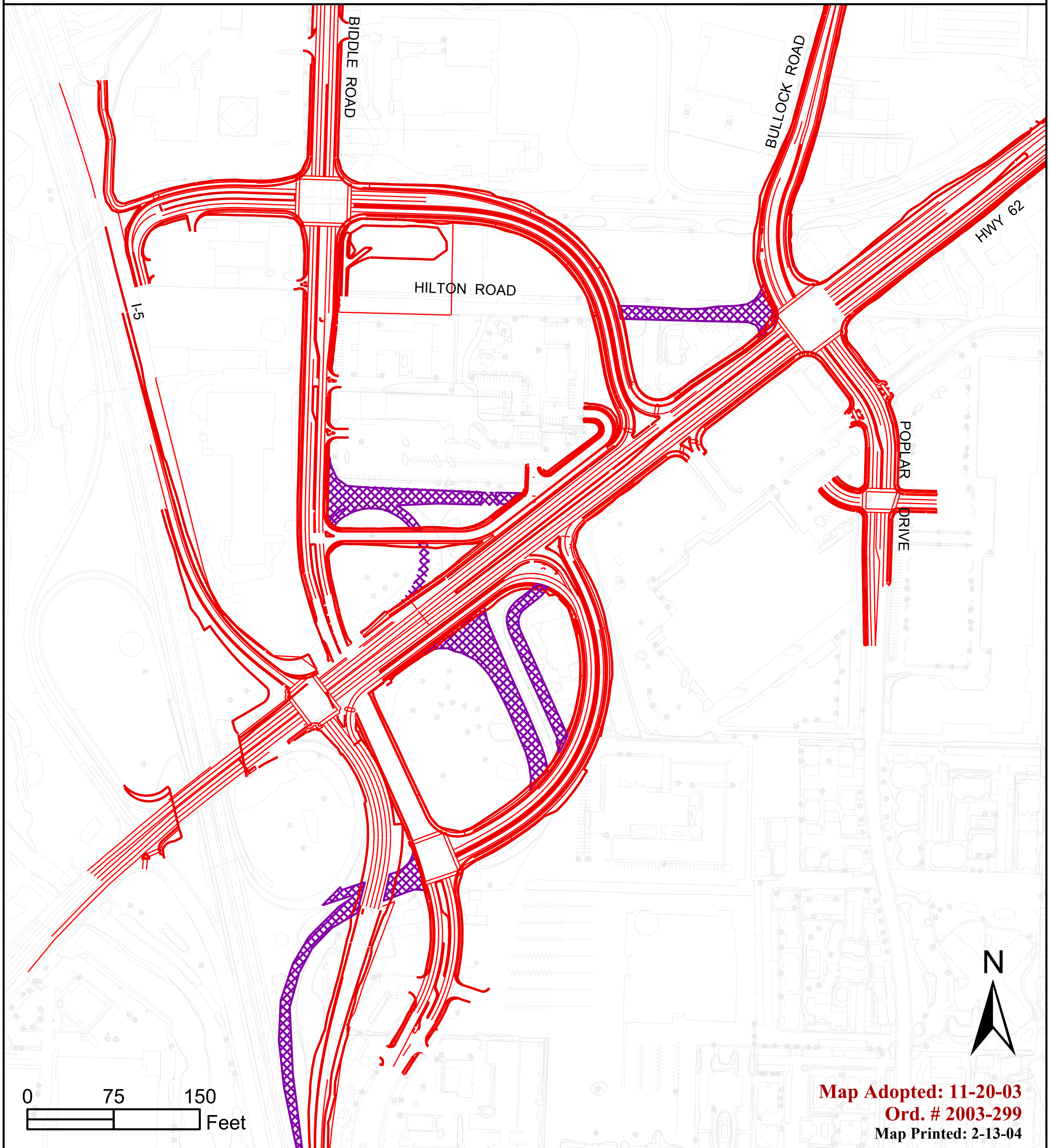
The South Medford Interchange Project was undertaken at the direction of ODOT and was guided by a highway Solutions Team. The Solution Team consisted of members from various disciplines in the public and private sectors and was the focal point for decisions about this project. Team members included selected representatives of the community, business interests, local governments, the transit district, other project stakeholders and ODOT.

A key component of the South Medford Interchange Project is the development of an interchange management plan to address land development and access provisions in the vicinity of the interchange. The interchange management plan will require the City's Municipal code to include provisions that protect the capacity and function of this new transportation facility.

Figure 2-2 is a drawing of the South Medford interchange preferred alternative as prepared for the project's Final EIS that will be published during April, 2003.

.

Figure 2-1: North Medford Interchange Project - Build Alternative



Improvements

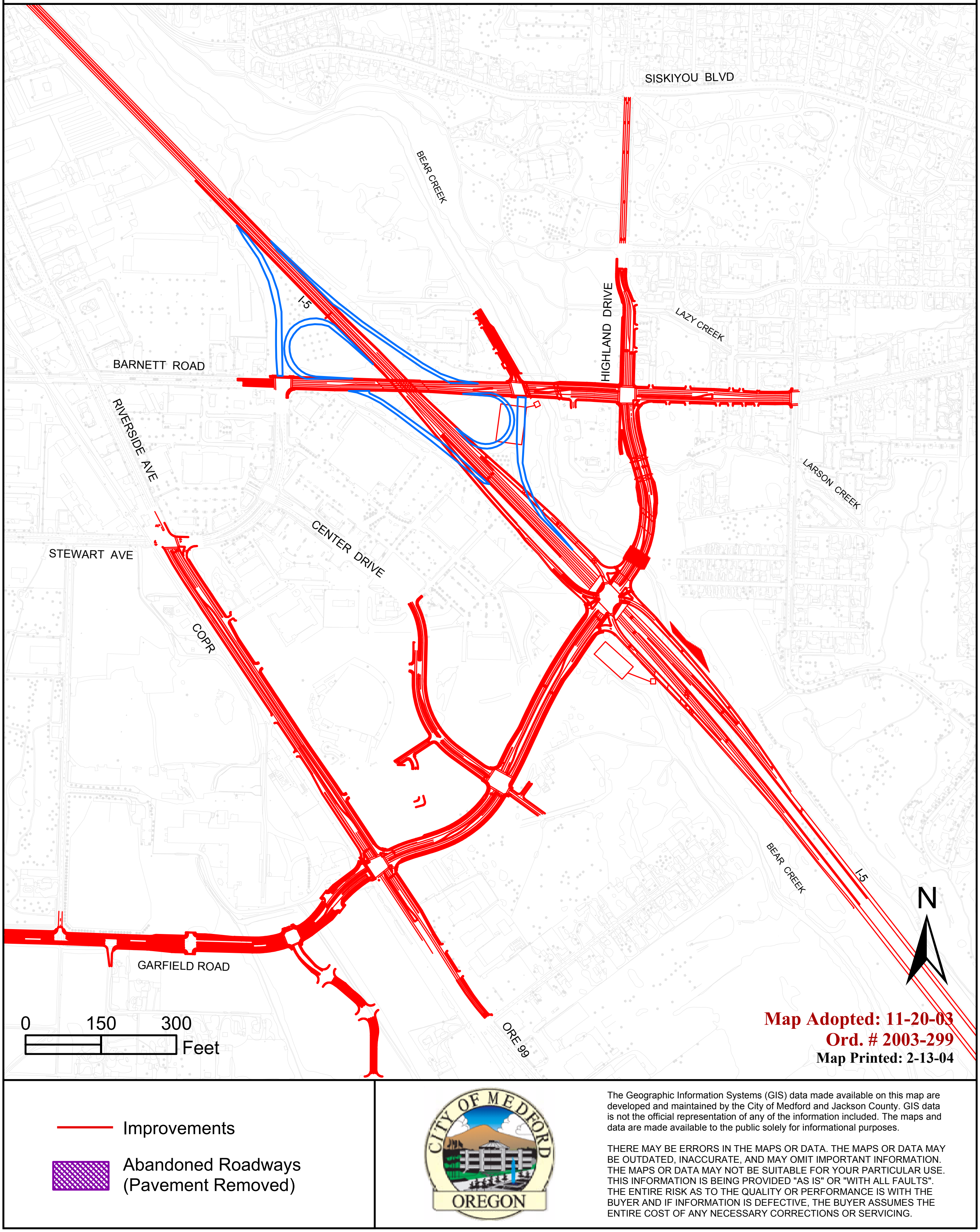
Abandoned Roadways (Pavement Removed)

CITY OF MEDFORD OREGON

The Geographic Information Systems (GIS) data made available on this map are developed and maintained by the City of Medford and Jackson County. GIS data is not the official representation of any of the information included. The maps and data are made available to the public solely for informational purposes.

THERE MAY BE ERRORS IN THE MAPS OR DATA. THE MAPS OR DATA MAY BE OUTDATED, INACCURATE, AND MAY OMIT IMPORTANT INFORMATION. THE MAPS OR DATA MAY NOT BE SUITABLE FOR YOUR PARTICULAR USE. THIS INFORMATION IS BEING PROVIDED "AS IS" OR "WITH ALL FAULTS". THE ENTIRE RISK AS TO THE QUALITY OR PERFORMANCE IS WITH THE BUYER AND IF INFORMATION IS DEFECTIVE, THE BUYER ASSUMES THE ENTIRE COST OF ANY NECESSARY CORRECTIONS OR SERVICING.

Figure 2-2: South Medford Interchange Project - Build Alternative



Rogue Valley International – Medford Airport Master Plan (2001)

An Airport Master Plan was completed in February of 2001 for the Rogue Valley International-Medford Airport. This Master Plan provides for anticipated aviation facility needs over the next twenty-year period (and beyond). The improvements identified in the Master Plan will allow the airport to meet growing demands of commercial passenger air service, air cargo, military, and general aviation needs. In addition to addressing aviation needs, the plan also identifies airport-owned properties that are not anticipated for aviation-related development. These properties may be used for other purposes to enhance airport revenues. The plan generally recommends that proposed improvements be implemented as airport activity demands them. Recommended improvements include:

- Expanding the loop road in order to provide additional parking capacity
- Construction of a grade-separated interchange between Biddle Road and the airport access road
- Construction of an additional runway to handle projected airline activity

Implementation of these and other recommendations related to development of the airport are the responsibility of Jackson County using County, Federal Aviation Administration (FAA), and other funding. Airport-related recommendations are further addressed in Chapter 9 of the TSP.

Other Transportation Studies

In addition to the foregoing, there are numerous other studies and transportation-related documents which have been produced in the Rogue Valley area. Some of these have been reviewed to extract specific information that will be helpful in preparing the Medford TSP, but the documents have not been summarized in this memorandum due to the limited applicability of the information they contain. For example, the existing TSPs for nearby jurisdictions including Central Point, Phoenix, and Talent have been reviewed to obtain information such as functional classification and improvements so that consistency can be maintained between these jurisdictions and the City of Medford where relevant.

Many other studies have still less utility in the preparation of the Medford TSP than the ones previously summarized. The first technical memorandum produced for the *Rogue Valley Regional Transportation Plan* (RTP) in August 1993, provides an exhaustive review of existing transportation plans and studies previously completed in the area. Table 2-3 below lists plans and studies by title and date that are reviewed in Technical Memorandum #1 of the RTP. If additional information from any of the studies listed below is required, the Technical Memorandum #1 of the RTP should be consulted.

Table 2-3
List of Other Transportation Studies with Relevance to Medford TSP

Study	Year
CORRIDOR AND INTERCHANGE STUDIES	
Highway 62 Corridor Solutions Project – Preliminary Draft Environmental Assessment	2001
Pacific Highway No. 1 (I-5) Corridor Study Phase I, M.P. 1.0 - 70.0	1992
A Traffic Management and Access Plan for Crater Lake Highway (OR 62)	1991
AREA-WIDE TRANSPORTATION STUDIES	
South Gateway Center Traffic Study	1992
King Business Center Traffic Study	1992
Parking Structures Feasibility and Preliminary Design Analysis	1990

Table 2-3 Continued
List of Other Transportation Studies with Relevance to Medford TSP

Study	Year
AREA-WIDE TRANSPORTATION STUDIES Continued	
Transportation Improvement Program for the Medford – Central Point - Phoenix Urbanized Area (Fiscal Years 1993-1998)	1992
Transportation Element, Jackson County Comprehensive Plan	1991
Interim Area-Wide Transportation Plan for Medford/Medford Area	1986
Medford Area Transportation Study	1981
Bear Creek Area Transportation Study - Transportation Plan Interim Report	1970
Bear Creek Area Transportation Study - Volume 1, Factual Data Report	1967
DOWNTOWN ECONOMIC DEVELOPMENT PLANS	
Parking Structures Feasibility and Preliminary Design Analysis	1990
Downtown EDA Survey of Medford	1990
Medford City Center Revitalization Plan	1988
Downtown - Search For Solutions, A Mail Tribune Special Report	1987
Downtown (Medford) Parking Analysis	1984
Downtown Revitalization - Progress Reports	1983 1984
Downtown Medford Market Opportunities	1982
Downtown Medford Traffic Safety, Circulation and Parking	1978
TRANSIT AND BICYCLE STUDIES	
RVTD Origin-Destination Studies	
Rogue Valley Transportation District Ridership Surveys	
Passenger Statistics	
ADA Paratransit Plan	1993
Transportation Demand Management Feasibility Study of Jackson County Employees: Survey Findings	1992
What Jackson County Employers Think About Transportation Demand Management: Survey Findings	1992
On-Board Passenger Surveys	1991 1989 1986
Bus Pass Marketing Program	1991
Downtown Transit Center Interface with Front-Riverside Couplet	1991
Analysis Report of Research Survey Conducted for Rogue Valley Transportation District	1990
Fully Allocated Cost Analysis	1989
Rogue Valley Transportation District Transfer Point Location Study	1987
Elderly and Handicapped Transportation Services Alternatives Report	1987
Transportation Handicapped: A Description of the Population Within Jackson and Josephine Counties	1985
Transportation Handicapped: A Description of the Population Within Jackson and Josephine Counties	1985
Transit Development Program	1985
Five Year Transit Development Program	1983
A Comprehensive Bicycle Plan for Jackson County, Oregon	1978

Table 2-3 Continued
List of Other Transportation Studies with Relevance to Medford TSP

Study	Year
TRANSIT AND BICYCLE STUDIES Continued	
Alternative Plans for Bus Service	1978
OTHER STUDIES	
Countywide Road Projects System Development Charge Handbook (For Fiscal Year 1992-93)	
The 1989 Survey of Attitudes in Jackson County - Analysis of Findings	1989
Five Year Pavement Management Plan for Jackson County, Oregon	1985
Control Strategy for Medford-Ashland Air Quality Maintenance Area - 1982 State Implementation Plan (SIP) Revision for Carbon Monoxide	1982
Medford – Jackson County Airport Master Plan	1978
Jackson County Standards and Specifications for County Roads	1976

Chapter 3
Existing Conditions

Overview

An inventory of the existing transportation system within the Medford Urban Growth Boundary (UGB) was conducted as part of the transportation system planning process. This inventory includes:

- Existing street characteristics including physical features, traffic control, current traffic operations and safety with primary emphasis on the arterial and collector street systems
- Public transit
- Other surface transportation such as intercity bus and passenger rail
- Air transportation
- Pedestrian and bicycle systems
- Freight transportation systems including trucking, rail, pipelines, and water transportation

The inventory data comes from a variety of sources. Although all transportation system modes are inventoried, the street inventory is the most data intensive. The street inventory effort includes detailed tables describing arterial and collector roadway features including number of lanes, posted speeds, functional classification, on-street parking, intersection traffic control, sidewalks and bicycle facilities. The detailed tables are included in Appendix A. This information was obtained through a combination of the Rogue Valley Metropolitan Planning Organization (RVMPO) travel model roadway inventory database and City of Medford staff review of existing roadway documents. The Rogue Valley Transportation District (RVTD) provided information related to transit service provided in the Medford area. Aviation data was supplied by the Jackson County Airport Authority. Freight-related information including trucking, freight rail, and pipelines was obtained from the RVMPO.

Existing Street Circulation System

This section describes the existing street circulation system within the Medford Urban Growth Boundary (UGB) including jurisdictional ownership and maintenance responsibilities, functional classification, physical features and traffic control, traffic operations including existing levels of service, and safety.

Jurisdictional Responsibilities

Several jurisdictions, including the Oregon Department of Transportation (ODOT), Jackson County and the City of Medford maintain portions of the existing street system within the study area. The following paragraphs present a summary of the jurisdictional responsibility for the various streets and highways within the Medford UGB. Included are state highways, county roads, and city and private streets.

State Maintained Highways

Within the planning area, ODOT maintains Interstate 5 (I-5), Highway 62, Highway 99, and Highway 238. I-5 is a well-maintained, four-lane divided freeway with a posted speed of 55 miles per hour in the Medford area. It is classified by the 1999 Oregon Highway Plan as having interstate significance and serves as the primary north and south through route for traffic traveling through the area.

Paralleling I-5 to the west, Highway 99 serves as another north-south access through the Medford area and is classified in the 1999 Oregon Highway Plan as a district highway. Portions of Highway 99 are under City jurisdiction. The cross-section of Highway 99 has four to six lanes in Medford, depending on location. The posted speed on Highway 99 ranges from 25 to 45 mph. Within Medford, the majority of Highway 99 is a one-way couplet. The northbound couplet roadway is Riverside Avenue and the southbound couplet roadway is Central Avenue/Court Street. The highway is also referred to as the Rogue Valley Highway. Between Barnett Road and the Highway 238/Highway 62 intersection (the Big X), maintenance and operations responsibilities for Highway 99 rest with the City.

Highway 62 (Crater Lake Highway) is classified as a Statewide Expressway, serving north-south access through Medford, linking the city with destinations to the north and east. The Highway 62/I-5 interchange area is a critical connection for the corridor.

Highway 238 (Jacksonville Highway) is classified as a district highway and serves east-west traffic between Medford and Jacksonville to the west. ODOT recently completed construction of a new alignment for Highway 238 north of downtown Medford. This highway runs from Highway 62 west of I-5 on a new alignment through the former Medco Mill site and connects to Rossanley Drive at Sage Road. When funding becomes available, Rossanley Drive and Hanley Road (from Rossanley to Highway 238) will be improved to highway standards by widening existing shoulders. The new alignment provides a more direct connection to the existing Highway 238 alignment between Medford and Jacksonville avoiding the downtown core area that was bisected by the old alignment. The previous alignment through Medford and west to the intersection at Hanley Road has reverted to City and County ownership.

County Maintained Roads

Jackson County maintains numerous roads within the Medford UGB including sections of Cherry Lane, Coker Butte Road, Columbus Avenue, E. Vilas Road, Foothill Road, and Ellendale Drive. Table 3-1 specifies all streets within the Medford UGB maintained by Jackson County. This list changes regularly as areas are annexed into the City, but maintenance responsibility is not transferred concurrently. A recent agreement was reached to transfer four sections of roadway to the City and an informal agreement was made to transfer all non "local access" roads to the City over the next 12 years.

Table 3-1
Jackson County Roads within the City of Medford

Street	From	To	Length
Airport Road	Table Rock Road	Biddle Rd. (South Intersection)	4100'
Alamar Street	Rio Street	Orchard Home Drive	1175'
Annapolis Drive	Normil Terrace	750' East	750'
Archer Drive	Orchard Home Drive	1300' West of Orchard Home Drive	1300'
Archer Drive	Orchard Home Drive	131' East of Milford Drive	1450'
Bateman Drive	Table Rock Road	395' East of Table Rock Road	395'
Bullock Road	Hilton Road	4400' Northwest of Hilton Road	4400'
Cadet Drive	Normil Terrace	550' East of Normil Terrace	550'
Canal Street	Dead End	Dead End	765'
Cedar Links Drive	350' East of Lexington Drive	Foothill Road	3350'
Cherry Lane	N. Phoenix Road	East N. Phoenix Rd. 2630'	2630'
Cherry Lane	3400' East of N. Phoenix Road	4025' East of N. Phoenix Road	625'
Cherry Street	Prune Street	470' South of Prune Street	470'
Cherry Street	680' N. of Stewart Avenue	967' N. of Stewart Avenue	285'
Cherry Street	235' N. of Stewart Avenue	335' N. of Stewart Avenue	100'
Cloudcrest	Highcrest	Stardust	400'
Coker Butte Road	Crater Lake Avenue	1000' East of Crater Lake Avenue	1000'
Columbus Avenue	530' S. of Stewart Avenue	Stage Road South	4355'
Connell Avenue	Beall Lane	100' South of Beall Lane	100'

Table 3-1 Continued
Jackson County Roads within the City of Medford

Street	From	To	Length
Corona Avenue	Roberts Road	700' N. of Hilton Road	2500’
Cottonwood Road	Lawnsdale Road	Gilman Road	400’
Crater Lake Avenue	Delta Waters Road	2300' North of Delta Waters Road	1300’
Crews Road	Table Rock Road	Bradley Avenue	750’
Cunningham Avenue	Columbus Avenue	1522’ W. of Columbus Avenue	1552’
East Vilas Road	Crater Lake Highway	550' West of Crater Lake Hwy	550’
East Vilas Road	Table Rock Road	1860' E. of Table Rock Road	1880’
East Vilas Road	2270' E. of Table Rock Road	2423' E. of Table Rock Road	153’
Ellen Avenue	Highway 99	Bursell Road	1000’
Ellendale Drive	Greenwood Street	Crestbrook	200’
Eucalyptus Drive	Foothill Road	Foothill Road Cul-de-sac	800’
Foothill Road	55’ S. of Lone Pine Road	1000’ N. Normil Terrace	3300’
Foothill Road	Cedar Links	1375' N. of Cedar Links Drive	1375’
Garfield Road	Kings Highway	168’ E. of Kings Highway	168’
Garfield Road	825’ E. of Kings Hwy	500’ E. of Kenyon Street	2025’
Gilman Road	Biddle Road	170’ W. of Cottonwood	1900’
Greenwood Street	Highland Drive	Ellendale Avenue	1100’
Happy Valley Drive	Agate Street	150’ S. of Agate Street	150’
Harbrooke Street	N. Phoenix Road	1320’ E. of N. Phoenix Road	1320’
Harvard Place	N. Phoenix Road	Yale Drive	1600’
Highcrest Drive	Hillcrest Road	Cloudcrest Drive	3100’
Hillcrest Road	Monterey Drive	2010’ E. of Monterey Drive	2010’
Hillcrest Road	Highway 62	Biddle Road	1200’
Kings Highway	500’ S. of Stewart Avenue	386’ S. of Agate Street	4506’
Lawnsdale Road	Biddle Road	Cottonwood Road	1700’
Marilee Street	Ellen Avenue	300’ N. of Ellen Avenue	300’
Meals Drive	Dead End	Dead End	765’
Midway Road	Merriman Road	413’ E. of Table Rock Road	1313’
Midway Road	270’ E. of Cummings Lane	665’ E. of Cummings Lane	395’
Midway Road	Biddle Road	380’ W. of Biddle Road	380’
Milford Drive	Dead End	Dead End	765’
Myers Lane	Stewart Avenue	2250’ S. of Stewart Avenue	2250’
Normil Terrace	Foothill Road	Annapolis Drive	2400’
North Phoenix Road	Barnett Road	Coal Mine Road	3750’
North Runway Drive	750’ S. of East Vilas Road	1250’ S. of East Vilas Road	500’
Orchard Home Drive	140’ N of Alamar Street	119’ N. of Orchard Home Court	884’
Orchard Home Drive	Stewart Avenue	Cunningham Avenue	2180’
Pech Road	East of Table Rock Road		680’
Princeton Way	N. Phoenix Road	Yale Drive	2200’
Prune Street	Cherry Street	330’ E. of Cherry Street	330’
Rio Street	Archer Drive	Alamar Street	264’
Roberts Road	Corona Avenue	Serenity Drive	550’
Ross Lane North	Finley Lane	258’ N. of Finley Lane	258’
Ross Lane North	Maple Park Drive	Thorne Oak Drive	900’
Rossanley Drive	450’ W. of Ross Lane North	2070’ W. of Ross Lane North	1620’
Stanford Avenue	Cherry Lane	High Oaks Drive	1500’

Table 3-1 Continued
Jackson County Roads within the City of Medford

Street	From	To	Length
Stardust Way	Highcrest Drive	Cloudcrest Drive	1850’
Stewart Avenue	370’ W. of Dixie Lane	181’ E. of Thomas Road	2515’
Sycamore Way	Eucalyptus Drive	Cul-de-Sac	700’
Table Rock Road	Merriman Road	300’ N. of Morningside	2700’
Yale Drive	Harvard Place	Stanford Avenue	800’
West Main Street	Lewis Avenue	298’ W. of Lewis Avenue	298’

Source: City of Medford, 2002

City Maintained Roads

The City of Medford maintains a complex network of streets including several one-way streets. The street cross-sections range from two to five lanes with posted speeds of 25-45 miles per hour. There are multiple public at-grade railroad crossings in Medford, with only one grade-separated crossing (located on West McAndrews Road). Several private railroad crossings also exist, mostly serving industrial properties. Portions of Highway 99 through the City are also City-maintained. The older central portion of Medford, generally between McAndrews Road and Stewart Avenue including downtown also contains numerous public alleys.

Privately Maintained Roads

Several streets in Medford are privately maintained. Many of these streets are associated with manufactured home parks and other planned developments. Medford also contains numerous private “minimum access streets” that are short cul-de-sacs serving up to three dwellings and are generally utilized for infill development. The private roads in the city are classified as local or residential roads and are not included in the street system inventory in Appendix A that focuses on arterials and collectors.

Existing Street Functional Classification and Standards

Functional classification provides a systematic basis for determining future right-of-way and improvement needs, and can also be used to provide general guidance to appropriate or desired vehicular street design characteristics. A street’s functional classification is based on the relative priority of traffic mobility and access functions that are served by the street. At one end of the spectrum of mobility and access are freeways, which emphasize moving high volumes of traffic, allowing only highly controlled access points. At the other end of the spectrum are residential cul-de-sac streets, which provide access only to parcels with direct frontage and allow no through traffic

These two roadway types form the ends of a spectrum relating access and traffic flow. Between the ends of this spectrum are local streets, collectors and arterials, each with an increasingly greater emphasis on mobility. Classifications can be further stratified into major and minor arterials and collectors. Some jurisdictions use other terms in their functional classification system, such as neighborhood street, throughway, and boulevards.

The City of Medford uses the Street Functional Classification system to reserve future rights-of-way, determine street design, and develop future street improvement projects. As described in Chapter 10 Article IV of the City of Medford *Land Development Code* (LDC), this system is comprised of nine individual classifications including: arterial, collector, commercial, industrial, frontage, standard residential, minor residential, lane, and minimum access. The city has been using narrowed residential street cross-sections (classified as minor residential streets and residential lanes) for more than 15 years. Planter strips have been required on arterial, collector, commercial, industrial, standard residential and minor residential streets since 1994. Traffic calming at specific locations in residential areas has been required by the Planning Commission for the past several years, primarily in the form of bulbed intersections to reduce pedestrian street crossing distance. In addition, consistent with Oregon statute, the LDC also requires that bike lanes be included with all new arterial and collector street construction projects.

The following table describes the characteristics that comprise four of the major street classifications in the Medford UGB area.

Table 3-2
Medford Functional Classification Standards

Feature	Arterial Streets	Collector Streets	Standard Residential (1)	Minor Residential
Right-of-way width	96 feet	74 feet	62 feet	55 feet
Curb-to-curb width	66 feet	44 feet	36 feet	28 feet
Moving Lanes	4	2	2	2
Turn Lanes	1 (2)	1 (3)	0	0
Bike Lanes	2 @ 5’ (4)	2 @ 5’ (4)	No	No
Parking Lanes	No	No	2	2
Planter Strip	10 feet	10 feet	8 feet	8 feet
Sidewalks	2 @ 5’ (5)	2 @ 5’ (5)	2 @ 5’	2 @ 5’

Source: City of Medford, 2002
(1) Features of commercial, industrial and standard residential are all the same. The classification depends on adjacent zoning with a specific designation being made at the time of development review.
(2) At all intersections where turns are allowed.
(3) Where required at or between intersections.
(4) Bike lanes will be provided on all new collector and arterial street construction (LDC Chapter 10, Table IV-1).
(5) Unless located in downtown or where adjacent to the curb and on an arterial or collector street where the sidewalk should be 7 feet wide.

The four major street classifications are further described below:

Arterial. Arterial streets are intended to provide for high volume travel between or within communities, or to and from collectors and other arterials. Standard design requirements for two-way arterials shall include four travel lanes and a fifth lane (or more where volumes warrant) at all intersections where turns are allowed. Facilities for two-way bicycle travel and pedestrians are included. The design of arterials may also be subject to regulation and control of on-street parking, turning movements, and access. Individual residential driveway access for new development shall not be permitted on an arterial if other means of access are available.

Collector. Collector streets service lower order streets and conduct traffic between arterials. Standard design requirements for a collector shall include two travel lanes and a center turn lane when necessary. Facilities for two-way bicycle travel and pedestrians are included. The design of collectors may be subject to regulation and control of on-street parking, turning movements, and access. Individual residential driveway access for new development shall not be permitted on a collector street if other reasonable means of access are available.

Standard Residential. Standard Residential streets provide access to immediately adjacent residential land that also provides connections between collector streets and minor residential streets. Design requirements for a standard residential street include two travel lanes and on-street parking on both sides.

Minor Residential. Minor Residential streets have the sole function of providing access to immediately adjacent land upon which a maximum of one hundred (100) dwelling units front and take access. On-street parking may be permitted on both sides.

The existing Functional Classification system of arterial, collector and standard residential streets within the Medford UGB is illustrated in Figure 3-1 on the following page. In addition to these citywide classification standards, the city recently adopted downtown streetscape standards to enhance the pedestrian environment and general livability of downtown. These street standards are further discussed in Appendix H.

Figure 3-1 also shows the boundaries of the adopted neighborhood circulation plans within the City. Neighborhood circulation plans are prepared by the City to address the unique issues, concerns and visions of individual neighborhoods within the City at a greater level of detail than is possible in a citywide TSP. In addition to the higher order streets adopted on the functional classification map, these neighborhood circulation plans show the conceptual locations of future lower order streets to aid in assuring proper connectivity. When adopted, the requirements of a neighborhood circulation plan will supercede any conflicting requirements of the TSP.

Chapter 5 of the TSP presents a discussion of revised street classifications to accommodate community growth and street system enhancements.

Existing Street Characteristics

This section presents a summary of the physical characteristics of the existing street system in the Medford UGB. Also included is a discussion of bridges, railroad crossings and intelligent transportation system (ITS) assets.

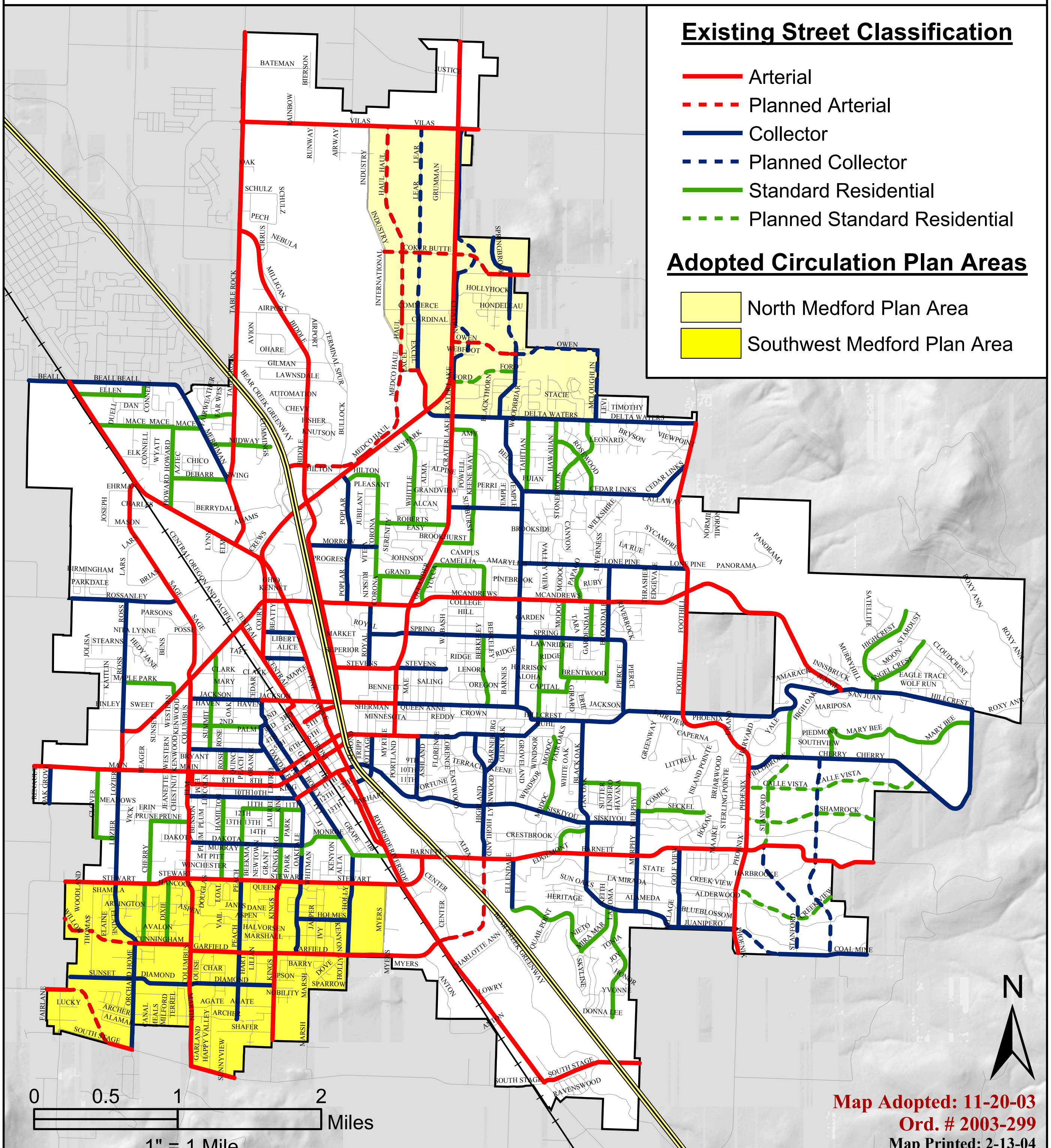
Physical Features of Street System

The street system in the Medford UGB consists of a one- and two-way grid system in the downtown and in the older urban core area located largely to the west of downtown. The City is bisected by Interstate 5, running in a northwest to southeast direction on the east side of downtown. There are two interchanges with I-5 that serve Medford; at Highway 62 at the north end of town (serving the airport, Rogue Valley Mall and other “big box” commercial areas, and the northwest industrial portion of the city), and Barnett Road at the south end of town serving much of the city’s residential area, as well as the commercial node located in the interchange area.

On the east side of I-5, the City’s street system follows a looser grid pattern and is characterized by a lack of higher order streets (arterial and collectors) that provide connections for longer distance, north-south through trips from one part of the city to another. Foothills Road/N. Phoenix Road on the eastern edge of the UGB provides the only arterial street connection that links the southern and northern portions of the UGB east of I-5. A partial north-south arterial connection is provided by Crater Lake Avenue, but this street truncates at Main Street east of the downtown core. A partial north-south collector connection is also provided by the Highland/Sunrise/Springbrook corridor, but this route is disconnected between Jackson and Main Streets. Because of the lack of higher order street connectivity on the east side of town, traffic intrusion onto local streets is an identified problem. Better arterial and collector connections are available for east-west traffic on the east side of the UGB. The eastern portions of the UGB are also characterized by rolling topography and the street system is influenced by this factor.

Detailed information about the physical characteristics of the existing street system in the Medford UGB is presented in Appendix A by street segment. Listed information includes presence of parking; presence and location of sidewalks; presence and location of bicycle lanes; presence and location of curbs; roadway condition; intersection traffic control; intersection turn lanes; and posted speeds.

Figure 3-1: Existing Street Functional Classification System



Other Streets
Highway
Railroad
UGB

CITY OF MEDFORD OREGON

Figure 3-2 shows the location of existing traffic signals within the City's UGB. There are about 125 traffic signals within the City limits, including eight at commercial entrances and six on state facilities, either at freeway interchange ramps or at intersections on state highways. The City controls and maintains 107 traffic signals, including several on state facilities within the City, while the rest are controlled and maintained by ODOT or Jackson County.

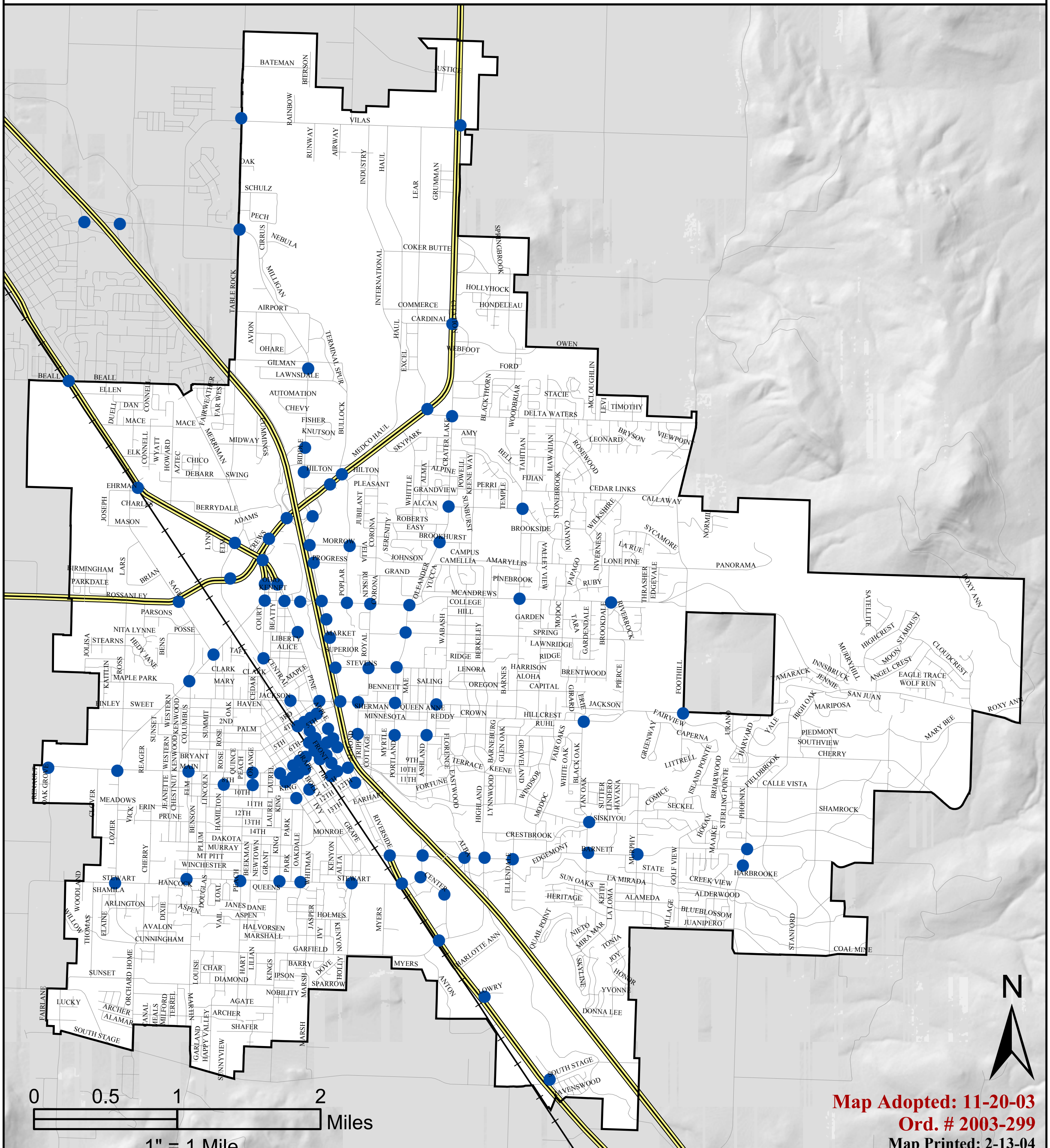
Existing Bridges

Table 3-3 documents the status of existing bridges in the Medford UGB including both those under control of ODOT and the City of Medford. Included in the table is information about the location of the bridge, its jurisdictional ownership, its sufficiency rating, and an assessment of current status. Bridges that have been determined to be structurally deficient have been indicated in **bold** type. The sufficiency rating is a numeric evaluation of a bridge's sufficiency to remain in service. The numbers represent percentages, with zero being entirely insufficient and 100 percent is entirely sufficient. The sufficiency rating takes into account structural adequacy, serviceability, functional obsolescence, essentiality for public use, and a few lesser details.

Table 3-3
Status of Existing Bridges in Medford UGB

Bridge ID	Highway	Mile Point	Crosses	Juris-diction	Sufficiency Rating	Status
19096	Vilas Road		Foothill Road	City	99.6	Not deficient or obsolete
19091	Golf View Drive		Larson Creek	City	40.0	Not deficient or obsolete
07137	Jackson Street	1.10	Bear Creek	City	70.4	Not deficient or obsolete
08607	8th Street	0.05	Bear Creek	City	75.9	Functionally obsolete
16792	Main Street	0.05	Bear Creek	City	91.1	Functionally obsolete
18756	Cottage Street	0.02	Bear Ceek	City	98.7	Not deficient or obsolete
08752	10th Street	1.20	Bear Creek	City	48.5	**Structurally Deficient**
08817	4th Street	0.54	Bear Creek	City	59.0	Functionally Obsolete
07610	McAndrews Rd	1.87	Bear Creek	City	8.0	**Structurally Deficient**
07160	Barnett Road	1.15	Bear Creek	City	7.0	**Structurally Deficient**
18525	McAndrews Rd	38.26	COP RR	City	95.9	Not deficient or obsolete (Old OR 238)
18370	McAndrews Rd	38.50	COP RR	City	68.5	Not deficient or obsolete (Old OR 238)
18777	McAndrews Rd	38.72	Hopkins Canal	City	85.0	N/A, culvert (Old OR 238)
8677N	I-5	27.09	Bear Creek	ODOT	37.2	**Structurally Deficient** (Replace in 2005)
8677S	I5	27.09	Bear Creek	ODOT	39.2	**Structurally Deficient** (Replace in 2005)
08678	I-5	27.88	Creek	ODOT	83.0	N/A, culvert
08332	I-5	28.66	Medford viaduct	ODOT	79.0	**Structurally Deficient** (Repair/ retrofit 2003)
00851	I-5	29.64	McAndrews Rd	ODOT	72.5	Functionally obsolete
8771N	I-5	30.69	Bear Creek	ODOT	84.9	Not deficient or obsolete
8771S	I-5	30.69	Bear Creek	ODOT	84.7	Not deficient or obsolete
8676B	Barnett Road	27.58	I-5	ODOT	92.0	Not deficient or obsolete
6605A	OR 62	0.38	Bear Creek	ODOT	85.0	Not deficient or obsolete
08821	OR 62	0.47	I-5	ODOT	80.0	Not deficient or obsolete
09590	OR 62	0.57	Biddle Road	ODOT	81.0	Not deficient or obsolete
0P247	OR 62	1.46	Creek	ODOT	85.0	N/A, culvert
0P248	OR 62	2.21	Creek	ODOT	85.0	N/A, culvert
06625	OR 62	4.04	Swanson Ck	ODOT	85.0	N/A, culvert

Figure 3-2: Existing Signalized Intersections



Signalized Intersections

Other Streets

Highway

Railroad

UGB

CITY OF MEDFORD OREGON

The Geographic Information Systems (GIS) data made available on this map are developed and maintained by the City of Medford and Jackson County. GIS data is not the official representation of any of the information included. The maps and data are made available to the public solely for informational purposes.

THERE MAY BE ERRORS IN THE MAPS OR DATA. THE MAPS OR DATA MAY BE OUTDATED, INACCURATE, AND MAY OMIT IMPORTANT INFORMATION. THE MAPS OR DATA MAY NOT BE SUITABLE FOR YOUR PARTICULAR USE. THIS INFORMATION IS BEING PROVIDED "AS IS" OR "WITH ALL FAULTS". THE ENTIRE RISK AS TO THE QUALITY OR PERFORMANCE IS WITH THE BUYER AND IF INFORMATION IS DEFECTIVE, THE BUYER ASSUMES THE ENTIRE COST OF ANY NECESSARY CORRECTIONS OR SERVICING.

Table 3-3 Continued
Status of Existing Bridges in Medford UGB

Bridge ID	Highway	Mile Point	Crosses	Juris-diction	Sufficiency Rating	Status
6644B	OR 99	5.57	Creek	ODOT	85.0	N/A, culvert
03660	OR 99	8.03	Crooked Creek	ODOT	43.0	**Structurally Deficient**
0M273	OR 99	8.09	Creek	ODOT	82.0	N/A, culvert
03661	OR 99	8.17	Irrigation Canal	ODOT	85.0	Not deficient or obsolete
?	OR 238	?	COP RR	ODOT	?	Not deficient or obsolete

Source: ODOT, 2003

Existing Traffic Volumes

Figure 3-3 shows existing 2000 daily traffic volumes on selected roadway sections throughout the City, as shown on the City Traffic Engineering Division traffic volume map. Also shown are volumes on state facilities including I-5, Highway 99, Highway 238 and Highway 62.

As indicated in this figure, significant volumes of traffic are carried through and within the Medford UGB by Interstate 5. Interestingly enough, Highway 62 from near I-5 to the northeastern corner of the UGB carries similar volumes although not on a grade-separated, fully access-controlled facility. Other key traffic-carrying streets in the Medford UGB include: McAndrews Road, Barnett Road, Crater Lake Avenue, and Highway 99. Because the new alignment for Highway 238 from the Highway 99/Highway 62 intersection opened so recently, the traffic counts in Figure 3-3 do not reflect the growth in traffic that has occurred through the “Big X” and westerly on Rossanley since the new roads opened. Additionally, the volumes shown in Figure 3-3 also understate more recent traffic growth on Ross Lane between Rossanley and Main Street that is related to the opening of the “Big X”.

Existing Traffic Operations

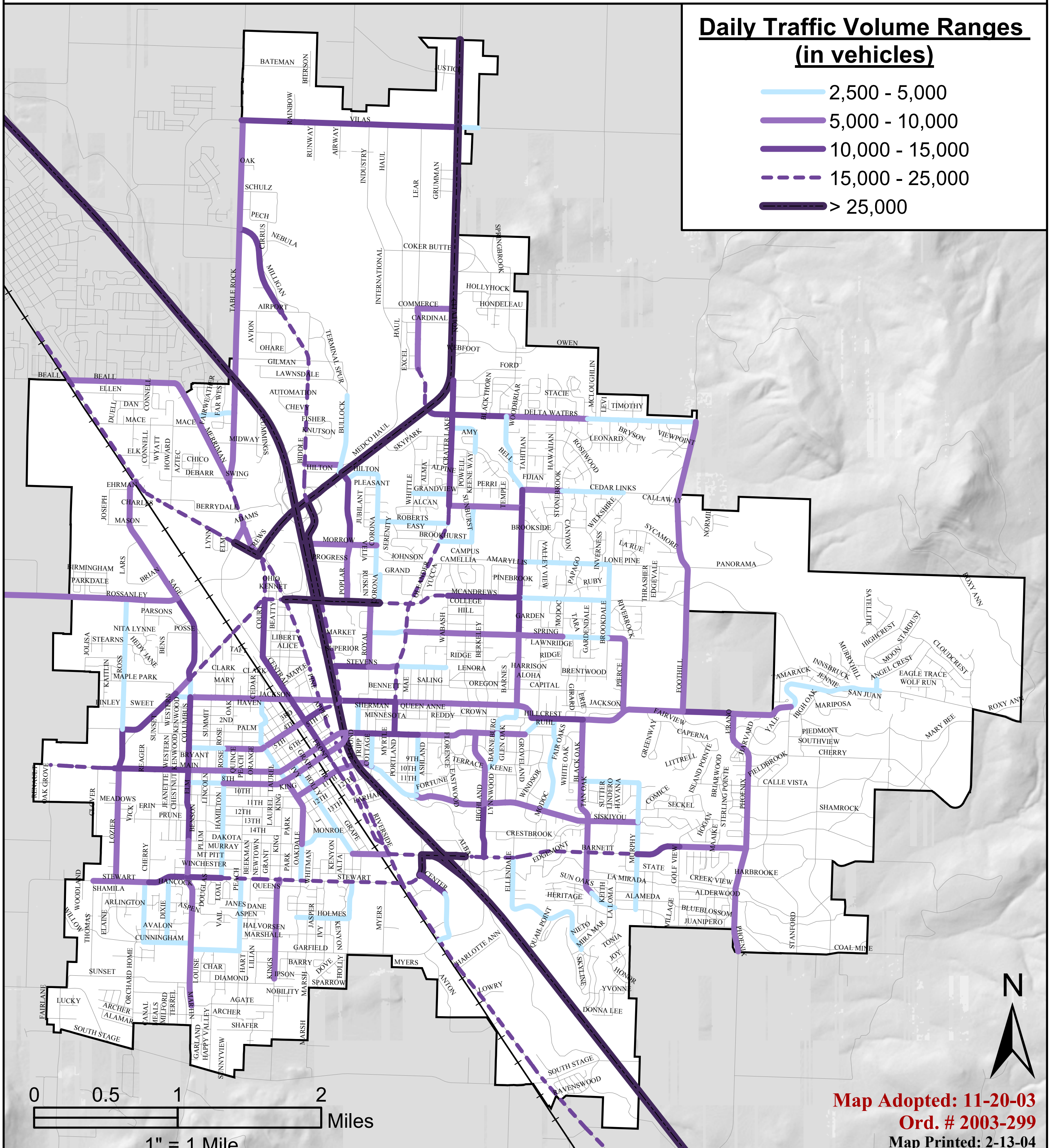
This section addresses existing transportation system operations on City streets within the UGB, and on state highways within the City, which are evaluated using different measures of effectiveness.

Intersection Levels of Service (LOS) and Existing City of Medford LOS Standard

Intersection levels of service (LOS) for signalized intersections are grades of A through F that are used to rate the intersection performance within a specified time period, typically the AM or PM peak hour. Assignment of a specific LOS is based on average control delay per vehicle, which is calculated using equations that take into account turning movement volumes, intersection lane geometry and traffic signal features, as well as characteristics of the traffic stream passing through the intersection, including time required to slow, stop, wait, and accelerate to move through the intersection. Progressively higher LOS reflect increasingly worse intersection performance, with higher levels of control delay and increased congestion and queues. Characteristics of each LOS are briefly described below in Table 3-4.

The City of Medford’s *Comprehensive Plan* has established LOS standards that are intended to guide roadway design and improvement priorities by establishing a threshold for determining the level of delay that is unacceptable to the community, thus triggering a roadway or intersection improvement. Currently the acceptable LOS threshold is LOS D or better. Under its current application, this standard requires that zone change decisions not allow increases in traffic that would exceed Level of Service D.

Figure 3-3: 2000
Daily Traffic Volumes



Other Streets

Railroad

UGB

CITY OF MEDFORD OREGON

The Geographic Information Systems (GIS) data made available on this map are developed and maintained by the City of Medford and Jackson County. GIS data is not the official representation of any of the information included. The maps and data are made available to the public solely for informational purposes.

THERE MAY BE ERRORS IN THE MAPS OR DATA. THE MAPS OR DATA MAY BE OUTDATED, INACCURATE, AND MAY OMIT IMPORTANT INFORMATION. THE MAPS OR DATA MAY NOT BE SUITABLE FOR YOUR PARTICULAR USE. THIS INFORMATION IS BEING PROVIDED "AS IS" OR "WITH ALL FAULTS". THE ENTIRE RISK AS TO THE QUALITY OR PERFORMANCE IS WITH THE BUYER AND IF INFORMATION IS DEFECTIVE, THE BUYER ASSUMES THE ENTIRE COST OF ANY NECESSARY CORRECTIONS OR SERVICING.

Table 3-4
Level of Service Definitions

Level of Service	Average Delay/Vehicle (sec.) Signalized	Unsignalized	Description
A (Desirable)	<10 seconds	≤10 seconds	Very low delay; most vehicles do not stop.
B (Desirable)	>10 and ≤20 seconds	>10 and <15 seconds	Low delay resulting from good progression, short cycle lengths, or both.
C (Desirable)	>20 and ≤35 seconds	>15 and <25 seconds	Higher delays with fair progression, longer cycle lengths, or both.
D (Acceptable)	>35 and ≤55 seconds	>25 and <35 seconds	Noticeable congestion with many vehicles stopping. Individual cycle failures occur.
E (Unsatisfactory)	>55 and ≤80 seconds	>35 and <50 seconds	High delay with poor progression, long cycle lengths, high v/c ratios, and frequent cycle failures.
F (Unsatisfactory)	>80 seconds	>50 seconds	Very long delays, considered unacceptable by most drivers. Often results from over-saturated conditions or poor signal timing.

Source: *2000 Highway Capacity Manual*, Transportation Research Board.

In a study effort that ran parallel with development of the *Transportation System Plan*, the City conducted a study of LOS. This study evaluated mitigation measures and associated improvement costs corresponding to three alternative LOS thresholds: the current PM peak hour LOS D standard; a standard of LOS E during the PM peak hour; and a standard of LOS D for the second highest hour of the PM peak period. In addition, the LOS study considered applying a PM peak hour LOS E standard only within the City's Central Business District. The City Council was presented with the study results, and directed consideration of a specific LOS threshold for purposes of completing the TSP. The LOS Study is further discussed in Chapter 5 and Appendix G.

State Highway Volume-to-Capacity (v/c) Ratios Within City of Medford UGB

Several state highways pass through the City's Urban Growth Boundary. As adopted in the 1999 Oregon Highway Plan, ODOT uses volume-to-capacity (v/c) ratios to measure state highway performance rather than intersection or roadway levels of service. Various v/c thresholds are applied to all state highways based on functional classification of these facilities. For the four state highways passing through the Medford UGB, the following v/c thresholds apply:

Highway	OHP Level of Significance	V/C Threshold
Interstate 5 (I-5)	Interstate Highway	0.80
Highway 62 (ORE 62)	Statewide Expressway (north of Delta Waters)	0.80
Highway 62 (ORE 62)	Statewide Highway (south of Delta Waters)	0.85
Highway 99 (US 99)	District Highway	0.90
Highway 238 (ORE 238)	District Highway	0.90

According to the 2000 *I-5 State of the Interstate Report* by the Oregon Department of Transportation, I-5 through Medford operates today without noticeable congestion on the freeway mainline, with average daily traffic volumes (ADT) ranging from 34,000 ADT at the south end of the City to 44,000 ADT north of the South Medford Interchange at Barnett Road, decreasing to 33,000 ADT north of the I-5/Highway 62 interchange. Trucks account for about 12 to 15 percent of total I-5 traffic. However, peak period congestion on the off-ramps at both the South Medford/Barnett Road and North Medford/Highway 62 (Biddle Road) interchanges generates backups that affect mainline traffic flow on I-5 in both directions. Based on current PM peak hour volumes both the intersections of I-5 southbound ramps/Stewart Avenue with Barnett Road and I-5 northbound ramps with Biddle Road exceed ODOT's volume-to-capacity standard for an interstate facility.

East of I-5, Highway 62, which passes through the North Medford interchange, is extremely congested during the typical PM peak hour at the intersections with Poplar Drive/Hilton Road, Delta Waters Road, Cardinal Avenue and West Vilas Road.

Existing (2002) PM Peak Hour Intersection Levels of Service

As part of the City's study of alternative level of service (LOS) thresholds, existing (2002) PM peak hour operations were analyzed at 107 signalized intersections throughout the City. Tables 3-5 through 3-8 summarize existing operations at these intersections, showing LOS, average delay and volume-to-capacity (v/c) ratios. The v/c ratio is another intersection measure of effectiveness that relates the magnitude of traffic traveling through an intersection with its theoretical capacity. Ratios above 1.0 often accompany LOS E and LOS F conditions indicating inadequate capacity for one or more major movements. At intersections operating at LOS D or better, v/c ratios above 1.0 are useful indicators of potential concerns such as sub-optimal signal timing or inadequate turn lane storage. **Bold font** highlights the intersections in the Medford UGB that are operating at LOS E with existing traffic volumes or where state volume-to-capacity thresholds in the *Oregon Highway Plan* are exceeded. No intersections operate at LOS F with existing PM peak hour traffic.

Table 3-5 summarizes existing operations at 31 intersections in downtown Medford in the area bounded by 12th Street on the south, Jackson Street on the north, Newton Street on the west and Hawthorne Street on the east. Analysis shows that all signalized intersections within the downtown area operate within LOS D given existing PM peak hour volumes. In addition, all the downtown signals operate at PM peak hour v/c ratios of less than 0.95, exceeding 0.70 at just one intersection (the intersection of 4th Street at Riverside Avenue operates with a v/c ratio of 0.92). These results indicate that, under typical conditions, adequate roadway capacity presently exists throughout the downtown to accommodate existing traffic and some level of future growth Future traffic volume growth and capacity constraints are discussed in Chapter 5.

Table 3-5
Existing (2002) PM Peak Hour Levels of Service: Downtown Medford

	2002 PM Peak Hour		
Intersection	LOS	Avg. Delay (seconds)	Volume/ Capacity
10th Street & Oakdale Avenue	B	17.2	0.38
10th Street & Holly Street	B	15.9	0.30
10th Street & Front Street	B	11.7	0.27
10th Street & Central Avenue	B	14.9	0.70
10th Street & Riverside Avenue	C	20.6	0.62
9th Street & Central Avenue	A	4.8	0.55
8th Street & Oakdale Avenue	B	12.5	0.31
8th Street & Ivy Street	A	12.7	0.35
8th Street & Holly Street	A	10.5	0.39
8th Street & Grape Street	A	8.4	0.35
8th Street & Front Street	B	10.6	0.40
8th Street & Central Avenue	B	12.6	0.74
8th Street & Riverside Avenue	A	7.2	0.51
Main Street & Oakdale Avenue	A	9.9	0.33
Main Street & Holly Street	A	8.0	0.24
Main Street & Grape Street	A	8.6	0.24

Table 3-5 Continued
Existing (2002) PM Peak Hour Levels of Service: Downtown Medford

Intersection	2002 PM Peak Hour LOS	Avg. Delay (seconds)	Volume/ Capacity
Main Street & Fir Street	A	7.2	0.24
Main Street & Front Street	A	7.6	0.24
Main Street & Central Avenue	B	14.0	0.49
Main Street & Bartlett Avenue	A	6.2	0.21
Main Street & Riverside Avenue	B	12.9	0.57
6th Street & Front Street	B	12.4	0.20
6th Street & Central Avenue	B	11.6	0.37
6th Street & Riverside Avenue	A	7.5	0.54
4th Street & Front Street	B	8.6	0.36
4th Street & Central Avenue	B	19.6	0.58
4th Street & Bartlett Street	A	7.3	0.32
4th Street & Riverside Avenue	C	33.6	0.92
Jackson Street & Central Avenue	B	17.4	0.55
Jackson Street & Riverside Avenue	B	13.0	0.69
Jackson Street & 4th Avenue/Biddle Road	D	37.2	0.67

Note: LOS means level of service and average delay is expressed as seconds per vehicle.
Source: LOS Study, JRH and Associates, 2002.

Table 3-6 summarizes existing (2002) operations at 18 signalized intersections on the three state highways passing through the Medford UGB: Highway 62, Highway 99 (including only those portions of the highway under state operations and maintenance), and Highway 238. Signalized ramp terminal intersections at the I-5 interchanges with Barnett Road, Highway 62 and Biddle Road are also listed. As noted earlier in this chapter, traffic operations on state highways are measured by volume-to-capacity (v/c) ratios and not levels of service. Thus, the v/c results in Table 3-6 will be used to identify the locations of deficiencies at existing intersections rather than levels of service.

Based on existing PM peak hour traffic and with some exceptions, signalized intersections on state highways within the UGB or at I-5 interchange ramps generally operate acceptably within the v/c standards for each highway type as proscribed by the Oregon Highway Plan. The intersections of Highway 62 at Poplar Drive/Hilton Road, Highway 62 at Delta Waters Road, and the I-5 northbound ramps at Biddle Road all operate with v/c ratios that exceed 1.00 indicating capacity constraints. The intersection of the I-5 southbound ramps at Barnett Road/Stewart Avenue operates with a v/c ratio of 0.99. Finally, the intersection of Highway 62 with Vilas Road operates with a v/c ratio of 0.86 that also exceeds ODOT's mobility standard for this type of state highway

Table 3-6
Existing (2002) PM Peak Hour Levels of Service: State Highway Intersections

Intersection	2002 PM Peak Hour LOS	Avg. Delay (seconds)	Volume/ Capacity
Highway 99 & South Stage Rd	C	21.8	0.81
Highway 99 & Garfield Road	B	19.9	0.57
Highway 99/Riverside Avenue & Stewart Avenue	D	52.1	0.85
Highway 99/Highway 62/Highway 238	D	36.0	0.77
Highway 99 & West Table Rock Road	C	28.6	0.73
Highway 62 & Rogue Valley Mall Access	B	10.7	0.62
Highway 62 WB Off/S Withams & Biddle Road	C	23.7	0.62
Highway 62 & Fred Meyer Access	C	25.9	0.65
Highway 62 & Poplar Drive/Hilton Road	**F**	**112.1**	**1.23**
Highway 62 & Delta Waters Road	**F**	**85.2**	**1.10**
Highway 62 & Cardinal Avenue	C	26.2	0.79
Highway 62 & East Vilas Road	**D**	**38.1**	**0.86**
Hwy 238/Rossanley Drive & Central Avenue	B	19.8	0.64
Hwy 238/Rossanley Drive & Sage Road	D	48.3	0.86
I-5 SB Off-Ramp/Stewart Ave. & Barnett Rd.	**E**	**78.5**	**0.99**
I-5 NB Off-Ramp/Alba Drive & Barnett Road	C	20.4	0.75
I-5 NB On/Off-Ramp & Biddle Road	**F**	**81.2**	**1.02**
I-5 SB Off/On-Ramp & Highway 62	B	11.1	0.64

Note: LOS means level of service and average delay is expressed as seconds per vehicle.
Source: LOS Study, JRH and Associates, 2002.

Tables 3-7 and 3-8 summarize existing (2002) PM peak hour operations at the remaining signalized intersections outside of downtown and not within the jurisdiction of ODOT. Table 3-7 lists 32 signalized intersections from Jackson Street to the south, with the remaining 31 intersections north of Jackson Street listed in Table 3-8.

Of the 32 intersections listed in Table 3-7, all but six intersections operate at LOS C or better with existing PM peak hour volumes. The intersections of Barnett Road at Riverside Avenue and Jackson Street at Crater Lake Avenue each operate at LOS E based on 2002 traffic volumes. The v/c ratios at these two locations are 0.93 and 0.92 respectively. Both of these intersections operate with split phasing on at least two approaches. Split phasing requires that each approach be served separately; therefore non-opposing through movements of left-turn movements cannot enter the intersection simultaneously. Split phasing is generally very inefficient since the signal phase length for a given signal phase must be long enough to service the worst case movement on the split-phased approach. The intersection of Barnett Road at Riverside Avenue is slated for reconstruction in the near future to eliminate the split-phase operations for the northbound and southbound approaches.

Table 3-7
Existing (2002) PM Peak Hour Levels of Service: South of Jackson Street

	2002 PM Peak Hour		
Intersection	LOS	Avg. Delay (seconds)	Volume/ Capacity
8th Street & Hamilton Street	B	13.1	0.21
8th Street & Orange Street	A	7.6	0.16
12th Street & Riverside Avenue	A	7.8	0.40
Barnett Road & Winco Access	C	21.2	0.56
Barnett Road & Riverside Avenue	**E**	**78.3**	**0.93**
Barnett Road & Highland Drive	D	42.5	0.94
Barnett Road & Ellendale Drive	B	18.3	0.59
Barnett Road & Black Oak Drive	C	22.0	0.85
Barnett Road & Murphy Road	B	10.7	0.51
Barnett Road & North Phoenix Road	C	22.5	0.62
Center Drive & Fred Meyers Access	C	24.1	0.46
Hillcrest Road & Black Oak Drive	C	20.9	0.82
Hillcrest Road & Foothill Road	C	23.4	0.60
Jackson Street & Academy Place	A	9.6	0.53
Jackson Street & Crater Lake Avenue	**E**	**67.8**	**0.92**
Jackson Street & Hawthorne St./Medford Center	B	10.2	0.61
Main Street & Columbus Avenue	D	47.2	0.87
Main Street & Rose Avenue	A	6.9	0.32
Main Street & Orange Street	A	3.8	0.25
Main Street & Crater Lake Avenue	D	39.1	0.69
Main Street & Hawthorne Street	B	11.6	0.41
Main Street & Lindley Street	A	6.8	0.52
North Phoenix Road & Cherry Lane	A	5.7	0.25
North Phoenix Road & Larson Creek Access	A	9.9	0.47
Siskiyou Boulevard & Black Oak Drive	C	22.1	0.66
Stewart Avenue & Lozier Lane	C	22.7	0.73
Stewart Avenue & Columbus Avenue	C	20.7	0.52
Stewart Avenue & Peach Street	B	10.5	0.42
Stewart Avenue & Kings Highway	C	20.8	0.57
Stewart Avenue & Oakdale Avenue	B	14.1	0.64
Stewart Avenue & Holly Street	D	49.1	0.70
Stewart Avenue & Center Drive	C	25.3	0.59

Note: LOS means level of service and average delay is expressed as seconds per vehicle.
Source: LOS Study, JRH and Associates, 2002.

The remaining 31 signalized intersections in the Medford UGB are located north of Jackson Street and are listed in Table 3-8, including the major north/south arterials of Biddle Road and Crater Lake Avenue, and the major east/west arterial, McAndrews Road. One signalized intersection in this area is currently operating at LOS E, Biddle Road at the north Withams truck stop driveway/Hilton Road. This intersection operates at a v/c ratio of 0.97 with the poor operation resulting from the split-phase signal for the northbound and southbound approaches. Four other intersections operate at LOS D indicating that future traffic growth may lead to congestions problems. These include Biddle Road at McAndrews Road, Crater Lake Avenue at Delta Waters Road, McAndrews Road at Poplar Drive, and McAndrews Road at Crater Lake Avenue.

Table 3-8
Existing (2002) PM Peak Hour Levels of Service: North of Jackson Street

Intersection	2002 PM Peak Hour LOS	Avg. Delay (seconds)	Volume/ Capacity
Biddle Road & Stevens Street	C	30.4	0.74
Biddle Road & Market Street	B	18.7	0.47
Biddle Road & Bear Creek Shopping Ctr.	A	9.6	0.45
Biddle Road & McAndrews Road	D	48.1	0.87
Biddle Road & Progress Drive	B	15.2	0.53
Biddle Road & Morrow Street	A	11.8	0.53
Biddle Road & N Withams/Hilton Road	**E**	**73.2**	**0.97**
Biddle Road & Lawndale Road	B	11.4	0.61
Court Street & Central Avenue/Edwards Street	C	25.4	0.58
Court Street & Ohio Street	A	9.2	0.40
Crater Lake Avenue & Brookhurst Street	A	8.9	0.62
Crater Lake Avenue & Delta Waters Road	D	50.7	0.88
Crater Lake Avenue & Roberts Road	A	8.7	0.51
Crater Lake Avenue & Spring Street	C	25.3	0.71
Crater Lake Avenue & Stevens Street	C	28.8	0.71
McAndrews Road & Columbus Avenue	C	34.6	0.57
McAndrews Road & Sage Road	C	32.6	0.86
McAndrews Road & Court Street	C	34.4	0.67
McAndrews Road & Riverside Avenue	C	28.2	0.82
McAndrews Road & Rogue Valley Mall	B	18.0	0.66
McAndrews Road & Poplar Drive	D	44.4	0.78
McAndrews Road & Royal Avenue	C	32.7	0.79
McAndrews Road & Crater Lake Avenue	D	52.8	0.85
McAndrews Road & Springbrook Road	C	24.9	0.86
McAndrews Road & Brookdale Avenue	A	9.5	0.26
Poplar Drive & Morrow Road	B	19.6	0.74
Riverside Avenue & Manzanita St.	A	9.6	0.59
Riverside Avenue & Ohio Street	A	9.5	0.47
Springbrook Road & Roberts Road	B	12.6	0.62
Stevens Street & Royal Avenue	B	13.5	0.55
Table Rock Road & Berrydale Avenue	A	8.6	0.47

Note: LOS means level of service and average delay is expressed as seconds per vehicle.
Source: LOS Study, JRH and Associates, 2002.

Existing Unsignalized Intersection Traffic Operations

Of the 39 unsignalized intersections evaluated as part of the City's Level of Service study and presented in Table 3-9, 11 have at least one stop-controlled approach or movement that exceeds LOS D. Intersections with approaches or movements exceeding LOS D are candidates for signalization or all way stop control. Some intersections have very low minor street volumes with relatively high major street volumes. Such intersections would likely not meet signal warrant criteria given the low traffic levels on the stop-controlled approach(es).

Table 3-9
Existing (2002) PM Peak Hour Levels of Service at Unsignalized Intersections

	2002 PM Peak Hour	
Intersection	**Approach or Movement**	**LOS**
4th Street at Oakdale Avenue	Northbound, southbound	C
Barneburg Road at Highland Drive	Westbound	D
Barnett Road at Golf View Drive	**Northbound**	**E**
Columbus Avenue at Cunningham Lane	Eastbound	B
Columbus Avenue at Diamond Street	Eastbound	B
Crater Lake Avenue at East Vilas Road	**Northbound**	**E**
Crater Lake Avenue at Coker Butte Road	Northbound	C
Cunningham Lane at Orchard Home Drive	Westbound	B
DeBarr Avenue at Merriman Road	Eastbound, westbound	C
Delta Waters Road at Foothill Road	Eastbound	C
Delta Waters Road at Springbrook Road	**Northbound**	**F**
Foothill Road at Cedar Links Drive	Eastbound	C
Foothill Road at Lone Pine Road	Eastbound, westbound	C
Garfield Street at Columbus Avenue	Westbound	B
Highway 62 at Coker Butte	**Westbound**	**F**
Highway 62 at Elliot Road/Costco	Southbound left, westbound right	C
Highway 62 EB Ramp from Biddle Road	**Northbound**	**F**
Highway 62at Target Access	Southbound, left	D
Hwy 238/Rossanley Drive at Ross Lane	**Northbound**	**F**
Hillcrest Road at Pierce Street	**Southbound**	**F**
Hillcrest Road at Valley View Drive	**Westbound**	**E**
Jackson Street at Columbus Avenue	Northbound, southbound, westbound	C
Jackson Street at Sunrise Avenue	**Eastbound**	**F**
Main Street at Barneburg Road	Northbound, southbound	D
Main Street at Willamette Avenue	Eastbound, westbound	C
McAndrews Road EB at Foothill Road	Eastbound	B
McAndrews Road at Hillcrest Road	Southbound	A
McAndrews Road at Jackson Street	Westbound	C
McAndrews Road at Ross Lane	**Westbound**	**F**
Oakdale Avenue at Dakota Avenue	Northbound, southbound, eastbound, westbound	B
Old North Phoenix Road at Hillcrest Road	Northbound	B
Old North Phoenix Road at North Phoenix Road	Westbound right	B
Old North Phoenix Road at Princeton Way	Southbound	A
Riverside Avenue at Edwards Street	Eastbound	C
Siskiyou Boulevard at Murphy Road	Westbound, southbound	B
Siskiyou Boulevard at Willamette Avenue	Eastbound, southbound	B
South Stage Road at King's Highway	Southbound	C
Spring Street at Springbrook Road	**Eastbound, westbound**	**F**
Table Rock Road at DeBarr Avenue	Eastbound	C

Note: LOS means level of service

Crash History

Due to the number of potential conflicting traffic movements, intersections in a city's transportation network generally experience a higher crash rate when compared to roadway segments. For intersections, annual crash rates are calculated based on the number of incidents per million vehicles entering the intersection. This provides more meaningful information than just the number of crashes alone as it relates the incidence of crashes to the magnitude of exposure.

Table 3-10 summarizes the analysis of the most recent three years of crash data within Medford's UGB for intersections that averaged at least one incident per year during the three-year period from January 1, 1999 through December 31, 2001. Only those intersections with crash rates greater than 1.0 crashes per million entering vehicles (MEV) are listed in the table. Appendix E includes information for every intersection that experienced a recorded incident. A crash rate of 1.0/MEV is a commonly used threshold to identify locations that warrant further investigation of crash experience at the intersection.

From 1999 through 2001, 533 intersections within the UGB experienced recorded vehicle crashes, with 153 intersections averaging at least 1.0 crash per year during the same time period. Analysis of crash rates reveals that 28 intersections had a rate equal to or higher than the 1.0 crashes/MEV threshold including five intersections each along Riverside and Central Avenues, four along 10th Street (in addition to the intersection of 10th at Central), three each along Barnett Road (in addition to the intersection of Barnett at Riverside) and Crater Lake Avenue, two and McAndrews Road (in addition to the intersection of McAndrews at Riverside) and two on Highway 62. Two intersections – Central Avenue/4th Street and Riverside Avenue/Jackson Street – experienced crash rates greater than 2.5 crashes/MEV.

Table 3-10 also includes information about the predominate type or types of accidents that occurred at each of these intersections. Many of the accident problems are closely related to existing levels of traffic congestion, including intersections along Central and Riverside Avenues, Barnett Road and Highway 62. Potential solutions to these crash problem locations are discussed in Chapter 5.

Table 3-10
Summary of Crash History for Major Intersections
In Medford UGB

Intersection	1999-2001 Crash Total	Crash Rate *	Predominate Accident Type(s)
Central Avenue/4th Street	45	2.69	- Angle collisions of SB Central and WB 4th traffic (30%) - Rear end collisions on SB Central (22%) - Angle collisions of SB Central and EB 4th traffic (17%) - Turning collisions of EB and WB 4th traffic (17%)
Riverside Avenue/ Jackson Street	44	2.54	- Angle collisions of NB Riverside and EB Jackson traffic (35%) - Rear end collisions on NB Riverside (16%)
Crater Lake Avenue/ Delta Waters Road	39	2.10	- Turning collisions of EB and WB Delta Waters traffic (31%) - Rear end collisions on NB Crater Lake (15%)
6th Street/Holly Street	6	2.07	- Angle collisions of NB Holly and WB 6th traffic (43%) - Angle collisions of SB Holly and WB 6th traffic (43%)
Central Avenue/ Jackson Street	31	2.01	- Angle collisions of SB Central and WB Jackson traffic (21%) - Angle collisions of SB Central and EB Jackson traffic (16%) - Rear end collisions on SB Central (10%)
Highway 62/ Highway 62 EB On-ramp	21	1.76	- Rear end collisions on WB and EB Hwy 62 (86%)
10th Street/Cottage Street	9	1.55	- Angle collisions of NB Cottage and WB 10th traffic (29%)
10th Street/Grape Street	13	1.50	- Angle collisions of NB Grape and EB 10th traffic (20%)
Riverside Avenue/8th Street	27	1.46	- Angle collisions of NB Riverside and EB 8th traffic (34%) - Turning collisions of NB Riverside and EB 8th traffic (17%)
McAndrews Road/ Biddle Road	49	1.46	- Rear end collisions on EB McAndrews (31%) - Rear end collisions on WB McAndrews (16%) - Rear end collisions on NB Biddle (13%)

Table 3-10 Continued
Summary of Crash History for Major Intersections
In Medford UGB

Intersection	1999-2001 Crash Total	Crash Rate *	Predominate Accident Type(s)
Barnett Road/ Stewart Avenue	41	1.41	- Rear end collisions on NB Stewart (21%) - Rear end collisions on WB Barnett (14%)
10th Street/Oakdale Avenue	14	1.40	- Turning collisions of NB and SB Oakdale traffic (27%)
McAndrews Road/ Court Street	38	1.35	- Turning collisions of WB and EB McAndrews traffic (30%) - Rear end collisions on EB McAndrews (11%) - Rear end collisions on SB Court (11%)
Riverside Avenue/ Main Street	26	1.31	- Rear end collisions NB on Riverside (37%) - Angle collisions of NB Riverside and WB Main traffic (30%)
Table Rock Road/ Morningside Street	9	1.28	- Rear end collisions NB on Table Rock (70%)
Crater Lake Avenue/ Brookhurst Street	17	1.26	- Turning collisions of EB and WB Brookhurst traffic (23%) - Turning collisions of NB and SB Crater Lake traffic (23%)
Central Avenue/6th Street	14	1.23	- Rear end collisions SB on Central (74%)
Central Avenue/10th Street	20	1.21	- Sideswipe on SB Central (33%) - Turning collisions of WB and EB 10th traffic (17%)
Crater Lake Avenue/ Stevens Street	21	1.18	- Turning collisions of WB and EB Stevens traffic (27%) - Rear end collisions NB on Crater Lake (24%)
Highway 62/Poplar Drive & Hilton Drive	39	1.16	- Rear end collisions WB on Hwy 62 (37%) - Rear end collisions EB on Hwy 62 (24%)
10th Street/Holly Street	9	1.13	- Angle collisions of NB Holly and WB 10th (33%) - Angle collisions of SB Holly and WB 10th (33%)
Biddle Road/Stevens Street	21	1.13	- Turning collisions of NB and SB Biddle traffic (24%) - Turning collisions of SB Biddle and WB Stevens traffic (12%) - Rear end collisions on SB Biddle (12%)
Riverside Avenue/ Barnett Road	25	1.09	- Rear end collisions NB on Riverside (20%) - Rear end collisions WB on Barnett (14%) - Rear end collisions SB on Riverside (12%)
Barnett Road/I-5 NB Off-ramp & Alba Drive	27	1.06	- Rear end collisions on EB Barnett (35%) - Rear end collisions on WB Barnett (31%)
Central Avenue/8th Street	16	1.05	- Angle collisions of SB Central and EB 8th traffic (45%) - Rear end collisions on SB Central (25%)
Riverside Avenue/ McAndrews Road	31	1.01	- Rear end collisions NB on Riverside (25%) - Rear end collisions WB on McAndrews (16%) - Angle collisions of NB Riverside and EB McAndrews traffic (14%)
Barnett Road/Murphy Road	13	1.00	- Turning collisions of EB and WB Barnett traffic (57%)

* Crash rate is expressed per million entering vehicles.
Source: City of Medford data, 1999-2001
Note: Table only includes intersections for which traffic volume data is available and for which crash rates were calculated at 1.00 crashes per million entering vehicles or greater.

Additional data was collected from ODOT for crashes along various segments of the state highway system within the Medford UGB including I-5, Highway 62, Highway 99 and Highway 238. This data is summarized in Table 3-11 and compared with statewide averages for similar facilities.

Table 3-11
Summary of Crash History on State Highways in Medford UGB

Segment Description	Segment Length	Average Daily Traffic	Number of Crashes In 2000	Crash Rate *
Interstate 5 (Interstate Highway)				
Phoenix city limits to Medford city limits	1.04	39,742	2	0.13
South city limits to Barnett Road	2.24	39,700	5	0.15
Barnett Road to Highway 62	2.72	44,880	18	0.40
Highway 62 to north city limits	0.46	33,700	5	0.88
Medford city limits to Central Point city limits	1.07	33,700	1	0.07
2000 average crash rate for this type of facility				***0.69***
Highway 62 (Statewide Highway)				
Junction Highway 99 to Interstate 5	0.47	26,400	11	2.42
Interstate 5 to north city limits	3.17	31,594	87	2.37
Four Corners junction to Highway 140	2.39	29,836	28	1.07
2000 average crash rate for this type of facility				***2.95***
Highway 99 (District Highway)				
Central Point city limits to northern Medford city limits	1.32	16,154	9	1.15
Medford city limits to northern end of one-way couplet	0.87	14,912	19	3.22
Riverside Avenue (One-way couplet northbound):				
• Begin couplet to 8th Street	0.78	15,715	18	4.01
• Jackson Street to end couplet	1.12	15,764	34	5.26
Central Avenue (One-way couplet southbound):				
• Begin couplet to Jackson Street	1.08	14,912	19	3.22
• 8th Street to end couplet	0.78	15,476	21	4.75
Southern end of one-way couplet to Belknap Road	0.75	19,964	24	4.37
Southern Medford city limits to South Stage Road	1.22	18,834	10	1.18
2000 average crash rate for this type of facility				**2.67**
Highway 238 (District Highway)				
Oak Grove Road to Medford city limits	1.20	10,451	10	1.55
Medford city limits to Riverside Avenue	0.98	17,787	10	1.56
2000 average crash rate for this type of facility				**2.67**

Source: ODOT, 2002
* Crash rate is expressed per million vehicle miles of travel along highway segment.

Freight

The movement of goods and commodities into, out of, and through the greater Medford area is heavily dependent on the highway system, although freight movement also occurs using rail, air, and pipeline modes. As indicated in the *2001-2023 Rogue Valley Regional Transportation Plan*, freight transportation has often been overlooked as a major transportation issue in the Rogue Valley. However, as some of the important roadways in the city are beginning to show significant traffic volume increases and capacity constraints, the impact of congestion on freight mobility needs to be addressed.

The Rogue Valley Metropolitan Planning Organization (RVMPO) has embarked on a freight planning study for the greater Medford area. The study will assess current conditions, determine potential deficiencies in moving freight, and identify projects to enhance freight movement within and through the Rogue Valley.

According to the *2001-2023 Rogue Valley Regional Transportation Plan* (RTP), the key to developing long-range strategies and solutions for freight mobility is to have an in-depth understanding of both local and pass-through freight characteristics. It requires preparation of an inventory of freight types, routes and generators, evaluation of freight needs and deficiencies, development of freight movement forecasts, and assessment of freight mobility alternatives. The RVMPO Freight Transportation Study will include intermodal aspects – truck, rail, and air connections – in order to implement the goals of the *2001-2023 Rogue Valley Regional Transportation Plan* (RVRTP) and the federal Transportation Efficiency Act (TEA-21). Trucking, rail, air freight, and pipeline transportation systems will be evaluated within the Rogue Valley Metropolitan Planning Organization area, which includes Central Point, Medford, Phoenix, and White City. Objectives of the study are to:

- Assess the existing freight transportation system,
- Identify current and forecasted deficiencies in moving freight,
- Devise solutions and strategies, including a list of projects, to improve freight movement,
- Identify safety deficiencies, and
- Preliminarily identify *Regional Transportation Plan*, and jurisdictional plan and implementing ordinance amendments to foster freight movement in the region.

The freight study will continue to identify and prioritize concerns. In addition, the completion of the freight study will allow the RVMPO to develop solutions to the most pressing concerns given by users of the RVMPO freight planning study. A discussion of existing freight facilities and issues in the Medford UGB is presented in the following sections for trucks, pipelines, and water transportation. Freight rail service and facilities are discussed later in this chapter under “Rail Service”

Truck Freight Service

Highway freight transportation in the Medford area is largely concentrated along the truck routes designated in the Regional Transportation Plan. Within the Medford UGB, the major truck routes include Interstate 5 (I-5) and Crater Lake Highway (Highway 62). I-5 is by far the most important freight link in the region carrying in the range of 4,000 to 5,000 trucks per day through the Medford area[2]. Not only does it serve freight heading to destinations within the Medford UGB, but also serves a significant number of trucks passing through the region to destinations elsewhere along the West Coast. Currently, the combined volume of freight transported over highway and rail modes in the I-5 corridor through the Rogue Valley metropolitan planning region is estimated at 25 million tons annually, with the majority of this freight carried on the highway system. Crater Lake Highway (Highway 62) is estimated to carry between 1.5 and 5 million tons of freight annually. Further information on freight movements is contained in *Technical Memorandum #4 of the Regional Transportation Plan*[3].

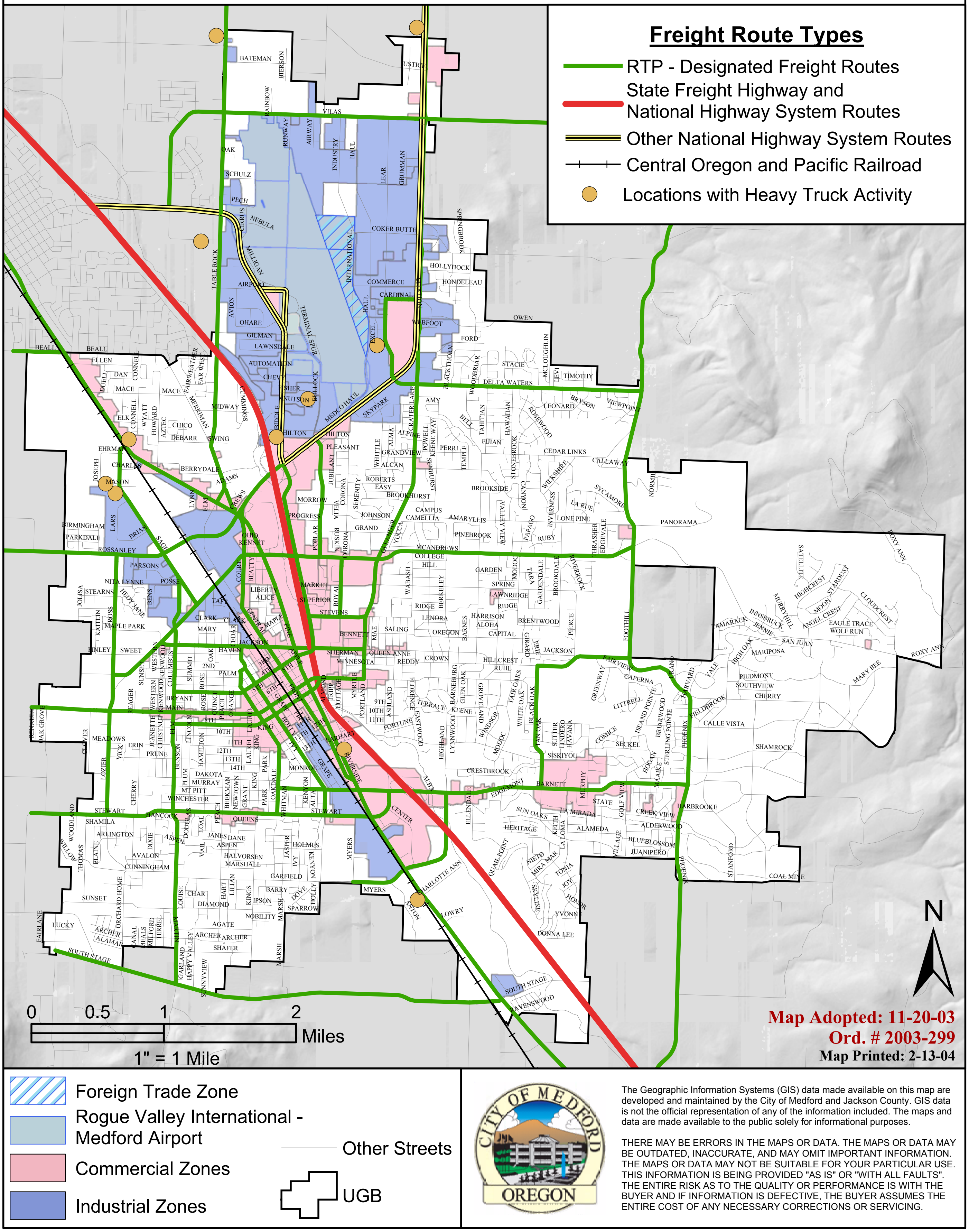
In addition, there are numerous regionally-significant truck routes and intermodal trucking facilities within the Medford UGB. Truck routes and trucking facilities are illustrated on Figure 3-4**.** Most of the shippers and receivers are located within ¼ to ½ mile of I-5. Consequently, access to I-5 is critical.

There is little existing signage to indicate where current or appropriate truck routes are located, and some existing signage is inaccurate or out-of-date. This includes directional signage to old Highway 238 through downtown Medford that is still in place although the state highway has been relocated northward through the Big “X”.

---

[2] *I-5 State of the Interstate Report*, ODOT, 2000.
[3] Rogue Valley Metropolitan Planning Organization (RVMPO), *Regional Transportation Plan* – Final Technical Memorandum #4: Analysis of Existing Conditions, March 1994.

Figure 3-4:
Existing Freight Facilities



The Geographic Information Systems (GIS) data made available on this map are developed and maintained by the City of Medford and Jackson County. GIS data is not the official representation of any of the information included. The maps and data are made available to the public solely for informational purposes.

THERE MAY BE ERRORS IN THE MAPS OR DATA. THE MAPS OR DATA MAY BE OUTDATED, INACCURATE, AND MAY OMIT IMPORTANT INFORMATION. THE MAPS OR DATA MAY NOT BE SUITABLE FOR YOUR PARTICULAR USE. THIS INFORMATION IS BEING PROVIDED "AS IS" OR "WITH ALL FAULTS". THE ENTIRE RISK AS TO THE QUALITY OR PERFORMANCE IS WITH THE BUYER AND IF INFORMATION IS DEFECTIVE, THE BUYER ASSUMES THE ENTIRE COST OF ANY NECESSARY CORRECTIONS OR SERVICING.

Preliminary information about freight movement from the RVMPO freight planning study, as well as information collected from other regions, indicates truck activity does not account for a high proportion of peak hour traffic at any specific location. Furthermore, peak times for freight movement are typically not the same as the peak for automobile traffic as they generally occur during the midday time period.

ODOT's *I-5 State of the Interstate* (2000) report indicates that trucks comprise approximately 12 to 15 percent of the daily traffic stream on I-5 through Medford. The RTP identifies the following arterial street intersections in the Medford UGB as having the highest volumes of truck traffic:

- Rogue Valley Highway (Highway 99) and McAndrews Road
- Biddle Road and Table Rock Road
- Crater Lake Highway (Highway 62) and Rogue Valley Highway (Highway 99)
- Interstate 5 ramp terminals and Crater Lake Highway (Highway 62)
- Central Avenue and Main Street
- Biddle Road and Airport Road

Truck traffic at these major arterial street intersections varies between three and five percent of the traffic during the morning and afternoon peak periods, and between five and ten percent of the traffic during the off-peak period.

Good freight mobility within the Medford UGB requires that the arterial and collector street system provide both an adequate level of service and good connectivity to intermodal facilities and inter-regional routes, such as Interstate 5 and Highway 62. Some guidance on the standard of performance necessary for freight movements is found in the 1999 *Oregon Highway Plan*. The *Highway Plan* sets mobility standards using volume-to-capacity ratios (v/c) rather than Level of Service letters, to identify the presence of congestion. If the v/c ratio for a highway segment exceeds the v/c ratio established in the plan, then the highway segment does not meet ODOT's minimum operating conditions. Acceptable v/c ratios are higher for urbanized areas than for sparsely settled rural areas, which means that relatively greater congestion is acceptable in urbanized areas than in rural areas.

Acceptable v/c ratios for freight routes are slightly lower than for other highways. This means that freight routes should be less congested than non-freight routes. The maximum acceptable v/c ratio for the Rogue Valley metropolitan area ranges from 0.80 for I-5, to 0.85 for Highway 62.

Pavement conditions and lack of restrictions on large vehicles along truck routes are also important for the efficient movement of freight. According to the *I-5 State of the Interstate* report, pavement conditions along I-5 are generally good. However, the RTP identifies several freight routes within the Medford UGB that currently have restrictions on vehicle size and/or poor pavement conditions that affect freight mobility. These include:

- Highway 99 (Rogue Valley Highway) from the Central Point city limits to the intersection with Highway 62 (Crater Lake Highway) – poor pavement conditions

- Highway 238 (Jacksonville Highway) from Lozier Lane westward out of the UGB – restrictions on overlength tractor and semitrailer combinations

The RVMPO freight planning study also included a survey of 25 local shippers and receivers within the Rogue Valley. Based on the results of this survey, numerous freight-related issues and concerns were identified and discussed in the RTP. Many of these issues and concerns focused on the street circulation system within the Medford UGB. Table 3-12 summarizes these concerns for the Medford area.

Table 3-12
Truck Freight Issues and Concerns

Location or Category of Concern	Concern
Interstate 5	• Not enough routes to I-5 • Bridges closed on I-5 cause lost revenue • Frequent congestion on the I-5 viaduct • Hard right turn off exit 30, I-5 • Congestion on Barnett and Stewart near the I-5 interchange • The I-5 Barnett exit (southbound), the light at the end of the off ramp has such a short cycle that drivers cannot get halfway across the intersection with Barnett before the light is yellow • Medford Interchanges are congested • Poor maintenance on I-5 during bad weather, i.e., snow plowing • Poor relationship between freight haulers and ODOT causes problems and loss of money, e.g., ODOT fines freight haulers for hospital mistakes on drug screens for drivers
Highway 62	• Heavy congestion on Highway 62 • Could use more signal change warning lights on Highway 62 like the one at the Vilas Road intersection. This one is very effective
Highway 99	• At Hwy 99 North when turning left onto Stewart Ave, there are heavy traffic flows and a short left-turn signal
Columbus Avenue	• Turning from Columbus to Stewart Avenue, the left turn signal is too short to get trucks through, before it turns yellow • Considerable school bus related delays on Columbus Avenue, Lozier Lane, and North Ross Lane, both in the morning and in the afternoon during the school year
Delta Waters Road	• Congestion on Delta Waters
Hilton Road	• Congestion on Hilton Road near the Highway 62 intersection
Lozier Lane	• Considerable school bus related delays on Columbus Avenue, Lozier Lane, and North Ross Lane, both in the morning and in the afternoon during the school year
McAndrews Road	• Intersection of North Ross Lane and McAndrews has very heavy traffic
North Ross Lane	• Considerable school bus related delays on Columbus Avenue, Lozier Lane, and North Ross Lane, both in the morning and in the afternoon during the school year
Sage Road	• Non-commercial traffic traveling through the Sage Road building area has nearly missed causing accidents (from Hanley Road through the industrial lots to Brian Way) • Trees need trimming along Sage Road and Brian Way • Driving times have increased between White City and warehouse on Sage Road, but not excessively
Stewart Avenue	• Turning from Stewart Avenue onto Lozier Lane, there is heavy traffic and long waits to turn at the stop sign
Vilas Road	• Vilas Road to I-5 has too many accesses creating congestion and safety issues. Houses and children nearby also create safety issues • Congestion near the intersection of Highway 62 and Vilas Road • Turning from Hamrick to Vilas is dangerous due to oncoming traffic

Table 3-12 Continued
Truck Freight Issues and Concerns

Location or Category of Concern	Concern
Medford Circulation	• Inability to dispatch oversized/flagged trucks during peak morning, noon, and evening traffic times • No easy way to move from one end of Medford to the other
Truck Freight Users and Citizens	• Traffic around property (RV Mall) is busy and freight makes it worse • Activities not compatible with freight, e.g. residential and commercial, are being developed around freight terminals • During construction, trucks destroy pavement not designed for loads imposed

Source: Regional Transportation Plan, RVMPO, 2002

Pipeline Transportation

The only major pipeline transportation system in the Medford area are several natural gas distribution lines located along the I-5 corridor between Grants Pass and Ashland. The Medford area distribution system connects at Grants Pass to a major natural gas transmission line operated by Northwest Pipeline Company. This line connects northward to Eugene and the Portland metropolitan area. There is also a natural gas transmission line connecting to the Medford system from the Klamath Falls area that provides redundancy in service.

Within the Medford area, the natural gas distribution system is operated by Avista Utilities. Avista provided the following information about natural gas consumption to the RVMPO as part of the regional Freight Study.

- Consumption of natural gas in the greater Medford area:
  - 1997 – 69 million therms
  - 1998 – 77 million therms
  - 1999 – 78 million therms
  - 2000 – 77 million therms

- Projected consumption of natural gas in the greater Medford area:
  - 2002 – 72 million therms
  - 2003 – 75 million therms
  - 2004 – 77 million therms
  - 2005 – 80 million therms
  - 2010 – 95 million therms
  - 2015 – 113 million therms

Since 1997, some motorists have converted from the use of diesel or gasoline to natural gas, resulting in a savings of 668,000 gallons of fuel. The Rogue Valley Transportation District's use of natural gas to power buses has also offset the consumption of 570,000 gallons of diesel fuel[4].

Other pipelines in and throughout the Medford area include transmission lines for electricity, cable television and telephone services, as well as pipeline transport of water and sanitary sewer. Medford also has two major water transmission pipelines (36 inch and 48 inch) from Big Butte Springs in the Cascade Mountains.

[4] *"Profile of the Medford Area Freight Transportation System"*, Rogue Valley MPO, unpublished information, 2003.

Water Transportation

There are no commercially-navigable waterways in Medford. Bear Creek runs north/south through the city, generally paralleling the alignment of Interstate 5. Bear Creek is the largest creek in Medford and is used primarily for recreational purposes.

Public Transit

This section describes existing public transportation services available in the Medford UGB including local public transit service offered by the Rogue Valley Transportation District (RVTD), paratransit services including taxi and service for the elderly and/or disabled, and intercity bus services.

Within the community, public transportation services fulfill dual roles. On one hand, these services provide transportation for those who cannot or choose not to drive their own automobile. As indicated in the discussion of RVTD ridership below, the majority of local transit riders likely fall into this category.

On the other hand, the provision of good local transit service is a key measure of quality of life within a community in that, along with walking and bicycling, it provides an alternative to driving. In Medford, goals have been established to encourage the use of alternative travel modes to reduce congestion and help to achieve air quality standards (PM10 standards for dust are currently exceeded in the Rogue Valley region). Transit is an important component in the toolbox of strategies that the City is implementing to encourage higher density, mixed use development and a more compact form of urban development where driving to meet basic travel needs becomes optional.

Rogue Valley Transportation District

The Rogue Valley Transportation District (RVTD) provides public transportation in the Medford area, and between Medford and its surrounding communities in Jackson County. RVTD was founded in 1975 and began service in 1977 with two leased vans. In 2002, RVTD operates a fleet of 30 buses including 10 powered by compressed natural gas. Service includes nearly 300-miles of fixed route and paratransit service. Over 2.7 million passenger miles are traveled annually with approximately 848,000 fixed route passengers and nearly 70,000 paratransit passengers carried in 2001-2002. RVTD also promotes alternative transportation through various travel demand management (TDM) strategies such as ridesharing, a “bikes on buses” program, telecommuting, and other activities. Service is currently provided Monday through Friday.

Fixed Route Service

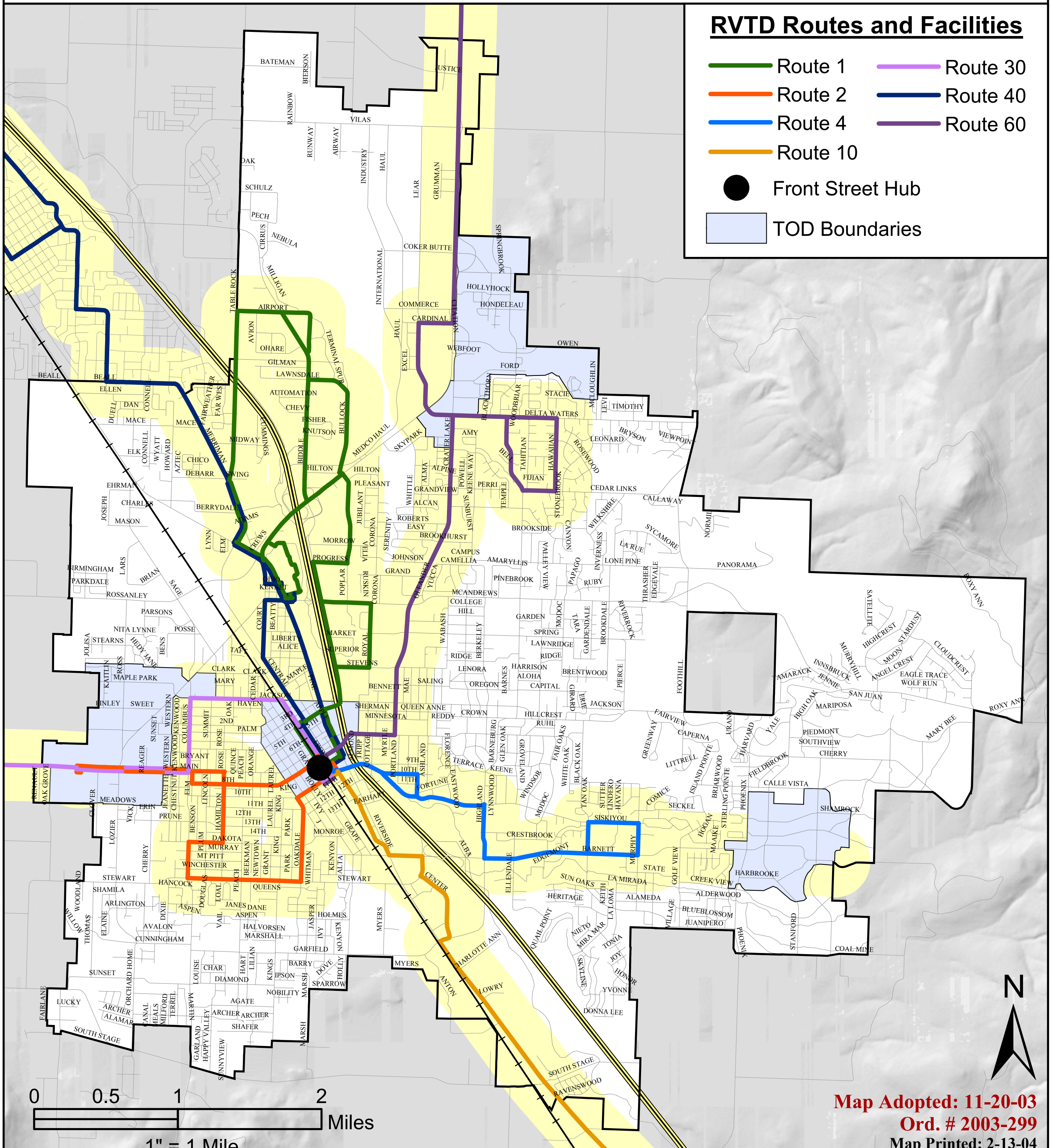
Current fixed route service is provided on eight routes, three of which operate solely within the City of Medford, one in the City of Ashland, and four that provide intercity service linking Medford (the Jackson county seat) with neighboring communities. Fixed route bus service is fully accessible to people with disabilities.

Table 3-13 presents a summary of the major destinations served by each route, its general operating times, the frequency of service during hours of operation and its average monthly ridership during the 2001-2002 fiscal year recently ended. These existing routes are also illustrated in Figure 3-5.

Intercity service is provided by the following routes:

- Ashland, Talent, Phoenix to Medford - Route 10
- Jacksonville to Medford - Route 30
- Central Point to Medford - Route 40
- White City to Medford - Route 60

Figure 3-5: RVTD Public Transit Service and Facilities



1/4 Mile Distance from Transit Routes

Other Streets

Highway

Railroad

UGB

The Geographic Information Systems (GIS) data made available on this map are developed and maintained by the City of Medford and Jackson County. GIS data is not the official representation of any of the information included. The maps and data are made available to the public solely for informational purposes.

THERE MAY BE ERRORS IN THE MAPS OR DATA. THE MAPS OR DATA MAY BE OUTDATED, INACCURATE, AND MAY OMIT IMPORTANT INFORMATION. THE MAPS OR DATA MAY NOT BE SUITABLE FOR YOUR PARTICULAR USE. THIS INFORMATION IS BEING PROVIDED "AS IS" OR "WITH ALL FAULTS". THE ENTIRE RISK AS TO THE QUALITY OR PERFORMANCE IS WITH THE BUYER AND IF INFORMATION IS DEFECTIVE, THE BUYER ASSUMES THE ENTIRE COST OF ANY NECESSARY CORRECTIONS OR SERVICING.

Table 3-13
Summary of Existing RVTD Transit Service
In Medford UGB

Route No.	Destinations Served	Hours of Operation	Frequency	Average Monthly Ridership (01-02)
1	Rogue Valley Mall, Poplar Square	7:30am - 6:30pm	60 minutes	4,300
2	Main Street, West Medford	6:00am - 6:30pm	30 minutes	5,000
4	Rogue Valley Medical Center	6:30am - 6:30pm	60 minutes	2,800
5	Ashland Loop	7:10am – 5:10pm	30 minutes *	3,800
10	Ashland, Phoenix, Talent and Medford along Hwy 99 to Front Street	5:00am - 6:30pm	30 minutes	35,700
30	Jacksonville	7:30am – 6:00pm	9 times/day	1,200
40	Central Point	6:00am - 6:00pm	60 minutes	6,300
60	White City	5:00am - 6:30pm	30 minutes	11,600

Source: RVTD, 2002
* When combined with Route 10 service, buses in Ashland operate with 15-minute frequencies.

Service to White City via Route 60 recently increased from an average headway of 60 minutes to a headway of 30 minutes. A significant increase in recent ridership activity has resulted from this service enhancement. In 2003 it is anticipated that service frequency will be increased to 30 minutes on the Central Point (Route 40) and East Medford (Route 4) routes. It is anticipated that the East Medford route will be extended into the Southeast Medford area concurrent with new development activity. Currently this route only goes as far east as the Rogue Valley Medical Center. This service increase was made possible by regional STP (federal Surface Transportation Program) funds dedicated through the RVMPO to these specific improvements over the next 18 years.

<u>Specialized Public Transportation Services</u>

Paratransit Services

Valley Lift is RVTD's ADA-compatible paratransit service for people who are unable to use a regular lift-equipped bus because of a disability. Valley Lift service is intended only for those trips that an individual cannot make on the bus system and is only available within 3/4 mile on either side of a fixed route. An application is required to determine when and under what circumstances the applicant can use the bus and when Valley Lift service is required. Anyone with a disability that prevents them from getting to or from a regular bus stop or anyone who cannot independently board, ride or disembark from a regular lift-equipped bus is eligible for participation in the Valley Lift program. Valley Lift service charges can be no more than twice that of the fare for fixed route service, as required by the Americans with Disabilities Act (ADA). RVTD Valley Lift service provided 69,324 trips during fiscal year 2001-2002, an increase of nearly 13% over the 61,479 riders during 2000-2001.

Job Access/Reverse Commute

Starting in September 2002, RVTD began offering Job Express Service to provide access for people traveling to and from work. The service is limited to a specific geographic area and passengers must qualify under the guidelines articulated in the Federal Transit Administration’s (FTA’s) Job Access and Reverse Commute program. RVTD received a grant from FTA in the amount of $151,767, with a 50 percent match requirement to fund this service. These funds are targeted at filling transportation gaps and are designed to transport welfare recipients and low-income individuals to and from jobs and other employment related support services such as childcare, job readiness, training and retention service programs.

Senior Shopper Express

Senior Shopper Express is a service for the elderly or people with disabilities. This service operates from 9:00 am to 3:00 pm, Monday through Friday. Fares are $1.00 per round trip and $0.50 extra for additional stops. The service will pick eligible passengers up at their home and take them shopping, banking, to the library and senior centers in the area. Participants must call 48 hours in advance to book a ride. RVTD's Senior Shopper service provided 5,628 trips during fiscal year 2001-2002, an increase of nearly 17% over the 4,813 riders during 2000-2001.

TransLink

TransLink is a centralized ride reservation, scheduling, management reporting, and financial reporting center managed by the Rogue Valley Transportation District (RVTD). At its startup on September 4, 2001, RVTD/TransLink began handling ride reservations, scheduling, and agency payment tracking for about 70,000 non-emergency OMAP-eligible (Oregon Medical Assistance Program) clients in Coos, Curry, Douglas, Jackson and Josephine Counties. TransLink's customer service representatives record rider data, and origin and destination information for each trip made using this service. The representatives use software to store and retrieve information each time an eligible user calls to schedule a ride, increasing the efficiency of service scheduling. Both volunteer and paid drivers provide rides, and every driver has undergone a criminal history check and drug testing. It is the goal of RVTD to have each driver equipped with a "hands free" cell phone or other communication link for ready contact with the reservation center to maximize the efficiency of vehicle routing and, consequently, the cost-effectiveness of TransLink's transportation services.

Ultimately, TransLink is expected to handle many types of rides utilizing many funding sources. TransLink allows multiple funding sources to be pooled in a central coordinating and scheduling agency increasing efficiency and reducing costs for everyone. During its first year of service the RVTD/TransLink service has become enormously popular for non-emergency medical rides. Between October 2001 and October 2002, TransLink provided about 325,000 rides in its five-county service area.

Fare Structure

The current bus fare is $1.00 for full paying passengers. A reduced fare of $.50 is available for seniors and youth (10-17 years old). Children under 10 years of age ride free. Additionally fares in Ashland are free as the City reimburses RVTD for the cost of this service. Regular fixed route monthly passes are $38 for full fare and $19 for reduced fare.
Valley Lift is $2.00 per trip everywhere except within the City of Ashland where it is also free. To encourage Valley Lift customers that can use the bus under certain circumstances, no fare is charged if those patrons ride the fixed route system.

Group pass programs are available for Rogue Community College (RCC) and Southern Oregon University (SOU) students, which are valid for one year. Group passes are also available for Bear Creek Corporation employees during five months of the year (September through January).

Ridership Statistics

During fiscal year 2001-2002, RVTD carried about 848,000 fixed route passengers and nearly 70,000 paratransit passengers. This represents an increase of approximately 7.6% over the 788,000 carried in 2000-2001 and 47% over the 575,000 carried in 1999-2000. Between 1999 and 2002, there have been only minor service changes (e.g. changes to destinations served, service frequency, hours of operation). It is likely that this consistency in service has been a major factor behind ridership increases. Based on 1999 passenger counts, approximately 56% of all RVTD trips either started or ended in Medford. When applied to ridership for 2001-2002, that translates to 474,900 trips.

Table 3-13 includes a summary of average monthly ridership by route for fixed route service. Table 3-14 presents a summary of ridership during fiscal year 2001-2002 by fare category.

Table 3-14
RVTD Passenger Ridership by Fare Category for 2001-2002

Fare Category		Annual Ridership	Average Monthly Ridership	Percent of Annual Ridership
Regular Fare		168,600	14,100	19.9%
Reduced Fare		422,700	35,200	49.8%
Group Fare		193,100	16,100	22.8%
Free/Day Pass		63,500	5,300	7.5%
	Total	847,900	70,700	100%

Source: RVTD, 2002

Table 3-15 illustrates recent growth in ridership for specific types of riders including those who use group passes and those who participate in the bikes on buses program. During 2001-2002 a total of 193,100 persons used group passes averaging about 16,000 passengers per month. The three major users of this program are Rogue Community College, Southern Oregon University, and the Bear Creek Corporation. The table also illustrates growth in the bikes on buses program that is described in more detail in the section on Transportation Demand Management Services.

Table 3-15
RVTD Annual Ridership Growth

Types of Passenger	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03*
Group Pass Program						
Rogue Community College	11,673	26,598	30,083	31,705	33,479	4,420
Southern Oregon University	35,055	20,661	0 **	28,135	41,233	3,284
Bear Creek Corporation ***	27,600	37,337	29,298	37,155	27,637	N/A
Bikes on Buses Program						
Annual Systemwide Ridership	7,108	12,611	11,952	18,074	22,151	N/A

Source: RVTD, 2002
* Data includes July and August of 2002.
** This program was discontinued during fiscal year 1999-2000 and was reinstated in late September of 2000.
*** Service is provided for only five months out of each year including September through January inclusive.

RVTD regularly surveys riders to gather information about trip purpose, trip destination, rider characteristics, etc. One question on a recent survey asked, "If transit was not currently available how would you have made your trip today?" Responses were as follows:

- 8% - drive alone
- 27% - be driven by someone else
- 9% - bicycle
- 22% - walk

- 4% - taxi
- 5% - other
- 25% - not make the trip

Of note is that nearly 65% of the respondents would either use an alternate travel mode (e.g. bicycle) or not make the trip. 35% would drive themselves or carpool, while an additional 4% would take a taxi resulting in a potential shift of 40% of current transit riders to an automobile-related travel mode if transit were not available. This shift could potentially increase existing street congestion.

The rider survey further identified a variety of trip purposes that were being made using existing RVTD service. The percent of each trip purposes out of total RVTD ridership is indicated as follows:

- 8% - school or college
- 34% - home
- 6% - recreation
- 15% - work
- 13% - shopping
- 5% - medical/dental
- 19% - other

Transit Facilities

Transit Stations

The only major transit station at this time is the Front Street Transfer Station. As soon as sustainable funding is secured, RVTD's plans call for a change in route structure from a radial pulse system to a grid type system. Once this transition is complete, it is anticipated that two additional transfer facilities will be developed. North and south Medford are the most likely locations for these sites.

Major Transit Stops

RVTD is currently developing a long-range plan that will incorporate the designation of major transit stops which are depicted in Chapter 7 of the TSP. According to the Transportation Planning Rule or TPR (Statewide Planning Goal 12), major transit stops in a community such as Medford are defined as a location that has *"an above average frequency of scheduled, fixed route service when compared to region wide service"* and /or is *"located in a transit oriented development (TOD) or within ¼ mile of an area planned for"* medium/high density residential, intensive commercial or institutional uses, or are likely to generate a high level of transit ridership. One of the key criteria for designation of major transit stops in Medford is passenger boardings per day. In the future, location within one of the four designated TOD's within the city may also be an important criterion for future designations.

RVTD has an ongoing program to upgrade stops and install passenger amenities. Improvements are made at high volume locations, locations with safety issues, and stops with consistent use (typically commuters). A list of transit stop facilities in Medford is located in Appendix B.

Park and Ride Lots

The only park and ride lot available to transit users is located at the Front Street Station in downtown Medford.

Taxi Service
Yellow Taxi and Metro Taxi are currently allowed to make intra-city trips within the City of Medford. Cascade Cab is allowed to make drop-offs in Medford from the White City area. Yellow Taxi is allowed to operate throughout all of Jackson County.

Elderly and Disability Service
As noted above, RVTD provides discounted fares for seniors and people with disabilities on its regular fixed route service, and the Valley Lift paratransit service for people with disabilities who are unable to use regular lift-equipped buses or whose trip cannot be made using fixed route service.

Aside from the service provided by RVTD, there are numerous private, non-profit and other agencies that provide transportation services to elderly and/or disabled passengers in the Medford area. Key agencies providing these services include the Rogue Valley Senior Volunteer Program and the Upper Rogue Community Center.

Intercity Bus Service
The information in this section was obtained from current Greyhound route service maps and schedules.

Greyhound Bus Lines
Greyhound provides daily intercity bus service along the I-5 corridor between Medford and destinations both to the north and south. Six trips between Medford and destinations to the north (including the Willamette Valley and Portland) are provided, including one trip to the north that begins and ends in Ashland. Five daily trips are provided between Medford and destinations to the south. Service in both directions is provided seven days per week. The Medford Greyhound depot, located on Bartlett Street in the downtown a few blocks from RVTD's Front Street station, is accessible via the local RVTD transit system.

Transportation System Management/Transportation Demand Management

Transportation System Management
Transportation System Management (or TSM) improvements include actions designed to maximize efficient use of the existing transportation system. TSM strategies include actions such as traffic signalization, signal synchronization to improve traffic progression (particularly along major arterial streets), signal retiming, channelization improvements, one-way streets, parking prohibitions, turn prohibitions, use of Intelligent Transportation Systems (ITS), and other actions. Traffic calming measures can also be considered as TSM strategies.

TSM activities currently underway in the Medford UGB include:

Traffic Signalization
Figure 3-2 illustrates the location of existing traffic signals within the Medford UGB. The City, County and ODOT currently maintain and operate these signals. Along a number of travel corridors, the City has implemented traffic signal timing plans to maximize the smooth progression of vehicles. The City regularly evaluates the need for new signal installations when intersection traffic operations indicate the need and signal warrants are met.

Traffic Channelization
The City currently operates a partial one-way grid system in the downtown core area and along Highway 99 through the downtown to maximize the capacity of these streets to accommodate existing and

projected traffic volumes. Where necessary to accommodate turn lane channelization requirements, various management strategies have been implemented including parking prohibitions and the use of split phase signal timing.

Existing ITS (Intelligent Transportation System) Assets

The development and implementation of Intelligent Transportation Systems (or ITS) is a strategic approach to better managing the demands on our street and highway system and, thus, maximizing the value of transportation capital investment. According to the *Oregon ITS Strategic Plan: 1997-2017*, ITS *"involves the application of advanced technology to solve transportation problems, to provide services to travelers, and to assist transportation system operators in implementing the most effective traffic management strategies to meet actual highway conditions"*. More specifically, ITS can help to address existing and projected future transportation system needs by:

- "Allowing for better management of transportation supply and demand" (by allowing transportation managers to respond immediately to operational needs).
- "Promoting the use of alternative modes and connectivity across the different modes".
- "Increasing travel efficiency and mobility without increasing the physical size of the transportation facility" (in other words, getting more use out of each dollar invested in the highway and transit system).
- "Enabling travelers to choose (their) travel time, mode and route efficiently based on real-time roadway and transit status information."
- "Reducing the cost of operating and maintaining transportation facilities and services (through the use of newer technology with better reliability)".
- Providing increased safety and security to travelers" (through the reduction in time to respond and clear incidents).

Existing ITS assets in the Medford UGB include:

- Variable message signs and traffic monitoring cameras on I-5 and 2 traffic monitoring cameras on city streets to provide real time information in support of traffic management improvements.
- Mayday call boxes on I-5.
- Photo violation detection at high accident locations (including McAndrews/Biddle and Barnett/Riverside). Installed in 2001.
- Incident management system in place.

Traffic Calming

Traffic calming refers to various design features and management strategies intended to reduce the speed and overall volume of traffic on particular roadways, typically through or near residential areas. Pedestrians, residents, business customers and property owners can benefit from implementation of traffic calming techniques in that they can result in slower traffic, fewer cars, less noise, and create a more inviting environment for walking or bicycling. Traffic calming is further discussed in Chapter 5. The City of Medford currently implements traffic calming strategies through the land development process as necessary and appropriate. The City also currently budgets $50,000 per year for traffic calming, but does not have a formalized program to spend the funds. It is recommended that a formal policy be created to address location and type, as well as prioritization of funds.

Transportation Demand Management

Transportation Demand Management or TDM involves using a variety of strategies to maximize the efficiency of the existing transportation system and reduce the need for additional roadway capacity. TDM strategies to reduce peak period vehicle trips on the local and regional transportation system can include use of transit, carpooling, vanpooling, working flexible hours and/or a compressed work week, and working from home with use of communications technology. TDM strategies work by improving the attractiveness of transportation choices like carpooling and transit use that place a lower demand on the transportation system compared to driving along.

Within the Medford UGB, the leader in developing and implementing TDM strategies is the Rogue Valley Transportation District (RVTD). RVTD currently promotes a full range of several TDM strategies including: education programs, trip reduction incentives, the "bikes on buses" program, carpools, vanpools, telework, park-and-ride service, employer outreach and other strategies. In addition, RVTD is actively engaged in developing a Transportation Management Association (or TMA) within the Medford area to assist large employers with implementation of various demand management strategies. TDM strategies currently being implemented and/or developed in the Medford UGB are described below.

Transportation Management Association

The Rogue Valley TMA program is in its early formative stages, and RVTD is currently recruiting TMA membership. As of late 2002, RVTD is an official member of the TMA, and Jackson County is an active participants but has not yet officially joined. The City of Medford became a member in 2003. RVTD has about 70 employees, Jackson County has 1,000, and Medford has 400 employees. Monthly meetings of the TMA are held, which are attended by these three agencies. The most recent meeting was the first in which the TMA extended its outreach to private employers. Four private employers attended this meeting including: Providence Hospital, Rogue Community College, Bear Creek Corporation, and the federal Bureau of Land Management. The TMA is looking for longer term stable funding and expects to submit an application for CMAQ funding at the end of 2002.

Bikes on Buses Program

All RVTD buses are fitted with bicycle racks that accommodate two bikes. Under certain circumstances, bikes can be brought into the bus when the racks are full. The racks allow bicyclists to ride to a transit stop, load their bikes, and take transit to a specific destination. The bikes on buses program carries a significant number of bicycles each year with ridership growing from 7,108 in fiscal year 1997-98 to 22,151 in 2001-2002, an increase of over 200%. Ridership experience with the bikes on buses program for each of the past several years is summarized in Table 3-15. Early indications are that over 30,000 bike trips will be taken on RVTD buses in the 2003 fiscal year that ends June 30th. At the end of 2002, RVTD submitted an application for CMAQ funding to replace all 2-bike bus racks with 3-bike bus racks to accommodate the increased demand for this service.

Analysis of detailed ridership statistics for this program indicates that Route 30 (service between Medford and Jacksonville) has the highest share of bike riders on the bus (nearly half of all such trips), followed by Route 60 (service to White City). According to RVTD staff, it appears that riders with bikes are much like the average bus rider in terms of where they go and how often they travel, except that they either need to make part of their trip before or after RVTD service hours or they have a trip origin or destination further than a comfortable walking distance from the closest bus stop. Recreational cyclists tend not to use the service except for emergencies.

RVTD Valley Rideshare

The rideshare program assists local employers, employees and residents in creating or joining carpools or vanpools to make the journey to work. In late 2002, RVTD started using the City of Portland's carpoolmatchnw.org online carpool matching web site. This site currently covers the entire state of Oregon as well as part of Washington State near Portland. RVTD expects to add a few Northern California counties to the system in 2003.

RVTD Telecommuting

RVTD serves as a local information resource to promote telecommuting within the greater Medford area. Telecommuting involves the partial or complete substitution of telecommunications technology (such as computers, telephones, or other equipment) for the traditional trip to work. Typically this requires a change in policy, organization, management and work structure on the part of both the employee and employer for telecommuting to be successful. Aside from the obvious benefits to reducing peak hour travel demand, telecommuting can also have benefits by expanding the geographic area from which employees can be recruited and retained, reducing office space costs and employee absenteeism, increasing productivity and other benefits.

Education

RVTD presents a variety of classes to over 6,000 students each year. Most of the students are in grades K through 12. RVTD's three main education programs are "Bicycle as Transportation", "Gus Rides the Interactive Bus", and "Young at Heart". All of RVTD's education programs focus on alternatives to driving alone.

Group Bus Pass Program

As noted in the discussion above of ridership by different fare categories, RVTD currently operates a group bus pass program aimed primarily at major employers or colleges. Under this program, RVTD provides extremely low cost bus passes for employees who are willing to purchase passes for all of their employees. Prices can be as low as 31 cents per month per employee for the first year (after taking the State of Oregon Business Energy Tax Credit). Southern Oregon University and Rogue Community College are current full time users of the Group Bus Pass. In recent years Bear Creek Corporation has purchased a group bus pass for its employees for five months out of the year.

Air Transportation

The majority of the following discussion was derived from information contained in the Rogue Valley International-Medford Airport's *Airport Master Plan* and the *2001-2023 Rogue Valley Regional Transportation Plan*. Additional data was provided by the Jackson County Airport Authority.

Rogue Valley International-Medford Airport

The Rogue Valley International-Medford Airport is the area's only provider of regularly-scheduled commercial airline service. The airport offers air passenger and air freight transportation opportunities to residents and businesses in the Rogue Valley by providing a national and international connection to the region. Currently, air passenger service is provided by Horizon Airlines (linking Medford to Portland, Seattle and Los Angeles), United Express (connecting to Portland, San Francisco and Denver), and America West (connecting to Phoenix). The airport also provides service to general aviation aircraft, as well as offering private, commercial, non-passenger related services (such as Erickson Air Crane) that operate from private helipads. Reliever service for general aviation and air freight service is provided at the Ashland Municipal Airport when visibility in Medford is below minimums due to fog or other inclement weather.

The Rogue Valley International-Medford Airport is located north and east of I-5 between Highway 62 (Crater Lake Highway) and Table Rock Road, entirely within the Medford Urban Growth Boundary (see Figure 3-4). Parking is available at the airport operating 24 hours a day, seven days a week. Current parking rates range from $2.00 per hour for short-term parking with a $12.00 per day maximum to $1.25 per hour for long-term with a $5.50 per day maximum.

Public transportation to the airport from various locations in Medford is available through privately operated taxis, shuttle services, and RVTD. Upon advance request, RVTD will deviate Route 60 to serve the airport. Bicycle and pedestrian facilities are available to the airport site along Biddle Road, however, facilities for direct access to the terminal using these modes are minimal.

Airport Facilities

The airport consists of both airside and landside facilities. Airside facilities include runways, taxiways, lighting and navigational aids. There are two active runways at the Rogue Valley International-Medford Airport. Runway 14-32 (the primary runway) is 8,800 feet long by 150 feet wide, while Runway 9-27 (the secondary crosswind runway) is 3,155 feet long by 100 feet wide. The primary runway can accommodate most aircraft operating in the commercial fleet, while the crosswind runway is limited to small aircraft weighing less than 12,500 pounds.

Landside facilities include the terminal, fixed base and corporate aviation facilities, storage hangars, the U.S. Forest Service facilities, and various facilities that support airport operations including the Federal Aviation Administration's airport traffic control tower and the airport's administration buildings.

Air Passenger Activity

Table 3-16 presents a summary of recent aircraft operations and passenger activity at the airport. As indicated in the table, air passenger activity increased by an annual average rate of about 4 percent between 1998 and 2000, while actual aircraft operations declined, primarily as a result of a drop in local civil aircraft operations. The increases in passenger activity have shown potential for growth in the air transportation mode as an important component in the regional transportation system. Aircraft and air passenger activity also increased in the early months of 2001. However, since September 2001, air operations and passenger activity has dropped consistent with the experience of other airports throughout the United States.

Table 3-16
Rogue Valley International-Medford Airport
Air Operations and Passengers

	1998	1999	2000	2001	2002 *	1998-2001 Change (%)
Aircraft Operations - Itinerant						
• Air Carrier	16,235	16,724	19,203	18,195	9,861	+12.1%
• Air Taxi	2,119	2,279	2,509	2,113	1,321	-0.3%
• General Aviation	26,133	25,648	24,181	24,100	13,529	-7.8%
• Military	340	350	368	286	183	-15.9%
Total Itinerant Operations	44,827	45,001	46,261	44,694	24,894	-0.3%
Aircraft Operations – Local						
• Civil	25,166	25,862	20,901	17,380	12,018	-30.9%
• Military	224	442	96	183	66	-18.3%
Total Local Operations	25,390	26,304	20,997	17,563	12,084	-30.8%
Total Operations	70,217	71,305	67,258	62,257	36,978	-11.3%
Passengers						
• Enplanements	218,593	228,783	245,874	234,779	126,840	+7.4%
• Deplanements	235,213	228,013	246,191	229,756	127,001	-2.3%
Total Passengers	453,806	456,796	492,065	464,535	253,831	+2.4%

Source: Jackson County Airport Authority, 4-year percentile change in data is for 1998 through 2001.
* Data is for period from January through July, 2002 inclusive

In 2001, the *Rogue Valley International-Medford Airport Master Plan* was completed. This document serves as the primary guide to future development of the airport. The *Airport Master Plan* includes documentation and an assessment of existing airport activity, a discussion of planning assumptions that relate to future demand for airport-related services, and a summary of recommended improvements. Key assumptions and conclusions that are important for the development of the Medford TSP include forecasts of passenger enplanements, expectations for growth in air cargo activity and potential future employment in the developing Foreign Trade Zone (FTZ) located on airport property. The passenger enplanement and employment assumptions lead directly to increased traffic volumes on the airport access road, as well as all major roadways leading to the airport and the Foreign Trade Zone. Principal roads affected by a growth in airport traffic include: I-5, Highway 62, and Biddle Road.

According to the *Airport Master Plan*, passenger enplanements are forecast to increase substantially from the 1998 level of approximately 219,000 passengers. Several different forecasting methods were used to determine the likely future demand for air passenger service at the Rogue Valley International-Medford Airport with the preferred method being based on a per capita ratio that related growth in demand to the area's growing population and propensity to fly. The preferred forecast was prepared in five-year increments through 2020, with the outlying year estimated at 379,300 passengers or a 74 percent increase over 1998 levels. This translates to slightly over 1,000 passengers on an average day, which is not significant, compared with forecast daily traffic volumes on I-5 of over 50,000 vehicles at both the north and south study area boundaries.

Existing land uses around the airport are largely a mix of scattered single family residential, industrial/commercial development, and agricultural uses. The density of development is greater on the south side of the airport where there has been extensive recent commercial and industrial land development, and to the northwest where there has been new residential development in Central Point. A 1986 study of airport land use compatibility resulted in the Airport's acquisition of a number of properties that were determined to be incompatible with existing airport noise levels. The city has two airport overlay zones (A-A and A-R) to ensure compatibility of land uses around the airport by restricting land uses and structure heights in the airport's imaginary surfaces. These imaginary surfaces radiate outward from the existing runways at specified angles in relation to the ground. They are intended to identify the area within which height restrictions should be enforced on development adjacent to the airport to maintain a safe flight path. Imaginary surfaces are depicted in the *2001 Airport Master Plan*.

One significant and growing land use in the airport vicinity is the Foreign Trade Zone (FTZ No. 206). The FTZ was designated in 1995 and is intended to help the airport develop to its fullest potential and to boost the local economy of southern Oregon through enhanced trading opportunities and job creation. FTZ No. 206 is one of four in Oregon, the others being located in Coos County, Klamath Falls, and Portland. The FTZ is projected to increase employment in the immediate vicinity of the airport and to produce an annual increase in revenue of more than $3 million. Those who work in the FTZ are expected to live throughout the region. The FTZ and air cargo activity at the airport are discussed more fully below in the discussion of air cargo activity.

Air Cargo

Along with air passenger and general aviation services, the Rogue Valley International-Medford Airport provides for the air freight needs of the Rogue Valley area, connecting the region to national and international markets. Air freight is handled by both all-cargo carriers and the scheduled airlines, while air mail is handled only by the latter. Five companies currently operate under contract with cargo-carrying companies such as FedEx, United Parcel Service (UPS) and Airborne Express, to carry air freight to and from the Medford area using a combination of small turboprop planes and jets.

In the mid-1980s, it was reported that only about 1.4 million total pounds of air freight were carried. This had increased by nearly 8 million pounds by 1993, at which point demand appeared to level off. Based on information in the 2001 *Airport Master Plan*, over 8 million pounds of air freight were carried in 1998, with the cargo-only carriers performing 5,800 annual operations. Table 3-17 illustrates air cargo activity at the Rogue Valley International-Medford Airport over the past few years.

Table 3-17
Rogue Valley International-Medford Airport, Air Cargo Activity

	1998	2000	2001	2002 *
Mail				
• Pounds On	678,770	588,735	393,454	267,161
• Pounds Off	27,569	51,110	60,967	15,610
Total	706,339	639,845	454,421	282,771
Air Freight				
• Pounds On	3,397,785	3,584,127	3,062,367	1,751,719
• Pounds Off	4,362,396	5,908,274	3,848,590	2,292,911
Total	7,760,181	9,492,401	6,910,957	4,044,630
Total Pounds of Air Cargo	8,466,520	10,132,246	7,365,378	4,327,401

Source: Jackson County Airport Authority
* Data is for period from January through July, 2002 inclusive

FedEx, United Parcel Service and Airborne Express operate air cargo facilities at the airport. FedEx constructed its facility south of the airport terminal in 1990. Airborne has constructed a facility on airport property at the northern end of the storage hangar area. Medford Air Cargo operates a facility to the south of the terminal, as well as a nearby storage and inspection facility with cold storage and a truck loading dock. The air cargo handling company has been very active in the development of air cargo facilities at the airport including expansion of on-field cargo handling capacity and in the establishment of an airport commerce park.

Future projections of air freight activity reflect a gradual “phasing in” of facilities on the east side of the airport in the Foreign Trade Zone (FTZ), and continuing development of markets in Southwest Oregon and Northwest California. FTZ No. 206 includes more than 700 acres divided among 12 sites in Jackson and Josephine Counties. Within the Medford UGB are located the following FTZ properties:

- Airport Commerce Park (east of the airport) 95 acres
- Crater Lake Center (east of the Airport Commerce Park) 38 acres
- North Medford Business Center (north of Crater Lake Center) 54 acres
- Medford Industrial Park 215 acres

The Foreign Trade Zone (FTZ) of Jackson County is a legally secured area considered to be outside the United States for purposes of customs, duties, and quotas. Imports are admitted to a FTZ duty-free facility to be stored, processed, manufactured, distributed, exhibited or inspected. The FTZ is designed to open the region to increased foreign and domestic trade opportunities and to enhance efficiency in reaching global markets with locally-produced commodities. The heart of the FTZ is located on 95 acres owned by Jackson County on the east side of the Rogue Valley International-Medford Airport (see Figure 3-4), adjacent to the old Medco Haul Road.

The FTZ is a new international port of entry although customs and immigration services are not presently available. An agricultural quarantine and inspection center began service in the FTZ in 1996. The new air cargo and cold storage warehouse in the FTZ is one of the largest available at an airport between Los

Angeles, California and Vancouver, B.C.[5] Regional access to the FTZ is available from Highway 62 north of the interchange with I-5. Direct road access to the FTZ includes Commerce Drive, Vilas Road, Table Rock Road and the Medco Haul Road. Recently Vilas Road was widened to accommodate increased traffic, and Coker Butte Road is being extended west of Crater Lake Highway to service the vicinity of the FTZ. Truck traffic on roads in this area is consistent with the pattern of truck activity common in other industrial areas.

In comparison with the demand for truck freight movement on Interstate 5, air freight is currently a small percentage of total freight movement in the Medford area. It is anticipated that the airport and FTZ will have minimal impact on the regional roadway system during the next few years. As operations in the FTZ grow and business interests increase, the adequacy of the existing surface transportation system will become increasingly important to accommodate expected increases in cargo handling and associated truck traffic. A significant increase of cargo moving in and out of this area could provide the impetus for development of an intermodal system for handling freight containers and trailers to increase the efficiency of cargo handling. It will be important to monitor activities related to air freight and the FTZ during the next few years for future TSP updates.

Non-Motorized Transportation System

Bicycle Transportation System

Although bicycle facilities are located on several arterial and collector streets in the Medford UGB, the majority of streets presently lack bicycle amenities. The facilities that do exist cover only a limited geographic area and, in most cases, are disconnected from each other. In addition, there is a general absence of connectivity between major destinations such as schools and employment areas, as well as an absence of such amenities as bicycle detection devices to facilitate travel through signalized intersections.

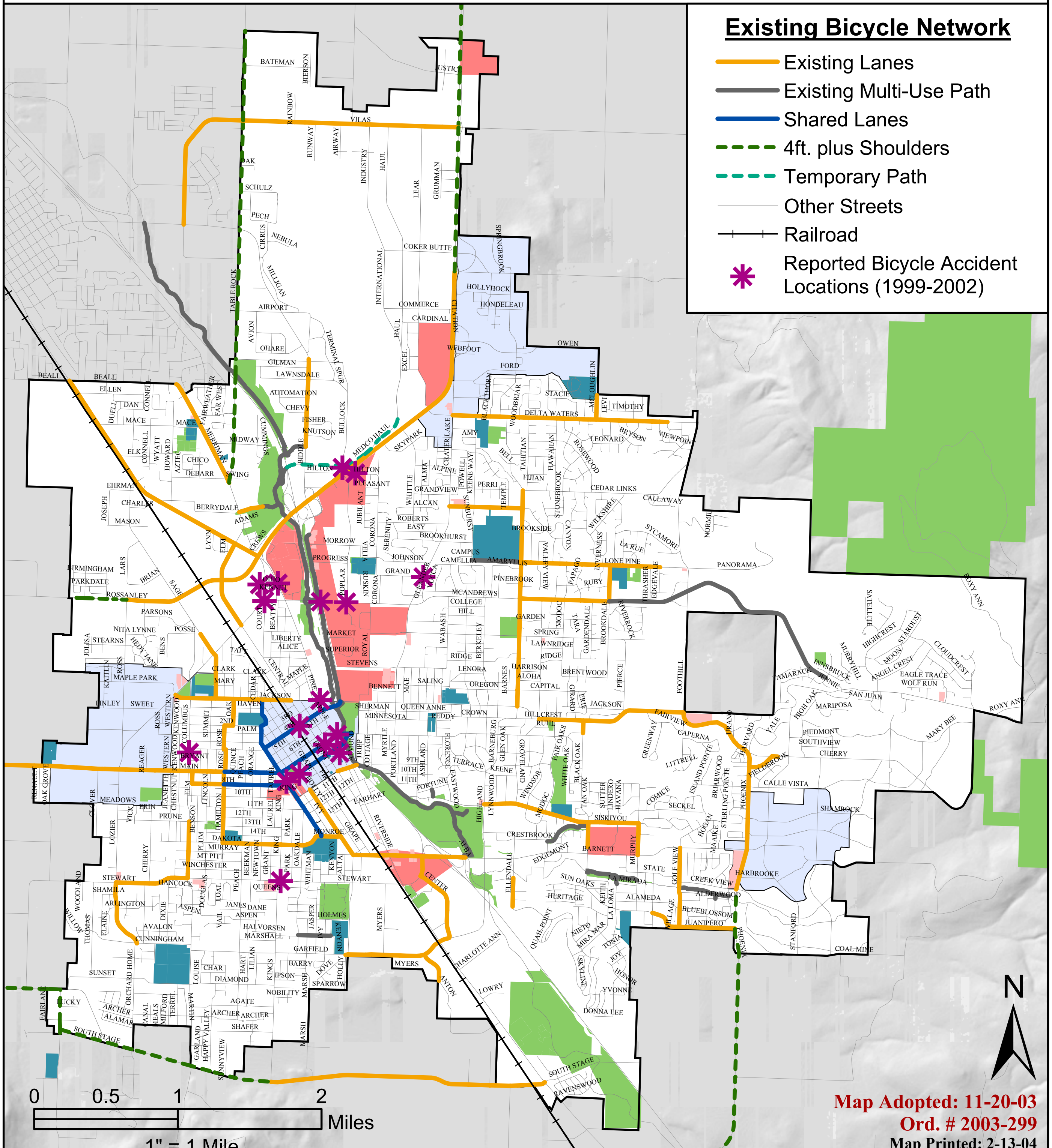
Bicycle facilities can generally be categorized as bicycle lanes, shared facilities including widened shoulders, and bicycle paths (also known as multi-use paths). Bicycle lanes are defined as that portion of a street that is designated by striping and pavement markings for the preferential or exclusive use of bicyclists. Shared facilities include locations where the bicyclist and the motorist must share a travel lane, as well as roadway shoulders contiguous to a travel lane where space is shared by bicyclists, pedestrians, emergency use by vehicles and for lateral support of the roadway pavement section. Bicycle paths are physically separated from the vehicle travel lane by an open space or barrier. A bicycle path may be located within the roadway right-of-way or on a separate right-of-way. Bicycle paths are also known as multi-use paths as they can be used by bicyclists, as well as pedestrians, joggers, skaters, and other non-motorized travelers.

Figure 3-6 illustrates the location of existing bicycle lanes and shoulders along major city streets, as well as multi-use paths that can accommodate bicycle travel within the Medford UGB. The City of Medford street inventory tables in Appendix A also catalog the presence of bicycle facilities for each street segment, while Appendix C presents a list of streets with existing shoulders and multi-use paths.

Medford's current bicycle system plan dates to the mid-1980's. A draft document partially updated the plan in 1998 to provide an inventory and assessment of the City's bicycle circulation network. In addition to the inventory and assessment, the draft document also contains a system need analysis and provides a full list of prioritized bicycle facility improvements. A summary of these proposed improvements, as documented in the 2002 *Regional Transportation Plan*, is presented in Appendix F. Planned or proposed bicycle system improvements are illustrated in Figure F-1. An additional discussion of critical gaps in the existing bicycle system is presented in Chapter 10 in Figure 10-1. Some

[5] Southern Oregon Regional Economic Development, Inc., January, 2002.

Figure 3-6:
Existing Bicycle Circulation System



Commercial Employment Centers
Neighborhood Commercial Centers
Schools
TOD Boundaries
Parks
UGB

The Geographic Information Systems (GIS) data made available on this map are developed and maintained by the City of Medford and Jackson County. GIS data is not the official representation of any of the information included. The maps and data are made available to the public solely for informational purposes.

THERE MAY BE ERRORS IN THE MAPS OR DATA. THE MAPS OR DATA MAY BE OUTDATED, INACCURATE, AND MAY OMIT IMPORTANT INFORMATION. THE MAPS OR DATA MAY NOT BE SUITABLE FOR YOUR PARTICULAR USE. THIS INFORMATION IS BEING PROVIDED "AS IS" OR "WITH ALL FAULTS". THE ENTIRE RISK AS TO THE QUALITY OR PERFORMANCE IS WITH THE BUYER AND IF INFORMATION IS DEFECTIVE, THE BUYER ASSUMES THE ENTIRE COST OF ANY NECESSARY CORRECTIONS OR SERVICING.

of these gaps would be connected by the proposed street improvement and/or urban upgrade projects identified in Chapter 5. Most of the remaining system gaps are identified in Table 10-5. A key exception is the north/south Crater Lake Avenue corridor and the east-west McAndrews Road corridor where development of bicycle facilities could be extremely expensive and have significant impacts. Specific projects and a process to address identified system gaps is discussed in Chapter 10.

The Rogue Valley region is committed to improving the bicycle system and is including the development of new bicycle facilities as a major priority in the *2001-2023 Regional Transportation Plan*'s Alternative Measures package. The Alternative Measures package was drafted by the RVMPO in an effort to bring the Rogue Valley region into compliance with the TPR requirement for a per-capita reduction in vehicle miles of travel (VMT). This requirement is intended to reduce vehicular congestion in the urban areas of the state and to encourage the development and use of alternative transportation modes such as transit, walking and bicycling. As the Rogue Valley region would have difficulty in meeting the goal of reducing VMT by the required amount (five percent over the twenty-year planning period), seven alternatives to this goal were suggested by the RVMPO and endorsed by the Land Conservation and Development Commission. The installation of additional bicycle facilities was identified as one measure that could be implemented to assist in meeting the TPR goal of increased travel mode diversity in the Rogue Valley region. Under this measure, phased targets in five year increments over the next 20 years have been established requiring a specific and increasing percentage of the arterial and collector street system to include bicycle facilities.

In addition to meeting the requirements of the Alternative Measures package, Oregon Revised Statue (ORS) 366.514 requires the provision of bicycle and pedestrian facilities on all arterial and major collector roadway construction, reconstruction, or relocation projects where conditions permit. The statute also states that in any fiscal year, at least one percent of road improvement funds in a jurisdiction must be allocated for bicycle/pedestrian projects.

Nearly all of the major roadway projects listed in the *2001-2023 Rogue Valley Regional Transportation Plan* include development of bicycle facilities. Although these planned improvements will provide better connections in many areas, additional improvements are needed to strengthen general connectivity throughout the City. Providing access to activity centers (particularly including the four designated transit oriented development locations within the city), schools, parks, and neighborhoods will be a key impetus behind the implementation of future bicycle/pedestrian projects as discussed in Chapter 10 of the TSP.

Pedestrian Transportation System

The City of Medford sidewalk system varies widely from neighborhood to neighborhood. Sidewalks exist in most of the downtown area and in surrounding older neighborhoods, particularly to the west and south of the downtown core. These sidewalks provide connections linking many of the residential areas to such pedestrian attractors as schools, commercial areas and employment opportunities. However, many of the older neighborhoods on the east side of the city either do not have sidewalks or have only a limited and disconnected sidewalk system. On the arterial and collector street system, the availability of sidewalks is generally erratic and incomplete. On many blocks, the sidewalks may be present on one side of the street and absent on the other, or partial sidewalks may be in place sporadically throughout the block, lacking continuity.

In an attempt to address the lack of sidewalk facilities within the city, Medford uses Community Development Block Grant (CBDG) money to construct or reconstruct sidewalks in portions of the city eligible for these funds. In addition, the City has initiated a program to construct critical sidewalk connections near City schools. The City has inventoried missing sidewalk segments (see Appendix D) and allocates funding each year to construct the missing segments. The primary intent of this program is to provide safe walking conditions for children attending school. An anticipated secondary benefit will be reduced traffic near schools as students will not require a ride and will be able to travel by foot.

As noted above, ORS 366.514 also requires construction of pedestrian facilities as part of all roadway construction, reconstruction or relocation projects on arterials and major collectors where conditions permit, and will require expenditure of at least one percent of road improvement funds on bicycle and pedestrian projects. In addition, the City's *Land Development Code* now requires sidewalk construction as part of residential subdivisions and in conjunction with nearly all new street construction or reconstruction within the city. Recently, the City Public Works Department developed guidance for crosswalk location focusing development of these facilities only at locations where active traffic control devices such as traffic signals, flashing beacons, or school crossing guards are in place. The City will no longer install crosswalks in mid-block locations or at stop sign-controlled intersections due to safety concerns. The City has also increased enforcement of crosswalk violations to improve pedestrian safety. It should also be noted that the city is developing street, sidewalk and streetscape standards for the downtown area to enhance the pedestrian environment of this area.

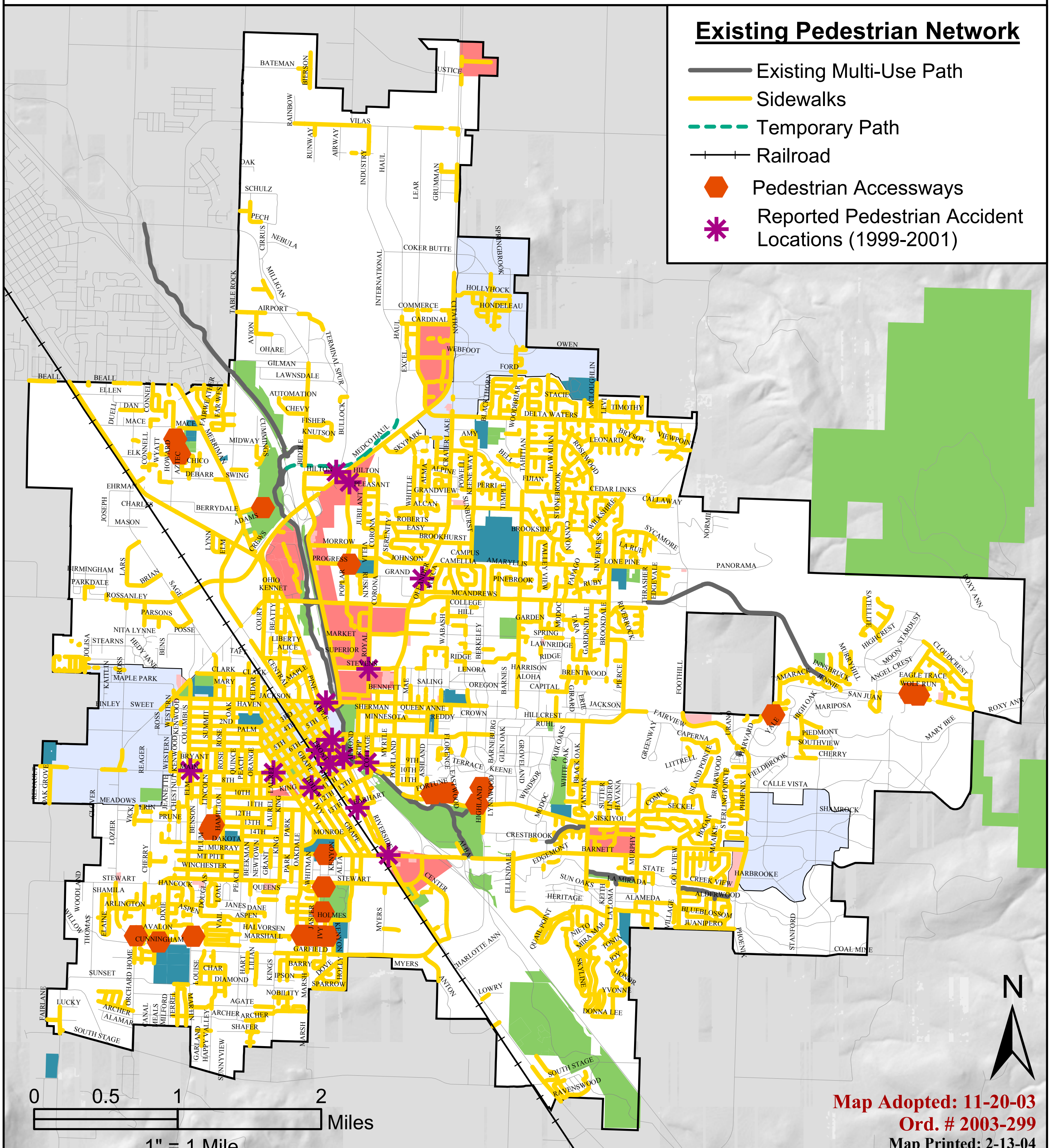
The existing Pedestrian Facilities map in Figure 3-7 depicts the location of sidewalks within the City of Medford including the presence of accessways. Accessways provide for pedestrian and or bicycle passage either between streets or from a street to a building or other destination such as a school, park, or transit stop. Accessways provide a valuable link for non-motorized transportation where use of the street system would result in a longer or more indirect trip. The street inventory tables in Appendix A also catalog the presence of sidewalks for each street segment, while Appendix D summarizes the existing arterial and collector street segments within Medford that do not have sidewalks on either side.

Multi-Use Paths

The Bear Creek Path is the longest multi-use path in Medford. The path is located along the Bear Creek Greenway east and west of I-5 in the Medford area. The southern section of the path currently terminates at Barnett Road. The path runs through Bear Creek Park paralleling Biddle Road to Highway 62, and continues northward to Pine Street/Biddle Road in Central Point near the Jackson County Expo Park. South of Barnett Road, the path is anticipated to parallel Bear Creek through the City's proposed Sports Park to South Stage Road. Construction of this segment will likely be combined with the pending major reconstruction of the South Medford interchange, and is expected to be complete by 2010. Construction of this section will complete the path through Medford. When fully constructed, the Bear Creek path will stretch from Ashland to Central Point.

Multi-use paths also exist along Biddle Road between Jackson Street and Morrow Road, and along the recently completed and under construction portions of McAndrews Road in east Medford. Several other short multi-use paths located along creeks provide connections between subdivisions. A temporary path

Figure 3-7:
Existing Pedestrian Circulation System



Commercial Employment Centers

Neighborhood Commercial Centers

Schools

TOD Boundaries

Parks

UGB

CITY OF MEDFORD OREGON

is currently located along the old Medco Haul Road between the Bear Creek Path and the Crater Lake Shopping Center (near Lear Way). ODOT presently owns the property containing this path, which is slated to become an alternate route for Highway 62.

The City's Southeast Plan proposes a system of multi-use paths along various forks of Larson Creek. These paths would eventually combine into one facility, and this path would extend to the west eventually connecting to the Bear Creek path. This facility would serve as a bicycle/pedestrian alternative to Barnett Road. The multi-use paths are shown on both the Pedestrian Facilities and Bicycle Facilities maps in Figures 3-6 and 3-7.

Rail Service

This section describes existing freight rail service in the Medford planning area and passenger rail service that is available to residents and visitors to the region.

Freight Rail Service

Freight rail service in the Medford area is provided by the Central Oregon & Pacific Railroad (CORP). CORP is Oregon's second largest short line railroad, operating on 391 route miles and 8 miles of trackage rights in the state. The entire length of CORP trackage is categorized as a Class III railroad. According to the *2001 Oregon Rail Plan*, the route miles of CORP comprise 16 percent of all route miles statewide. CORP connects the Medford area to the southern Willamette Valley through the Union Pacific Yard in Eugene, serving Springfield, Cottage Grove, Roseburg, Glendale, and Grants Pass as intermediate destinations. To the south, CORP connects Medford to Ashland, as well as destinations in northern California through Black Butte. CORP also provides service to the Oregon Coast, connecting Eugene with Reedsport, Coos Bay and Coquille.

CORP's trackage is characterized by steep grades and tight turns that limit operating speeds to about 25 to 35 miles per hour. Forty-three miles of track are limited to an operating speed of only 10 miles per hour. CORP's line south from Medford is one of the most rugged rail lines in the western United States with gradients that approach 3.25 percent. Figure 3-4 illustrates the alignment of the Central Oregon & Pacific Railroad through the City of Medford.

Since the Central Oregon & Pacific Railroad Company took over the former Southern Pacific Railroad's Siskiyou line in January 1995, rail service has increased and is now being offered six days per week. Generally, two trips per day are made in each direction on the line; however, this schedule is not consistent and there is some variation. Service increases have led to an expansion in the number of cars available to carry freight, reaching a level of approximately 28,000 cars per year. This is a significant increase over the 12,000 cars per year carried by the Southern Pacific Railroad when it operated the line. According to the *2001 Oregon Rail Plan*, CORP carries between 1 and 5 million tons of cargo each year.

The CORP is undertaking an aggressive maintenance program and is trying to increase operating speeds to 25 miles per hour and to ease some of the height restrictions currently in place on the line. Loan guarantees by the Federal Railroad Administration are being sought to help fund maintenance needs.

Rail service provides specific advantages for various bulk commodities or loads longer than those normally permitted on highways. Lumber and other wood products are the principal commodities transported over the Central Oregon & Pacific line. However, even with recent increases in railroad traffic, the total volume of rail freight is far less than the highway freight tonnage for the region. Based on information contained in the *2001-2023 Rogue Valley Regional Transportation Plan*, the combined highway and rail freight tonnage in the I-5 corridor alone is estimated at 25 million tons annually. The rail freight portion accounts for between 5 and 10 percent of this total. However, if this railroad were not available to carry commodities, there may be some impact on state freight routes in southern Oregon, particularly I-5 as commodities shift to truck transport. In Jackson County, much of the commodities carried by the CORP go south into California. Thus, the primary freeway impact of losing this railroad would likely be experienced on the Siskiyou crossing.

According to the freight users survey conducted by the RVMPO as part of its freight system analysis, two key issues were identified affecting rail freight in the Rogue Valley area. These included:

- Lack of an intermodal facility for rail-to-truck freight movement (the nearest intermodal facility is a rail/truck reload facility located in Grants Pass)
- Inadequate supply of shipping containers in the valley leading to the suggestion that a container pool be established.

The *2001 Oregon Rail Plan* identifies several policies that are pertinent to the provision of freight rail service in the Medford UGB. These include:

- Encouraging provision of intermodal reload facilities in areas such as Medford when market forces dictate.
- Providing level of service C or better on Oregon highways serving intermodal facilities during off-peak periods.
- Providing high quality highway access to terminal and reload facilities for transfers from truck to rail for long haul movement of freight.

Additionally, the *Rail Plan* identifies actions that can be taken by local governments to mitigate conflicts between rail and vehicular traffic, and to improve access to freight facilities. These actions include:

- Avoid or minimize the number of future railroad at-grade crossings when new streets are planned for growing portions of the community.
- Avoid creating intersections of major streets and railroads where possible.
- Locate new parallel streets at least 500 feet from the railroad to allow for industrial development between the tracks and the highway
- .Plan community development (particularly residential uses) with sensitivity to rail noise and other potential conflicts.

Existing Railroad Crossings

Table 3-18 presents a summary of existing railroad crossings in the Medford area along with type of crossing, presence of crossing protection devices, a general assessment of condition of pavement at the crossing based on a visual assessment, and other information. Pavement condition affects vehicular mobility at the crossings and is particularly significant for bicycle circulation.

Table 3-18
Summary of Medford Railroad Grade Crossings

Street	Railroad Crossed	Type of Crossing	Warning Devices	Crossing Condition	Other Comments
Beall Lane	CORP	At-grade	Gates	Good	Approx. 1 car storage between tracks and Highway 99 (signalized)
Boise Cascade Entrance	CORP	At-grade	Gates	Good	Approx. 1 car storage between tracks and Highway 99 (stop sign) – private crossing
Ehrman Way	CORP	At-grade	Gates	Good	Approx. 1 car storage between tracks and Highway 99 (signalized)
Highway 238	CORP	Grade-separated		Good	
McAndrews Road	CORP	Grade-separated		Good	
Clark Street	CORP	At-grade	Stop sign with RR X-bar	Good	Low volume street
Jackson Street	CORP	At-grade	Gates	Good	
3rd Street	CORP	At-grade	Gates	Good	
4th Street	CORP	At-grade	Gates	Good	
6th Street	CORP	At-grade	Gates	Good	
Main Street	CORP	At-grade	Gates	Good	
8th Street	CORP	At-grade	Gates	Good	
10th Street	CORP	At-grade	Gates	Good	
11th Street	CORP	At-grade	Stop sign with RR X-bar and wigwags	Good	Low volume street
Barnett Road	CORP	At-grade	Gates	Good	
Stewart Avenue	CORP	At-grade	Gates	Good	Approx. 1 car storage between tracks and Highway 99 (signalized)
Garfield Road	CORP	At-grade	Gates	Good	No storage between tracks and Highway 99 (signalized)
Bear Creek Corp Entrance	CORP	At-grade	Gates	Good	Private crossing
South Stage Road	CORP	At-grade	Gates	Some pavement buckling	
Sage Road near Mason	Spur line	At-grade	Gates	Good	Industrial area
Joseph Street near Mason	Spur line	At-grade	Signs and flashers	Good	Industrial area
Fir Street near Melrose	Spur line	At-grade	Pavement marking	Good	Industrial area

Note: CORP means Central Oregon and Pacific Railroad

Passenger Rail Service

Passenger rail service is not directly available in Medford. The existing rail line between Medford and Eugene generally follows an alignment built in the 1880s. This rail line, operated by the Central Oregon and Pacific Railroad or CORP, provides freight-only service to the Rogue Valley region. As discussed above, the line is constrained by low speeds and steep grades to the north and south that would make operation of passenger rail service very slow and thus unattractive. Intercity passenger rail service is available in Klamath Falls which lies on the major north/south rail line connecting California with destinations in the Willamette Valley and further north. North/south passenger rail service is operated by

Amtrak in the California-Oregon-Washington corridor with its Coast Starlight route. The Coast Starlight provides one northbound and one southbound train each day as it passes through Klamath Falls. Intercity shuttle bus connections can be made from Medford to Klamath Falls to connect with the Coast Starlight service.

Amtrak also provides four trips per day between Portland and Seattle on its Cascades route. Intercity bus connections to the train service in Portland are available from Medford via Greyhound bus lines. These connections are available for three trips each day in both northbound and southbound directions. Additional service is available northward to Vancouver, British Columbia, as well as to destinations east of Portland. The intercity passenger rail line in Oregon is part of the federally designated Pacific Northwest High Speed Rail Corridor that connects Eugene, Oregon with destinations in Washington State and with Vancouver, B.C. The federal designation gives this route preference for Federal Railroad Administration funding to develop advanced technology passenger train service. The States of Oregon and Washington, in cooperation with the Province of British Columbia, are working together to incrementally improve passenger train operations in the corridor. The Oregon Department of Transportation is developing Oregon's portion of the corridor, with the long-range goal of providing safe service at speeds of more than 100 miles per hour in rural areas. The 2001 Oregon Rail Plan, provides further guidance on the development of future passenger rail service along the I-5 corridor and elsewhere in the state. Key components of this plan as they pertain to Medford are described in the "Public Transit Plan" chapter. This chapter also discusses findings and conclusions from the recently completed Southern Oregon Commuter Rail Feasibility Study.

Chapter 4
Transportation and Land Use

Overview

This chapter presents a discussion of the interrelationship between land use and transportation with particular emphasis on how Medford will manage land uses through its planning program to optimize performance of the transportation system and to identify future improvement needs. Included in the chapter is:

- A discussion of the current land use-based assumptions regarding generation of travel demand in the Medford area including anticipated growth in population and employment;

- A discussion of how land use policy will change in response to policy direction set by the *2001-2023 Rogue Valley Regional Transportation Plan*;

- A discussion of activities that are currently underway to respond to regional and local policies, including the encouragement of mixed-use development and development of transit-oriented districts in the greater Medford area; and

- Future actions to be taken by the City of Medford to monitor progress carrying out regional and local policies.

Population/Employment Growth and Transportation Forecasts

Traffic patterns and the demand for transportation services within a community are closely interrelated with existing and anticipated future land use patterns. The location of housing, places of employment, shopping, education and other services, and the relationships between these land uses in terms of distance and transportation system connections, all influence the type and magnitude of travel demand that is experienced in a community. Locations where land use patterns are dispersed and built at lower densities will be difficult to serve by any other mode than the automobile. More compact, mixed use development where good multi-modal transportation system connections are provided will encourage the use of a variety of transportation modes making it possible for the traveler to choose whether to drive, walk, bicycle or take transit.

To estimate the future relationship of land uses and transportation system performance, land use development expectations must be more specifically defined to describe the type, amount and location of anticipated future housing and employment growth. Planning for the community's land use and transportation system begins with a vision of where and how the community wants to grow, and follows with more technical analysis of population forecasts, allocations of future housing and employment to areas of the community and an analysis of how land use patterns affect the need for transportation facilities, and vice versa.

Medford Community Development Vision

As noted in the introduction to this plan, Medford's Vision Strategic Plan identifies the long-term goals for community development. Components and specific actions provide a framework for integrating decisions about land use and transportation system investment in the community. Most importantly, the vision reflects a desire by the community to change past practices in order to create a balanced land use and transportation system that provides greater travel opportunities to residents beyond reliance on the single occupancy vehicle.

Historic Trends

Population and employment in the Rogue Valley region have increased significantly over the past 40 years. Taken as a whole, Jackson County's population has grown from 73,926 in 1960 to a 181,269 persons in 2000. This represents a growth of 145 percent over the 40-year period. During the years from 1995 to 2000, the County's population grew by 16,869 persons or 10.3 percent. Of particular significance for the *Transportation System Plan* is the growth in persons of retirement age who may increase the demand for viable mobility alternatives to the automobile. Between 1970 and 1990, the population group over 65 more than doubled in Jackson County. In the MPO region, this age group makes up a relatively large portion of the population (17 percent in Medford, 14 percent in Central Point and 27 percent in Phoenix).

Within the City of Medford, the population has grown from 24,425 in 1960 to 63,154 in 2000, representing an increase of nearly 160 percent. During the years between 1995 and 2000, Medford's population grew by 8,064 persons or 14.6 percent. This is less than the 29.9 percent growth experienced by Central Point during the same time period but higher than the countywide rate.

Employment activity in the Rogue Valley has seen a dramatic shift away from a resource-based economy to an economy that is more heavily dependent on trade and service employment[6]. Between 1995 and 2005 the Oregon Department of Employment projects an increase of 16 percent in overall employment in the County, with employment in trade expected to grow by 23 percent and employment in the service industry expected to grow by 26 percent. Growth in tourism has had a significant impact on the local economy. In 1981, only 9 percent of visitors came to the region as a vacation destination (as opposed to a stop-over on the way to somewhere else). By 1990, this figure was up to 47 percent, and by 1995, 58 percent of visitors were coming to the region as a vacation destination.

The change in the local economy from largely manufacturing and resource-based employment to service and trade employment has impacted the region's transportation system in a significant way. Typically, industrial employment generates about 2.5 trips per employee each day, while retail employment generates 15 trips per employee. For example, 100 industrial employees would generate about 250 daily trips while 100 retail employees would generate 1,500 daily trips (this includes trips made by the employee and all others coming to and from the employment site). Thus, the same level of overall employment, but a change in the type of employment and its location, significantly affects travel demand on the road system. Residents have clearly seen changes in the transportation system resulting from the changing economic makeup of the community. The downtown has declined significantly as a portion of the regional employment base leaving a large amount of available and unused public infrastructure. At the same time, large areas along major local streets and state highways have become commercial shopping districts, and in turn have reduced the function of the transportation system and created the demand for expensive new projects. Decisions about where and how the community chooses to grow, and how transportation investments are managed, greatly influence community livability and future performance of the transportation system.

Future Projections

Data analyzed for the *2001-2023 Rogue Valley Regional Transportation Plan* suggests that population in the Rogue Valley MPO region is expected to increase by over 37 percent between 2000 and 2023, while employment is expected to increase by over 41 percent. Within the City of Medford, population is

[6] *2001-2023 Regional Transportation Plan*, Rogue Valley MPO, April 25, 2002, page 5-2.

expected to increase by nearly 31 percent from 63,154 in 2000 to 82,879 in 2023. Employment is expected to increase by 39 percent from 38,858 to 53,944.

The *2001-2023 Rogue Valley Regional Transportation Plan* made a number of technical assumptions and policy decisions about future community growth in order to develop a transportation plan that balances many competing objectives. A key assumption and decision made in the regional planning process is that a large proportion of future development will be directed to areas that can be well-served by transit – including the downtown, transit corridors, mixed-use areas, and transit-oriented districts or TODs. Table 4-1 presents more detailed information about anticipated growth in population, housing and employment in the City of Medford.

Between 2000 and 2023, the share of City population that is anticipated to reside in a TOD will grow by 86 percent. The largest share of new TOD population is forecast in the SE Medford TOD – the area with the greatest opportunity to absorb new development. Population in the Downtown TOD is expected to grow only slightly as this area is largely fully developed. Population growth in the Delta Waters and West Medford TODs is expected to be more closely aligned with citywide population growth. On an average, population in TODs in the City of Medford is expected to nearly double over today's levels. These are only forecasts of anticipated growth patterns; achieving the forecasts and the attendant benefits to the transportation system will require conscious and specific changes to development policies and practices in Medford.

Table 4-1
Population, Housing and Employment Growth Projections in Medford

Data Type	2000	2005	2010	2015	2023	% Increase 2000-2023
City Population	63,154	64,979	71,138	75,036	82,879	31.2%
City Dwelling Units	24,245	26,016	28,565	30,225	33,451	37.9%
City Employment	38,858	41,449	43,669	46,751	53,944	38.8%
- Industrial	*4,750*	*5,067*	*5,074*	*5,432*	*6,267*	*31.9%*
- Retail	*10,252*	*10,936*	*12,096*	*12,949*	*14,942*	*45.7%*
- Service	*15,338*	*16,361*	*17,905*	*19,169*	*22,118*	*44.2%*
- Other	*8,518*	*9,085*	*8,594*	*9,201*	*10,617*	*24.6%*

Employment growth in the City of Medford is expected to be higher in the retail and service sectors than in other employment categories. Between 2000 and 2023, current retail employment is expected to increase by over 45 percent, while current service employment is expected to increase by approximately 44 percent. Industrial employment is expected to increase at a lower rate, growing only 32 percent, while other employment sectors (including agriculture) is expected to grow by only 25 percent. Growth of employment in the Downtown TOD, as well as the other TODs will be an important part of the strategy to reduce vehicle miles of travel

Vehicle Travel Demand

Forecasts of vehicle travel demand were prepared for the Medford *Transportation System Plan* using the regional travel demand model developed and maintained by the Rogue Valley MPO. The assumptions and structure of this model are documented in the *2001-2023 Rogue Valley Regional Transportation Plan.*

In general and regardless of identified strategies to build mixed-use development and transit-oriented districts, significant growth in motor vehicle traffic is anticipated on Interstate 5, Highway 99, Crater

Lake Highway (Highway 62), Barnett Road, McAndrews Road, and Crater Lake Avenue among others. In addition, the area around the proposed new South Medford interchange is also expected to see significant vehicle traffic growth taking advantage of state and local investments in the interchange. According to the *2001-2023 Rogue Valley Regional Transportation Plan*, areas with a high percentage increase in traffic volumes over current levels will also include the urban fringes where rural land is transitioning to urban uses. Areas of particular importance to Medford include the east side of Medford, unincorporated Jackson County west of Medford and to the north of Medford. The regional travel model does not forecast comparable increases in travel in and around the Medford downtown.

Land Use Policy in Relation to Transportation Demand

The Oregon Transportation Planning Rule (TPR) implements Statewide Planning Goal 12 related to transportation. The TPR promotes development of safe, convenient, and economic transportation systems that are designed to reduce reliance on the automobile so that air pollution, traffic and other livability problems faced by urban areas in other parts of the country might be avoided. The TPR aims to help local governments improve the livability of urban areas by promoting changes in land use patterns and the transportation system that make it more convenient to walk, bicycle, use transit, and drive less to meet daily needs.

State policy puts special emphasis on metropolitan planning areas and the opportunities that exist within these areas to coordinate transportation planning and investment decisions with overall community development objectives. Because metropolitan areas are by their nature more varied and complex, land use and transportation plans can result in more than a one-size-fits-all approach. Some areas such as downtowns, transit oriented districts, and other mixed-use centers will be very convenient for all means of travel, while other areas will remain automobile-oriented and include more modest measures to accommodate walking, bicycling, and transit users. It is left to regional and local plans to work out the details.

The integration of land use and transportation decision-making has been discussed at some length in the *2001-2023 Rogue Valley Regional Transportation Plan*. The RTP calls on local jurisdictions to implement the following land use policies when preparing a TSP:

Policy 1: *Local governments shall utilize transit-oriented design strategies to encourage the use of local public transportation and discourage reliance upon single-occupancy vehicles.*

Policy 2: *Local governments shall consider ordinances or amendments to their Comprehensive Plans to protect and preserve corridors for transportation purposes.*

Policy 3: *Local governments shall amend their Comprehensive Plans to promote mixed or higher density developments in areas that would lower the vehicular demand on the regional transportation system.*

Policy 4: *Local governments shall discourage cul-de-sac or dead-end street designs whenever an interconnection alternative exists. Development of a modified grid street pattern shall be encouraged for connecting new and existing neighborhoods during subdivisions and partitions.*

Policy 5: *Wherever possible, subdivisions and any approved cul-de-sacs shall be designed to provide pedestrian connectivity between neighborhoods.*

Policy 6: *Where appropriate, local governments shall consider the use of traffic calming techniques and reduced street widths to minimize negative impacts of traffic on neighborhoods.*

A fundamental aspect of the TPR is the direction to local governments to plan for reduced reliance on the automobile. Typically, transportation planning tracks automobile reliance through monitoring a standardized statistic such as vehicle miles traveled (VMT) per capita. The TPR recognizes that measuring VMT per capita is just one means of assessing automobile reliance, and that it does not reflect varied conditions across local governments. Therefore, the TPR provides a mechanism for metropolitan areas to develop and implement measures specifically tailored to local needs. In the Rogue Valley region, the RVMPO developed seven alternative measures designed to reduce the region's reliance on single-occupant automobiles and to encourage the use of alternative transportation modes. These measures include five actions to be implemented by the MPO, and two by the three cities in the MPO region (Medford, Phoenix and Central Point). As the largest city in the Rogue Valley region, Medford will have a significant responsibility for carrying out the mandated measures assigned to the three cities.

The seven alternative measures and accompanying benchmarks are summarized in Table 2-2. Measures specifically pertinent to land use planning and the integration of transportation and land use decision-making in Medford are illustrated in Table 4-2. These measures include:

- Increasing the percentage of dwelling units that are located within transit corridors that are defined as the area within ¼ mile (reasonable walking distance) of a transit route. The land use decisions made by Medford (as well as Central Point and Phoenix) will strongly influence the ability of RVTD to successfully meet the identified benchmarks. Development of land use patterns within the city and the UGB that support the efficient and cost-effective provision of transit service are critically important.

- Increasing the percentage of new dwelling units in mixed-use development within the City and within transit-oriented districts in relation to total housing development within the City. Mixed-use development and transit-oriented districts are distinguished by a pattern of residential units and employment generating uses in close proximity with an emphasis on the provision of a high level of bicycle, pedestrian and transit access and mobility.

- Increasing the percentage of new employment in mixed-use development and transit-oriented districts in comparison to total new employment in the City.

Table 4-2
Alternative RTP Performance Measures Related to Land Use Planning
For the Rogue Valley MPO

Measure	How Measured	Current 2000	Benchmark 2005	Benchmark 2010	Benchmark 2015	Target 2020
Measure 2: % Dwelling Units (DU's) w/in ¼ mile walk to 30-min. transit service	Determined through GIS mapping. Current estimates are that 12% of DU's are within ¼ mile walking distance of RVTD transit routes.	12%	20%	30%	40%	50%
Measure 5: % Mixed-use DU's in new development	Determined by tracking building permits – the ratio between new DU's in TODs and total new DU's in the region.	0%	9%	26%	41%	49%
Measure 6: % Mixed-use employment in new development	Estimated from annual employment files from State – represents the ratio of new employment in TODs over total regional employment.	0%	9%	23%	36%	44%

Source: Land Conservation and Development Commission, OAR 660-012-0035(5), April 3, 2002.

Medford Land Use Activities to Influence Changes in Transportation Demand

Medford is currently undertaking actions and proposes future actions to change land uses patterns to support reduced reliance on the automobile and to develop a balanced transportation system. The primary emphasis is on facilitating mixed-use development and focusing development in transit oriented districts (TODs). These actions are intended to help implement the *2001-2023 Rogue Valley Regional Transportation Plan's* strategy of increasing investment in alternative modes (including facilities for pedestrians, bicyclists, and transit users) and promoting land use patterns that will complement investment in alternative modes as the locally preferred approach to reducing reliance on the automobile.

The Transit Oriented Design and Transit Corridor Development strategies (or TOD Study) was conducted to ensure that the 1997 Rogue Valley *Regional Transportation Plan* (RTP) would adequately address state transportation planning (TPR) requirements for reducing reliance on the automobile. The objectives of the TOD Study were to:

- Identify and designate major transit service routes supportive of transit oriented development.
- Identify and assess principal activity centers throughout the RVTD boundary capable of supporting transit-oriented districts.
- Develop model ordinances, zoning and design guidelines that support the planning principles necessary to enhance transit-oriented districts and transit corridors.

Based on the results of the TOD Study, and policies adopted by the MPO, local governments in the Rogue Valley are preparing specific plans for implementing the TOD sites. In the City of Medford four TOD sites were identified: City Center (Downtown) Medford, SE Medford, the Delta Waters area along Highway 62, and West Medford. The general location of these TODs along with other significant activity centers in the City are presented in Figure 4-1.

This section describes on-going planning activities and outlines the current development trends within the four Medford TODs and provides ideas to help fulfill the strategy outlined in the Rogue Valley RTP. To date, the City has focused its planning and implementation activities on the Downtown TOD and the SE Medford TOD. The Medford Urban Renewal Agency (MURA) is currently preparing plans, ordinances and guidelines for adoption in the Downtown Medford TOD. The City of Medford is implementing the TOD site located near the intersection of Barnett Road and North Phoenix Road through the Southeast Area Plan implementation process.

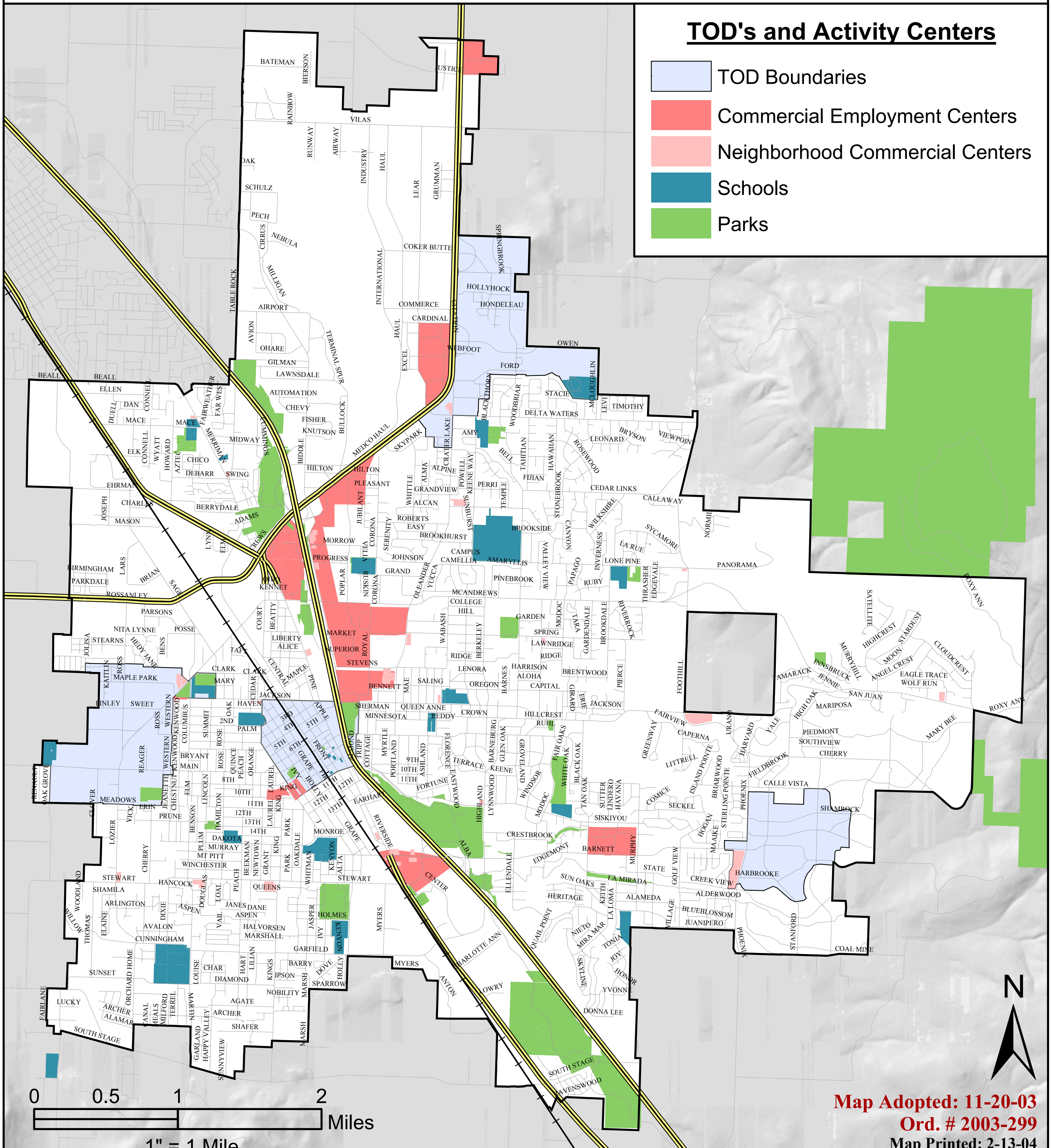
City Center Medford TOD

Current Planning Activities

The boundaries of the Downtown Medford TOD are illustrated in Figure 4-1. MURA recently prepared the *Downtown 2050 Plan* that is intended to provide vision along with goals and policies for the Downtown. This plan is being followed by a series of design standards and guidelines for development within the Downtown Medford TOD. The purpose of the standards and guidelines is to ensure that the unique historic and pedestrian character of the downtown core is preserved and enhanced. The policy framework for the 2050 Plan includes seven topical visions:

- *Regional Position*: Downtown is the Rogue Valley's largest integrated mixed-use urban center, a vibrant, enjoyable, and highly regarded regional hub for residential, business, retail, finance, government, arts and entertainment, and education; and it is the Rogue Valley's largest transit oriented district with convenient multi-modal access to all areas of the region.

Figure 4-1: Medford Conceptual TOD Boundaries and Other Activity Centers



Other Streets
Highway
Railroad
UGB

CITY OF MEDFORD OREGON

The Geographic Information Systems (GIS) data made available on this map are developed and maintained by the City of Medford and Jackson County. GIS data is not the official representation of any of the information included. The maps and data are made available to the public solely for informational purposes.

THERE MAY BE ERRORS IN THE MAPS OR DATA. THE MAPS OR DATA MAY BE OUTDATED, INACCURATE, AND MAY OMIT IMPORTANT INFORMATION. THE MAPS OR DATA MAY NOT BE SUITABLE FOR YOUR PARTICULAR USE. THIS INFORMATION IS BEING PROVIDED "AS IS" OR "WITH ALL FAULTS". THE ENTIRE RISK AS TO THE QUALITY OR PERFORMANCE IS WITH THE BUYER AND IF INFORMATION IS DEFECTIVE, THE BUYER ASSUMES THE ENTIRE COST OF ANY NECESSARY CORRECTIONS OR SERVICING.

- *Growth*: Downtown's position as a vibrant and attractive integrated 24-hour urban center is firmly established as part of the City's urban centered growth management objective, with plans and programs to assure the sustained growth and development of downtown as the Rogue Valley's largest urban service center. Downtown is not only the heart of Medford, but also the Rogue Valley, and is a unique irreplaceable component to the City's identity and sense of community.

- *Urban Design:* Downtown is the region's most recognizable and enjoyable urban center with its traditional historic character, a comprehensive network of sidewalks, bike and pedestrian ways, attractive streetscapes, ground-level retail, a network of parks and plazas, and convenient transportation linkages to surrounding neighborhoods.

- *Housing*: Downtown is a vibrant 24-hour urban center with a large residential community supported by convenient services within easy walking distance.

- *Transportation*: Downtown is a balanced multi-modal urban center with easy access to all areas of the Rogue Valley. Within downtown there is provided a full range of transportation opportunities with an emphasis on the quality of travel and preservation of a highly livable and pedestrian downtown environment.

- *Historic Preservation*: Throughout downtown it is visibly evident that Medford's heritage is a major contributor to the community's livability and identity. The historic architecture and traditional designs of downtown have been preserved through renovation, and enhanced and complemented by new development, making downtown a truly unique and enjoyable urban place for both residents and visitors, while providing a competitive advantage over, and setting it apart from, other commercial centers.

- *Partnerships*: The revitalization and redevelopment of downtown is a long-term program supported by a unique public-private partnership that recognizes past investments, and works to leverage public, institutional, commercial and private investments; and to share the benefits and risks of future downtown investments to achieve a common objective, and a healthy and vibrant downtown.

In the spring of 2003 the Medford City Council approved the *Downtown 2050 Plan* including a policy framework, design standards and guideline ordinances for downtown along with a *Comprehensive Plan* amendment to include a special plan designation for Downtown.

Land Use Types

The City Center TOD is encompasses the same area as the central business district and is generally bounded by Jackson Street, Oakdale, 10th Street and Bear Creek. The City Center TOD includes about 210 acres. The current land uses include downtown retail type uses and civic uses in older two and three story buildings. There are a number of vacant lots or underutilized lots within the City Center TOD and auto-oriented commercial on the edges of this TOD boundary. The City is preparing new zoning code language for the City Center TOD that would emphasize the role of the city center as a TOD. The purpose of the new regulations is to preserve the unique pedestrian character, implement a plan of improved pedestrian and vehicular circulation and parking management, and promote a variety of retail consumer and service businesses. The new changes prohibit auto-oriented uses in the City Center TOD such as new and used car dealers and auto repair.

Because much of the development in the City Center TOD occurred in the early 1900's it represents the type of development that the TOD strategy is trying to replicate in other parts of the city. The new zoning code changes reinforce the past design pattern and require new development to imitate the existing development. Future development, however, may be dependent on developer incentives or partnerships with the urban renewal agency. The RVCOG TOD study gave the City Center TOD low marks for development opportunity because of the high cost of converting historic structures, creating structured parking and including vertical mixed use within the project. However, the Central City TOD does have significant momentum with new redevelopment projects, including the Craterian Ginger Rogers Theater and the Rogue Community College building and represents a known market and a desirable place to live for many residents, if the right housing products were made available. The City should consider the potential for competition between the new Southeast TOD and the City Center TOD and make an effort to differentiate the types of development between these two TOD areas.

Implementation Ideas

The City appears to be on the right track with requiring new development to imitate the original development found in the City Center TOD. The City should consider focusing more on the design of the use than the type of use. The City Center TOD could include everything from light industrial to housing uses under this approach. It is important to recognize that there may be a substantial rent differential between older City Center TOD buildings and new buildings found in other TOD areas and the lower rents found in the City Center can be used to create momentum in this area. As with most TOD areas, housing is very important and the City should consider spending urban renewal resources on housing projects before other projects. Housing types should include mostly flats or lofts at higher densities than found in other parts of the city.

Southeast Medford TOD

Current Planning Activities

The Southeast TOD is centered on Barnett Road east of North Phoenix Road. The Southeast TOD has been the subject of much study and planning in recent years and the city is currently implementing the Southeast Medford Plan (includes the Southeast TOD) through new zoning standards and comprehensive plan designations. The City's Southeast Plan is intended to create a livable community of approximately 10,000 residents that encourages walking and cycling to nearby destinations and shorter automobile trips. Adopted in 1998, the Southeast Plan provides a major street grid and land use plan for an area of approximately 1,000 acres on the east side of Medford. The Southeast TOD was recently brought into the city limits and development began in 2003. The City is currently preparing modifications to the Southeast Overlay Zone that will provide additional specificity to carry out the Southeast Plan and, in particular, will address development of the TOD.

Land Uses

The core of the Southeast TOD encompasses approximately 175 acres with a village center located along Barnett Road containing a retail commercial core with a surrounding mixed-use commercial area, with additional medium and high density residential (15 to 30 dwelling units per acre) and institutional uses. The commercial area is to be designed as a "town center" with on-street parking and ground-floor retail adjacent to the sidewalks. In addition, a detailed neighborhood circulation plan and specific requirements are being developed. When adopted, this plan will include design standards for streets, streetscapes and non-motorized transportation circulation.

The planning for this TOD is still underway, but this basic structure is likely to remain in place. Development of residential in this TOD is likely to occur through the city's Planned Unit Development (PUD) process, which can result in an increase of density of up to twenty percent. Draft zoning changes for this area include increasing the higher densities listed above to support transit oriented development. New development will have to conform to the Southeast Plan Comprehensive Plan goals and the revised zoning requirements. Goal 1 seeks to create a transit friendly environment by assuring "that development in the SE Area occurs in a manner that reduces reliance on automobile travel within the area and promotes multi-modal travel, including pedestrian, bicycle and transit." Given proper implementation of the Southeast TOD, the development found within this area should meet the requirements of the DLCD order requiring pedestrian and transit friendly development.

Implementation Ideas

Likely land use types within this TOD include community commercial shopping opportunities, such as grocery stores to compete with Albertsons across the street, chain stores such as Office Depot and smaller specialty shops that cater to the high density residential within the village center. Perhaps the key to making the Southeast TOD successful is creating a distinctive housing type that will attract empty-nesters and younger Medford residents to this area. Housing types could range from loft-style buildings to town homes. There should be a focus on design standards to insure that the new housing development is good quality.

West Medford TOD

The West Medford TOD is located on the western edge of the city limits, directly west from the City Center TOD and includes about 450 acres. The West Medford TOD is generally bounded by Western Avenue on the east, Maple Park Drive on the north, Meadows Lane on the South and the city limits on the west. The current land uses within this TOD include auto-oriented, low-density commercial, low density residential and some higher density residential. This area of the city contains some of the older, less expensive residential development in the city. There is no TOD overlay or other special zoning for the West Medford TOD yet in place. The zoning includes general commercial, low density residential (SR2.5) and a small amount of higher density residential (MFR20 and 30).

Creating a pedestrian-friendly TOD development out of the West Medford TOD represents a significant challenge. The primary transit route is along Main Street, which mainly consists of low density, auto-oriented commercial uses and limited pedestrian and bicycle amenities. The other portions of the TOD are generally low density residential, typically a land use type that is not easily changed. Perhaps the best strategy for spurring TOD development in this area is to focus on one node and try to build on the success of a few projects.

Implementation Ideas

Due to the large potential for redevelopment found in the West Medford TOD and the current prevalence of low density uses should focus on one key intersection in the TOD. This intersection should be along the current transit route or in an area where transit can be easily routed and should have the opportunity for redevelopment along one entire block. The project should be a one or two-story commercial building with retail on the first floor and if applicable, office space on the second floor. Design is important. The uses should be local if possible, not chains and the rents should reflect the need to accommodate local merchants. To make this happen it may be necessary to extend the Central City urban renewal district to this area, or create a new urban renewal district. A partnership between the City and the development community will likely be required to jump start redevelopment in this TOD area.

North Medford TOD

The North Medford TOD is located on the east side of Crater Lake Highway and includes about 460 acres. This TOD is bounded by the city limits on the north, Crater Lake Highway on the west, Springbrook and McLaughlin on the east, and approximately Delta Waters on the south. The current land uses within the North Medford TOD include a combination of light industrial, highway commercial and medium density residential. Portions of this TOD also are outside the city limits, but within the UGB. The zoning for the area echoes the current land uses and includes general and light industrial, MFR20 and a range of single family zoning from SFR10 to SFR4. The significant feature of this TOD is the presence of Crater Lake Highway, which serves as both a barrier and a major transportation corridor. Much of the development directly fronting Crater Lake Highway relies on the good access this facility provides and there are a number of land intensive uses such as warehousing. Long-range plans for Crater Lake Highway include remaking the highway into a more pedestrian friendly roadway that better allows connections to the commercial developments on the west side of the highway.

The high concentration of light industrial uses directly along Crater Lake Highway make transforming this area into a TOD relatively difficult. Perhaps the best opportunity for new TOD development lies along Owen Drive. Owen Drive will become a major connector between the residential areas to the east and the Crater Lake Plaza shopping center and industrial employment centers to the west. By focusing this TOD on Owen Drive it is possible to create a walkable main street that also serves as a major connector. The connection across Crater Lake will be important to make this TOD successful. The land to the north of Owen could be zoned for employment uses that support the main street development on Owen Drive.

Implementation Ideas

Potential land uses for this TOD include the main street uses along Owen such as restaurants, coffee shops, and personal services, and employment uses north of Owen and potentially focused along Coker Butte. Differentiation from the uses on the west side of Crater Lake Highway will help this TOD area become successful.

Conclusions

- Each TOD area has unique opportunities and issues and designing a one-size fits all TOD overlay is not likely to be effective.
- The Southeast TOD could focus on housing to attract buyers interested in a different sort of housing market.
- The Central City TOD already contains the type of development that the other TOD areas are trying to achieve and the strategy for this TOD area should focus on the strength of the existing development while creating new housing opportunities to draw more people to the area.

Development Tracking

The value of measures to track progress meeting the policy objective of building a more balanced land use and transportation system is only as good as monitoring, assessment, and periodic update. The region has set ambitious targets for changing land use patterns and directing growth to specific areas potentially served by transit. However, many mixed-use and TOD development practices are not yet codified in Medford plans. Therefore, a mechanism must be developed for Medford and the rest of the MPO area to track and report on the success in developing mixed-use developments, including the TOD areas.

The overall intent of tracking is to promote development of mixed-use, pedestrian and transit-supportive centers. Until city plans and codes fully implement TOD development principles, the following general attributes will guide the city's tracking of new mixed-use development –

- Mixed-use development will include medium to higher density residential development (e.g., 10 or 12 units per acre) and at least one of the following land uses: retail commercial, service commercial or light industrial. To be counted, residential and employment uses must be within ¼ mile of each other (via a reasonably direct pedestrian route) and within ¼ mile of a transit stop. Residential and other land uses may be located vertically in relation to each other. Other land uses such as parks or plazas, and/or civic, community and cultural uses are also appropriate in mixed use development areas.

- All development within the site is connected by internal sidewalks or other pedestrian pathways..

- The local street network includes a frequency of streets and street crossings that make it attractive and convenient to walk within the area and to the surrounding areas. Streetscape components should include human-scaled design features that encourage safety and convenience of pedestrians, bicyclists, and transit users. On-street parking is allowed. Transit stops are incorporated into the design and function of the area.

- Primary building entrances are located on the street and are not separated from the street by off-street parking or maneuvering areas.

- Low-intensity, land extensive uses, and automobile-oriented uses are prohibited from the area.

A further discussion of mixed-use development and a proposed tracking mechanism is included in Appendix I.

Neighborhood Activity Centers and Major Transit Stops

While the emphasis on changes to Medford land use patterns lies with focusing development in mixed-use developments and TODs, other areas of the community play an important role in helping balance the transportation system. Neighborhood activity centers are places in and around residential neighborhoods that draw people for shopping, employment, or recreation. They should by their nature and location be accessible by walking and by bicycle. Proposed pedestrian and bicycle projects are oriented to improve connection and accessibility to and from neighborhood activity centers.

City land development standards will require all new land uses to assure safe and convenient, reasonably direct routes for pedestrians and bicyclists within, to, and from neighborhood activity centers. Land development standards will require facilities be provided along public streets, connections between adjacent developments, and internal design features that encourage short trips conducive to walking or bicycling.

The TSP also identifies major transit stops, that are existing or planned stops with higher than average frequency that serve existing or planned land uses that generate potential for higher ridership from medium or higher density residential or commercial uses within ¼ mile walking distance of the stop – medium or higher density residential or commercial uses. The expectation for planning at major transit stops is to take advantage of transit service as well as encourage better transit service by bringing riders in close proximity to routes.

Land development regulations will increase residential and commercial intensity near major transit stops, assure that buildings are oriented to transit to provide reasonably direct walking connections without out-of-direction travel, and provide improvements such as shelter and lighting that make transit use safe and convenient.

Arterial and Collector Street Frontages

There has been discussion and some implementation undertaken toward improving the look of adjacent single-family residential development along arterial and collector streets when the lots back up to arterial and collector street frontages. The most favored standard has been to put a wall along the street frontage. Discussion is now underway about the possibility of having the adjacent houses face the street in order to create a much more inviting street environment.

Some of the issues associated with arterial and collector street design are neighborhood integration, pedestrian friendly spaces, maintenance of orphan landscape strips, integrated construction materials, noise and dust, preservation of vehicular traffic capacity, access management and safety.

In Medford there has been a consistent desire for residential development to include some large lots. By providing some larger or estate lots with front-facing houses along the main thoroughfares, a win-win situation for the community could be created. Larger lots with increased setbacks from the street could provide a diversity in lot size, eliminate wall maintenance issues, allow neighborhood integration, be more pedestrian friendly, give noise and dust protection and provide access management controls. It is recommended that there be more discussion regarding this issue.

Strategies

To address the need for integrated land use and transportation policy and decision-making, the following strategies have been identified:

- The City of Medford should complete and adopt a land use/transportation plan, design guidelines, street and streetscape standards and implementing ordinances for the SE Medford TOD, the West Medford TOD and the Delta Waters TOD, and mixed-use areas.

- The City should review its existing Code and prepare the necessary ordinances and/or *Comprehensive Plan* amendments to protect and preserve future corridors identified in the TSP for transportation purposes.

- The City should initiate discussion to address potential code revisions to address issues related to arterial and collector street frontages.

Chapter 5
Street Plan

Overview

This chapter documents an assessment of needs, deficiencies, policies and improvement options affecting the street system within the Medford Urban Growth Boundary (UGB). Included is a discussion of the local and regional policy context for developing and maintaining this part of the transportation system, an evaluation of needs and deficiencies in the existing and projected future (2023) system, and a discussion of various improvement strategies for enhancing and expanding this system. More specifically, this chapter addresses:

- Policy context that guided development of the street plan
- Summary of street system deficiencies
- Assessment of improvement alternatives focused primarily on identification of level of service standards for the city
- Street functional classification
- Access management
- Level of Service standards
- New roadways
- Roadway capacity improvements, and
- Safety improvements

Information contained in this memo was obtained largely from the existing conditions inventory discussed in Chapter 3, the transportation-related goals and policies of the City's *Comprehensive Plan*, the Vision for the 21st Century and the *2001-2023 Rogue Valley Regional Transportation Plan*. The traffic operations analysis and discussion of roadway system deficiencies was obtained from the City's on-going *Level of Service Study*. In addition, the vehicular transportation projects in the *2001-2023 Rogue Valley Regional Transportation Plan* were reviewed to identify benefits that could be realized by the implementation of RTP roadway improvement projects that are expected to be completed within the 20-year planning horizon.

Policy Context and Background

In 1991, the *Transportation Planning Rule* (or TPR, Oregon Administrative Rule 660-12) was adopted to implement Statewide Planning Goal 12 (Transportation). One of the primary objectives of the TPR is to reduce reliance on the automobile for trips made within the urban areas of the state. The TPR requires local jurisdictions to take actions to increase travel choices, reduce vehicle miles traveled, and, in doing so, to reduce traffic congestion and associated air pollution and livability problems. In urban areas, the TPR promotes changes in land use patterns and the transportation system that make it more convenient for people to walk, bicycle and use transit to meet their daily needs. The TPR recognizes that most other transportation modes are dependent on the street system, and accordingly, street system planning must take into consideration not only the travel needs of cars and trucks, but also buses, bicyclists, pedestrians and other transportation modes that require access via the street system (like airports, marine terminals, railroad depots, and other transportation hubs).

Local agencies carry out TPR requirements through regional and local transportation system plans, which are then incorporated into local Comprehensive Plans. The *2001-2023 Rogue Valley Regional*

Transportation Plan (RTP), prepared for the Medford Urbanized Area (including Medford, Phoenix and Central Point) by the Rogue Valley Metropolitan Planning Organization and adopted in 2002, establishes policy direction for vehicular transportation within the Medford UGB. Goal 1 of the RTP addresses the need to "*Plan for, develop, and maintain a multi-modal transportation system that will address existing and future needs for transportation of people and goods in the region,* ***recognizing the importance of the street network to most surface travel modes"*** (emphasis added).

RTP policies and objectives relevant to the street component address the need for:

- *"Provid(ing) for smoother traffic flow and less congestion, particularly as it relates to commuter transportation.* (Policy 3-1.2)
- *Creat(ing) an integrated and linked network of arterial and collector streets that serves the mobility and multimodal travel needs of the region and consider network-wide improvements (i.e. beltways, by-passes, new interchanges, transportation demand management methods, etc.) to sustain acceptable levels of service and anticipate future needs.* (Policy 3-1.3)
- Recognizing that a *"Higher priority shall be placed on preservation of the existing street system through maintenance than on added capacity."* (Policy 8-1)

The City's *Comprehensive Plan* also contains goals, policies and implementation strategies that affect the street transportation system. Several goals and implementation strategies in the *Comprehensive Plan* focus on developing an effective arterial street network. The *Public Facilities Element* of the *Plan* directs that a minimum performance of level of service "D" should be maintained during peak periods in all areas of the City, including areas within the City that are yet to be developed. Other goals address the need for efficient integration of transportation modes and of various City plan and code documents into the overall City *Transportation System Plan*. These goals, policies and implementation strategies were reviewed and modified as appropriate during the development of the TSP. New goals, policies and implementation strategies are included in Chapter 13.

The City of Medford's Vision for the 21st Century identifies a series of "elements" aimed at meeting the City's circulation needs in the coming decades. Each element includes a supporting "Action Plan" that includes specific actions, responsibilities, timelines, human and fiscal resources, challenges and measures of effectiveness. Three elements in particular affect the City's street system. Element 1 and the corresponding action plan identify the need for the recently completed *2001-2023 Regional Transportation Plan* and the City *Transportation System Plan* to develop a network of arterial and collector streets that provides alternatives to the freeway for local travel. Element 6 focuses on progressing from planning to implementation. Action items include ongoing planning, community education and funding. Element 9 emphasizes the need for interagency partnership and cooperation to fund and implement the highway projects that benefit the City.

There are many roads located within the Medford city limits and the Medford UGB that are under the jurisdiction of Jackson County. Additionally, many major roads cross the city limits into the unincorporated area around the City. Accordingly, County transportation goals and policies affect the City's future transportation system. County *Comprehensive Plan* goals call for improving the roadways linking communities and resources within Jackson County, and maintaining County roads and bridges to retain or improve their existing condition.

County *Comprehensive Plan* transportation policies also identify the need for access management on key high-traffic corridors such as Highway 62; recommend steps be taken to ensure that proposed development assure transportation facilities are adequate to accommodate increased demand generated by the development; and call for private development to make proportionate improvements and/or upgrades to existing facilities affected by traffic generated by new development.

Characteristics of the Medford Street System

The street system in the Medford UGB consists of a one- and two-way grid system in the downtown and in the older urban core area located largely to the west of downtown. The City is bisected by Interstate 5, running in a northwest to southeast direction on the east side of downtown. There are two interchanges with I-5 that serve Medford; at Highway 62 at the north end of town (serving the airport, Rogue Valley Mall and other "big box" commercial areas, and the northwest industrial portion of the city), and Barnett Road at the south end of town serving much of the city's residential area, as well as the commercial node located in the interchange area.

On the east side of I-5, the City's street system follows a looser grid pattern and is characterized by a lack of higher order streets (arterial and collectors) that provide connections for longer distance, north-south through trips from one part of the city to another. Foothills Road/N. Phoenix Road on the eastern edge of the UGB provides the only arterial street connection that links the southern and northern portions of the UGB east of I-5. A partial north-south arterial connection is provided by Crater Lake Avenue, but this street truncates at Main Street east of the downtown core. A partial north-south collector connection has been designated along the Highland/Sunrise/Springbrook corridor, but the segment of this route between Main and Jackson Streets has not been designated for a collector street function. Because of the lack of higher order street connectivity on the east side of town, traffic intrusion onto local streets is an identified problem. Better arterial and collector connections are available for east-west traffic on the east side of the UGB. The eastern portions of the UGB are also characterized by rolling topography and the street system is influenced by this factor.

Existing travel patterns within the Medford area focus on the major activity centers within the city and on several major travel corridors. Major activity centers include, but are not limited to such areas as the downtown core area, the Rogue Valley Mall, South Gateway Center, Crater Lake Plaza, the commercial strips along Biddle Road and Highway 99, and the airport area. Major travel corridors include Highway 99, Highway 62, McAndrews Road, Crater Lake Avenue, Barnett Road/Stewart Avenue, Columbus Avenue/Sage Road, Foothill/North Phoenix Roads, Biddle Road, and Table Rock Road. Pending improvements to the South Medford interchange with I-5 will add Garfield Street to the list of major travel corridors within the city.

Peak hour trip-making in the Medford area includes a substantial number of commuter trips between work and home. However, commuter trips typically represent only a minority share of the total travel that occurs during peak periods. In common with most urban areas, the majority of peak hour travel in Medford also includes trips for shopping, day care, school, recreation and many other purposes. This multiplicity of trip purposes means that while traffic volumes are high in the major corridors identified above, total travel demand is spread throughout the community. This creates challenges not only for improving the roadway system to meet existing and expected future demand, but also for encouraging the development and use of transportation modes other than the automobile.

Summary of Needs and Street System Deficiencies

Traffic Operations and Capacity Deficiencies at Signalized Intersections

This section focuses on identifying future traffic operations and street system capacity deficiencies within the Medford UGB. This analysis was conducted as part of a study by the city to evaluate alternative level of service (LOS) standards. LOS standards will be used as the basis for identifying deficiencies, requiring mitigation for land development projects, and establishing a roadway mobility improvement program.

The discussion of level of service standards is complex involving an assessment of existing and future traffic operations, costs, and community "quality of life" impacts. Equally important in and integral to any decision about the traffic operational implications of a level of service standard are considerations for:

- The relationship of street improvements to the land use patterns of the city as established by policy and zoning, including land use designations, locations and densities. In particular, the decision to establish a level of service standard should consider the effect of the standard on the ability of the city to encourage more efficient land use patterns that cost less from a public infrastructure perspective and have the potential of reducing reliance on the automobile as required by OAR 660-012-000 (the Transportation Planning Rule).

- The relationship of street improvements to the goal of accommodating the needs of transit, bicyclists and pedestrians and, thus, encouraging the use of alternative transportation modes as consistent with the RTP Alternative Measures adopted for the Rogue Valley region by the Land Conservation and Development Commission in 2002.

- Policies and standards that guide the management of access from streets of various functional classifications to adjacent property, as well as street and traffic signal spacing.

Identification of Level of Service Strategies

With existing 2002 PM peak hour traffic volumes (as documented in Chapter 3), all but seven of the more than 100 intersections analyzed for the TSP currently operate at Level of Service (LOS) D or better. Three operate at LOS E and three at LOS F. LOS D corresponds to the maximum permissible level of delay currently allowed under the City of Medford's *Public Facilities Plan*. With the anticipated future population and employment growth in the City (estimated to 2023) and in nearby communities that generate travel to and from the City, increases in traffic volumes, congestion and delay on City streets are expected. Several of the key intersections in the city that were evaluated as part of the *Level of Service Study* could experience LOS E or F conditions by 2023[7].

Because of the costs and potential land use, neighborhood and alternative mode impacts associated with future traffic growth and congestion, consideration was given to three strategic approaches to establishing a new level of service standard for the city. These strategic approaches included:

- Using existing Level of Service (LOS) D as the City's standard for defining the threshold for unacceptable degrees of congestion during a single PM peak hour. With this standard all intersections operating or expected to operate at LOS E or F would require mitigation;

- Establishing the standard at LOS E for a single PM peak hour. This would increase average delay experienced along the busiest travel corridors in the city and mitigation would only be required at intersections operating or expected to operate at LOS F; and

- Establishing a two-hour PM peak hour standard. This multi-hour standard would cover the two-hour PM peak period (4:00 p.m. to 6:00 p.m.), with LOS D or better operations required for the second hour, but no LOS requirement for the single highest hour. For the multi-hour analysis, the second highest hour was what remained from projected 2023 4:00 p.m. to 6:00 p.m. peak period traffic volumes after subtracting the 2023 peak hour volume. Therefore, the second-highest hour

[7] See Appendix G for a more complete discussion of the Level of Service Study including analysis methodology, location-specific analysis results, and a summary of potential roadway improvements to mitigate the anticipated adverse traffic operational conditions with each LOS alternative.

volume does not always represent a consecutive one-hour period, but is rather the "shoulders" of the two-hour time period.

After considering factors such as the cost of improvements needed to meet each standard, potential impacts on adjacent property due to the improvements, the difference in congestion and travel time at key intersections and along major travel corridors within the city, potential land use impacts, impacts on alternative modes, and other key impacts associated with the expected congestion problems, the City Council provided preliminary direction on a level of service standard to be used in the TSP planning process. Adoption of this standard will occur simultaneous with adoption of the TSP after public review and comment. The LOS standard is discussed later in this chapter under "Strategies". Summary results of the traffic operations and impact analysis from the LOS Study are presented below.

Summary of LOS Strategy Analysis Results

Table 5-1 summarizes the results of the LOS Study for the planning horizon year 2023. For each LOS strategy, the table identified both the expected intersection level of service during the PM peak period in 2023 and the intersection mitigation that would be required under each LOS strategy. Appendix G contains more detailed information about the methods and results of the LOS Study including identification of anticipated street system deficiencies for each analysis location. Figure 5-1 illustrates the location of intersections expected to operate at LOS E or F, or to exceed ODOT's volume-to-capacity standard during a single peak hour in 2023.

It should be noted that the use of LOS to evaluate the need for improvements at State highway intersections is inconsistent with the standards adopted in the Oregon Highway Plan. ODOT standards for determining needed improvements are based on volume-to-capacity ratios. Accordingly, the level of service results presented in this chapter for State highway intersections are not relevant to the discussion of alternative LOS standards for the City. However, these results are relevant to understanding the general nature and location of expected congestion problems in the Medford UGB. Further discussion of improvement needs on state highways based on volume-to-capacity ratios is presented later in this chapter (see Table 5-5) and in more detail in Table G-4 of Appendix G.

According to the information summarized in Table 5-1, a strategy based on achieving LOS D or better during the 2023 PM peak hour would require that fifteen intersections be improved to meet this standard. A more relaxed standard of LOS E reduces the number of intersections requiring improvement to ten. The third LOS strategy, which would consider the second-highest hour volumes during the PM peak period instead of the single highest PM peak hour, requires mitigation at a total of eleven intersections.

In addition to the locations projected to exceed one or more of the LOS thresholds strategies being considered for improvement, several intersections are projected to have volume-to-capacity (v/c) ratios near or exceeding 1.00, including some on state highway intersections. A high volume-to-capacity ratio is indicative of traffic conditions that are operating close to capacity. Minor growth in traffic volumes can quickly result in a failing level of service at such an intersection. To ensure that level of service standards are not exceeded, the City may also want to consider undertaking operational improvements at these locations such as traffic signal upgrades or refinements, additional turn storage, or provision of new turn lanes.

When considering a secondary standard of v/c ratio less than 1.00, the number of intersections requiring mitigation based on forecast 2023 p.m. peak hour volumes increases to 20 under both the LOS D and LOS E scenarios. For the second-highest hour, the number of intersections requiring mitigation remains at 10. Table 5-2 includes a summary of the locations where the projected volume-to-capacity ratio of 1.00 could be exceeded.

Table 5-1
Summary of 2023 PM Peak Period LOS Strategies

	Needs Mitigation with 1 Hour Standard			Needs Mitigation with 2nd Hour Standard	
Location	**LOS**	**LOS D**	**LOS E**	**LOS**	**LOS D**
Number of Congested Intersections (1)					
Downtown Medford					
4th at Central (1)	A	Yes	Yes	A	Yes
4th at Riverside	F	Yes	Yes	E	Yes
State Highway Intersections					
Highway 99 at South Stage	E	Yes	No (3)	C	No (3)
Highway 62 at Poplar/Bullock	F	Yes	Yes	D	No (3)
Highway 62 at Hwy 99/Hwy 238	E	Yes	No (3)	D	No (3)
Highway 62 at Delta Waters	F	Yes	Yes	F	Yes
Highway 62 at Vilas	E	Yes	No (3)	D	No (3)
Highway 238 at Sage	F	Yes	Yes	E	Yes
South of Jackson Street					
Barnett at Black Oak	E	Yes	No	D	No
Barnett at N. Phoenix	E	Yes	No	D	No
Highland at Siskiyou	F	Yes	Yes	E	Yes
Hillcrest at N. Phoenix	F	Yes	Yes	F	Yes
Jackson at Crater Lake	F	Yes	Yes	F	Yes
Main at Columbus	F	Yes	Yes	E	Yes
Main at Ross	F	Yes	Yes	E	Yes
North of Jackson Street					
Biddle at McAndrews	E	Yes	No	E	Yes
Crater Lake at Delta Waters	F	Yes	Yes	F	Yes
Congested intersections (2)		17	17		17
Intersections that would be fixed to meet alternative LOS standard		17	11		11
Intersections that would be degraded from today's 1-hour LOS D standard that would not be fixed		None	6		5

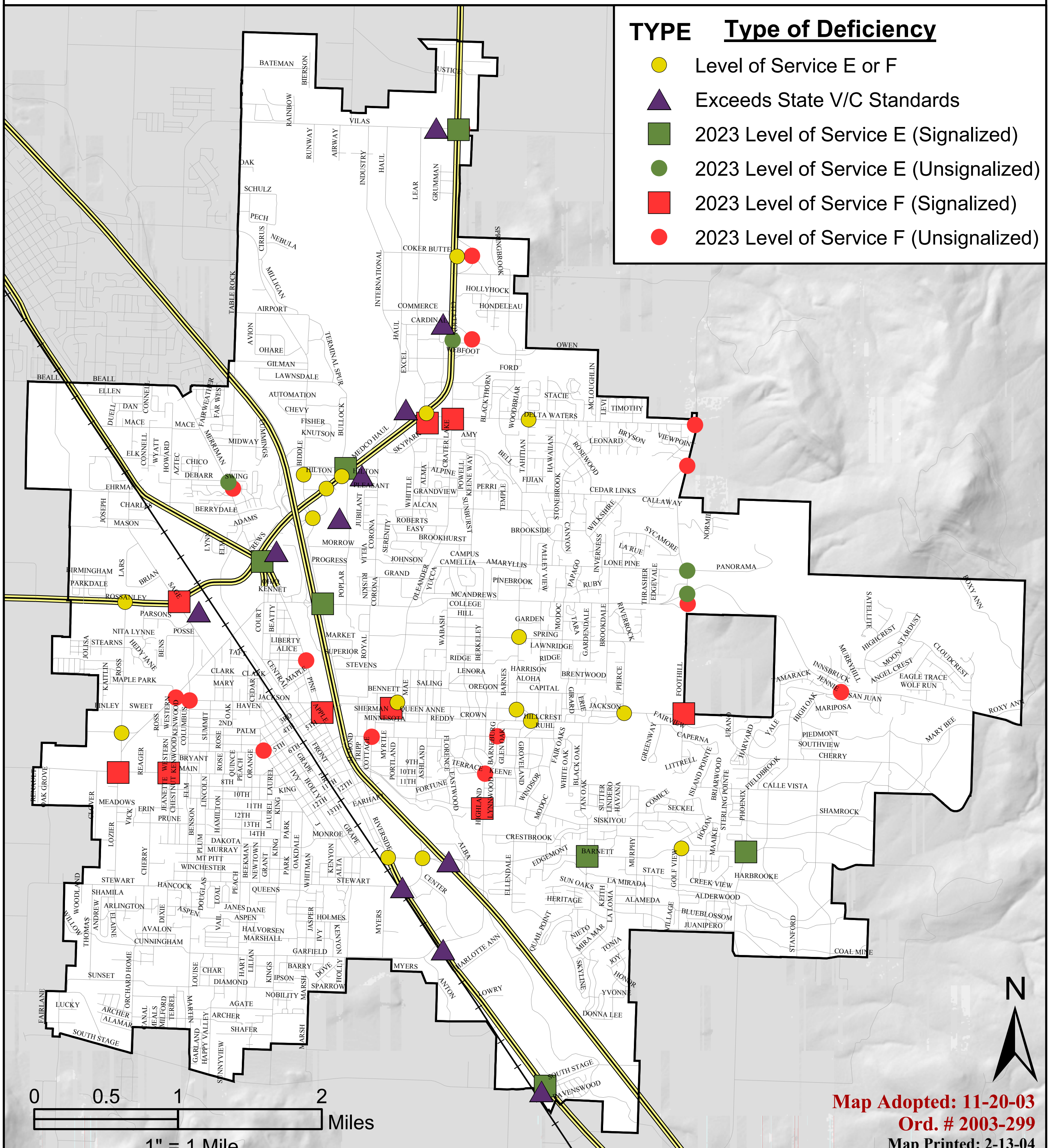
Note: LOS means level of service. Analysis results are based on the identified alternative LOS standard. PM peak hour (1 hour) LOS D column represents the existing standard.

(1) Simulation shows that the permitted left-turn phase on the westbound approach is not adequately served thus causing extended queues that block upstream intersections. It is assumed that an exclusive left-turn lane would be provided on this approach under all LOS standards considered.

(2) Based on today's LOS D standard that reflects the public's current expectations about acceptable levels of delay.

(3) Mitigation conclusions in this table are based strictly on LOS. Based on ODOT's v/c standards for state highways these intersections would require mitigation.

Figure 5-1: 2002 and 2023 Street System Deficiences



Other Streets
Highway
Railroad
UGB

CITY OF MEDFORD OREGON

The Geographic Information Systems (GIS) data made available on this map are developed and maintained by the City of Medford and Jackson County. GIS data is not the official representation of any of the information included. The maps and data are made available to the public solely for informational purposes.

THERE MAY BE ERRORS IN THE MAPS OR DATA. THE MAPS OR DATA MAY BE OUTDATED, INACCURATE, AND MAY OMIT IMPORTANT INFORMATION. THE MAPS OR DATA MAY NOT BE SUITABLE FOR YOUR PARTICULAR USE. THIS INFORMATION IS BEING PROVIDED "AS IS" OR "WITH ALL FAULTS". THE ENTIRE RISK AS TO THE QUALITY OR PERFORMANCE IS WITH THE BUYER AND IF INFORMATION IS DEFECTIVE, THE BUYER ASSUMES THE ENTIRE COST OF ANY NECESSARY CORRECTIONS OR SERVICING.

Table 5-2
2023 PM Peak Hour Signalized Intersections with Volume-to-Capacity Ratio Equal to or Exceeding 1.00

	PM Peak Hour Standard			2nd Hour Standard	
		Needs Mitigation with			Needs Mitigation with
Location	V/C Ratio	LOS D Standard	LOS E Standard	V/C Ratio	LOS D Standard
City Intersections					
Downtown Medford					
4th at Central (1)	0.82	Yes	Yes	0.73	Yes
4th at Riverside	1.22	Yes	Yes	1.06	Yes
South of Jackson Street					
Barnett at Black Oak	1.03	Yes	Yes	0.97	No
Barnett at North Phoenix	1.05	Yes	Yes	0.96	No
Highland at Siskiyou	1.16	Yes	Yes	1.08	Yes
Hillcrest at North Phoenix	1.24	Yes	Yes	1.08	Yes
Jackson at Crater Lake	1.24	Yes	Yes	1.13	Yes
Main at Columbus	1.11	Yes	Yes	1.03	Yes
Main at Ross	1.34	Yes	Yes	1.19	Yes
North of Jackson Street					
Biddle at McAndrews	1.05	Yes	Yes	0.99	No
Crater Lake at Delta Waters	1.25	Yes	Yes	1.10	Yes
McAndrews at Riverside	1.00	Yes	Yes	0.83	No
McAndrews at Royal	1.09	Yes	Yes	0.94	No
State Highway Intersections					
Highway 99 at South Stage	1.11	Yes	Yes	0.93	No (2)
Highway 99 at Garfield	0.92	No (2)	No (2)	0.78	No
Highway 99 at Stewart	1.00	Yes	Yes	0.93	No (2)
Hwy 62 at Hwy 99/Hwy 238	0.98	No (2)	No (2)	0.82	No
Highway 62 at Poplar/Bullock	1.02	Yes	Yes	0.96	No (2)
Highway 62 at Delta Waters	1.37	Yes	Yes	1.23	Yes
Highway 62 at Cardinal	0.95	No (2)	No (2)	0.84	No (2)
Highway 62 at Vilas	1.04	Yes	Yes	0.84	No (2)
Highway 238 at Sage	1.09	Yes	Yes	0.94	No (2)
Intersections exceeding a v/c ratio of 1.00		19	19		9
Intersections exceeding ODOT's standard		22 (2)	22 (2)		15 (2)

Source: LOS Study, JRH Transportation Engineering, 2003.
(1) Simulation shows that the permitted left-turn phase on the westbound approach is not adequately served causing extended queues that block upstream intersections. It is assumed that an exclusive left-turn lane would be provided on this approach under all LOS standards considered.
(2) The v/c ratios at these intersections are less than 1.00 but exceed the Oregon Highway Plan's v/c-based standard and would require mitigation by ODOT.

The strategies listed were also evaluated in terms of how well they directly and indirectly responded to the street system planning policies dictated by the TPR, RTP, and the City's *Comprehensive Plan*. To varying degrees, the strategies also reflect the goals of the Medford Vision Strategic Plan, the Jackson County *Comprehensive Plan* and the RVMPO Alternative Measures package.

The various alternative strategies were evaluated using criteria that were developed to weigh the benefits and impacts of implementing each improvement strategy, and to initiate discussion of Level of Service priorities. Evaluation criteria were developed based on existing adopted policies, state TPR requirements, and/or factors identified as particularly relevant for comparing and contrasting the alternative strategies. In addition to the number of congested intersections requiring mitigation, the LOS strategies were also analyzed to determine the degree that each:

- Affected local and regional economic development potential;
- Impacted recent land development patterns within the city and in other locations within Jackson County;
- Assisted in implementing community development objectives such as the TODs;
- Required land acquisition and has the potential for business or residential displacement;
- Impacted neighborhoods, particularly with cut-through traffic;
- Affected safety;
- Resulted in potential adverse air quality impacts;
- Potentially reduced local traffic impacts on I-5; and
- Had a potential for reducing reliance on the automobile for trip-making within the UGB.

Table 5-3 presents an evaluation of roadway level of service strategies based on these factors. A preliminary comparison of improvement costs has also been provided. It should be noted that the implementation of street improvement strategies will be contingent on the region's ability to secure the necessary funding.

In summary, the following conclusions can be drawn from the evaluation of level of service alternatives.

1. The **1-hour LOS D** standard would result in the lowest levels of congestion if all identified projects were implemented. LOS D would also minimize the potential for traffic congestion-related neighborhood cut-through traffic in comparison with the other alternatives, and could result in lower carbon monoxide emissions at the busiest intersections. Reduced levels of congestion may also reduce the potential for accidents.

   Costs are significant with the LOS D alternative, but only slightly higher than costs with the other two alternatives. A key issue with Medford's concurrency standard is that it can effectively limit the density of development in Medford which is inconsistent with the City's goals, including those for Transit Oriented Districts, and also reduce the System Development Charges (SDCs) received by the City to build road improvements. As Medford will remain the regional job and shopping center for Jackson County, the loss of SDCs will reduce the city's ability to pay for street improvements but may not significantly reduce traffic volumes. LOS D could also result in higher vehicle miles of travel per capita (contrary to state and regional objectives) and could create higher levels of PM10 (particulate pollution for which the region does not presently meet National Ambient Air Quality Standards). It should also be noted that adoption of this standard may require that the City modify other elements of the *Comprehensive Plan* to ensure consistency. For example, city goals with respect to increased density may not be compatible with a LOS D standard.

2. The **1-hour LOS E** standard is less restrictive threshold that would allow more development to occur in Medford where the SDCs could be captured and used for roadway improvements. This differs from the LOS D standard where some development may be forced out of the city (along with the SDCs for street system improvement), but where much of the traffic from this development could still use city streets and adversely affect congestion levels in Medford. The LOS E standard could promote higher land development densities and more compact urban form that could make the use of

Table 5-3
Summary of Intersection Level of Service Improvement Strategies and Policy Criteria

	STRATEGIES		
	1-Hour LOS D Standard	**1 Hour LOS E Standard**	**2nd Hour LOS D Standard**
Description of Strategy	Requires LOS D operations or better at signalized intersections with projected 2023 p.m. peak hour traffic volumes.	Requires LOS E operations or better at signalized intersections with projected 2023 p.m. peak hour traffic volumes.	Requires LOS D operations or better at signalized intersections during the second-highest hour. Allows LOS E or LOS F operations during the single highest hour of the day.
POLICY CRITERIA			
Number of congested intersections	18	18	18
Number of intersections that would be fixed to meet alternative LOS standard	18	12	12
Number of intersections that would be degraded from today's 1-hour LOS D standard that would not be fixed	None	6	6
Potential economic development impacts	Could have a minor positive effect on economic development compared to the other standards by resulting in less delay at major intersections.	Could have a minor negative effect compared to LOS D standard.	Greater adverse effect than other alternatives.
Impacts on land development within the City	Limits development based on lower street system LOS. More development may spread to surrounding communities but may still impact traffic levels in Medford, the regional center. Lower SDC's (System Development Charges) to accommodate the needs of increased traffic.	Reducing overall project costs by approximately $3M over 20 years per LOS Study.	Similar to 1-hour LOS E strategy.
Impacts on City's land development goals like TODs	Less supportive than other strategies.	More supportive as could make alternative modes more attractive.	Same as 1-hour LOS E strategy.
Potential land acquisition needs	Would require mitigation at four more intersections than the LOS E standard. Could require additional land acquisition compared to the other strategies, depending on existing right-of-way widths.	With fewer intersections requiring mitigation, potential land acquisition is less than with a LOS D standard.	Potentially lower impact than other alternatives due to fewer intersections affected.
Potential neighborhood impacts	Would result in less delay at major intersections. Expected to reduce potential for cut-through traffic compared to the other alternatives.	Would allow longer delay. Could increase potential cut-through traffic and corresponding negative neighborhood impacts compared to the LOS D standard.	Would allow longer delay. Could increase potential cut-through traffic and corresponding negative neighborhood impacts compared to other alternatives.

Table 5-3 Continued
Summary of Intersection Level of Service Improvement Strategies and Policy Criteria

	STRATEGIES		
	1-Hour LOS D Standard	**1 Hour LOS E Standard**	**2nd Hour LOS D Standard**
Safety	Intersections would be less congested and generally safer. Drivers would be less likely to run red lights.	With potentially greater delay and congestion than the LOS D standard, more red light running could occur.	Potentially greater delay and congestion than the other standards. More red light running could occur, with potentially negative effects on safety.
Air quality implications	LOS D standard could result in less delay and relatively lower carbon monoxide emissions at major intersections. Possibly higher PM10 emissions.	LOS E standard could result in greater delay and relatively higher carbon monoxide emissions at major intersections. Possibly lower PM10 emissions.	The two-hour standard could allow LOS E or LOS F during the highest hour, potentially resulting in the highest carbon monoxide emissions of the three strategies.
Potential to reduce local traffic impacts on I-5	Improvements to arterial congestion points could reduce local traffic using I-5, if coupled with greater north/south connectivity.	With fewer arterial improvements compared to LOS D standard, less reduction of local traffic on I-5 would be expected.	Similar to the LOS E standard, depending on the number of locations operating at LOS E or F during the second highest hour, and on the peaking characteristics at those intersections.
Potential to reduce reliance on the automobile	Least effective in reducing reliance on the automobile.	Greater allowable congestion in theory would promote greater use of alternatives to single-occupant automobile; however, the majority of intersections would continue to operate acceptably without mitigation. Transit is negatively affected by congestion.	Similar to the LOS E standard, depending on the number of locations operating at LOS E or F during the second highest hour, and on the peaking characteristics at those intersections.
Cost	Approximately \$3 to \$ 5 million higher than either of the other two alternatives.	Lower cost than the LOS D standard due to fewer mitigation requirements.	Similar to LOS E standard.

alternative travel modes more attractive. LOS E is less costly than the LOS D standard. LOS E could also help move the region toward attainment of the PM10 air quality standard.

On the negative side, levels of delay experienced in several of the major travel corridors in the City would be greater with the LOS E standard, and there exists a potential for increased neighborhood cut-through traffic to avoid the most heavily congested intersections. There may also be some additional accidents resulting from increased congestion that the City would need to mitigate through additional design solutions. LOS E could result in higher carbon monoxide pollution but it is not clear based on preliminary analysis whether any air quality violations might result.

3. The 2-hour LOS D standard would have impacts similar to the 1-hour LOS E standard with one major exception. During the first hour no level of service standard would be set, potentially resulting in unmitigated LOS F operations for that hour.

Traffic Operations and Capacity Deficiencies on State Highways

Level of Service Study Results

The City's Level of Service Study evaluated key intersections along the state highways in the Medford UGB including: Interstate 5 ramp terminals, Highway 62, Highway 99 and Highway 238. Table 3-7 identifies locations that exceed ODOT's volume-to-capacity (V/C) ratio standards based on 2002 PM peak hour traffic levels, while Table 5-4 identified locations expected to exceed these standards based on anticipated future (2023) PM peak hour traffic volumes (see Appendix G for further information about the LOS Study and its results pertaining to state highways).

Volume-to-capacity standards vary depending on the classification of the highway and it's relative importance to the statewide transportation system. In 2002, there were five locations that exceed the applicable V/C standards. Three were located along Highway 62 including the intersections with Poplar Drive, Delta Waters Road, and West Vilas Road. Additionally, the southbound off-ramp from I-5 to Stewart Avenue at Barnett Road and the northbound on and off-ramps from I-5 at Biddle Road exceeded their applicable V/C standard.

Table 5-4
2023 PM Peak Hour Signalized Intersections
with Volume-to-Capacity Ratio
Equal to or Exceeding State Highway Thresholds

Location	Applicable V/C Standard	Volume/ Capacity Ratio	LOS
Highway 62			
At Hwy 99/Hwy 238	0.85	1.00	F
At Poplar	0.85	1.14	F
At Delta Waters	0.85	1.37	F
At Cardinal Avenue	0.80	0.95	E
At West Vilas	0.80	1.02	F
Highway 99			
At South Stage Road	0.90	1.11	F
Highway 238			
At Sage Road	0.90	1.17	F

By 2023, even with completion of the North and South Medford Interchange projects, it is anticipated that V/C standards will be exceeded at seven intersections on the state highway system in the Medford UGB. Most of these intersections are located along Highway 62 and include the four locations identified above plus the intersection of Highway 62 with Highway 99/Highway 238. Other intersections that are expected to experience congestion levels in excess of the ODOT standard include: Highway 99 at South Stage Road and Highway 238 at Sage Road.

In addition to analysis conducted as part of the City's Level of Service Study, several other significant transportation system analyses have recently been completed in the Medford UGB to address existing and future operational deficiencies on the state highway system. These analyses include the following.

South Medford Interchange

The South Medford I-5 interchange study was conducted to address existing and anticipated future congestion problems at the I-5/Barnett Road interchange. Currently, traffic backs on Barnett Road in the vicinity of the interchange during a large portion of a typical weekday. Additionally, traffic back-ups have been experienced on freeway ramps impacting the freeway mainline. A Draft Environmental Statement has been prepared for a new interchange south of the existing Barnett Road location and a preferred alternative has been selected. Preparation of a Final Environmental Impact Statement will be completed during the spring of 2003 with construction expected to begin by 2006. This project has been included as a Tier 1 (financially-constrained) project in the 2002 *Regional Transportation Plan* and is included in the draft 2004-2007 State Transportation Improvement Program. Funding for this project comes from ODOT general revenues, City of Medford contributions and a recent $14 million allocation from the Oregon Transportation Investment Act program (OTIA) which is financed through the sale of revenue bonds.

When OTIA funding was made available for the South Medford interchange project, the City of Medford signed an agreement with the Oregon Transportation Commission that included two key provisions pertaining to future land use planning activities in the vicinity of the new interchange. These components included the requirement that ODOT prepare access management and interchange plans for the project. These plans must be adopted by the City of Medford and can be incorporated into a future update of the City's *Transportation System Plan*. The management plans will *"protect the function of (the) interchange to provide safe and efficient operations between connecting roadways and to minimize the need for major improvements of existing interchanges"*[8]. The second requirement is for the City to develop land use and subdivision ordinances that address access control measures and signal spacing standards consistent with the functional classification of roads, and standards to protect the future operation of state highways. Progress towards development of these ordinances must be made prior to contracting for interchange construction. Draft access management and signal spacing standards are currently under development by the City's Public Works Department. In addition to the land use-related requirements, the OTC will also require that the City assume responsibility for Barnett Road at the location of the existing interchange.

Highway 62 Corridor Solutions Study

The Highway 62 Corridor Solutions, North Medford interchange study to address the increasing congestion and safety issues being experienced along Highway 62 from the I-5 interchange area northward to White City. Since the fall of 2000, the project has been focused primarily on the I-5/Highway 62 interchange area as further improvements to the north could not be accomplished within the region's "financially-constrained" improvement program. An Environmental Assessment has been prepared to evaluate improvement alternatives at the interchange and a preferred "Build" alternative has been identified. The central component of the Build Alternative includes a new I-5/Highway 62

[8] Staff Report to Oregon Transportation Commission on OTIA projects, ODOT, page 3.

interchange, a modified Highway 62/Biddle Road interchange, and other improvements necessary to support safe and efficient operation of the interchanges including bicycle and pedestrian facilities. These other improvements would include modifications to the existing intersections of Highway 62 at Poplar Drive and at the Fred Meyer entrance. It is anticipated that these improvements will accommodate anticipated traffic growth in the corridor while meeting ODOT's mobility standards. The interchange area project (referred to as Highway 62 Unit 1 improvements) has been included as a Tier 1 project in the *Regional Transportation Plan* and in the draft 2004-2007 State Transportation Improvement Program.

Solutions for existing and anticipated future congestion problems along Highway 62 north of Poplar Drive are not included in the preferred Build alternative due to financial constraints. However, preliminary recommendations have been made for a "hybrid" alternative (referred to as the Highway 62 Unit 2 improvements) which would create an expressway-type facility running north/south parallel to and west of the existing Highway 62 alignment. This facility would leave Highway 62 just northeast of the intersection with Poplar Drive and rejoin Highway 62 north of the Medford UGB at approximately Corey Road. This project has been included as a Tier 2 (financially-unconstrained) project in the *Regional Transportation Plan*.

I-5 Mainline and Ramp Traffic Operations

According to the 2000 *I-5 State of the Interstate Report* by the Oregon Department of Transportation and recent traffic volume counts, I-5 through Medford operates today without noticeable congestion on the freeway mainline, with average daily traffic volumes (ADT) ranging from 34,000 to 39,000 ADT south of exit 27 (Barnett Road) at the south end of the City to 44,000 ADT on the Medford Viaduct between exit 27 and exit 30 (Highway 62), decreasing to 33,000 ADT north of the I-5/Highway 62 interchange. Trucks account for about 12 to 15 percent of total I-5 traffic. According to ODOT's forecasts[9] (based on the RVMPO travel demand model's output) for this portion of the I-5 mainline, daily traffic volumes are expected to grow by approximately 28 percent south of exit 27, by 48 percent on the Medford Viaduct, and by 54 percent north of exit 30. A significant increase in existing levels of congestion along this highway is anticipated over the planning horizon.

Existing (2002) peak period congestion on the off-ramps at both the South Medford/Barnett Road and North Medford/Highway 62 (Biddle Road) interchanges generates backups that affect mainline traffic flow on I-5 in both directions. Based on current PM peak hour volumes the southbound off-ramp to Barnett Road/Stewart Avenue currently exceeds ODOT's volume-to-capacity standard for an interstate facility (the standard is 0.80 and the actual ratio is >1.00[10]. According to the DEIS prepared for improvement to the Barnett Road interchange, existing problems at this location include "*unsafe queuing and particularly long queues and short-sight distances at the interchange, its off-ramps and surrounding intersections ... These factors combine to create a hazardous situation, which leads to a high percentage of rear-end accidents at these locations… In addition, off-ramp queues backing up onto the freeway degrade its capacity.*"

Based on information from the Environmental Assessment prepared for improvements to the I-5/Highway 62 interchange, existing traffic conditions in the vicinity of this interchange are over capacity and are expected to worsen based on projected future (2024) volumes. The over capacity conditions will lead to "*increased accident potential and reduced travel times throughout the interchange area. In particular, the over capacity conditions at the existing northbound I-5 off-ramp connection to Biddle Road cause vehicle queues to extend back (to) the I-5 mainline resulting in excessive speed differentials*."[11]

---

[9] ODOT, Transportation Planning Analysis Unit website, 2020 Future Volume Forecasts for State Highways, 2003.
[10] ODOT Interoffice Memo from Kent Belleque to Frank Stevens, entitled "Barnett Road Interchange Northbound Entrance Ramp, dated October 30, 2001.
[11] ODOT Region 3, Highway 62 website, "Environmental Assessment Executive Summary", 2003.

As noted above, improvement projects have been developed for these two interchanges to address not only the congestion and safety problems that are created in the vicinity of the interchanges but also to address the existing and projected impacts on the I-5 mainline.

Other Street Improvement Needs

17-Project List and the Regional Transportation Plan

In addition to the recent LOS and I-5 interchange area studies, street improvement needs in the Medford UGB have been identified through several other means. One venue for project identification is the City's 17-project list. The intersection and roadway segment enhancement projects on this improvement program were previously identified by the city as priorities for the use of funds raised through a local street bond. These projects were chosen for bond funding because they address critical locations in the city that are experiencing significant congestion or because they enhance overall traffic circulation and connectivity in the city.

Another source of project identification is the *Regional Transportation Plan*. The RTP includes many street projects in its "financially-constrained" Tier 1 project list. These projects were assumed in the LOS Study to be in place during the next 20 years. RTP projects address both existing and anticipated future congestion and operational problems, as well as the need for upgrading rural roads to city street standards when formerly rural areas become urbanized. The projects identified through both of these sources are included in the street system improvements discussed later in this chapter.

Bridge Deficiencies

According to recent ODOT bridge inspection reports and as indicated in Table 3-3, there are currently seven bridges within the Medford UGB that are considered to be structurally deficient. Three of these bridges are owned and operated by the City of Medford and four are owned and operated by ODOT. The City's structurally deficient bridges include Bear Creek overcrossings at 10th Street, McAndrews Road and Barnett Road overcrossing. ODOT's structurally deficient bridges include two I-5 crossings over Bear Creek (which are scheduled to be replaced in 2006), the Medford Viaduct (which was repaired during the spring of 2003), and the Highway 99 bridge over Crooked Creek (improvement scheduling not currently identified). The City of Medford anticipates that weight-restrictions will be instituted on its deficient bridges until such time as funding can be secured to address the deficiency problems. The Barnett Road bridge will be replaced as part of the South Medford Interchange project.

Safety Needs

Table 3-10 presents a list of the intersections under local jurisdiction in the Medford UGB that currently experience a higher than average crash history. A preliminary assessment of these locations has been conducted to indicate both predominate cause(s) of crashes as well as potential solutions. Detailed analysis of the crash locations has not been conducted for this TSP, and should be conducted as part of project refinement planning or preliminary engineering prior to implementation. It should be noted that some of these accident locations may be resolved by other pending roadway improvement projects including the Highway 62 Unit 1 improvements (for the intersection of the Highway 62/Biddle Road eastbound ramps and Highway 62 at Poplar Drive) or as part of the South Medford interchange project (at the intersection of Barnett Road with the I-5 northbound off-ramp at Alba Street, and Barnett Road at Riverside Avenue). Potential safety-related improvements at each intersection are identified in Table 5-5.

Table 5-5
Safety Need Assessments at High Crash Locations in Medford UGB

Intersection	Need and Potential Solutions
Central Avenue/4th Street	As part of proposed capacity enhancements consider: - Modifications to signal timing change intervals (i.e. extended yellow and/or all red phase) - Red light photo enforcement - Signal progression improvements on Central - Add protected left turn phasing on 4th St. consistent with streetscape changes identified in 2050 Plan
Riverside Avenue/Jackson Street	Consider: - Modifications to signal timing change intervals (i.e. yellow and/or all red phase) - Red light enforcement - Signal progression improvements on Riverside
Crater Lake Avenue/Delta Waters Road	As part of proposed capacity enhancements consider: - Protected left turn phasing on Delta Waters Rd.
6th Street/Holly Street	Consider: - Maintenance of stop sign visibility - All-way stop if warrants met
Central Avenue/Jackson Street	Consider: - Modifications to signal timing change intervals (i.e. yellow and/or all red phase) - Red light photo enforcement - Signal progression improvements on Central
Highway 62/Highway 62 EB On-ramp	Will be addressed by Hwy 62 Unit 1 project:. Consider: - Extending length of on and off ramp tapers - Providing advance warning of merging traffic
10th Street/Cottage Street	Consider: - Improvements to and maintenance of sight distance visibility from Cottage - Install all-way stop if warrants met
10th Street/Grape Street	Consider modifications to signal timing change intervals (i.e. yellow and/or all red phase)
Riverside Avenue/8th Street	Consider modifications to signal timing change intervals (i.e. yellow and/or all red phase)
McAndrews Road/Biddle Road	As part of proposed capacity enhancements consider: - Adding right or left turn lanes to increase intersection capacity and separate turning movements from throughs - Evaluate success of red light photo enforcement on reducing angle collisions - Improve alternate routes for Biddle Road.
Barnett Road/Stewart Avenue	As part of proposed So. Medford Interchange Project improvements consider: - Providing adequate turn lanes and storage area to accommodate demand for the re-built interchange - Re-evaluate crash problems after completion of interchange improvements
10th Street/Oakdale Avenue	Consider adding protected left-turn signal phasing
McAndrews Road/Court Street	Consider: - Improvements to sight distance for east-west traffic on McAndrews Rd. - Improve east/west left turn protection (phasing, all red)

Table 5-5 Continued
Safety Need Assessments at High Crash Locations in Medford UGB

Intersection	Need and Potential Solutions
Riverside Avenue/Main Street	Consider: - Modifications to signal timing change intervals (i.e., yellow and/or all red phase) - Red light photo enforcement - Signal progression improvements on Riverside
Table Rock Road/Morningside Street	Maintain visibility of stop signs
Crater Lake Avenue/Brookhurst Street	Consider: - Protected east/west left turn phases - Maintain sight visibility
Central Avenue/6th Street	Consider: - Improved signal visibility - Signal progression improvements on Central
Central Avenue/10th Street	As part of proposed capacity enhancements consider: - Removal of on-street parking and restriping for third SB through lane
Crater Lake Avenue/Stevens Street	Improve east/west left turn protection (phasing, all red)
Highway 62/Poplar Drive & Hilton Drive	As part of Hwy 62 Unit 1 project consider: - Redesign and reconstruct intersection to provide adequate storage and transition lengths - Re-evaluate crash problem after completion of improvement project
10th Street/Holly Street	Consider: - Sight distance improvements of and for westbound 10th - Evaluate signal timing change intervals (i.e. yellow and/or all red phase)
Biddle Road/Stevens Street	As part of proposed capacity enhancements consider: - Modifications to signal timing change intervals (i.e. yellow and/or all red phase) - Restrict NB u-turns on Biddle Rd
Riverside Avenue/Barnett Road	As part of So. Medford Interchange Project and other proposed capacity enhancements consider: - Increase North/South capacity on Riverside Ave. - Evaluate signal timing change intervals (i.e. yellow and/or all red phase) - Re-evaluate crash problem after completion of improvements
Barnett Road/I-5 NB Off-ramp & Alba Drive	As part of So. Medford Interchange Project consider: - Evaluate signal timing change intervals and phase lengths (including all red phase) - Re-evaluate crash problem after completion of improvements
Central Avenue/8th Street	Consider: - Modifications to signal timing change intervals (i.e. yellow and/or all red phase) - Red light photo enforcement - Signal progression improvements on Central
Barnett Road/Murphy Road	Consider protected left turn phasing on Barnett Rd.

Table 5-5 Continued
Safety Need Assessments at High Crash Locations in Medford UGB

Intersection	Need and Potential Solutions
Riverside Avenue/McAndrews Road	As part of proposed capacity enhancements consider: - Adding turn lanes and/or through lanes to increase intersection capacity - Modifications to signal timing change intervals (i.e. yellow and/or all red phase) - Red light photo enforcement - Signal progression improvements on Riverside

Street System Strategies

This section presents strategies for both long- and short-term policy guidance and improvement of the street system within the Medford UGB. These strategies are based on the evaluation of existing street system deficiencies as discussed in Chapter 3, and the evaluation of anticipated future system deficiencies as presented above. The strategies presented in this section include the following:

- Modifications to the existing street functional classification system and street standards to address changes in travel patterns and street facilities;
- Access management;
- Level of service standards;
- Roadway system improvements including new roadways, urban upgrades and capacity improvements;
- Bridge repair or replacement; and
- Safety improvements

Transportation system management improvements including signalization, ITS strategies, traffic calming and other related actions are included in Chapter 8. Strategies related to at-grade railroad crossings are included in Chapter 11. Goals, policies and implementation strategies for street system operation, management and improvement within the Medford UGB are presented in Chapter 13.

Functional Classification and Street Standards

The TSP planning process included a review and assessment of the existing street functional classification system within the Medford Urban Growth Boundary (UGB). This section includes strategies for changes to that system. Included is a discussion about the nature of street functional classification and changes to the system that are focused primarily on adding minor arterial and minor collector categories. Additional analysis can be found in Appendix H.

It will be important to ensure as much consistency as possible between the City of Medford's functional classification system and street standards, and those of surrounding incorporated and unincorporated areas. Central Point recently adopted its TSP and a comparison of Medford classifications with that document indicated that one street classification change would be necessary in Medford to ensure consistency. Jackson County is currently developing its TSP and no changes to Medford's classifications are suggested for consistency.

What is Functional Classification?

Functional classification provides a systematic basis for determining future right-of-way and improvement needs, and can also be used to provide general guidance to appropriate or desired vehicular street design characteristics. A street's functional classification is based on the relative priority of traffic mobility and access functions that are served by the street. At one end of the spectrum of mobility and access are freeways, which emphasize moving high volumes of traffic, allowing only highly controlled access points. At the other end of the spectrum are residential cul-de-sac streets, which provide access only to parcels with direct frontage and allow no through traffic.

These two roadway types form the ends of a spectrum relating access and traffic flow. Between the ends of this spectrum are local streets, collectors and arterials, each with an increasingly greater emphasis on mobility. Classifications can be further stratified into major and minor arterials and collectors. Some jurisdictions use other terms in their functional classification system, such as neighborhood street, throughway, and boulevards.

Presently the City of Medford includes nine classes of publicly-maintained streets in its functional classification system, four of which are described in Table 3-2 – arterial, collector, standard residential and minor residential. In addition there are commercial and industrial classifications, which have cross-sections identical to standard residential streets. The applicable classification depends on adjacent zoning and is determined at the time of development review. Frontage streets are commercial or industrial streets adjacent and parallel to an arterial street or highway that are needed to control access of property to an arterial. The two remaining classifications are residential lane and minimum access. A residential lane is a facility that serves a maximum of eight (8) dwelling units. A residential lane is short (a maximum of 450 feet in length) with parking on one side and a single travel lane. A minimum access street is a private residential street serving a maximum of three (3) dwelling units. Typically, a minimum access street is a short cul-de-sac.

Non-vehicular modes also need to be considered in functional classification designations. The Transportation Planning Rule (TPR) requires that bicycle facilities (typically bicycle lanes) and pedestrian facilities (typically sidewalks) be provided on arterial and major collector streets. The City's existing cross-sections for all publicly-maintained arterial and collector roadways include bicycle and pedestrian facilities on both sides with one exception. On streets with a 10-foot shared multi-use path on one side, only a sidewalk is required on the side of the street opposite the multi-use path. The provision of off-street bikeways should be limited to locations where on-street bike lanes are impractical for reasons of cost, design constraints, right-of-way impacts, or other factors. Existing standard and minor residential street cross-sections require sidewalks on both sides but bicycle lanes are not required. Residential lanes and minimum access streets are not required to have either bicycle lanes or sidewalks.

Functional Classification System Changes

As part of the TSP analysis, the City's primary street classifications were expanded to include proposed major and minor designations for arterials and collectors. Additional cross-sections were developed for each new classification. In developing these proposed changes, existing City street and access standards were reviewed and contrasted with the requirements of the Transportation Planning Rule (for inclusion of bicycle and pedestrian facilities), and ODOT access management guidelines. Also reviewed for comparison purposes were standards from other jurisdictions including the Cities of Grants Pass, Salem, Milwaukie, Vancouver (Washington), Ashland, and Central Point; along with Jackson and Josephine Counties and RVMPO's cross-section templates that were included as an appendix to the 2002 *Regional Transportation Plan*.

Adding functional classifications and cross-sections provides several advantages for the City. The primary advantage is to enable the City to better tailor the roadway system to meet future travel needs by varying the standard cross-section for an arterial street from a three-lane cross-section (appropriate for the minor arterial classification) to a full five-lane cross-section (appropriate for the major arterial classification). By allowing some variation from the existing arterial and collector street standards through the introduction of minor street classifications, both time and money can be saved on street improvement projects. In addition, by adding increased flexibility within the functional classification system, constraints that exist in the built and/or natural environment can be evaluated and incorporated into roadway planning and design without necessarily having to vary from adopted standards. However, in some locations due to historic development patterns, topographic features or other factors, deviations from the City's street standards should be accommodated.

Figure 5-2 illustrates the functional classification system within the Medford UGB. Changes from the City's existing standard cross-section for functionally classified streets are shown in Table 5-6. This table includes the addition of standard cross-sections for the new minor arterial and minor collector street classifications. The following paragraphs describe the four most significant street classification categories: major arterial, minor arterial, major collector and minor collector.

Major Arterial

Major arterial streets carry heavy traffic volumes, most of it being traffic traveling through the urban area. Typically, they are equivalent to the Oregon Department of Transportation (ODOT) classification of principal arterial. For purposes of this TSP, it is assumed that all existing designated arterial streets within the Medford UGB are major arterials with the exceptions discussed in Appendix H under the "Minor Arterial" heading. Examples of major arterial streets under City jurisdiction include Biddle Road, Crater Lake Avenue south of Delta Waters Road, and McAndrews Road west of Crater Lake Avenue.

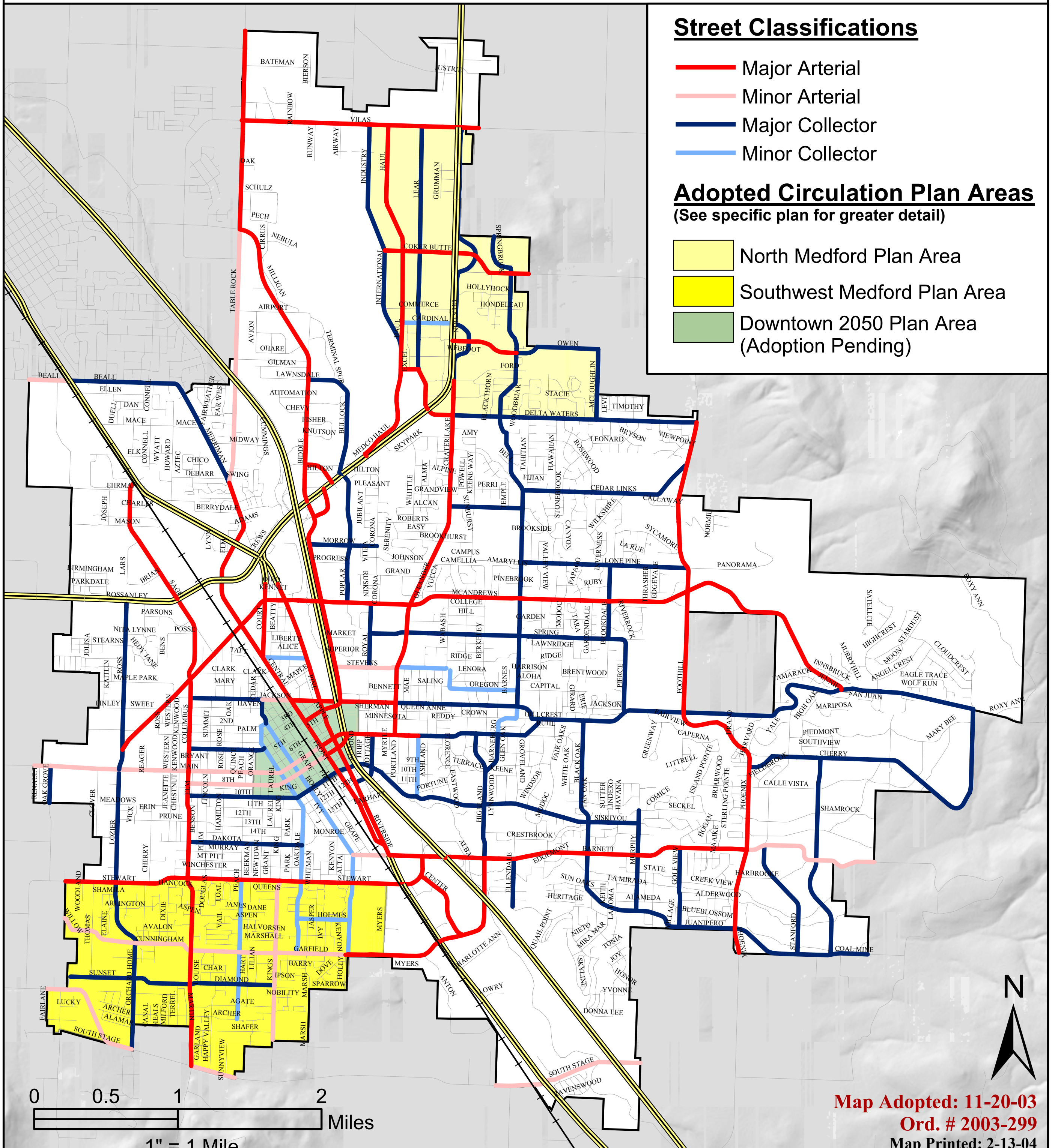
Street design standards proposed for major arterials are outlined in Table 5-6 and include a 70-foot paved width with four 11-foot travel lanes (two in each direction), a 14-foot raised center median (with left turn channelization where appropriate), and two 6-foot shoulder bikeways (one in each direction). Five-foot sidewalks with a 10-foot planter strip would be required, consistent with existing City code for arterial designations. No on-street parking would be permitted or provided along a major arterial street. Total required right-of-way (ROW) would be 100 feet. In Downtown and TOD areas the 10-foot planter strip would likely be paved with space designated for tree wells, providing for a 10 to 12-foot pedestrian facility in commercial areas to create a "Main Street-like" environment. The newly constructed section of Garfield Avenue between Highway 99 and Holly Street is representative of the design standards for a Major Arterial as depicted in Table 5-6.

Minor Arterial

Minor arterial streets also carry heavy traffic volumes, most of it traveling within the urban area, and they often connect two major arterials. Minor arterials would differ from major arterials in that they are proposed to have a three-lane cross-section with a 48-foot paved width and a total ROW of 78 feet. These dimensions would accommodate two 12-foot travel lanes, a 14-foot center left turn lane or median, two 5-foot bicycle lanes, two 5-foot sidewalks, and two 10-foot planter strips (see Table 5-6). No on-street parking would typically be permitted along a minor arterial street.

Alternative cross-sections for the minor arterial could be provided through development and adoption of neighborhood plans, neighborhood circulation plans or Transit-Oriented District (TOD) plans where street speeds are expected to be lower. These plans would reflect the unique nature that a minor arterial street could assume as it passes through a pedestrian-friendly, mixed use development area. The minor arterial street cross-section in these unique areas could include different lane or sidewalk configurations, and could potentially include on-street parking.

Figure 5-2: Medford Street Functional Classification Plan



Other Streets
Highway
Railroad
UGB

CITY OF MEDFORD
OREGON

The Geographic Information Systems (GIS) data made available on this map are developed and maintained by the City of Medford and Jackson County. GIS data is not the official representation of any of the information included. The maps and data are made available to the public solely for informational purposes.

THERE MAY BE ERRORS IN THE MAPS OR DATA. THE MAPS OR DATA MAY BE OUTDATED, INACCURATE, AND MAY OMIT IMPORTANT INFORMATION. THE MAPS OR DATA MAY NOT BE SUITABLE FOR YOUR PARTICULAR USE. THIS INFORMATION IS BEING PROVIDED "AS IS" OR "WITH ALL FAULTS". THE ENTIRE RISK AS TO THE QUALITY OR PERFORMANCE IS WITH THE BUYER AND IF INFORMATION IS DEFECTIVE, THE BUYER ASSUMES THE ENTIRE COST OF ANY NECESSARY CORRECTIONS OR SERVICING.

Table 5-6
Major Street Cross-Sections and Dimensions

	Features/Dimensions (Each Direction)							
Functional Classification	**Travel Lanes**	**Bike Lane**	**On-Street Parking**	**Sidewalk**	**Planter Strip ***	**Left or Center Turn Lane/ Median ****	**Total Paved Width**	**Total Right-of-Way Width**
Major Arterial	11’ 11’	**6’**	None	5’	10’	**14’**	**70’**	**100’**
Minor Arterial	**12’**	**5’**	**None**	**5’**	**10’**	**14’**	**48’**	**78’**
Major Collector	11’	5’	None	5’	10’	12’	44’	74’
Alternative	**11’**	**5’**	**7’**	**5’**	**10’**	**None**	**46’**	**76’**
Minor Collector	**11’**	**5’**	**7’**	**5’**	**8’**	**None**	**46’**	**72’**
Commercial Street	11’	None	7’	5’	8’	None	36’	63’
Industrial Street	**12’**	None	**8’**	5’	8’	**14’**	**54’**	**80’**
Standard Residential	11’	None	7’	5’	8’	None	36’	63’
Minor Residential	11’	None	7’	5’	8’	None	28’ +	55’

Bold font indicates changes from existing city street standards.

Note 1: These street standards would only apply to new or reconstructed streets owned and maintained by the City of Medford. Jackson County and ODOT have their own street design standards that are applicable to facilities owned and maintained by these agencies.

Note 2: See Downtown 2050 Plan and other adopted specific or Neighborhood Circulation Plans for exceptions to these standards. Adopted downtown standards are also included in Table H-4 of Appendix H.

* Need to provide a pedestrian pad at all bus stops to ensure ADA compliance. Planter strip could be paved in areas with greater pedestrian activity (such as Downtown or in transit-oriented districts) thus providing up to 13 feet of walking areas (including a “furniture zone” for utilities, benches, trees and other streetscape components.

** Raised median shall always be installed with turn bays as necessary. Traffic analysis shall be conducted to determine need for turn bays and required vehicle storage length.

\+ Street width numbers are not additive. When cars are parked on both sides of the street, travel lane width is effectively reduced to accommodate only a single car at any one time.

Table H-5 in Appendix H illustrates changes from arterial to a minor arterial classification along 10 street segments within the Medford UGB. These changes typically reflect the lower traffic volumes and lower through traffic-moving function of these facilities in comparison with those that were identified for major arterial classification. Additionally, in some instances, roadways proposed for minor arterial classification currently have only a 2 to 3 lane cross-section and it would be difficult to justify a street widening to meet the City's existing arterial street design standards (which require four travel lanes with left turn channelization).

Major Collector

Major collectors link arterial and lower-order streets, serving both direct land access and traffic mobility functions. For purposes of the TSP, it is assumed that all streets currently designated as collectors are major collectors with exception of the street segments identified in Table H-5 under the heading of "Minor Collectors". Examples of existing major collector streets include Lozier Lane, Hillcrest Road, Black Oak Drive, Sunrise Avenue, and Springbrook Road. There are about two dozen major collector roadways within the UGB. In a few locations it will be necessary to upgrade street classifications to major collector to recognize the nature of traffic movement on a particular street. These upgrades are presented in Table H-5.

The proposed cross-section for a major collector street, as illustrated in Table 5-6, is consistent with the 74-foot ROW required for collectors under the City's existing Development Code. A 44-foot paved width is proposed to accommodate 11-foot travel lanes in each direction, a 12-foot center median or left turn lane, and five-foot bicycle lanes in each direction. Five-foot sidewalks and 10-foot planter strips form the remaining 30 feet of ROW. As an alternative, 7-foot sidewalks could be provided on both sides without planter strips where right-of-way is constrained. No on-street parking would be permitted along a major collector street except where included in an adopted neighborhood plan, neighborhood circulation plan or Transit-Oriented District plan. The newly constructed segment of Juanipero Way between Olympic and Golf View is representative of the design standards for a major collector as depicted in Table 5-6.

Minor Collector

Minor collectors run through neighborhoods, linking residential traffic on local streets with higher classification of collector and arterial roadways. In contrast to major collectors, which provide a greater degree of mobility compared to land access, minor collector streets place a greater emphasis on direct land access compared to through traffic movement. Most of the minor collector designations illustrated in Figure 5-2 resulted from downgrading a collector street to minor collector status. In a few locations, it will be necessary to upgrade street classifications to minor collector to recognize the nature of traffic movement on a particular street. These upgrades are presented in Table H-5.

The proposed minor collector street cross-section has one 11-foot travel lane, one 5-foot bicycle lane, and one 7-foot parking lane in each direction. This street classification would also have a 5-foot sidewalk in each direction with 8-foot planter strips on both sides, or 7-foot sidewalks on both sides without planter strips. Total paved width between the curbs is 46 feet within a 72-foot ROW.

Standard Residential

Standard residential streets provide access to adjacent residential land and also connect collectors with minor residential streets. No changes are proposed to the City's existing Standard

Residential street design standards that are illustrated in Table 3-2. Because the designation of standard residential streets is adequately set forth in the City's *Land Development Code* (and is dependent upon the number of dwelling units proposed in a land development application that will be served by the street), illustration of proposed standard residential streets in the TSP is not appropriate. Accordingly, these streets are not reflected in Figure 5-2. Existing standard residential streets are illustrated in Figure 3-1.

Access Management

The term access management refers to the process of balancing the need for access to parcels of land adjacent to roadways with the need for safe and efficient through movement of vehicular traffic on the roadway. Access management can be implemented by a variety of means. These include median controls (e.g., raised concrete medians), driveway spacing and/or driveway consolidation (so that there are fewer driveways serving one parcel or multiple parcels), requiring that driveways be placed on lower order streets where a parcel abuts both higher and lower order streets, and intersection spacing to reduce the number of conflict points or signal-controlled locations along a street as the frequency of these locations can reduce the benefits of effective signal timing progression.

Access management is closely related to street functional classification. Typically, when access controls are in place, the frequency of driveways and intersecting streets is more restrictive along state highways and major arterials where the movement of traffic takes a higher priority. Access controls are less restrictive along collector streets where there is greater balance between access and mobility. Access controls are restricted only by safety considerations along local streets where property access is the primary function of the street.

As indicated in the *2001-2023 Rogue Valley Regional Transportation Plan's* discussion of roadway access guidelines *"access management is an important key to balanced urban growth."* Lack of prudent access control standards results in loss of transportation capacity, a poor environment for alternative modes of travel, and reduced safety. Frequent driveway and cross-street access can significantly degrade traffic operations along major streets as motorists must contend with people slowing to turn into adjacent property or attempting to get back onto the major street from a side access location. Not only do frequent driveways adversely affect the operational capacity of a road, they also affect safety in that each driveway or intersecting street represents a potential conflict point for through-moving vehicles. The strip development that often occurs as a result of the lack of access control can also be inhospitable to pedestrians and can be difficult to adequately serve by transit due to the spread out nature of destinations.

Access management can be most effectively implemented during the land development process when access locations and localized street improvements can be adapted to ensure that adjacent street traffic-carrying functions are not degraded. Access management controls are more difficult to implement along streets with developed property due to possible right-of-way limitations and/or the concerns of property owners about business or on-site circulation impacts. In these cases, access controls can be incorporated into a roadway improvement project.

Strategies for Access Management

Along State Highways

Along state highways, access is commonly controlled by the Oregon Department of Transportation (ODOT) through the purchase of access rights. New access to/from a state highway is provided consistent with the standards adopted in the Oregon Highway Plan for each highway classification, its location within an urban or rural area, and its posted speed. Access management guidelines for the state highways within the Medford UGB are shown in Table 5-7. These highways include I-5, Highway 99 north of McAndrews Road and south of Barnett Road, Highway 62, and Highway 238.

For state highways in the Medford UGB, state access management guidelines would apply as follows:

- Rogue Valley Highway (Highway 99):
  - o Within Medford north and south of the couplet (signed for 40 mph speeds):
    - – 500-foot minimum spacing for driveways or intersecting streets
    - – Minor deviations for a public approach could allow 475-foot minimum spacing
    - – Minor deviations for a private approach could allow 400-foot minimum spacing

  - o Riverside Avenue/Court Street-Central Avenue couplet north of McAndrews Road and south of Barnett Road in Medford (signed for 20 to 35 mph speeds):
    - – 400-foot minimum spacing for driveways or intersecting streets
    - – Minor deviations for a public approach could allow between 245 and 325-foot minimum spacing
    - – Minor deviations for a private approach could allow between 200 and 275-foot minimum spacing

- Jacksonville Highway (Highway 238) – new alignment along Rossanley Road:
  - o Highway 62/Highway 99 to UGB Boundary (signed for 40 mph speeds):
    - – 500-foot minimum spacing for driveways or intersecting streets
    - – Minor deviations for public approach could allow 475-foot minimum spacing
    - – Minor deviations for private approach could allow 400-foot minimum spacing

- Crater Lake Highway (Highway 62):
  - o I-5 interchange to Delta Waters (signed for 45 mph speeds):
    - – 990-foot minimum spacing for driveways or intersecting streets
    - – Minor deviations for public approach could allow 740-foot minimum spacing
    - – Minor deviations for private approach could allow 530-foot minimum spacing
  - o Delta Waters to Vilas (signed for 45 mph speeds)
    - – 2,640-foot minimum spacing for driveways or intersecting streets
    - – No minor deviations permitted.

Table 5-7
State Highway Access Management Guidelines within Medford UGB

Classification	Posted Speed	Spacing for Public or Private Approach	Minor Deviations Public Approach	Minor Deviations Private Approach
District Highway in Urban Other Environment (Highway 99 and Highway 238)	$\geq$ 55 mph	700’	660’	650’
	50 mph	550’	525’	475’
	40-45 mph	500’	475’	400’
	30-35 mph	400’	325’	275’
	$\leq$ 25 mph	400’	245’	200’
State Highway, Non-Expressway, Non-Freight (Highway 62 south of Delta Waters	$\geq$ 55 mph	1,320’	1,000’	870’
	50 mph	1,100’	810’	640’
	40-45 mph	990’	740’	530’
	30-35 mph	770’	600’	350’
	$\leq$ 25 mph	550’	400’	250’
State Expressway (Highway 62 north of Delta Waters)	$\geq$ 40 mph	2,640’	None	None
Interstate (I-5)	55-65 mph	Access limited to interchanges		

In addition to the access management standards identified above, an agreement between the Oregon Transportation Commission and the City of Medford stipulated access management conditions in the vicinity of the new South Medford interchange. This agreement requires preparation of an access management plan and an interchange management plan that must be adopted by the City of Medford. These plans can also be incorporated into a future update of the City's *Transportation System Plan*. The management plans will *"protect the function of (the) interchange to provide safe and efficient operations between connecting roadways and to minimize the need for major improvements of existing interchanges"*[12]. As a condition of receiving OTIA funding for the South Medford interchange, the City is also required to develop land use and subdivision ordinances that address access control measures and signal spacing standards consistent with the functional classification of roads, and standards to protect the future operation of state highways. Progress towards development of these ordinances must be made prior to contracting for interchange construction. Draft access management and signal spacing standards are currently under development by the City's Public Works Department as discussed below.

Along City/County Streets in Medford UGB

The City of Medford currently has provisions in its *Land Development Code* related to access management that are intended to ensure that the traffic-moving function of higher order arterial and collector streets is not unduly compromised by frequent property access or side street intersections. Access management enhances safety and provides maximum capacity for accommodating the higher volumes of traffic typically using the arterial and collector street system. Current code includes provisions that address intersection spacing, driveway location and access design, intersection design, provision of shared driveways between parcels, internal vehicle circulation between parcels off the city street, and the use of medians to limit vehicle movement at driveways or intersecting streets to right-in/right-out operations where necessary.

As noted above under the discussion of state highway access, the Medford Public Works Department is currently preparing modifications and additions to existing standards for incorporation into Chapter 10, Article IV (Public Improvement Standards and Criteria) of the City's *Land Development Code*. These changes are expected to provide more detailed information related to street intersection design and spacing, driveway spacing, and traffic signal spacing. When completed and adopted, these standards will guide development of access based on specific street classification and/or vehicle speeds.

The City should utilize access management, including access location and spacing, as a strategy to increase the capacity and safety of the transportation system. Access management strategies that could be implemented based on individual assessments of need during street design engineering or land development review might include: raised medians, access management plans, driveway consolidations, driveway relocation and closure of driveway access.

Level of Service Standards

The City will continue with its existing Level of Service D standard for major/minor arterial and collector streets as the threshold for determining when street improvements or development mitigation for traffic impacts will be required. See Table 3-4 for a description of service levels.

It should be noted that state highway deficiencies are not determined on the basis of meeting or exceeding level of service standards. According to the Oregon Highway Plan, state highways are evaluated on the basis of meeting or exceeding standards based on volume-to-capacity ratios. These ratios and their applicability to the state highways in the Medford UGB are discussed in Chapter 3.

---

[12] Staff Report to Oregon Transportation Commission on OTIA projects, ODOT, page 3.

Street Improvement Strategies

This section includes a summary and description of the street improvement projects that will be implemented based on the identification of existing and future system deficiencies as discussed in Chapter 3 and in a preceding section of this chapter. These improvements address a variety of local and regionally-significant traffic circulation issues including:

- New roadways needed to serve developing areas;
- Improvements to address traffic congestion that currently exceeds or is expected to exceed the Level of Service D standard or the applicable state highway volume-to-capacity (V/C) standard; and
- Urban upgrades of county roads to meet city design standards.

New or Improved Streets and Intersections

Table 5-8 presents the improvements to the existing street system in the Medford UGB. Included are projects that would be constructed by ODOT, the City of Medford and Jackson County. These projects were developed through a variety of studies including the City's 17-project list, the *2001-2023 Rogue Valley Regional Transportation Plan* and the City's recently completed Level of Service (LOS) Study. Included are new roads and interchanges, roadway widenings, and intersection geometric and signal upgrade projects. Bridge improvements and traffic signalization projects are described in the following sections. Appendix F displays the recommendations in the adopted *2001-2023 Regional Transportation Plan*, while Appendix G includes more detailed information about the LOS Study.

It should be noted that Table 5-8 includes all identified roadway and intersection improvement needs in the Medford UGB regardless of funding or timing of the improvement need. Further discussion of specific improvements to be implemented in the 20-year planning horizon based on anticipated funding is included in Chapter 13.

Table 5-8
Summary of Street System
Capacity and Operations Improvements

Project No.	Location	Improvement	Source of Improvement
Medford Street Improvements			
402	Lozier Lane, 500' from Cunningham north	Construct new three lane road with bike lanes and sidewalks	17-project list
403	Garfield Rd, Peach to Kings Highway	Widen to three lanes with curb, gutter, bike lanes and sidewalks	17-project list
407	Jackson St, Berkeley Way to Valley View Dr	Realign and widen to three lanes with curb, gutter, bike lanes and sidewalks	17-project list
409	Peach St, Stewart to Garfield	Widen to two lanes with curb, gutter, bike lanes and sidewalks	17-project list
412	S Holly, Garfield to Holmes	Construct new three lane road with bike lanes and sidewalks	17-project list
413	Columbus Ave, McAndrews to Sage	Realign, extend Columbus to Sage Rd, and widen to three lanes with bike lanes and sidewalks	17-project list
414	Poplar, McAndrews to Progress	Widen to three lanes with curb, gutters, bike lanes and sidewalks	RTP/17-project list
416	Crater Lake at McAndrews	Add second NBL lane, second EBL lane, and EBR lane	17-project list
417	Siskiyou at Highland	Realign intersection, add NBL lane, extend EBR lane, signalize	17-project list/LOS Study

Table 5-8 Continued
Summary of Street System
Capacity and Operations Improvements

Project No.	Location	Improvement	Source of Improvement
Medford Street Improvements Continued			
418	Barnett at Riverside	Add third northbound through lane	RTP/LOS Study
419	Table Rock at Merriman	Signalize with intersection improvements or consider roundabout.	RTP/17-project list/LOS Study
437	Delta Waters, Waterford to Bailey	Curb, gutter, storm drain improvements north side	RTP
440	Other identified infill locations	City sidewalk improvements (see Table 10-11 for projects)	RTP, TSP
441	Black Oak, Hillcrest to Acorn	Widen to two lanes with curb, gutter and sidewalks	RTP
443	Biddle, Midway to Morrow	Restripe for bike lanes	RTP
444	N Fir Street Extension	Extend Fir Street as three-lane section from Jackson to McAndrews	17-project list
445	Cherry Lane, N Phoenix Rd to Hillcrest Rd	Widen to three lanes with bike lanes and sidewalks	RTP
446	Springbrook, Cedar Links to Delta Waters	Widen to three lanes with curb, gutter, bike lanes and sidewalks	RTP
447	Table Rock Rd, Merriman Rd to I-5	Widen to three lanes with curb, gutter, bike lanes and sidewalks.	RTP
448	Delta Waters Rd, Provincial to Foothill	Widen to three lanes with curb, gutter, bike lanes and sidewalks	RTP/17-project list
449	Barnett Rd at Black Oak	Install SBR turn lane	RTP/LOS Study
450	Valley View Dr, Main to Hillcrest	Geometric improvements	RTP
451	Sunrise at Barneburg	Geometric improvements	RTP
455	Garfield, Columbus to Peach	Widen to three lanes with bike lanes and sidewalks	RTP
456	Sunset, South Stage Rd to Orchard Home	Widen to provide curb, gutter, bike lanes and sidewalk	RTP
457	Pierce, Hillcrest to Spring	Widen to provide curb, gutter, bike lanes and sidewalk	RTP
458	Diamond, Peach to Kings Hwy	Widen to provide curb, gutter, bike lanes and sidewalk	RTP
459	Highland, Keene to Main	Widen to provide curb, gutter, bike lanes and sidewalk	RTP
460	12th, Central to Cottage	Widen to provide curb, gutter, bike lanes and sidewalk	RTP
461	Barneburg, Keene to Main	Widen to provide curb, gutter, bike lanes and sidewalk	RTP
462	Edwards, Niantic to Riverside	Widen to provide curb, gutter, bike lanes and sidewalk	RTP
463	Hillcrest, N. Phoenix to Highcrest	Add sidewalks	RTP
464	Cottage, 12th to Main	Remove parking and re-stripe with bike lanes	RTP
465	Columbus to South Stage Rd	Widen to three lanes with bike lanes and sidewalks	RTP
466	Spring St, Crater Lake Ave to Sunrise	Widen to five lanes with curb, gutter, bike lanes and sidewalks	RTP
467	Lear Way, Coker Butte to Vilas	Construct new two lane road with bike lanes and sidewalks	RTP
468	Spring St, Sunrise to Pierce Rd	Widen to three lanes with curb, gutter, bike lanes and sidewalks	RTP

Table 5-8 Continued
Summary of Street System
Capacity and Operations Improvements

Project No.	Location	Improvement	Source of Improvement
Medford Street Improvements Continued			
469	Foothill Rd, Hillcrest to McAndrews Rd	Widen to three lanes with bike lanes and sidewalks	RTP
470	Hillcrest, Highcrest to Cherry	Widen to three lanes with bike lanes and sidewalks	RTP
471	Spring St, Pierce to Foothill Rd	Construct new three lane road with bike lanes and sidewalks	RTP
472	Cedar Links Rd, Foothill Rd to 1000’ east of Wilkshire Rd	Widen to three lanes with bike lanes and sidewalks	RTP
473	Crater Lake Ave, Delta Waters to Owen Drive	Widen to three lanes with bike lanes and sidewalks	RTP
474	Holmes, Oakdale to Kenyon	Widen to three lanes with bike lanes and sidewalks	RTP
475	Coker Butte Rd, Crater Lake Hwy to east of Crater Lake Ave	Move Coker Butte Rd north and realign Crater Lake Ave	RTP
476	Owen Drive (formerly Elliot Rd), Hwy 62 to east of Crater Lake Avenue	Realign Crater Lake Avenue to provide separation from Highway 62 (Cardinal becomes right in/right out and Elliot intersection is closed)	RTP
478	Coker Butte, Crater Lake Ave to Foothill	Realign and widen to rural two lane with shoulder bikeway	RTP
479	Manzanita-Spring connection, crossing with I-5	Construct new grade-separate crossing	RTP (Tier 2)
480	Lone Pine Rd, Foothill to Cherry	Construct new three lane roadway with bike lanes and sidewalks	RTP (Tier 2)
481	Coal Mine Rd (realigned), N. Phoenix to Santa Barbara Dr	Realign and widen to three lane road with bike lanes and sidewalks	RTP (Tier 2)
482	Elliot Rd, Crater Lake Ave to Foothill Rd	Construct new three lane road with bike lanes and sidewalks	RTP (Tier 2)
483	Tamarack Rd, McAndrews to Lone Pine Extension	Construct new two lane roadway with bike lanes and sidewalks	RTP (Tier 2)
484	Stanford, Coal Mine Rd to Cherry Lane	Construct new three lane road with bike lanes and sidewalks	RTP (Tier 2)/SE Medford Plan
485	Bellinger-Cunningham connector, Hull Rd to Orchard Home	Construct new three lane road with bike lanes and sidewalks	RTP (Tier 2)
486	Springbrook, Blackthorn to Coker Butte Rd	Construct new three lane road with bike lanes and sidewalks	RTP (Tier 2)
487	Ross Lane, Jacksonville Hwy to McAndrews Rd	Widen to five lanes with bike lanes and sidewalks	RTP (Tier 2)
488	Manzanita, extension from Riverside to Spring	Construct new five lane roadway with bike lanes and sidewalks	RTP (Tier 2)
489	Diamond St, Orchard Home Dr to Peach	Construct new two lane road with bike lanes and sidewalks	RTP (Tier 2)
490	McAndrews Rd, Ross Ln to Jackson St	Widen to five lanes with bike lanes and sidewalks	RTP (Tier 2)
491	Cherry, Hillcrest to Lone Pine	Construct new two lane road with bike lanes and sidewalks	RTP (Tier 2)
492	Cunningham, Orchard Home to Columbus Ave	Widen to five lanes with bike lanes and sidewalks	RTP (Tier 2)
493	Hillcrest Rd, Foothill Rd to Phoenix Rd	Realign and widen to five lanes with bike lanes and sidewalks	RTP (Tier 2)

Table 5-8 Continued
Summary of Street System
Capacity and Operations Improvements

Project No.	Location	Improvement	Source of Improvement
Medford Street Improvements Continued			
494	Highland, Barnett Rd to Siskiyou Blvd	Widen to three lanes with bike lanes and sidewalks	RTP (Tier 2)
495	Coker Butte Rd, Lear to Haul Rd	Construct new five lane road with bike lanes and sidewalks	RTP (Tier 2)
496	Stewart Ave, Lozier Ln to Dixie	Widen to five lanes with bike lanes and sidewalks	RTP (Tier 2)
497	Highland, Siskiyou Blvd to Keene Way	Widen to four lanes with curb, gutter, bike lanes and sidewalks	RTP (Tier 2)
505	4th at Central	Install WBL; convert WB approach to left, left, thru	LOS Study
506	4th at Riverside	Extend NBR lane	LOS Study
507	10th at Central	Remove parking at intersection and restripe to accommodate third through lane	LOS Study
508	Lear Way, Commerce to 1000' north	Construct new three lane road with bike lanes and sidewalks	TSP
509	Barnett at N. Phoenix	Widen and add WBR lane and second EBL lane	LOS Study
510	Biddle at Jackson	Add WBR turn lane	LOS Study
511	Biddle at Lawnsdale	Add SBL lane and widen Bullock to accommodate the added lane	LOS Study
512	Biddle at McAndrews	Add EBR lane and third WBL lane.	LOS Study
513	Biddle at Stevens	Add right-turn overlap on WB approach	LOS Study
514	Crater Lake at Delta Waters	Add EBL and WBL turn lanes and protect movements. Add EBR turn lane.	LOS Study
515	Crater Lake at Jackson	Add left-turn lanes on all approaches and protect movements	LOS Study
517	Highway 62 at Delta Waters	Add second WBL turn lane, second EBT lane and EBR turn lane	LOS Study
518	High Crash Rate Locations	Safety Improvement projects as needed (see Table 5-10	TSP
519	Hillcrest at N. Phoenix	Add EBR turn lane and provide signal overlap	LOS Study
520	Main at Columbus	Add NBL and SBL and protect movements. Extend second WB lane further west. Add SBR lane.	LOS Study
521	McAndrews at Columbus	Add second SBL lane (on McAndrews)	LOS Study
522	McAndrews at Riverside	Restripe WB approach to TH, TH+RT, RT and modify signal	LOS Study
523	McAndrews at Royal	Add second NBL lane from Royal onto McAndrews	LOS Study
524	McAndrews at Springbrook	Add SBR turn lane	LOS Study
527	At transit stops	Improvements at transit stops to enhance safety and access	TSP
528	Truck route locations	Install truck routing signs	TSP
529	Other identified infill locations	City bicycle lane improvements (see Table 10-5 for projects)	TSP
533	McAndrews Rd Bridge at Bear Creek	Repair bridge (assume 80% federal share/20% city share – city share shown)	TSP
534	10th Street Bridge at Bear Creek	Repair bridge (assume 80% federal share/20% city share – city share shown)	TSP
535	Barnett Road Extension e/o N Phoenix Road	Construct new five lane arterial with sidewalks and bike lanes	SE Medford Plan
536	Garfield, Holly to Kings Highway	Widen to provide curb, gutter, bike lanes and sidewalks	TSP

Table 5-8 Continued
Summary of Street System
Capacity and Operations Improvements

Project No.	Location	Improvement	Source of Improvement
Medford Street Improvements Continued			
537	South Stage Road, Hwy 99 to e/o I-5	Construct new three lane road with bike lanes and sidewalks, overcrossing of I-5	TSP
539	N/S Collector Street in SE Medford TOD	Construct new three lane road with bike lanes and sidewalks	SE Medford Plan
540	McAndrews at Springbrook	Add second EBL lane and widen Springbrook to accommodate the added lane	LOS Study
541	McAdnrews at Riverside	Add second WBR turn lane	LOS Study
542	Siskiyou Bl, Jackson St, Juanipero Wy, Highland Dr, Murphy Rd	Remove on-street parking, strip pavement for bicycle lanes, and install bicycle signage	TSP
543	4th St, 10th St, Dakota Ave	Remove on-street parking, strip pavement for bicycle lanes, and install bicycle signage	TSP
544	Royal Ave, Cedar Links Rd, Morrow Rd, Springbrook Rd	Remove on-street parking, strip pavement for bicycle lanes, and install bicycle signage	TSP
545	Jefferson School Area (Holmes, Kenyon)	Install sidewalks	TSP
546	Lone Pine School Area (Spring)	Install sidewalks	TSP
547	Plum Street, 11th to Dakota	Widen street to add curb, gutter and sidewalks	TSP
548	Withington Street, Plum to Hamilton	Install sidewalks	TSP
549	Newtown Street, Dakota to Stewart	Install sidewalks	TSP
550	Howard School Area (Mace and Howard Streets)	Install sidewalks	TSP
551	Roosevelt School Area (Ashland, Lindley, Bessie, Hillcrest, Oregon)	Install sidewalks	TSP
552	Washington School Area (Prune, 11th, 12th)	Install sidewalks	TSP
553	Wilson School Area (Grand)	Install sidewalks	TSP
554	Delta Waters Rd, Crater Lake Avenue, Garfield Rd, Cedar Links Drive	1st priority - Jurisdictional transfer road resurfacing	TSP
555	Stewart Avenue, Peach Street, Kings Highway	2nd priority - Jurisdictional transfer road resurfacing	TSP
556	Table Rock Road, Cherry Lane	3rd priority - Jurisdictional transfer road resurfacing	TSP
557	Columbus Ave, Coker Butte Rd, Lozier Lane	4th priority - Jurisdictional transfer road resurfacing	TSP
558	Airport Road, W Main St, Orchard Home Dr, Garfield Rd, Cunningham Lane	5th priority - Jurisdictional transfer road resurfacing	TSP
559	N Phoenix Rd, Foothill Rd, Orchard Home Rd	6th priority - Jurisdictional transfer road resurfacing	TSP
560	Bullock Rd, Hillcrest Rd, Ross Lane No.,	7th priority - Jurisdictional transfer road resurfacing	TSP
561	Foothill Road, Diamond St, Myers Lane	8th priority - Jurisdictional transfer road resurfacing	TSP

Table 5-8 Continued
Summary of Street System
Capacity and Operations Improvements

Project No.	Location	Improvement	Source of Improvement
Medford Street Improvements Continued			
562	Eucalyptus Dr, Sycamore Way, Ellendale Dr, Greenwood St, Prune St, Harbrooke St, Corona Ave, Roberts Rd, Cherry St, Hillcrest Rd, Lawnsdale Rd, E. Vilas Rd	9th priority - Jurisdictional transfer road resurfacing	TSP
563	Orchard Home Dr, Bateman Dr, Cottonwood Rd, Gilman Rd, N runway Dr, Midway Rd, Cloudcrest, Harvard Pl, Highcrest Dr, Princeton Way	10th priority - Jurisdictional transfer road resurfacing	TSP
564	Stanford Ave, Stardust Way, Yale Dr, Crews Rd, Archer Dr, Lowry Ln, Connell Ave, Ellen Ave, Marilee St, S. Stage Rd, Alamar St, Canal St, Meals Dr, Milford Dr,, Midway Rd	11th priority - Jurisdictional transfer road resurfacing	TSP
565	Rio St, E. Vilas Rd, Pech Rd, Schultz Rd, Table Rock Rd, Annapolis Dr, Cadet Dr Normil Terrace	12th priority - Jurisdictional transfer road resurfacing	TSP
ODOT Improvements			
1	Hwy 62/N Medford Interchange Corridor Solutions	Construct five lane overpasses, widen bridge, reconfigure interchange, intersection improvements at Poplar	RTP/LOS Study
1	Highway 62 at Poplar	Intersection and signal phasing improvements. Possibly grade separate with Highway 62 Unit 2 Project	LOS Study
3	S Medford Interchange	Construct new interchange	RTP
3		Southern connection to Center Drive/Garfield Road	LOS Study
7	Hwy 238 Unit 2 – Hanley Road and Rossanley Drive	Widen to two lanes with bike lanes and sidewalks (on Rossanley)	RTP
15	Coker Butte Road at Highway 62 and Crater Lake Avenue	Install new traffic signals	RTP/LOS Study
22	Owen Drive at Highway 62 and Crater Lake Avenue	New Owen Drive Connection to Hwy 62 (with signal)	RTP/LOS Study
22		New Owen Drive intersection with Crater Lake Avenue (with bulb-out and signal on Crater Lake Ave)	RTP/LOS Study
24	McAndrews, Biddle to Riverside	Reconstruction of overpass to accommodate added lanes (assumed to be part of I-5 seismic retrofit project)	RTP
25	Haul Road, Biddle to Delta Waters (Hwy 62 Unit 2)	Construct new hour lane road with bike lanes and sidewalks	RTP
26	Haul Road, Delta Waters to Gregory Rd (hwy 62 Unit 2)	Construct new hour lane road with bike lanes and sidewalks	RTP
27	Crater Lake Avenue, Elliot to Corey	Widen to provide curb, gutter, bike lanes and sidewalks	RTP
29	Hwy 99/Hwy62/ Hwy238	Grade separation or flyover (EA identifies need for further improvements in future)	LOS Study
30	Highway 99 at South Stage	Second NBL lane and SBR lane	LOS Study
31	Highway 99 at Stewart	Add third SB through lane	LOS Study

Table 5-8 Continued
Summary of Street System
Capacity and Operations Improvements

Project No.	Location	Improvement	Source of Improvement
Jackson County Tier 1 Improvements			
200	Table Rock Road/Pine to Biddle to Wilson	Widen to five lanes with bike lanes and sidewalks	RTP
204	Sage Road, Posse to Ehrman Way	Widen to three lanes with sidewalks and bike lanes. Intersection improvements at Hwy 238.	RTP/LOS Study
207	Oak Grove Rd, Medford UGB to Hwy 238	Widen to two & three lanes with bike lanes and sidewalks	RTP
217	Lozier Lane, Stewart to Jacksonville Hwy	Widen to three lanes with bike lanes and sidewalks	RTP
218	N Ross Lane, McAndrews Rd to Rossanley Rd	Widen to three lanes with bike lanes and sidewalks	RTP
223	Foothill Rd, McAndrews to Delta Waters	Widen to three lanes with bike lanes and sidewalks	RTP
224	Kings Hwy, South Stage Rd to Stewart Ave	Widen to three lanes with bike lanes and sidewalks	RTP
227	Vilas Rd, Haul Rd to Crater Lake Ave, Hwy 62 at Vilas	Widen to five lanes with bike lanes and sidewalks, Realign Crater Lake Avenue to increase spacing from Highway 62 and signalize intersection	RTP/LOS Study
228	Table Rock Rd, Bear Creek to Pine St/Biddle Rd	Widen to three lanes with bike lanes and sidewalks	RTP
229	Beall Lane, Front St. (Hwy 99) to Merriman Rd	Widen to three lanes with bike lanes and sidewalks	RTP
230	Stewart Ave, Hull Rd to Lozier Lane	Widen to three lanes with bike lanes and sidewalks	RTP
260	Hwy 238 at Sage Rd	Add NBR and SBR lanes. Add second WBL lane and widen Sage to accommodate the added lane.	LOS Study
264	Main at Ross	Add second EBL lane and widen Ross to accommodate the added lane. Add WBR lane.	LOS Study
265	Highway 62 at Vilas Road	Add second east and westbound through lanes	LOS Study

Source: *2001-2023 Rogue Valley Regional Transportation Plan*, 2002 and *LOS Study*, JRH Transportation Engineering, 2003.

Bridge Improvements

Based on the list of structurally deficient bridges in the Medford UGB that were identified in Chapter 3 and further discussed above, the following improvements are identified in Table 5-9.

Table 5-9
Bridge Improvements

Bridge ID	Jurisdiction	Highway	Mile Point	Crosses	Comments
08752	City	10th Street	1.20	Bear Creek	
07610	City	McAndrews Road	1.87	Bear Creek	
07160	City	Barnett Road	1.15	Bear Creek	Repair part of S. Medford interchange project
08677N	ODOT	I-5	27.09	Bear Creek	Repair part of S. Medford interchange project
08677S	ODOT	I-5	27.09	Bear Creek	Repair part of S. Medford interchange project
08332	ODOT	I-5	28.66	Medford Viaduct	Repair/retrofit in 2003
03660	ODOT	Highway 99	8.03	Crooked Creek	

For deficient bridges within the city, federal Highway Bridge Rehabilitation and Replacement (HBRR) grant funding should be sought. Additionally, it will be important that traffic management plans be developed to accommodate current travel demand during the time that bridge improvements are under construction. Development of these plans should take into account current function of the bridge and any special needs such as freight routing and/or bicycle/pedestrian connections. Bridge improvement projects for structures under the jurisdiction of the City of Medford are also included in Table 5-8.

Safety Improvement Strategies

Table 3-10 presents a summary of crash data at several major intersections in the Medford UGB that are currently experiencing a higher than average crash rate. Preliminary analysis of these locations is included in Table 5-5 which is based on a review of the predominate types of crashes and an assessment of likely contributing causes at all of the identified high crash locations. Table 5-10 includes preliminary projects for intersections that would not be improved as a result of a capacity enhancement. The projects identified in Table 5-10 are also included in Table 5-8. Refinement planning and preliminary engineering will be necessary to confirm the feasibility of each project. The city should consider developing a Safety Priority Index System (SPIS) to refine its review and assessment of high crash locations to facilitate the prioritization of improvement projects.

Table 5-10
Potential Safety Improvements for High Crash Rate Intersections
Not Addressed by Other Improvement Projects

Intersection	Potential Safety Improvement
Riverside Avenue/Jackson Street	Consider: - Modifications to signal timing change intervals (i.e. yellow and/or all red phase) - Red light enforcement - Signal progression improvements on Riverside
6th Street/Holly Street	Consider: - Maintain stop sign visibility, all-way stop if warrants met
Central Avenue/Jackson Street	Consider: - Modifications to signal timing change intervals (i.e. yellow and/or all red phase) - Red light photo enforcement - Signal progression improvements on Central
10th Street/Cottage Street	Consider: - Improvements to and maintenance of sight distance visibility from Cottage - Install all-way stop if warrants met
10th Street/Grape Street	Consider modifications to signal timing change intervals (i.e. yellow and/or all red phase)
8th Street/Riverside Avenue	Consider modifications to signal timing change intervals (i.e. yellow and/or all red phase)
10th Street/Oakdale Avenue	Consider adding protected left-turn signal phasing
McAndrews Road/Court Street	Consider: - Improvements to sight distance for east-west traffic on McAndrews Rd. - Improve east/west left turn protection (phasing, all red)

Table 5-10 Continued
Potential Safety Improvements for High Crash Rate Intersections
Not Addressed by Other Improvement Projects

Intersection	Potential Safety Improvement
Riverside Avenue/Main Street	Consider: - Modifications to signal timing change intervals (i.e., yellow and/or all red phase) - Red light photo enforcement - Signal progression improvements on Riverside
Table Rock Road/Morningside Street	Maintain visibility of stop signs
Crater Lake Avenue/Brookhurst Street	Consider: - Protected east/west left turn phases - Maintain sight visibility
6th Street/Central Avenue	Consider: - Improved signal visibility - Signal progression improvements on Central
Crater Lake Avenue/Stevens Street	Improve east/west left turn protection (phasing, all red)
10th Street/Holly Street	Consider: - Sight distance improvements of and for westbound 10th - Evaluate signal timing change intervals (i.e. yellow and/or all red phase)
8th Street/Central Avenue	Consider: - Modifications to signal timing change intervals (i.e. yellow and/or all red phase) - Red light photo enforcement - Signal progression improvements on Central
Barnett Road/Murphy Road	- Evaluate Protected Left Turn Phasing on Barnett Rd.

In addition to the foregoing projects, the City should make efforts to enhance street system safety through the following actions:

- Regularly monitor crash data on transportation facilities within the City, and assess and update the list of high crash locations as appropriate. At a minimum, a reassessment of crash data should be conducted once every three years or after a significant change in the roadway system has occurred (a significant change is one which would cause a rerouting of traffic that causes a substantive increase or decrease in traffic volumes). Intersection accident rates should be calculated based on Million Entering Vehicles (MEV) according to the following formula. Accidents resulting from DUI or which do not have engineering solutions (such as road racing) should be excluded from the data analysis.

  Crash rate / MEV = (# of accidents/years of data) x 1,000,000 / (total weekday traffic volume x 261 weekdays in a year)

- Maintain an inventory of traffic control devices (e.g., traffic signals, signs, striping and pavement marking) to ensure that these devices can be managed and kept in good repair.

- Require maintenance of sight-distance areas adjacent to intersections and driveways, to keep clear of fencing, landscaping, foliage, etc. that could obstruct the view of motorists, bicyclists, and pedestrians.

- Actively enforce motor vehicle codes related to transportation safety.

- Promote traffic safety education and awareness, emphasizing the responsibilities required of motor vehicle drivers, in order to reduce the per capita number of motor vehicle accidents.

Summary of Improvement Strategies

In summary, the Street Plan includes the following strategies:

- Implement the street functional classification system and revised street standards. Consider neighborhood impacts, unique topography or neighborhood features and street connectivity needs, as well as opportunities for street design treatments such as boulevards or "main" streets.

- Develop and adopt Neighborhood Circulation Plans to address local traffic issues.

- The City, County and ODOT should utilize access management, including access location and spacing, as a strategy to increase the capacity and safety of the transportation system. The City should adopt ODOT access management standards for state highways in Medford, as well as any duly enacted revisions thereto, and revise City access management standards to maximize efficiency of existing and future street system appropriate to the street classification.

- Maintain the current Level of Service "D" standard to identify needed congestion relief improvement projects. Further study revisions to transportation concurrency ordinance.

- Implement funded short, medium and long-term roadway and intersection improvement projects (based on timing and funding availability identified in Chapter 13).

- Implement bridge improvements to address existing city bridges that have been identified as structurally deficient.

- Implement roadway safety measures including improvements to address existing safety problems and other relevant actions by the city to enforce existing municipal code provisions that enhance travel safety.

Chapter 6
Freight Plan

Overview

This chapter presents a review and assessment of needs, deficiencies, policies and improvement options affecting the freight transportation system within the Medford Urban Growth Boundary (UGB). The freight transportation system includes trucking, pipelines, rail and air freight. Issues related to air freight are discussed in the general context of air transportation in Chapter 9. Freight rail is discussed in Chapter 11. Included in this chapter is a discussion of truck freight movement and pipelines, and it acknowledges the water transportation mode.

Truck Freight

Key transportation issues to be addressed in this section will include identifying appropriate modifications to the regional truck route system (as identified in the *2001-2023 Rogue Valley Regional Transportation Plan*) to address the city's truck routing requirements, and determining the adequacy of the existing truck route system to serve current and future truck-related demand (as measured by levels of congestion on truck routes and quality of access to significant truck trip generators). Included in this section is a discussion of the local and regional policy context for developing and maintaining the truck freight system, an evaluation of needs and deficiencies, and a discussion of various improvements.

Information contained in this memo was obtained largely from the *2001-2023 Rogue Valley Regional Transportation Plan*, from the on-going *Rogue Valley Freight Study*, and from planning and zoning data supplied by the City of Medford. In addition, the city's Level of Service study evaluated critical connections along the local and regional truck route system and provides insight into the benefits realized by the implementation of currently-funded roadway improvement projects that are expected to be completed within the 20-year planning horizon.

Policy Context and Background

The 1999 Oregon Highway Plan recognized the importance of good freight mobility to the State's economy and added a policy to *"maintain and improve the efficiency of freight movement on the state highway and access to intermodal connections. The State shall seek to balance the needs of long distance and through freight movements and local transportation needs on highway facilities in both urban areas and rural communities."* Through the Transportation Planning Rule and guidelines prepared by ODOT for preparation of local transportation system plans, local and regional governments are encouraged to improve planning coordination between public investments in highways and other investments (both public and private) in the freight movement infrastructure.

The *Regional Transportation Plan (RTP),* prepared for the Medford Urbanized Area by the Rogue Valley Metropolitan Planning Organization (RVMPO) and adopted in 2002, establishes policy direction for facilitating freight mobility within the Medford UGB. The RTP encourages *"Local governments ... to take actions to promote access to all modes of transportation for freight movements to serve the needs of residents and businesses in the RVMPO planning area. Local actions include ensuring access to freight facilities via the local street system and actively supporting the freight transportation policies set forth in the Oregon Highway Plan ..."* (Policy 15-1). Supporting actions include identifying roadway obstacles and barriers to efficient truck movement on state highways, improving safety, encouraging the use of Intelligent Transportation System Commercial Vehicle Operation technology, funding and improving roadways to accommodate freight movement, and other actions.

Of particular significance to the development of the City's TSP are the policies related to identifying barriers to efficient freight movement, and improving access to intermodal and/or other significant freight facilities (particularly the airport, truck stops, and major truck generating businesses). Development, maintenance and improvement of continuous connections between freight generators and inter-regional routes, such as Interstate 5 and Highway 62 are of key importance.

The City's existing *Comprehensive Plan* identifies the general need to assure "*maximum mobility for all Medford residents"* and to *"facilitate the safe movement of inter-neighborhood vehicular traffic within and through the community, consistent with adjacent land use requirements"* but does not specifically address freight mobility. These general goal statements were reviewed and modified as appropriate during the development of the TSP. New goals, policies and implementation strategies are included in Chapter 13.

Needs and Deficiencies

Chapter 3 of the TSP includes an analysis of the existing truck freight system and current deficiencies with that system. Much of this information was obtained from studies conducted by the RVMPO during preparation of the *2001-2023 Rogue Valley Regional Transportation Plan*, in particular the on-going *Rogue Valley Freight Study*. This study includes an assessment of current freight practices in the Rogue Valley area for highways, railways, air transportation and pipelines. It addresses intermodal connectors and facilities, principal manufacturing facilities, warehouses and distribution centers. It identifies principal transportation providers in the region and the nature of the services that they provide. The study also addresses current strengths and weaknesses with the freight mobility system in the greater Medford area, and suggests opportunities for improvement.

As indicated in the RVMPO's freight-related studies, one of the greatest assets of the region is its central location on the west coast that results in it being an intermediate stopping point for long-distance freight movement. The area also benefits from Oregon law that permits triple trailers. As triples are not permitted in California, the Medford area has become a hub of trucking activity partly because southbound trucks must drop a trailer before entering California, while northbound trucks heading into Oregon can add a trailer. Additionally, because of its location and relative isolation from other large urban centers, Medford has become a distribution hub from southern Oregon and northern California.

According to the *Rogue Valley Freight Study*, the number of freight and freight-related companies in the Medford area is high. For example, there are at least 54 companies in the area engaged in trucking and/or transportation brokering. The Oregon Employment Department's report 2000 Regional Economic Profile, indicates that there was a 36 percent increase in the number of jobs in the Transportation and Public Utilities sector in the area between 1990 and 2000. Most of these jobs were in trucking. The 1999 ODOT publication "Freight Moves the Oregon Economy" notes that every 100 jobs in Oregon's transportation-dependent business sectors generate 85 to 154 additional jobs. Transportation-related sectors include manufacturing, transportation, communication, public utilities and wholesale trade. Based on the Oregon Employment Department's 2001 data, a total of 14,500 (19.4% of the labor force) were employed in Jackson County in these sectors. Using the multipliers identified above, the 14,500 transportation-related jobs translates into a range of between 12,325 and 22,330 additional jobs.

The freight transportation system consists of streets and highways where the demand for access and circulation by large vehicles is expected to be the highest. The foundation of this system are the critical "backbone" routes identified by the Federal Highway Administration as the National Highway System. National Highway System Routes are intended to include the most significant highways in the United States for the movement of people and freight. Within the Medford UGB, this system includes Interstate 5, Highway 62 and Highway 99. Most truck traffic in the region and the state moves on the National Highway System. In addition, the 1999 Oregon Highway Plan designated a State Highway Freight

System based on freight volume, connectivity and linkages to major intermodal facilities. Interstate 5 is the only highway in the Medford UGB that has been designated as a State Freight Highway.

The Rogue Valley area's *2001-2023 Rogue Valley Regional Transportation Plan (RTP)* identified additional routes that are considered to be of regional significance for the movement of freight. These routes are illustrated in Figure 3-4 in the existing transportation conditions chapter. According to the RTP, of freight-related firms with more than 100 employees in the regional planning area, only one company is more than ¼ mile from a designated freight route. Within the Medford UGB, areas with significant commercial and manufacturing activity are generally located near the I-5 interchanges, along Highway 99 or along Highway 62, resulting in heavy truck volumes on these facilities. Because of their location within industrial and commercial corridors, Biddle Road and Table Rock Road also experience a high volume of truck activity.

The *2001-2023 Rogue Valley Regional Transportation Plan* identifies 10 locations within the RVMPO area that are currently experiencing the highest volumes of truck traffic. Six of these locations are within the Medford UGB and include:

- Highway 99 and McAndrews Road
- Biddle Road and Table Rock Road
- Highway 62 and Highway 99
- Interstate 5 ramp terminal and Highway 62
- Court Street and Main Street
- Biddle Road and Airport Road

According to the *Rogue Valley Freight Study*, one of the most serious issues facing freight transportation in the region is the declining condition of Interstate 5, particularly its bridges. Many of the bridges on the I-5 system are cracked and need to be repaired or replaced. In the interim before replacement, weight restrictions have been put in place in a number of locations and detours established for heavier tractors and trailers. Other weaknesses that have been identified with the freight transportation system in the Medford area include: the lack of viable alternative routes when regular routes are blocked during construction (such as the experience with I-5 during the 2003 viaduct seismic retrofit project through Medford); daily out-of-direction travel to avoid bottlenecks and congestion; and restrictions that prevent the movement of oversized freight at certain times.

In a shipper survey conducted for the *Rogue Valley Freight Study* very specific problem locations were identified and some suggestions were made for improvements. The main issues raised generally related to congestion (particularly on Highway 62), difficult or awkwardly designed intersections at various locations (including Crater Lake Avenue at Vilas Road, and the right turn from Stewart Avenue to northbound Highway 99), lack of north/south truck connections through town other than I-5 and Highway 99 that goes through downtown, poor signal timing along several major arterial roads that results in a lot of stop-and-go driving, and the inability of Vilas and Table Rock Roads to accommodate heavy vehicles.

Many of the congested locations identified as problems during the RVMPO survey of trucking companies were also identified during the City's *LOS Study*. Improvements to these locations, including both signal timing improvements and roadway/turning lane improvements, are identified and discussed in the Street Plan. Further discussion of truck freight mobility within the Medford UGB is presented in Table 6-1.

Table 6-1
RVMPO Freight-Related Street Improvements

Location	Improvement Suggested	Priority	Actions
Highway 62, I-5 to Table Rock Road	Establish a traffic signal interconnect to minimize truck stopping	High	Should be addressed by City and ODOT as a traffic signal coordination priority
Foreign Trade Zone area	Needs improved connection between the FTZ and Highway 62 expressway	High	Proposed extension of Coker Butte Road west of Highway 62 to address this need.
Highway 62 at Delta Waters	Address congestion problems	High	Existing LOS E (V/C = 1.01) and future LOS F based on LOS Study. Identified for improvements.
Crater Lake Avenue at Vilas and Highway 62	Improve traffic circulation	High	Identified for improvements.
Airport Road at Table Rock Road	Add turning lanes	Medium-High	County traffic operations analysis should address this need
Table Rock Road, other locations	Add turning lanes	Medium-High	Evaluate and consider as part of the Table Rock roadway improvement project
W. Main Street at Ross/Lozier	Address congestion problems	Low	2023 LOS F based on LOS Study. Identified for improvements.

Proposed City Freight Routes

The designation of a city truck freight route system is a useful tool for identifying and prioritizing project locations that affect freight movement. This system can also be used to identify locations where street improvements could be made to enhance the movement of large vehicles and/or to provide access to destinations with significant truck activity.

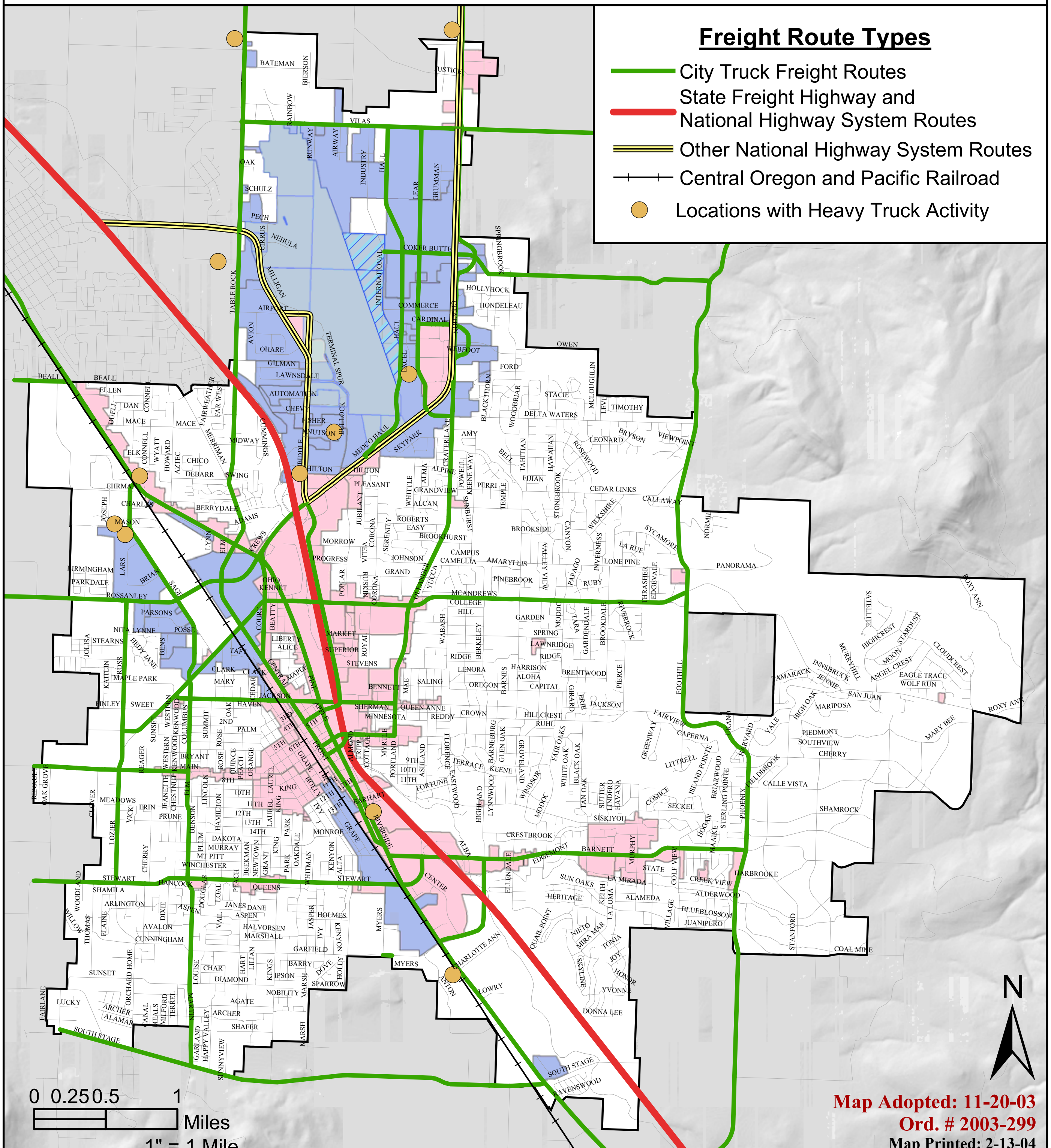
As noted above, Figure 3-4 in the existing conditions chapter illustrates the regional freight route system as developed by the Rogue Valley Metropolitan Planning Organization (RVMPO) and incorporated into the *2001-2023 Rogue Valley Regional Transportation Plan*. This freight route system includes a State Freight Highway (I-5), and National Highway System facilities (I-5, Highway 62 and Biddle Road) along with a number of city arterial and collector streets. Also included in Figure 3-4 are specific locations where a significant level of truck activity is currently being generated, existing industrial and commercial zoning within the UGB where truck activity might occur, and the location of the Rogue Valley International-Medford Airport and nearby Foreign Trade Zone which may also generate truck activity.

The regional freight route system was used as a starting point for development of a city truck freight route system. In developing this system it's important to note that designation of city truck routes would not affect localized truck circulation for business access and deliveries. Truck routes are meant to direct through truck trips (e.g., regional truck traffic or trucks traveling between more distant portions of the city to facilities where truck traffic is more appropriate considering such factors as existing and proposed traffic volumes, roadway width, pavement design, surrounding land uses and other consideration.

Figure 6-1 reflects the proposed truck freight route system within the Medford Urban Growth Boundary (UGB). The most significant change from the RTP regional freight system illustrated in Figure 3-4 is the change in designation of Highway 238 from McAndrews Road to Rossanley Drive, which occurred with completion of the Big X project west of the I-5 North Medford Interchange.

Several additional truck freight facilities have been proposed to be added to the regional routes shown in Figure 3-4. These routes serve areas where existing land use and/or zoning provide for industrial or

Figure 6-1: Medford Designated Truck Routes and Other Freight Facilities



Foreign Trade Zone

Rogue Valley International - Medford Airport

Commercial Zones

Industrial Zones

Other Streets

UGB

CITY OF MEDFORD OREGON

commercial business activity which could, as a result, generate significant levels of truck activity or need truck-related accommodation. Proposed additions to the truck freight system include:

- Bullock Road from Highway 62 northward to the Medford Airport,
- New arterial alignment in the vicinity of Medco Haul Road from Highway 62 to West Vilas Road,
- Easterly extension of McAndrews Road (constructed during 2002/2003) to connect with Foothill Road,
- New alignment of North Phoenix Road to connect with Foothill Road at Hillcrest Road, and
- Garfield Road extension from Highway 99 to Barnett Road at Highland Drive.

A number of routes designated as regional freight routes are <u>not</u> included in the proposed City truck route map. Generally the regional freight routes not included in the proposed City truck route map run through residential areas (along roads typically classified as collector streets), downtown Medford (e.g., the former alignment of Highway 238), or areas that are served by other, more preferable roadways. It is proposed that these routes also be removed from the RVMPO regional freight route map. They include the following:

- Delta Waters Road between Crater Lake Avenue and Foothill Road,
- Beall Lane east Highway 99 to Merriman Road,
- Merriman Road between Beall Lane and Table Rock Road,
- Sage Road southeast of Posse Lane (Sage Road is proposed for realignment to connect with Columbus Avenue and this new alignment should be designated for trucks),
- W Main Street between Central Avenue and Columbus Avenue,
- W 8th Street between Central Avenue and Columbus Avenue,
- Hillcrest Road between Black Oak Drive and the existing intersection with North Phoenix Road,
- Black Oak Drive between Hillcrest Road and Barnett Road,
- North Phoenix Road between Princeton Way and Hillcrest Road, and
- Barnett Road between Oakdale Avenue and Holly Street.

Truck Freight-Related Improvement Strategies

As discussed in this chapter, good freight mobility and accessibility is essential to the on-going economic vitality of the Medford/Jackson County region. While a detailed analysis of freight issues in currently underway by the Rogue Valley Metropolitan Planning Organization (RVMPO), several initial strategies have been identified. Specific actions that should be taken by the City of Medford include the following:

- Approve the freight route system map, install signage and focus improvements on accommodation of large vehicles along these routes.

- Remove inappropriate truck route signage in downtown Medford that directs motorists to the old route for Highway 238.

- In cooperation with RVMPO, Jackson County and ODOT, identify street improvements that enhance freight mobility. Table 6-1 provides insight into a preliminary list of these improvements including locations where the City's LOS Study identifies specific improvement needs. Establish a priority list of improvements for implementation and secure funding.

- Address deficient bridges along freight routes, in particular, McAndrews Road over Bear Creek including assigning weight restrictions as necessary. Evaluate and develop improvement projects to address these deficiencies, secure necessary funding, and manage freight traffic during construction to minimize adverse impacts on both freight mobility and local multi-modal traffic circulation.

- Work cooperatively with freight providers and other jurisdictions to balance freight mobility with community livability including:
    - Increase freight transport safety awareness
    - Reduce the number and severity of commercial transport-related accidents
    - Enforce regulations related to safe transport of hazardous materials
    - Address issue of commercial vehicles blocking travel lanes on arterial and collector streets while loading or unloading during peak travel periods
    - Reduce through truck traffic on residential streets

Pipelines

The only major pipeline transportation system in the Medford area includes several natural gas distribution lines located along the I-5 corridor between Grants Pass and Ashland. Within the Medford area natural gas distribution is operated by Avista Utilities. All other pipelines in and throughout the Medford area include transmission lines for electricity, cable television and telephone services, as well as pipeline transport of water and sanitary sewer. Medford also has two major water transmission pipeline (36 inch and 48 inch) from Big Butte Springs in the Cascade Mountains.

Because there is no significant pipeline transportation system within the Medford UGB and the majority that exist are for local utilities, no specific projects for this area of transportation are provided for in the Medford TSP. The City should establish policy to promote accessibility to, protection of and siting of appropriate locations for regional pipeline systems within the City.

Water Transportation

There are no commercially-navigable waterways in Medford. Accordingly, no projects for this transportation system are provided for in the Medford TSP.

Chapter 7
Public Transit Plan

Overview

This chapter documents a review and assessment of needs, deficiencies, policies and improvement options affecting the public transit system within the Medford Urban Growth Boundary (UGB). Included is a discussion of the local and regional policy context for developing and maintaining this travel mode, an evaluation of needs and deficiencies in the existing system, a discussion of various improvement strategies for enhancing and expanding this system, and strategies for the City of Medford. Public transit service in the Medford area is currently provided by the Rogue Valley Transportation District and is supported by the city through requirements in the land development process to accommodate and/or provide amenities to encourage the use of transit – both within designated Transit-Oriented Districts and elsewhere in the city. This chapter also addresses intercity bus services.

Information contained in this section was obtained largely from the existing conditions inventory, input from RVTD planning staff, the City's *Comprehensive Plan* and Vision for the 21st Century, and on-going planning and implementation activities related to establishing Transit Oriented Districts (TODs). In addition, the public transit recommendations in the *2001-2023 Rogue Valley Regional Transportation Plan* were reviewed to identify service deficiencies and potential improvement strategies that have had previous planning attention at the regional level.

Public Transit

Policy Context and Background

The *2001-2023 Rogue Valley Regional Transportation Plan (RTP)* prepared for the Medford Urbanized Area by the Rogue Valley Metropolitan Planning Organization and adopted in 2002, establishes regional policy direction with respect to the public transit system within the Medford UGB. Many of these policies speak specifically to the services provided by the Rogue Valley Transportation District (RVTD) including maximizing ridership, improving service frequency and coverage (including operating with headways no greater than 30 minutes on all routes during peak periods and retaining off-peak, midday service on all routes). However, some RTP policies are directed at local governments within the RVTD service area. Specifically pertinent to the Medford TSP are the following:

- *"Local governments shall work with major employers to encourage transit use by their employees through fare subsidies and other programs".* (Policy 11-6)
- *"RVTD and local governments shall cooperate to the maximum extent to identify and include features beneficial to transit riders and transit district operations when developing plans for roadway projects".* (Policy 11-7)
- *"RVTD and local governments shall encourage connectivity between different travel modes, including accessibility of major transit facilities to bike, pedestrian, and automobile traffic".* (Policy 11-8)
- *"RVTD and local governments shall promote the use of transit services to residents and businesses as an alternative mode of travel"*. (Policy 11-9)

The RVMPO has also prepared analysis of *Transit Oriented Design and Transit Corridor Strategies* (May 1999) to support the agency's transit oriented development (TOD) program. This program includes components related to land use, transit service enhancements, and improvements to the pedestrian circulation system to encourage the use of transportation modes other than single occupant automobiles. Anticipated to develop over a 20-year period, the program aims to establish a permanently-fixed hierarchy of transit routes served by compact development along a series of "Primary Transit Corridors". These corridors are described in the section entitled "Future Service Deficiencies and Regional Plans".

"Major Transit Stops" will serve the Primary Transit Corridors. Consisting of covered shelters and bicycle racks, these stops are intended to accommodate 15 to 20 people at one time. Vendor activity, such as magazine or espresso booths, is also encouraged to locate at these stops. Safe and convenient pedestrian connections to Major Transit Stops will be important to ensuring the success of the primary transit corridor concept.

The City of Medford's existing *Comprehensive Plan* includes a goal and policy specifically directed at enhancing the public transit system. Goal 4 indicates that the City will take actions *"To facilitate the availability of a viable pubic transportation system in the Medford planning area to serve the needs of those unable to secure private transportation, and those who wish to choose an alternative to private transportation".* This goal is further defined by a policy directing that "*The City of Medford shall encourage and support, in every way possible, the continuation and expansion of the Rogue Valley Transportation District services and facilities, both as an important transportation mode, and as an air quality strategy."* Development of the public transit system is further supported by specific *Comprehensive Plan* objectives. These objectives focus requiring, where appropriate, that consideration be given to incorporating transit facilities as part of the infrastructure improvements required for major land development applications. The *Comprehensive Plan* goal and accompanying policies and objectives were reviewed and modified as appropriate during the development of the TSP. New goals, policies and implementation strategies are included in Chapter 13.

The City of Medford's Vision for the 21st Century foresees a community that is *"served by a safe, accessible, efficient, and well planned transportation system"*. The Vision Statement includes a series of "elements" aimed at meeting the City's circulation needs in the coming decades. Elements of the vision that pertain to the public transit system focus on working in partnership with other agencies in the region to provide more frequent transit service with longer hours of operation and more passenger amenities.

The City of Medford's *Land Development Code* further provides for transit service enhancements by requiring that developers incorporate transit amenities into their projects along "existing or planned" transit routes. These amenities could range from requiring that on-site buildings be oriented to pedestrians (including transit riders) through placement on the site and location of major access points, to requiring that projects include ADA compliant waiting areas for transit with signs, a paved area for bus boarding, improved accessibility for pedestrians, lighting, benches, shelters or other amenities.

In addition to regional and local policy strategies governing public transit system enhancements, two state directives must also be satisfied. The first is associated with State Planning Goal 12, the Transportation Planning Rule (TPR). The TPR requires the Oregon Department of Transportation (ODOT) and the cities and counties of Oregon to cooperate and to develop balanced transportation systems, including public transit service and facilities.

The second directive is based on alternatives to the TPR requirement for a per-capita reduction in vehicle miles of travel (VMT) that have been approved for implementation in the Rogue Valley metropolitan area (RVMPO). This VMT reduction requirement is intended to reduce vehicular congestion in the urban portions of Oregon and to encourage the development and use of alternative transportation modes such as transit, walking and bicycling. The RVMPO Alternative Measures package was endorsed in 2002 by the

Land Conservation and Development Commission, and includes seven measures with targets for implementation that are phased in five-year increments through 2020. The Alternative Measures pertaining to transit planning are listed in Table 7-1. It should be noted that Medford will have a significant responsibility for implementing the Alternative Measures.

Table 7-1
Alternative RTP Performance Measures Related to Public Transit for the Rogue Valley MPO

Measure	Intent	Current 2000	Benchmark 2005	Benchmark 2010	Benchmark 2015	Target 2020
Measure 1: Transit and bicycle/ pedestrian mode share	Demonstrate a shift in travel behavior away from the automobile	% of daily trips Transit: 1.0 Bike/Ped: 8.2	% of daily trips Transit: 1.2 Bike/Ped: 8.4	% of daily trips Transit: 1.6 Bike/Ped: 8.8	% of daily trips Transit: 2.2 Bike/Ped: 9.8	% of daily trips Transit: 3.0 Bike/Ped: 11.0
Measure 2: % Dwelling Units (DUs) w/in ¼ mile walk to 30-min. transit service	Determined through GIS mapping. Current estimates are that 12% of DUs are within ¼ mile walking distance of RVTD transit routes.	12%	20%	30%	40%	50%
Measure 7: Alternative Transportation Funding *	Demonstrate commitment to implementing the alternative transportation projects upon which many of the measures rely	N/A	$950,000	$2.5 million	$4.3 million	$6.4 million

Source: Land Conservation and Development Commission, OAR 660-012-0035(5), April 3, 2002.
* Dollar amounts are cumulative from 2000 through 2020.

Needs

Existing Service Deficiencies

The Rogue Valley Transportation District (RVTD) provides public transportation in the Medford area, and between Medford and its surrounding communities in Jackson County. In 2002, RVTD operates a fleet of 30 buses including 10 powered by compressed natural gas. Service includes nearly 300-miles of fixed route and paratransit service. Over 2.7 million passenger miles are traveled annually with approximately 848,000 fixed route passengers and nearly 70,000 paratransit passengers carried in 2001-2002. RVTD also promotes alternative transportation through various travel demand management (TDM) strategies such as ridesharing, a "bikes on buses" program, telecommuting, and other activities. RVTD works with major employers in the area to provide a variety of different incentives, including a guaranteed ride home program to increase the use of fixed route bus service by employees.

Photo courtesy of RVTD

RVTD's fixed route service typically radiates outward from downtown Medford, connecting this portion of the city to a variety of other destinations. With the exception of the east/west service within Medford that is currently provided by Routes 2 and 4, fixed route service is primarily designed to provide intercity service that connects central Medford to the communities of Ashland, Phoenix, Central Point, Jacksonville, Talent and White City. The existing route structure generally provides very good coverage within 1/4 mile of most activity centers in the greater Medford area. However, connections between activity centers are not easily made and there is limited or no service in much of the eastern (and largely residential) portion of the city, including the SE Medford TOD and in the southwestern portion of the urban area. Additionally, little or no service is provided to the northwest industrial portion of the city and to the southwest, largely residential area. Service to the Rogue Valley International-Medford Airport is provided upon request only. Figure 3-5 in Chapter 3 shows the existing RVTD fixed route structure and ¼ mile service coverage area.

RVTD operates eight fixed routes generally from 7:30 am to 6:00 pm. Service is currently provided Monday through Friday and there is no weekend service. Of the eight fixed routes currently operated by RVTD, only four operate on 30 minute frequencies. The rest operate with one hour service frequency, with the exception of Jacksonville (Route 30) with a total of only nine runs per day. RVTD has designated bus stops and in many locations has installed amenities for passengers. However, there are existing problems with inadequate waiting areas and pedestrian access to many other stops throughout the UGB.

A passenger survey conducted by RVTD in November 2001 indicated that the following service deficiencies were identified by current riders:

- Riders want weekend service, especially on Routes 10 (between Medford and Ashland) and 60 (White City) so that riders who work Monday to Friday can shop on the weekend after they have been paid.
- One Route 10 bus is needed for evening service (e.g., as late as 9 PM for those working late who need to get home).
- One express bus run during each of the morning and evening peak hours on Route 10. A slightly higher fare would be acceptable.
- Regular, all day service on Route 30 rather than 9 times/day as is currently provided.
- Expanding or modifying existing route structure to reach pockets of elderly housing to minimize walking distances to bus stops for these individuals.

According to the *2001-2023 Rogue Valley Regional Transportation Plan*, the existing hours of operation do not fully meet the demand for general public transit service, particularly for Southern Oregon University students, Rogue Community College students, Bear Creek Corporation employees, residents living at the Veteran's Domiciliary in White City, Rogue Valley Medical Center, Providence Hospital and the Rogue Valley Manor. Modifications are needed to provide transportation to employees whose shifts begin early in the morning and for employees who work graveyard shifts.

RVTD also offers paratransit service (shared ride, curb-to-curb, wheelchair-accessible) for people whose disabilities prevent them from using RVTD's lift-equipped buses. Service is operated using local taxis. This service is only available on the same days and hours of the fixed route system and is limited to the geographic area within ¾ of a mile on either side of any fixed route. Fares for paratransit service are double the fares for fixed route service.

Future Service Deficiencies and Regional Plans

Much of RVTD's service planning effort focuses on developing and implementing short-term strategies to meet the needs of existing riders or to attract new riders by offering service that meets current travel needs within the limited financial resources of the agency. The assessment of future service deficiencies and improvement needs beyond the short-term planning horizon has been addressed in the *2001-2023*

Rogue Valley Regional Transportation Plan (RTP) and in the recently-conducted studies that evaluated the feasibility of creating Transit-Oriented Districts (or TODs) within the city.

The 2001-2023 Rogue Valley Regional Transportation Plan

According to the RTP, RVTD currently provides less than one percent of total daily and peak-hour trips. The RTP Alternative strategies that were identified to help the Rogue Valley Region meet state planning for reduction in travel by single occupant vehicles identify a series of benchmarks for increasing the share of all daily trips that are made by public transit (or "mode share") to 3 percent by 2023 (see Table 7-1). Currently, RVTD carries 3,200 of the daily trips made in the Medford Urbanized Area. Growth in the transit mode share to 3 percent by 2023 would result in 18,500 daily trips being made by transit in that year, an increase of nearly 500 percent over today's levels. This compares with trips made by auto that are expected to keep pace with population growth and increase by approximately 35 percent by 2023.

As discussed in the RTP, public transit has the potential of capturing a greater portion of total daily trips in the region if RVTD is provided with additional revenue. Increased revenues will enable the District to expand services to make transit a more viable option to people who choose to use an alternative transportation mode other than the automobile. New operating revenues would increase the frequency on existing routes, expand hours and days of service, provide new routes, and expand shuttle services.

Transit service improvements identified in the RTP are based on a two-tiered approach based on two operational plans that have varying service levels. The Tier 1 plan is "financially-constrained" and is based on the expectation that existing funding programs and levels will remain relatively consistent (allowing for inflation and population growth). Tier 1 revenues would support a modest increase in current service levels, but would not support any significant expansion in existing services. Tier 2 represents a financially-unconstrained plan that would result in a dramatic expansion of current service levels with an accompanying increase in transit ridership. Tier 2 will require substantially more service hours, buses, and facilities than are currently available. The existing route structure would be modified from its current radial focus on downtown Medford to including high quality connections to/from activity centers consistent with the recommendations of the RVMPO's Transit Oriented Development and Transit Corridor Strategies Plan. Tier 2 has the primary objective of attracting all types of trips rather than just work trips or trips made by persons who presently have little choice in their mode of travel. Tier 2 is the preferred option in the *2001-2023 Rogue Valley Regional Transportation Plan*.

The Tier 2 projects identified in the RTP[13] begin by upgrading the level of service currently provided on existing fixed routes, including establishing minimum standards for headways, service days, and service hours. The RTP recommends that priority be given to improving the quality of service on existing routes by:

- <u>Adjusting route alignments</u> - structure routes so a transit trip takes no longer than 50 to 75 percent more time than a trip taken by automobile or provide service in areas where it is currently not available.

- <u>Increasing the frequency of service</u> - operate all transit routes with route headways no greater than one-half hour during peak periods (the level and frequency of service are important factors in attracting and maintaining a ridership base).

- <u>Expanding the hours of service</u> - to meet the needs of potential riders who presently are unserved due to the limited hours of operations, the RTP preferred option would begin weekday service at 4:00 a.m. and continue until 11:30 p.m.

---

[13] *2001-2023 Rogue Valley Regional Transportation Plan*, Rogue Valley MPO, April 25, 2002, pages 11-4 and 11-7.

- Changing to seven day per week operations – the RTP preferred options would expand service to include weekends (including Sundays) with service typically beginning at 6:30 a.m. and operating until 10:00 p.m.

In addition, the RTP identifies other strategies that could be implemented to support and encourage the use of public transit within the Rogue Valley area. These strategies include:

- Adding new routes – according to the RTP, existing routes meet only basic transportation needs for people to travel between cities throughout the Rogue Valley area. To improve transit ridership within cities, new routes need to be established between residential areas and employment and shopping areas. All new routes would attempt to provide greater than the minimum level of service described in the sections on headways, service hours, and service days. Options for additional route coverage could include:
    - Expand service to Rogue Valley International Airport
    - Add transit trunk route between Rogue Valley Medical Center and South Gateway to expand service to SE Medford
    - Add service route from Medford Central Business District (CBD) to Roxy Anne/Brookdale neighborhoods via Spring Street
    - Add service route from Rogue Valley Mall to Cedar Links/Lone Pine neighborhoods
    - Add service route from Medford CBD to Sage Road Industrial Area
    - Add service route from South Gateway to Columbus and Garfield neighborhoods
    - Add transit trunk route from Rogue Valley Mall to South Gateway to serve Medford's Civic and Business Centers
    - Add service route from Medford CBD to Hillcrest area via Jackson Street/Hillcrest
    - Add service route that travels between Garfield and Jackson Streets via Columbus Avenue to serve West Medford
    - Add service route that travels from Rogue Valley Mall to White City via Table Rock Road to include North Medford and East Central Point
    - Express commuter service between Ashland and Medford, Medford and Central Point, and Medford and White City

- Encouraging major employers to offer transit fare subsidies and other programs

- Incorporating design features into roadway projects to benefit transit – features that might be incorporated into roadway projects could include thicker pavement at transit stops; transit-only right-of-way at congested intersections; construction of bus turnouts; construction of transit passenger shelters; wider sidewalks at transit stops; bicycle facilities near transit stops; and bike racks at transit stations. The RTP recommends that consideration of transit infrastructure and capital needs be incorporated early in street project planning to eliminate redundancy and reduce future expenditures.

Transit-Oriented Design Studies

The *Transit Oriented Design (TOD) and Transit Corridor Strategies* study (May 1999) conclude that for the TOD land use strategy to be successful in increasing the use of alternative travel modes, it will need to include an intensive increase in bus service that is *"integrated into the community and highly visible as part of the civic infrastructure"*[14]. This service would be focused on developing a "primary transit corridor network" where buses would operate at 15-minute frequencies for 14 hours every day and on 30-minute frequencies in the evening, seven days a week. These primary transit corridors would be

[14] "Transit Recommendations", RVMPO – *Transit Oriented Design and Transit Corridor Development Strategies*, McKeever/Morris and Nelson/Nygaard, May 28, 1999, page 2.

supported by "secondary" corridors and local service that would operate on 30 to 60 minute frequencies. The primary transit corridors would be a focal point for transit service in the region, operating at higher speeds with distinctive shelters, and improved pedestrian/bicycle access. Four corridors were recommended:

- Highway 99 Corridor between Central Point and Phoenix (which could include modifications to the Riverside/Central Avenue couplet to provide for two-way high speed transit service on Central Avenue);

- Southeast Medford Corridor between Barnett/Gateway and Phoenix Road to connect with the Southeast Medford TOD and the Rogue Valley Medical Center;

- Central Medford Corridor between West Medford and Delta Waters running along Main Street and Crater Lake Avenue linking the West Medford and Delta Waters TODs with downtown Medford and each other. Crater Lake Avenue has an extensive pattern of transit supportive development including Providence Hospital, extensive apartments and commercial land uses; and

- Highway 62 Corridor between Rogue Valley Mall and Delta Waters (could operate as an extension of the Central Medford Corridor. A key stop at Poplar with improved pedestrian access to the Fred Meyer and surrounding commercial destinations would be critical).

The primary transit corridors would include three types of transit stops including transit center stations (located in the TODs or other locations where major boarding and/or transfer activity could occur); major transit stops (where significant boarding activity would occur but route-to-route transfers would be unlikely); and minor transit stops.

Summary

In summary, to achieve the transit ridership goals identified in the RTP Alternative Measures, RVTD must significantly increase the amount of intracity service within the RVMPO area. The first step toward meeting these goals was taken when the RVMPO, acting on behalf of its member local governments, chose to dedicate half of the federal Surface Transportation Program (STP) funds expected to be received in the region over the next 18 years to funding improved RVTD service. This commitment is expected to meet the financial obligation identified in Measure 7 of the RTP Alternatives. As noted in Chapter 3, a recent service improvement financed through the use of STP funds dedicated to transit was the increased service frequency on Route 60 (White City). In 2003, increases in service frequency will also be implemented on Routes 4 (East Medford) and 40 (Central Point).

In addition to the region's financial commitment to improved public transit service within the Rogue Valley area, achieving transit ridership goals will require strong community support and adherence to the policies set forth in the public transit component of the City's *Transportation System Plan*. It will also require integration of transit improvements with improvements identified under other TSP components including Transportation Demand Management, Bicycle, and Pedestrian Components that include policies and strategies designed to support and encourage the use of public transit by improving access to transit. In addition, achieving transit ridership goals will require land use actions designed to strengthen the activity centers (including TODs) where RVTD intends to emphasize high quality service.

Strategies

In response to the recommendations identified in the *2001-2023 Rogue Valley Regional Transportation Plan* and the *Transit Oriented Design and Transit Corridor Strategies* study, two sets of strategies were identified to provide the basis for a discussion of policies and priorities to be used in guiding development of the public transit portion of Medford's *Transportation System Plan*. These strategies were derived from existing policies, an assessment of current service deficiencies, and review of the improvement options identified and discussed in the RTP and the TOD study for implementation within the Medford UGB. The strategies were primarily of two types:

- Strategies involving City support of RVTD focused on specific service enhancements
- Strategies that could be implemented by the City in partnership with RVTD.

Service Enhancement Strategies

Table 7-2 describes several strategic options for service enhancements that could be supported by the City, and identifies relevant polices and other commitments that could be satisfied by implementation of these options. It should be noted that there are additional service enhancement options that could be identified, the ones in Table 7-2 are intended primarily to be illustrative of possibilities.

Table 7-2
Potential Public Transit Service Enhancement Strategies

Strategy	Description	Objectives of the Strategy
Improve Service Frequency	Provide incentives to RVTD to offer 30 minute headways on all existing bus routes	• Increase percentage of daily trips made via transit • Address RTP Alternative Measure 7 by demonstrating commitment to alternative transportation projects • Encourage transit-supportive land uses
Improve Service to TODs	Provide incentives to RVTD to offer transit service to/from designated TODs where none exists today or to improve service to 30 minute headways	• Primarily improve connections to TODs • Secondarily improve connections to other activity centers including employment and commercial districts, institutions, schools and recreation • Increase percentage of daily trips made via transit • Address RTP Alternative Measure 7 by demonstrating commitment to alternative transportation projects • Encourage transit-supportive land uses
Develop Transit Corridors	Provide incentives to RVTD to develop higher frequency (and possibly) higher speed service along major transit corridors	• Primarily improve connections to activity centers including TODs, employment and commercial districts, institutions, schools and recreation • Increase percentage of daily trips made via transit • Address RTP Alternative Measure 7 by demonstrating commitment to alternative transportation projects • Encourage transit-supportive land uses
Expand Route Coverage	Provide incentives to RVTD to expand geographic area of fixed route coverage	• Primarily improve connections to activity centers including TODs, employment and commercial districts, institutions, schools and recreation • Increase percentage of daily trips made via transit • Address RTP Alternative Measure 7 by demonstrating commitment to alternative transportation projects

The strategies listed in Table 7-2 directly and indirectly respond to the public transit system planning policies dictated by the TPR, RTP, and the City's *Comprehensive Plan*. To varying degrees, the strategies also reflect the goals of the Medford Vision Strategic Plan and the RTP Alternative Measures package. While many local and regional policies relate to actual service enhancements, others recognize the importance of multi-modal transportation system improvements and land use actions in the success of transit service plans and policies. The provision of street space for transit, development of good access routes to transit including both sidewalks and bicycle lanes, transportation demand management strategies (like employer transit passes and/or participation in the fledgling Medford Transportation Management Association (TMA)), and implementation of transit supportive land use policies all contribute to improving transit service and encouraging the use of public transit as a mode of choice.

The various alternative strategies were evaluated using criteria developed to weigh the benefits and impacts of implementing each improvement strategy, and to initiate discussion of public transit system priorities from the perspective of the City of Medford.

Evaluation criteria were developed based on existing adopted policies, state TPR requirements, and/or factors identified as particularly relevant for comparing and contrasting the alternative strategies. The strategies were analyzed to determine the degree that each could:

- Increase the share of daily trips made by transit;
- Improve access to transit;
- Increase the frequency of transit service;
- Improve transit passenger amenities;
- Encourage transit supportive land use; and
- Potentially reduce reliance on the automobile for trip-making within the UGB.

The matrix in Table 7-3 summarizes the evaluation of public transit-related improvement strategies. This evaluation not only gauges the impacts and potential benefits of each strategy, but can also serve as a prioritization tool leading to the identification of a phased program of improvements.

Strategies that Could be Implemented in Partnership with RVTD

Strategies that could be implemented through a partnership between the City and RVTD could include both land use actions and infrastructure development. Some of these strategies could include, but not be limited to:

- Improve pedestrian access and transit waiting areas
- Implement operational strategies to ensure transit schedule adherence (e.g., signal priority treatment at critical intersections)
- Implement and/or enforce City code provisions related to land development process to ensure adequacy of transit access (e.g., sidewalks, waiting area at stops, building orientation, etc.)
- Coordination in the promotion of transit use by Medford area residents, employees, public institutions, medical facilities, schools and business including support for programs that offer reduced fare transit service or other activities to encourage transit use
- Other strategies such as parking maximums to encourage use of buses rather than construction of parking spaces.

These strategies are not mutually exclusive. Each could form part of a multi-dimensional package of transit service enhancements that achieve city goals related to transportation, land use, environmental quality and community livability. Many of these strategies could also be incorporated into employer-based travel demand management strategies. However, when considering strategies that could be implemented through an expanded partnership between the City of Medford and RVTD, RVTD service priorities and transit operational needs should be fully considered.

Table 7-3
Summary of Public Transit Service Enhancement Strategies and Policy Criteria

	SERVICE ENHANCEMENT STRATEGIES			
	Improve Service Frequency	**Improve Service to TODs**	**Develop Transit Corridors**	**Expand Route Coverage**
Description of Strategy	Provide incentives to RVTD to offer 30 minute headways on all existing bus routes	Provide incentives to RVTD to offer transit service to/from designated TODs where none exists today or to improve service to 30 minute headways	Provide incentives to RVTD to offer higher frequency (and possibly) higher speed service along primary transit corridors	Provide incentives to RVTD to add new routes and/or increase geographic coverage of service. Service may be hourly in new areas not on TODs or along transit corridors
POLICY CRITERIA				
Increases transit mode share (% trips made on transit)	Moderate increase in ridership	Moderate increase in ridership	Potentially higher increase in ridership than other strategies	Moderate to high increase in ridership depending on level of service provided
Improves access to transit	Minimal	Moderate, includes transit service in new areas with pedestrian/bicycle access	Some additional geographic coverage in service. Improvements to pedestrian/bicycle access assumed to be a part of corridor development	Moderate to high increase in service coverage
Increases frequency of transit service	Potentially significant increase	Higher increase than first option due to new service additions	Potentially significant increase – frequency improvements assumed to be part of corridor development	Moderate depending on level of service provided
Improves transit passenger amenities	Minimal	Improves passenger amenities in TODs (transit stations and/or major transit stops)	Significant improvements in passenger amenities assumed to be part of corridor development	Moderate – would likely include addition of bus shelters or other amenities consistent with additional route coverage
Encourages transit supportive land use	Minimal	Transit service integration with land use is an essential component of TOD success	Significant opportunity to encourage more transit supportive land use at stations and major transit stops. Will require supportive land use codes and actions.	Moderate dependent on level of service
Potential for reducing reliance on automobiles	Moderate	Moderate to high	High	Moderate

Meaning of terms: "Minimal" – Strategy fulfills 0 to 33% of criterion; "Moderate" – Strategy fulfills 34 to 66% of criterion; "High" – Strategy fulfills 67 to 100% of criterion.

Actions
To meet city and regional goals of encouraging the development of public transit as a viable form of transportation in the Medford UGB, the City and RTVD should work cooperatively to identify specific actions involving the city that would encourage transit use. These actions should include:

Short-Term Actions (0 to 5 years)
In cooperation with the Rogue Valley Transportation District (RVTD), the City should support the provision of convenient and accessible transit service to meet travel needs in the Medford UGB through the short-term implementation of the following actions:

- Support efforts to implement funding strategies that provide adequate, long-term and stable revenue sources for transit

- Support efforts by RVTD to develop and implement a transit system that effectively combines components of radial, neighborhood and circumferential services with a minimum of transfers.

- Support efforts by RVTD to increase transit service including increasing the frequency of service, extending hour of operations, expanding weekend service and providing express bus service during peak travel periods.

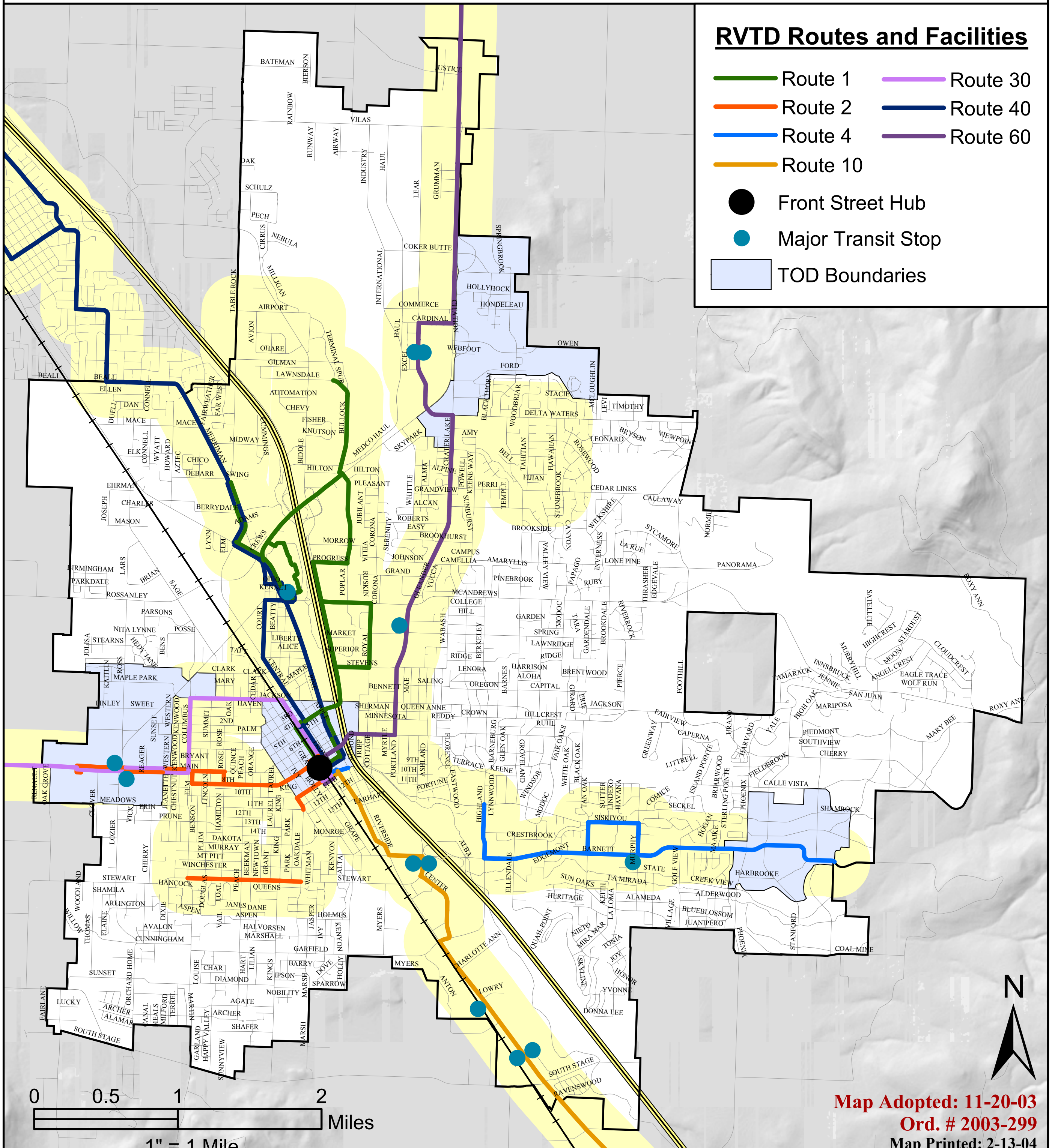
- Assure that land use planning activities promote transit service viability and accessibility. These activities could include:
  - Locating mixed-use development within ¼ mile of transit corridors or vice-versa

  - Requiring transit-supportive improvements as part of the land development process to facilitate the use of transit. This could include installing passenger amenities such as paved bus waiting areas that are ADA-compliant (particularly in where landscaped planter strips have been or are required to be developed), bus signs and other information displays, improved sidewalk access between the stop and the adjacent development, bus shelters, bike racks, trash cans, benches, lighting, bus pullouts and/or other features as necessary. RVTD should be consulted about the type, location and design of any passenger amenities proposed for transit stops.

  - With the designation of major transit routes and major transit stops in the TSP to focus enforcement of the transit-supportive land use and site design provisions in sections 10.806 through 10.808 of the Medford Municipal Code. Figure 7-1 show the location of proposed "major" transit routes (including the extension of Route 4 to serve the SE Medford TOD) and "major" transit stops in the Medford UGB. Major stop locations proposed by RVTD are further described in Table 7-4. As currently proposed, major transit routes would include most existing RVTD routes.

- Provide transit-supportive street system including:
  - Providing financial or other appropriate support to RVTD to retrofit existing major bus stops to add amenities such as paved, ADA-compliant waiting areas, bus signs and other information displays, improved sidewalk access between the stop and major destinations, bus shelters, bike racks, trash cans, benches, lighting, bus pullouts and/or other features as necessary. RVTD priorities for adding these amenities should be considered. RVTD should be consulted about the type, location and design of any passenger amenities proposed for transit stops. An initial project list is included in Table 7-5.

Figure 7-1: Medford Designated Major RVTD Transit Routes and Stops



1/4 Mile Distance from Transit Routes

Other Streets

Highway

Railroad

UGB

CITY OF MEDFORD
OREGON

The Geographic Information Systems (GIS) data made available on this map are developed and maintained by the City of Medford and Jackson County. GIS data is not the official representation of any of the information included. The maps and data are made available to the public solely for informational purposes.

THERE MAY BE ERRORS IN THE MAPS OR DATA. THE MAPS OR DATA MAY BE OUTDATED, INACCURATE, AND MAY OMIT IMPORTANT INFORMATION. THE MAPS OR DATA MAY NOT BE SUITABLE FOR YOUR PARTICULAR USE. THIS INFORMATION IS BEING PROVIDED "AS IS" OR "WITH ALL FAULTS". THE ENTIRE RISK AS TO THE QUALITY OR PERFORMANCE IS WITH THE BUYER AND IF INFORMATION IS DEFECTIVE, THE BUYER ASSUMES THE ENTIRE COST OF ANY NECESSARY CORRECTIONS OR SERVICING.

Table 7-4
Major Transit Stops in Medford UGB

Stop	Location	Direction	Route
Rogue Valley Mall	167 feet south of Ohio Street on Riverside Avenue	outbound	1 & 40
West Main	At thunderbird/Albertson's	Inbound & outbound	2 & 30
Rogue Valley Medical Center	Barnett Road at Murphy Road	Inbound & outbound	4
South Gate Shopping Center	90 feet south of Gateway entrance	Inbound & outbound	10
Lear Way	157 feet north of Wal-Mart access road	outbound	60
Lear Way	New stop after it is established	inbound	60
Crater Lake Avenue	Providence Hospital	Inbound & outbound	60
Bear Creek Corp.	130 feet north of Lowery on Highway 99	outbound	10
Bear Creek Corp.	150 feet north of training center on Highway 99	outbound	10
Highway 99	75 feet north of Bear Creek south entrance	inbound	10

- Evaluating locations and appropriate operational strategies for transit signal priority treatments. One example of where these treatments might be successfully implemented is in the Highway 62 corridor where such treatments have been considered as part of the overall corridor improvement strategy. Transit signal priority treatments can make transit service more attractive to riders by increasing its reliability through reductions in travel time and missed transfers.

In designing and constructing improvements to the arterial and collector street system, the City should incorporate transit-supportive components that promote pedestrian connectivity, convenience, and safety, along with operational components to enhance transit vehicle movement.

- Working in partnership with RVTD to address the planning and development of future transit service within the Medford UGB, including sharing costs of surveys, studies, and research needed for long range planning.

- Working with RVTD to ensure that transit transfer stations and park-and-ride facilities are accessible by pedestrian, bicycle, transit, and motor vehicle travel modes, including provisions for secured bicycle parking, passenger loading, and taxi service.

- Work with employers to increase commuter transit ridership through employer-based incentives, such as subsidized transit passes.

Table 7-5
Transit-Supportive Improvement Projects

Route #	Stop #	Location	Improvement
1	110	Poplar at G.I. Joe's (outbound)	Bus shelter (Hwy 62 project)
1	160	Poplar 326' south of Hwy 62 (inbound)	Bus shelter
2	280	Stewart between Grant and Newtown (outbound)	Bus shelter
2/30	???	W. Main at Albertson's (outbound)	Bus shelter
2/30	400	W. Main at Reager (outbound)	Bus shelter
4	860	Siskiyou at Bear Creek Park (outbound)	Bus shelter
4	980	Murphy at Medford Radiology (inbound)	Bus shelter
10	2040	Barnett 163' east of Riverside (outbound)	Bus shelter
10	2050	Barnett 326' west of Stewart (outbound)	Bus shelter
10	2095	Hwy 99 at Bear Creek Corp payroll entrance (outbound)	Bus shelter
10	2940	Hwy 99 at Hubbard's Ace Hardware (outbound)	Bus shelter
10	2950	Hwy 99 at Grange Co-op (inbound)	Bus shelter
10	2960	Hwy 99 at Roxanne Lanes (inbound)	Bus shelter
10	6070	Crater Lake Ave 243' north of Stevens Shamrock Square (outbound)	Bus shelter
60	6110	Crater Lake Ave 140' north of Brookhurst (outbound)	Bus shelter
60	6270	Cardinal Ave at Costco (outbound)	Bus shelter
60	6620	Cardinal Ave 45' west of Nation Flora (inbound)	Bus shelter
60	6630	Lear Way south of Aviation (inbound)	Bus shelter
60	6690	Crater Lake Ave 125' north of Brookhurst (inbound)	Bus shelter

Longer-Term Actions (5-20 years)

All of the foregoing, short-term strategies should continue to be implemented. In addition, the City of Medford should:

- Consider entering into an agreement with RVTD for focused and specific service improvements that would be funded by direct city financing. Such service improvements could include the options discussed in Table 7-2 above or other strategies that become important to the city.

- Increase coordination between RVTD staff and City staff in planning for and the development of needed transit routes and services, and in securing financial resources to meet long-term goals and policies for encouraging the use of transit as part of a complete multi-modal transportation system.

Intercity Bus Service

Needs

Intercity bus service between Medford and other destinations in Oregon and elsewhere in the United States is provided by Greyhound Bus Lines. As described in Chapter 3, existing Greyhound service is offered seven days a week in both northbound and southbound directions, with service focused on the I-5 corridor. There are six buses each day to and from the north (including the Willamette Valley and Portland) and five buses each day to and from the south. In Greyhound Bus Depot is located in downtown Medford a few blocks from RVTD's Front Street station (the hub of all RVTD fixed route service) and is accessible via the local RVTD bus system.

No significant improvements are proposed for expansion of the existing privately-operated intercity bus service or facilities.

Strategies

To support the continued availability of intercity bus service to/from the Medford area, the City should consider the following actions:

- Ensure that the existing intercity passenger facilities in downtown Medford are connected to adequate pedestrian facilities.
- Ensure that there is continued availability of transit, taxi and/or shuttle services to connect with all intercity passenger facilities.
- Encourage the continued operations and future expansion of intercity bus service to and from Medford.

Chapter 8
Transportation System Management/Transportation Demand Management Plans

This chapter includes a discussion of existing and future needs for transportation system management (TSM) and transportation demand management (TDM) services and improvements.

Transportation System Management

Transportation System Management (or TSM) improvements include actions designed to maximize efficient use of the existing transportation system. TSM strategies include actions such as traffic signalization, signal synchronization to improve traffic progression (particularly along major arterial streets), signal retiming, channelization improvements, one-way streets, parking prohibitions, turn prohibitions, and other actions. Traffic calming measures are also addressed in this section.

This section presents a discussion of TSM needs including:

- Intersection traffic control needs and improvements including signal coordination, signal upgrades, and new signal installation or modification,
- Intelligent Transportation System (ITS) needs and improvements;
- Traffic calming; and
- On-going traffic monitoring.

Intersection Traffic Control

Traffic Signal Coordination Needs and Improvements

Traffic signal coordination along arterial streets is one of the most effective strategies to maximize the efficient use of the existing transportation system. Signal coordination is intended to reduce the amount of starting and stopping experienced along a street by timing signals to turn green just before the traffic platoon reaches them.

The City of Medford currently has a fully interconnected traffic signal system that can be used to implement coordinated signal timing plans, and which can ultimately be connected to a centralized traffic control management center. The City should initiated the following improvements:

- Improve traffic signal coordination in the Medford UGB by establishing priorities for and implementing coordinated traffic signal timing plans (these could generally be based on traffic volumes and/or street hierarchy). Employ signal timing plans that maximize operational efficiency during different time periods.

- Continue to modernize traffic signal equipment and to improve its efficiency by ultimately connecting all signals to a centralized traffic control management center.

Traffic Signalization/Traffic Control Needs and Improvements

Traffic Operations and Capacity Deficiencies at Unsignalized Intersections

As described in Appendix G, the Level of Service Study included an assessment of existing and 2023 future PM peak hour traffic volumes at significant unsignalized intersections in the Medford UGB. Table

8-1 summarizes the results of this analysis and indicates the improvements to mitigate the traffic operational problems that were identified.

Table 8-1
2023 PM Peak Hour Level of Service at Unsignalized Intersections in Medford UGB

Intersection	2023 PM Peak Hour Approach or Movement	LOS
4th Street at Oakdale Avenue	**Northbound**	**F**
Barneburg Road at Highland Drive	**Westbound**	**F**
Barnett Road at Golf View Drive	**Northbound**	**F**
Columbus Avenue at Cunningham Lane	Eastbound	C
Columbus Avenue at Diamond Street	Westbound	D
Crater Lake Avenue at East Vilas Road	**Northbound, southbound**	**F**
Crater Lake Avenue at Coker Butte Road	**Southbound**	**F**
Cunningham Lane at Orchard Home Drive	Westbound	B
DeBarr Avenue at Merriman Road	**Westbound**	**E**
Delta Waters Road at Foothill Road	**Eastbound, westbound**	**F**
Delta Waters Road at Springbrook Road	**Northbound**	**F**
Foothill Road at Cedar Links Drive	**Eastbound**	**F**
Foothill Road at Lone Pine Road	**Eastbound, westbound**	**E**
Garfield Street at Columbus Avenue	Westbound	C
Highway 62 at Coker Butte	**Westbound**	**F**
Highway 62 at Elliot Road/Costco	**Westbound right**	**E**
Highway 62 EB ramp from Biddle Road	**Northbound**	**F**
Highway 62 at Target Access	Southbound, left	D
Highway 238/Rossanley Drive at Ross Lane	**Northbound**	**F**
Hillcrest Road at Pierce Street	**Southbound**	**F**
Hillcrest Road at Valley View Drive	**Eastbound, westbound**	**E**
Jackson Street at Columbus Avenue	**Northbound, southbound**	**F**
Jackson Street at Sunrise Avenue	**Southbound, eastbound, westbound**	**F**
Main Street at Barneburg Road	**Northbound, southbound**	**F**
Main Street at Willamette Avenue	**Eastbound, westbound**	**F**
McAndrews Road eastbound at Foothill Road	**Eastbound**	**F**
McAndrews Road westbound at Foothill Road	**Eastbound**	**E**
McAndrews Road at Hillcrest Road	**Southbound**	**F**
McAndrews Road at Jackson Street	**Westbound**	**F**
McAndrews Road at Ross Lane	**Westbound**	**F**
Oakdale Avenue at Dakota Avenue	Northbound, southbound, eastbound, westbound	B
Riverside Avenue at Edwards Street	**Eastbound, westbound**	**F**
Siskiyou Boulevard at Murphy Road	Westbound, southbound	B
Siskiyou Boulevard at Willamette Avenue	Eastbound, southbound	C
South Stage Road at King's Highway	Southbound	C
Spring Street at Springbrook Road	**Eastbound, westbound**	**F**
Table Rock Road at DeBarr Avenue	Eastbound	D
Table Rock Road at Merriman Road	**Northbound, southbound**	**F**

Source: LOS Study, JRH Transportation Engineering, 2003.
Note: LOS means level of service

Need for Traffic Signal Upgrades

The need for traffic signal upgrades to replace outdated equipment or to accommodate more complex signalization needs has been identified at several locations throughout the city. These locations are indicated in Table 8-2.

Traffic Signalization and Control Improvements

Table 8-2 presents improvements for the traffic control at key intersections throughout the Medford UGB. Included are projects for signal installation at currently unsignalized intersections, signal upgrades where appropriate, and other appropriate improvements such as all-way stop control and/or roundabout treatments. It should be noted that several of the projects in this table have already been identified as improvement needs and included in the *2001-2023 Rogue Valley Regional Transportation Plan* and/or the City's 17-project list. Others would be incorporated into larger projects, particularly along Highway 62 at Coker Butte Road and Elliot Road (which would become Owen Drive). New signalized intersections of these streets with Highway 62 are planned and street alignment changes will be made to provide adequate vehicle storage distance between Highway 62 and Crater Lake Avenue. Implementation of many of these improvements also could have positive impacts for pedestrian circulation in that the addition of a traffic signal may improve pedestrian safety at intersections.

Table 8-2
Summary of Intersection Traffic Control Improvements

Project No.	Location	Traffic Control	Source of Improvement
Medford Tier I Improvements			
420	Main at Hamilton	Signal upgrade	RTP
421	Jackson at Sunrise	Install new traffic signal and EBL turn lane	RTP/LOS Study
422	Columbus at Prune	Install new traffic signal	RTP
423	Columbus at Jackson	Install new traffic signal	RTP/LOS Study
424	4th at Columbus	Install new traffic signal	RTP
425	Springbrook at Cedar Links	Install new traffic signal	RTP
426	4th at Oakdale	Install new traffic signal	RTP/LOS Study
427	Crater Lake at Roberts (west)	Install new traffic signal	RTP
428	Spring at Springbrook	Install new traffic signal	RTP/LOS Study
429	Biddle at Lawnsdale	Install new traffic signal	RTP
430	Keene at McAndrews	Install new traffic signal	RTP
431	Barnett at Golfview	Install new traffic signal	RTP/LOS Study
432	10th at Columbus	Install new traffic signal	RTP
433	8th at Hamilton	Signal upgrade	RTP
434	6th at Central	Signal upgrade	RTP
435	8th at Central	Signal upgrade	RTP
436	8th at Orange	Signal upgrade	RTP
438	Main at Oakdale	Signal upgrade	RTP
439	12th at Riverside	Signal upgrade	RTP
450	Hillcrest Road at Valley View Drive	Install new traffic signal. May also need WBL turn lane.	RTP/LOS Study
452	Highland at Main	Install new traffic signal	
453	N Phoenix Rd at Cherry	Install new traffic signal	RTP (assumed in LOS study)
454	Delta Waters Road at Springbrook Road	Realign Springbrook n/o Delta Waters, add signal and WBR lane	RTP/LOS Study
477	Hillcrest Road at Pierce Road	Install new traffic signal	RTP/LOS Study
498	Hillcrest, Main St to Foothill Road	Transportation System Management Improvements	RTP (Tier 2)

Table 8-2 Continued
Summary of Intersection Traffic Control Improvements

Project No.	Location	Traffic Control	Source of Improvement
Medford Tier I Improvements			
499	McAndrews Rd at Ross Lane	Install new traffic signal	RTP (Tier 2)
500	Willamette St at Main St	Install new traffic signal	RTP (Tier 2)
501	Brookdale at Spring	Install new traffic signal	RTP (Tier 2)
502	Cottage St at Main St	Install new traffic signal	RTP (Tier 2)
503	Foothill Rd and Lone Pine Rd	Install new traffic signal	RTP (Tier 2)
504	Springbrook Rd at Lone Pine Rd	Install new traffic signal	RTP (Tier 2)
516	Highland Drive at Keene Way/Barneburg Road	Install all way stop	LOS Study
525	Main Street at Barneburg Road	Signalize. May be part of future street realignment	LOS Study
526	McAndrews Road at Foothill Road ramp terminals	Signalize when warrants met	LOS Study
530	Arterial or collector locations as needed	Install new or upgrade existing traffic signals	TSP
531	Arterial or collector locations as needed	2070 signal controller upgrades	TSP
532	Arterial or collector locations	Fiber optic system upgrade	TSP
538	Arterial or collector streets as needed	Install ITS equipment to facilitate traffic flow and enhance system communications	TSP
Jackson County Tier 1 Improvments			
261	Crater Lake Avenue at Vilas Road	Install new traffic signal	LOS Study
262	Highway 238 at Ross Lane	Install new traffic signal	LOS Study
263	McAndrews Road at Ross Lane	Install new traffic signal and NBR turn lane	LOS Study

Source: *LOS Study*, JRH Transportation Engineering, 2003.

Intelligent Transportation System (ITS) Improvement

The development of an integrated and comprehensive intelligent transportation system (ITS) is in its early stages in the Rogue Valley area, with only a limited number of devices and programs currently in place. The current ITS system includes: variable message signs, traffic monitoring cameras, call boxes for motorist assistance, photo violation detection, and incident management.

The Rogue Valley MPO has created a sub-committee of its Technical Advisory Committee to initiate development of architecture for an area wide ITS system. Expected to be completed by the spring of 2005, this system will ultimately consist of a wide variety of strategies, actions and programs to help better manage the transportation system through the application of technology.

ITS Strategies

The City of Medford is advancing its use of technology to manage the city street system through a variety of strategies. The city will continue with its efforts to use ITS measures such as real-time traffic monitoring cameras and management projects that provide motorist information and incident response/clearance programs, to alleviate traffic congestion. These measures should include:

- Installation of a fiber-optic ring within the city to provide enhanced communications for operations of the traffic signal system;
- Installation of permanent electronic traffic counters at key intersections to provide current information about rapidly growing segments of the existing collector and arterial street system to

facilitate better management of traffic signal operations. Currently permanent counters have been installed at three locations and installation of three to five more counters is anticipated.

- Addition of 40 to 60 traffic monitoring cameras over the next 20 years at critical locations in the city's street system. These cameras can be used to modify traffic signal timing in response to actual conditions. They can also be connected with a web site such as ODOT's Trip Check for use by motorists to evaluate road conditions before they leave home so they can plan travel routes accordingly.

- Install ITS equipment at selected intersections to facilitate traffic flow and enhance system communications.

Traffic Calming

Overview and Needs Assessment

Traffic calming refers to various design features and strategies intended to reduce the speed and overall volume of traffic on particular roadways, typically through or near residential areas. Pedestrians, residents, business customers and property owners can also benefit from implementation of traffic calming improvements in that they can result in slower traffic, fewer cars, less noise and create a more inviting environment for walking or bicycling.

Traffic calming typically consists of the progressive application of *education*, *enforcement* and *engineering*. Education can involve mailings and flyers providing information and photos or drawings of various devices, their benefits and costs. Enforcement can include passive techniques such as portable vehicle-actuated devices that display the speed of passing motorists, to citations issued by officers or by photo radar. Engineered traffic calming techniques range from very restrictive devices such as full or partial street closures, to moderately restrictive devices such as speed humps and traffic circles or roundabouts, to minimally restrictive applications like warning signs. Some devices focus on reducing speeds, while others reduce traffic volume. According to the Congress for the New Urbanism, physical changes to the roadway are generally more self-enforcing (and likely more effective) than education and traditional enforcement efforts and they may not require continual intervention.

Traffic calming has both advantages and disadvantages, and tradeoffs may need to be made. For example, residential property values may increase with slower speeds in neighborhoods, reducing the potential for crashes involving injuries or fatalities to motorists or pedestrians, but emergency vehicle response time may increase. Another typical tradeoff is between traffic noise and traffic speed; however, techniques that produce "reasonable" speeds of 25-30 mph will minimize noise of acceleration and deceleration from drivers trying to make up for slower travel speeds. Because many of the concerns that residents have about traffic problems in neighborhoods rest with perceptions, it is very important that devices enhance the neighborhood and that the positive impacts are clearly seen as off-setting any negative impacts that are experienced.

A broad range of techniques exists, and each situation should be evaluated in conjunction with the residents and/or businesses affected by implementation of a potential strategy to identify an appropriate solution. Typical measures for the City of Medford's traffic calming program might include one or more of the strategies identified in Table 8-3.

Table 8-3
Summary of Potential Traffic Calming Techniques

Type of Traffic Calming Technique	Description
Bike lanes	Marking bike lanes narrows traffic lanes.
Channelization islands	A raised island that forces traffic in a particular direction, such as right-turn-only.
Chicanes	Curb bulges or planters (usually 3) on alternating sides, forcing motorists to slow down.
Curb extensions "pinch points"	Curb extensions, planters, or centerline traffic islands that narrow traffic lanes to control traffic and reduce pedestrian crossing distances. Also called "chokers."
Horizontal shifts	Lane centerline that curves or shifts.
Median island	Raised island in the road center (median) narrows lanes and provides pedestrian with a safe place to stop.
Mini-circles/traffic circles	Small traffic circles at intersections. These differ from "roundabouts" based on their size, purpose, and design speeds.
"Neotraditional" street design	Streets with narrower lanes, shorter blocks, T-intersections, and other design features to control traffic speed and volumes.
Pavement treatments	Special pavement textures (cobbles, bricks, etc.) and markings to designate special areas.
Perceptual Design Features	Patterns painted into road surfaces and other perceptual design features that encourage drivers to reduce their speeds.
"Road diets"	Reducing the number and width of traffic lanes.
Roundabouts	Medium to large circles at intersections
Rumble Strips	Low bumps across road make noise when driven over.
Semi-diverters, partial closures	Restrict entry/exit to/from neighborhood. Limit traffic flow at intersections.
Speed humps	Curved 7-10 cm high, 3-4 m long hump.
Speed tables, raised crosswalks	Ramped surface above roadway, 7-10 cm high, 3-6 m long.
Street closures	Closing off streets to through vehicle traffic at intersections or midblock
Street Trees	Planting trees along a street to create a sense of enclosure and improve the pedestrian environment.
Traffic speed reduction programs	Increased enforcement of speeding violations.
Woonerf	Streets with mixed vehicle and pedestrian traffic, where motorists are required to drive at very low speeds.

In addition to the traffic management effects of traffic calming devices, many also have benefits for creating a more pedestrian-friendly environment. Some of the traffic calming strategies that are particularly effective in enhancing pedestrian circulation include:

- Pedestrian Refuges provide a place of refuge when crossing the street. It permits crossing one direction of traffic at a time.

- Curb Extensions reduce crossing distance and increase crossing opportunities by permitting use of shorter gaps in traffic.

- Overhead Warnings to alert motorists.

- Marked Crossings (parallel to traffic rather than perpendicular) to alert motorists to high use crossings

- Advance Warning Sign to alert motorists of approach to crossing; "Fines Double" Warnings

- Flashing Beacons to alert motorists and provide positive indication for enforcement. These are turned on and off by City computers through pagers.

Each of the traffic calming strategies identified above has appropriate applications that address one or more of the concerns typically expressed by residents. To implement a traffic calming program, the City of Medford should involve affected neighborhoods in considering all of the aspects in the “toolbox” of potential strategies to determine what action(s) will be most effective in addressing the perceived problem and what will be the most effective to the affected community.

Traffic calming design involves both science and art. The following are guidelines for traffic calming best practices:

- Traffic calming planning should include adequate public involvement.

- Involve experts familiar with the latest traffic calming resources and design standards.

- Planners should consider a variety of traffic calming devices, rather than relying on a single type, such as speed humps or rumble strips.

- Traffic calming projects should support multiple objectives, including enhanced street aesthetics, improved walking and cycling conditions, as well as controlling traffic speeds.

- Stop signs should not be used as traffic calming devices. Many studies have shown that average travel speeds can actually increase between stop signs if it is perceived that there are too many of these devices.

- Devices that are new to an area should be implemented on a trial basis with adequate signing. For example, the first traffic circles in an area should have signs showing the path vehicles should follow. After a few years such signs become unnecessary.

The City of Medford currently implements traffic calming strategies through the land development process as necessary and appropriate. However, no significant program exists for the installation of traffic calming devices on existing streets. The need for traffic calming is indicated by frequently public concern for speeding, high traffic volumes and other traffic-related problems that affect the quality of life along the City’s neighborhood streets.

Traffic Calming Program

This section outlines the process for implementing traffic calming in the City of Medford, based on materials drawn from communities throughout Oregon and the rest of the country. Typically, this process is based on the submission of requests from citizens to address specific neighborhood traffic management problems. The process should be undertaken annually in conjunction with the City's budgeting cycle to ensure that the highest priority projects can be identified and funded. A traffic calming program would address only non-arterial or collector streets and would not be implemented on either County roads or state highways.

Step 1 (Petitioners and City): Determine eligibility. Following submission of a request, staff determine eligibility. Criteria that have been used elsewhere to determine eligibility of a street for traffic calming-type improvements include such factors as:

- The street has a posted speed of 30 mph or less
- 85 percent of daily traffic on the street exceed the posted speed limit by 5 mph OR cut-through traffic is at least 25 percent of all traffic based survey data
- Alternate primary emergency response routes are available
- The street has no more than two lanes
- The street has a functional classification of minor collector or lower

Step 2: (Petitioners): Collect support. An initial ballot identifying the problems and potential traffic calming solutions should be distributed and collected from all residences on the affected street or nearby parallel streets which may be impacted by installation of traffic calming devices. In order to be advanced to the City Council, a majority of affected residents must favor traffic calming.

Step 3: (City and/or Designated Committee/Board): Prioritize requests. A citizen group such as a Traffic Commission or other body evaluates and prioritizes proposed traffic calming projects. Priority is established based on factors including existing traffic volumes and 85th percentile speeds, availability of alternate emergency vehicle routes, potential for negative impacts on adjacent streets (primarily traffic diverted from the subject street), and how effectively the identified problem(s) can be resolved through the use of traffic calming techniques.

Step 4: (City Staff): Evaluate Problem and Determine Appropriate Solution(s). Evaluate data and field conditions and design a proposed traffic calming project. Staff should incorporate the following guidelines in developing the project:

- Provide an avenue for ongoing public input.
- Involve experts familiar with the latest traffic calming resources and design standards, through either direct involvement as consultants or advisors, or review of the literature by staff.
- Consider a variety of devices, rather than relying on one type of device such as speed humps or traffic circles. Reinforce the understanding that stop signs are not appropriate traffic calming devices.
- Support multiple objectives, including enhanced street aesthetics, improved walking and cycling conditions, as well as maintaining appropriate traffic speeds.
- Locate traffic calming devices at an adequate distance from intersections, driveways and horizontal curves, considering sight distance, turning movements and other constraints. Avoid installing traffic calming devices on slopes greater than five percent to the extent possible, and do not install devices on slopes greater than eight percent.
- New devices should be implemented on a trial basis with adequate signing. For example, the first traffic circles in an area should have signs showing the path vehicles should follow. After a few years such signs become unnecessary.
- Avoid traffic calming devices that will reduce speeds by more than 15 mph. As an example, if the 85th percentile speed is greater than 35 mph, devices with 20 mph design speeds – such as 14-foot speed humps – should not be used.

Step 5: (City Council): Project Approval. Final approval of the recommended project and authorization of funding for implementation.

Traffic Calming Strategies

The City should implement a formal traffic calming program to work toward achieving the objectives of lowering vehicular speeds, providing a human-scale environment, facilitating pedestrian crossings and minimizing adverse impacts on the character and livability of neighborhoods and business districts while still allowing for emergency vehicle access. This program should be comprised on two primary components:

- Identify and provide for traffic calming street improvements focused on non-arterial or collector streets to achieve program objectives.

- Utilize design techniques for local streets, such as reduced widths and lengths, curb extension and other traffic calming measures to achieve the objectives identified above.

On-Going Traffic Monitoring

The city should continue with its on-going biennial traffic monitoring program to provide the data necessary for effective management of the existing transportation system. Data collection should be citywide and should include as many common locations with each count as possible to facilitate evaluation of traffic shifts and growth patterns. Data collection should also emphasize portions of the street system where traffic is rapidly growing to facilitate periodic updating of traffic signal timing plans and other transportation system management activities. The installation of automatic traffic counters as proposed by the city for approximately 40 to 60 locations should be implemented.

Transportation Demand Management

Needs

Transportation Demand Management or TDM is a general term that describes any action that helps to improve the performance and efficiency of the transportation system by reducing reliance on the single occupant vehicle during peak travel periods. TDM measures can be effective in helping to reduce vehicle miles of travel, and involve a wide range of potential strategies including the use of transit, carpooling, vanpooling, working flexible hours and/or a compressed work week, bicycling, walking, working from home using communications technology, and preferential parking for rideshare vehicles. Most TDM strategies rely on voluntary participation and often incentives are provided to make the use of these strategies more attractive. TDM measures can also include land use actions such as higher density or mixed use development and growth management (Smart Growth) strategies.

Table 8-4 lists a variety of TDM strategies that either are or could be considered for implementation within the City of Medford. TDM strategies can help to preserve transportation system capacity and these strategies will become increasingly important as travel demand in the area continues to grow but transportation investments are not able to keep pace.

Table 8-4
Examples of Transportation Demand Management Strategies

Strategy	Description
Alternative Work Hours	Flex time and alternative work weeks (such as 4 10-hour days)
Bicycle Improvements	Improved bicycle planning, education and facilities
Congestion Pricing	Charge road users more for use of transportation system during periods of peak demand
Education	Education can serve to change how people value different transportation choices

Table 8-4 Continued
Examples of Transportation Demand Management Strategies

Strategy	Description
Employer Commute Options (ECO)	Employer-sponsored programs to help reduce trip-making by employees at large employment sites.
Free Transit Zones	Free transit service in commercial core areas
Guaranteed Ride Home	Provide a limited number of free rides home for transit and rideshare commuters
Intermodal Bicycle Services	Provision of bike lockers and/or bike racks at transit stops; bike racks on transit vehicles
Land Use Reforms	Higher density, mixed use, growth management
Monitor TDM	Perform surveys and other monitoring of TDM program effectiveness
Neotraditional Planning	Develop neighborhoods to encourage walking, bicycling, and transit use
Park and Ride	Provision of commuter parking at urban-fringe transit stops
Parking Pricing	Charge users directly for parking. Charge by the hour or day rather than the month.
Preferential Parking	Preferential parking for rideshare vehicles
Rideshare Programs	Rideshare promotions and ride-matching
Security	Address security concerns of rideshare, transit, cycle, and pedestrian commuters
Telecommuting	Working at home to avoid commute trips
Transit Improvements	Improve public transit service
Trip Reduction Incentives	Incentives like cash or gift certificates provided for employees, usually by employers to encourage use of alternatives to driving alone.
Vanpool Programs	Promotion/organization of vanpools
Vehicle Rentals	Encourage carshare cooperatives and neighborhood vehicle rentals

RVTD currently promotes a full range of several TDM strategies including: education programs, trip reduction incentives, the very successful “bikes on buses” program, carpools, vanpools, telework, park-and-ride service, employer outreach and other strategies. RVTD has also initiated development a Transportation Management Association (TMA) within the Medford area to assist large employers with implementation of various demand management strategies. The City of Medford is one of a handful of employers who participate in the fledgling TMA, but the city has not yet officially joined as a TMA member. The TMA is actively seeking stable funding to support its on-going activities.

Strategies

- The City should promote the use of alternative commute options to reduce motor vehicle travel generated by employment sites and schools by serving as a role model for the community by joining the Medford area Transportation Management Association (TMA) and actively supporting its mission.

- The City should support the use of transit among major employers in the Medford area by encouraging purchase of individual or subsidized group transit passes, or other actions to meet requirements for employee commute trip reductions.

- The City should encourage the development of discount transit fare programs and shuttle services by offering to share start-up costs with employers, schools and special event sponsors.

- The City should participate in public outreach to raise awareness about the use of TDM strategies and should actively market groups having the greatest potential for reducing single occupancy vehicle trips such as large employment sites and commuting students.

Chapter 9
Air Transportation Plan

Overview

This chapter includes a review and assessment of needs, deficiencies, policies and improvement options affecting the air transportation system within the Medford Urban Growth Boundary (UGB). Included is a discussion of the local and regional policy context for developing and maintaining this travel mode, an evaluation of needs and deficiencies in the existing system, and a discussion of various short, mid and longer term improvement projects for enhancing and expanding this system.

Information contained in this memo was obtained largely from the recently completed *Rogue Valley International-Medford Airport Master Plan* that includes forecasts of air passenger and cargo demand and identifies options and recommendations for airport improvement. In addition, the city's Level of Service study evaluated critical connections in the roadway system around the airport and provides insight into the airport landside access benefits realized by the implementation of currently-funded roadway improvement projects that are expected to be completed within the 20-year planning horizon. Additional improvement needs to the roadway system around the airport were also identified in this study. A key transportation issue to be addressed will be the adequacy of multi-modal transportation access to the Rogue Valley International-Medford Airport, particularly in light of the growth in air passenger and air cargo activity that is anticipated in the *Airport Master Plan*.

Policy Context and Background

The *2001-2023 Rogue Valley Regional Transportation Plan (RTP)* prepared for the Medford Urbanized Area by the Rogue Valley Metropolitan Planning Organization and adopted in 2002, establishes regional policy direction with respect to the air transportation system within the Medford UGB. The Rogue Valley International-Medford Airport provides an important passenger and freight connection to the remainder of the state, as well as to other national and international destinations. Because of the regional significance of this facility, the RTP recommends that *"Local governments shall take actions to promote air transportation in the region and its connections with the other areas in the state, nation, and abroad. This includes ensuring that good ground transportation is available for passengers and freight, and that the Airport Master Plan is periodically updated as necessary."* (Policy 13-1)

The City's existing *Comprehensive Plan* includes a goal and policies specifically directed at protecting and enhancing the air transportation system. Goal 7 indicates that the City will take actions *"To assure that land use planning and development approval processes are fully coordinated with the present and future needs of the Rogue Valley International-Medford Airport, thereby protecting and enhancing this valuable regional resource."*

Adopted city policies related to air transportation include the following:

- *"Policy 1: The City of Medford shall encourage and support in every way possible the continuation and expansion of the Rogue Valley International-Medford Airport facilities and services as an important transportation mode. This "Public Facilities Element" shall be amended as appropriate as airport facility plans are updated by Jackson County."*

- *"Policy 2: The City of Medford shall be an active participant in all matters related to airport land use planning. Special emphasis shall be placed on providing protective land use* *regulations, such as the existing Airport Approach (AA) Overlay district, and anyother such measures that are determined to be necessary."*

- *"Policy 3: The City of Medford shall consider the airport area (MATS sectors 10, 11, and 12) as a priority area for providing urban levels of public facilities and services."*

The *Comprehensive Plan* goal and accompanying policies were reviewed and modified as appropriate during the development of the TSP. New goals, policies and implementation strategies are included in Chapter 13.

In addition to local and regional policies related to air transportation, development of the air transportation portion of the Medford TSP must also consider Oregon Administrative Rules related to airport planning (OAR 660-013). These rules address the issues related to the on-going operation and vitality of Oregon's system of airports including the need to address land use planning in the vicinity of airports to reduce risks to aircraft operations and nearby land uses.

Needs

The Rogue Valley International-Medford Airport is the area's only provider of regularly-scheduled commercial airline service providing a national and international connection for the region. The airport is also the focal point for regional air cargo activity and employment growth in the adjacent Foreign Trade Zone (FTZ) and other business parks. The location of the airport is illustrated in Figure 3-4.

The *Rogue Valley International-Medford Airport Master Plan* serves as the primary guide to future development of the airport. Completed in 2001, the *Airport Master Plan* includes planning assumptions with respect to future community growth and business activity, identifies future needs for air passenger, air cargo and general aviation activities, evaluates potential options to enhance the airport to meet anticipated needs, and outlines recommendations for a staged airport improvement program.

Based on projected airport activity, the Jackson County Airport Authority plans to improve and expand several airport facilities including runways, parking facilities and vehicle accessways. These improvements will affect both internal airport circulation, as well as the surrounding transportation system. Improvement recommendations are based on an assessment of future air passenger and air cargo demands that are largely driven by increased population and economic activity both in Medford and throughout southern Oregon. A discussion of airport needs and deficiencies is presented below.

Demand for Airport Services

Key information gleaned from the *Airport Master Plan* and used in the development of this multi-modal TSP includes forecasts of passenger enplanements (the number of passenger boardings for air carrier or scheduled airline service), forecasts of air cargo tonnage, and itinerant and local aircraft operations including both civil and military aircraft. Estimates of employment growth in the developing Foreign Trade Zone (FTZ) located adjacent to and east of the existing airport facility, have also been considered in evaluating both the demand for on-site airport improvements and off-site airport access needs (this analysis is focused on several key intersections in the vicinity of the airport).

According to the *Airport Master Plan*, passenger enplanements are forecast to increase substantially from the 1998 level of approximately 219,000 passengers. Several different forecasting methods were used to determine the likely future demand for air passenger service at the Rogue Valley International-Medford Airport with the preferred method being based on a per capita ratio that correlates growth in travel demand to the area's growing population and propensity to fly. The preferred forecast was prepared in five-year increments through 2020, with the outlying year estimated at 379,300 passengers or a 74 percent increase over 1998 levels. This translates to slightly over 1,000 passengers on an average day, which is not significant compared with forecast daily traffic volumes on I-5 of over 50,000 vehicles at both the north and south ends of the Medford UGB study area. Table 9-1 illustrates the projected growth in air passenger demand at the Medford Airport.

Table 9-1
Rogue Valley International-Medford Airport
Projected Air Operations and Passengers

	1998	2005	2010	2020
Passenger Enplanements	218,593	268,950	303,630	379,300
Aircraft Operations - Itinerant				
• Air Carrier	16,235	18,120	19,100	21,900
• Air Taxi	2,119	4,000	4,500	5,500
• General Aviation	26,133	28,000	30,000	34,500
• Military	340	375	375	375
Total Itinerant Operations	44,827	50,495	53,975	62,275
Aircraft Operations - Local				
• Civil	25,166	28,000	30,000	34,500
• Military	224	200	200	200
Total Local Operations	25,390	28,200	30,200	34,700
Total Operations	70,217	78,695	84,175	96,975
Total Aircraft Based at Airport	150	160	168	184
• Single-Engine	124	128	129	132
• Multi-Engine	15	17	20	25
• Jet	7	9	11	15
• Helicopter	4	6	8	12

Source: Unpublished data from Jackson County Airport Authority (for 1998) and *Rogue Valley International-Medford Airport Master Plan*, February 2001 (for future year estimates).

Table 9-1 also outlines projected growth in aircraft operations including the air carriers responsible for accommodating most of the projected passenger growth. Along with air passenger growth, air carrier operations are expected to grow by 35 percent by 2020. Other aircraft operations include air taxi (expected to more than double by 2020), general aviation (expected to grow by about 35 percent by 2020), and military operations (expected to grow very slightly). Total aircraft operations are expected to grow by a little less than 40 percent between 1998 and 2020.

In addition to serving air passenger and general aviation demand, the Rogue Valley International-Medford Airport provides for the air freight needs of the Rogue Valley area, connecting the region to national and international markets. Both all-cargo carriers and the scheduled airlines handle air freight, while air mail is handled only by the latter. Five companies currently operate under contract with cargo-carrying companies such as FedEx, United Parcel Service (UPS) and Airborne Express, to carry air freight to and from the Medford area using a combination of small turboprop planes and jets.

According to the 2001 *Airport Master Plan*, over 8 million pounds of air freight were carried in 1998, with the cargo-only carriers performing 5,800 annual operations. In comparison with the demand for truck freight movement on Interstate 5, air freight is currently a small percentage of total freight movement in the Medford area. Future projections of air freight activity reflect a gradual "phasing in" of air cargo facilities on the east side of the airport in the Foreign Trade Zone (FTZ), and continuing development of markets in Southwest Oregon and Northwest California. A significant increase of cargo moving in and out of this area could provide the impetus for development of an intermodal system for handling freight containers and trailers to increase the efficiency of cargo handling. Table 9-2 identifies both existing and projected air cargo activity.

Table 9-2
Rogue Valley International-Medford Airport
Projected Air Cargo Activity

		1998	2005	2010	2020
Mail					
• Pounds On		678,770	864,000	1,026,000	1,450,000
• Pounds Off		27,569	35,000	42,000	59,000
	Total	706,339	899,000	1,068,000	1,509,000
Air Freight					
• Pounds On		3,397,785	4,980,000	6,540,000	11,280,000
• Pounds Off		4,362,396	6,390,000	8,390,000	14,470,000
	Total	7,760,181	11,370,000	14,930,000	25,750,000
Total Pounds of Air Cargo		8,466,520	12,269,000	15,998,000	27,259,000

Source: *Rogue Valley International-Medford Airport Master Plan*, February 2001.

On-Site Airport Improvement Needs

The *Airport Master Plan* identifies facility improvements and additions that the airport will need in the coming decades to sufficiently handle increases in passenger and freight activity while also meeting Federal Aviation Administration (FAA) requirements. While growth in passenger volumes largely dictate the timing of airport improvements, the *Airport Master Plan* includes a prioritized list of improvements based on short-, intermediate-, and long-term planning horizons. Short-term needs lie within the period between 2001 and 2005. Intermediate and long-term needs span the 2006-2010 and 2011-2020 timeframes, respectively.

1998, the Rogue Valley International-Medford Airport is deficient in terms of space and facilities to accommodate air passenger demand. According to airport planning standards developed by the FAA, the overall passenger terminal area is too small to handle the number of passengers currently being served. In addition, public parking capacity is below FAA standards for an airport of this size. With air passenger demand anticipated to grow by nearly 75 percent between 1998 and 2020, the need for terminal and parking area expansion is evident.

Determining facility needs for general aviation depends on the number of annual operations, number of aircraft based at the airport, and the varying types of fleet being served. Both local and itinerant general aviation operations are anticipated to increase in the coming decades. While the number of based aircraft is expected to grow, the fleet mix is expected to remain generally the same as it exists today. Projected military activity is not expected to vary much from current levels, therefore static projections were used in the forecasts. Terminal and storage facilities for general aviation currently meet both short- and intermediate-term needs, however, apron area and parking facilities are currently deficient. Realignment of Taxiway "A" is also identified as a short-term need.

The airport's air cargo facilities presently do not meet short-term needs. The current 20,000 square-feet of available building space is less than the 25,000 square-feet estimated to be needed. In addition, there are only 5,000 square yards of apron space available for air cargo activity, while short-term demand is estimated at 9,700 square yards.

Off-Site Airport Access Needs

Based on the information prepared as part of the city's Level of Service (LOS) Study, some current deficiencies exist with respect to multi-modal transportation system access to the Rogue Valley International-Medford Airport. The analysis of existing (2002) conditions indicates that there are several intersections in the vicinity of the airport that currently operate below the city's existing LOS D standard during the PM peak hour, including:

- Highway 62 at Poplar Drive/Hilton Road (currently operating at LOS D/E)
- Highway 62 at Delta Waters Road (currently operating at LOS E)
- I-5 NB on and off-ramp at Biddle Road (currently operating at LOS E)
- Biddle Road at N Withams/Hilton Road (also operating at LOS E)

Based on output from the regional travel demand model maintained by the Rogue Valley COG, traffic growth in the vicinity of the airport is expected to be significant. This traffic growth assumes an increase in both air passenger and air cargo demand as well as future employment in the Foreign Trade Zone (FTZ) adjacent to the east side of the Medford airport. Future intersection traffic operations exceeding the city's LOS D standard include:

- Highway 99/Highway 62/Highweay 238 (expected to operate at LOS D with a v/c of 1.00)
- Highway 62/Poplar Drive (expected to operate at LOS F with a v/c of 1.14)
- Highway 62/Delta Waters Road (expected to operate at LOS F with a v/c of 1.37)
- Highway 62/West Vilas Road (expected to operate at LOS E with a v/c of 1.02)

The identified future problems along Highway 62 in the vicinity of the airport are expected to occur even with the proposed Unit 1 improvements in the vicinity of the I-5/Highway 62 interchange.

To ensure that landside access to the airport includes not only adequate facilities to address anticipated future travel demand by automobiles and trucks, consideration must also be given to the needs of those who travel to the airport by other means. These travelers could include not only airline passengers, but also airport area employees, visitors and others with a need to reach the airport. Currently, RVTD bus service to the Rogue Valley International-Medford Airport is provide upon request only with a requirement for advance reservations. Service is also available by taxi and airport shuttle. Access to/from the airport by walking and bicycling is incomplete with pedestrian and bicycle facilities extended only part way along Biddle Road northward from the city.

Land Use Issues

Along with issues related to airport on-site development needs to meet anticipated travel demand for this mode and the off-site airport landside access needs as identified above, airports typically can have significant impacts on land uses in their vicinity. These impacts include not only potential safety issues related to both aircraft operations and risks to surrounding land uses, but also potentially neighborhood quality of life issues related to airport noise. The economic and transportation needs associated with airport use and development must be balanced against these potential land use issues.

To address airport area land use issues, the Oregon Administrative Rules (Section 660-013-Airport Planning) requires local agencies with planning authority for one or more airports or for areas within safety or compatibility zones around airports to adopt comprehensive plan and land use regulations for airports consistent with the requirements to that division and ORS 836.600 through 836.630. These plans and regulations are intended to encourage the long-term viability and compatibility of airports with their surrounding communities.

To meet the requirements of the OAR, local governments are required to:

- Adopt an Airport Safety Overlay Zone to prohibit structure, trees and other objects of natural growth from penetrating airport imaginary surfaces (e.g., in particular, height limitations in areas used by aircraft to approach or depart from the airports runways);

- Adopt airport compatibility requirements to prohibit new residential development and public assembly within the Runway Protection Zone; to limit establishment of specified uses within a noise impact boundary; to prohibit siting of new industrial uses and the expansion of existing industrial uses that could cause emissions of smoke, dust or steam that would obscure visibility within airport approach corridors; to limit outdoor lighting that would project directly onto an existing runway or taxiway or into existing airport approach corridors; to coordinate siting of transmission facilities with ODOT Aeronautics Division; and to regulate water impounds and the establishment of new landfills near airports (that might attract birds).

Medford currently has provisions in its Municipal Code to address airport compatibility issues including Airport Approach (A-A) and Airport Radar (A-R) Zoning Districts. However, review of these code provisions is appropriate to ensure that they meet all of the requirements of OAR 660-013.

Strategies

Airport Master Plan

Based on the assessment of existing conditions and estimates of future needs, the 2001 *Airport Master Plan* identifies several alternatives for implementing needed improvements. Each alternative was analyzed and documented in the *Airport Master Plan* to provide a foundation for the plan's recommendations. Several functional areas at the airport were considered as the various alternatives were developed, including the airfield, passenger terminal, air cargo complex (including the Foreign Trade Zone), general aviation facilities, and other airport support facilities. The *Airport Master Plan* outlines several combinations of improvements and summarizes the results based on extensive analysis. Table 9-3 identifies key components of the improvement options that were considered for the each of major functional areas at the airport.

Of particular significance for the City of Medford's TSP is the identified need to improve the airport's vehicular entrance on Biddle Road. The existing access roads to the airport terminal are stop sign-controlled at Biddle Road. Based on existing volumes, no significant traffic operational problems were observed. The *Airport Master Plan* recommends grade separation of the southern airport terminal entrance road with Biddle Road as an intermediate term improvement (needed between 2006 and 2010). However, there has been recent industrial park development activity in the vicinity of the existing at-grade intersection that would need to be acquired and removed in order to build the proposed grade-separation. This would increase the cost of such an improvement over the level anticipated in the *Airport Master Plan*.

Table 9-3
Rogue Valley International-Medford Airport
Improvement Alternatives Considered

Airfield Considerations

- Extension of Runway 14-32 to 8,800 feet (project completed)
- Consider longer runway for trans-Pacific air cargo flights (subsequently determined not to be feasible)
- Realign Taxiway A at south end to provide 400-foot separation from runway
- Reserve area for parallel runway to increase capacity

Terminal/Access Considerations

- Short-term need to expand terminal (bag claim, holdroom and rental car)
- Short-term need to expand public parking area
- Evaluate entrance/exit onto Biddle Road

General Aviation Considerations

- Consider current hanger expansion proposals
- Evaluate development potential if Runway 9-27 is closed

Air Cargo Considerations

- Consider current layout for air cargo facilities prepared for Airport Commerce Park
- Maintain segregation of large aircraft cargo facilities from other commercial or general aviation facilities

Source: *Rogue Valley International-Medford Airport Master Plan*, February 2001.

Off-Site Transportation System Improvement Strategies

One of the more significant roadway improvement projects proposed in the vicinity of the Rogue Valley International-Medford Airport is the North Medford interchange project. This project will eliminate Hilton Road, which currently runs from Biddle Road to the Poplar/ Highway 62 intersection. Bullock Road currently intersects Hilton Road very close to its intersection with Highway 62. Bullock Road provides access to the south side of the airport, largely for industrial and/or air cargo purposes. However, due to long queues on Hilton Road approaching Highway 62, vehicles cannot make a southbound left-turn from Bullock Road onto Hilton Road (and thus reach Highway 62) during peak traffic periods. This makes Bullock Road unattractive for vehicles exiting the airport desiring to get to Highway 62 via this route. Under the North Medford Interchange project Bullock Road will be realigned to become the fourth leg of the Poplar/ Highway 62 intersection. This will enhance the attractiveness of this route, which would reduce some reliance on the airport roadway connections to Biddle Road.

There has also been some consideration of providing a new link to Bullock Road from Lear Way. This alignment would connect from Lear Way to the curve at the north end of Bullock Road. Such a connection would require a tunnel since it would cross the Runway Protection Zone. Given the cost of a tunnel and the current levels of congestion at Delta Waters/ Lear Way/ Highway 62, this connection is not currently recommended.

As a result of the City's LOS Study, several other street system improvements have been proposed in the airport vicinity to address likely future deficiencies and/or to enhance passenger access to the terminal and/or access to the industrial areas surrounding the airport. These improvements would include adding additional turning lanes along Highway 62 at Poplar Drive and Delta Waters (with the possible future grade-separation of Highway 62 at Poplar as part of the Unit 2 improvement package); adding additional through lane capacity on West Vilas Road at Highway 62, and potentially grade-separating the existing at-grade intersection of Highway 99, Highway 62 and Highway 238.

Actions

Airport Master Plan

Analysis of various development alternatives resulted in a list of recommended airport capital improvements. Although airport activity levels and facility demand ultimately drive the timing of improvements, the 2001 *Airport Master Plan* groups recommended projects into a general time-based schedule. Short-term improvements range between the years 2001 and 2005; intermediate-term improvements are recommended for implementation between 2006 and 2010; long-term improvements are generally scheduled between 2011 and 2020. Table 9-4 identifies recommended airport improvements that affect transportation planning in the Medford area. The *Airport Master Plan* contains a full list of capital improvements.

Table 9-4
Rogue Valley International-Medford Airport
Key Components of Recommended Capital Improvement Program

Short-term Improvements (2001-2005)
• Expand loop road to accommodate additional public parking
• Expand public parking (400 spaces)
• Construct taxiway stub/Schultz Road (8,100 sq. yds.)
• Construct new baggage claim/2nd level concourse (Phase 1) (14,000 sq. ft.)
• Re-align Taxiway A (south) (30,000 sq. yds.)
Intermediate-term Improvements (2006-2010)
• Construct new Biddle Road interchange
• Expand surface parking (400 spaces)
• Re-align Milligan Way (1,200 linear feet)
Long-term Improvements (2011-2020)
• Expand general aviation apron (50,000 sq. yds.)
• Construct parallel runway (4,650 x 75 ft.)
• Acquire property for terminal area expansion (8.8 acres)
• Acquire property for development (100 acres)

Source: *Rogue Valley International-Medford Airport Master Plan*, February 2001.

Projects in the short-term horizon represent those ranking highest in priority and meeting immediate needs of the airport. The shortage of public parking has strengthened the need for expansion as airport activity increases. At the same time, baggage claim expansion is also a recommended short-term improvement. The baggage claim expansion will possibly force the rental car area to be relocated into the existing parking lot, which will affect parking space availability depending on the timing of improvements.

An additional 400 public parking spaces are expected to be needed in the intermediate-term. This expansion will likely occur south of the existing parking area. Concurrently, the *Airport Master Plan* recommends the construction of a grade-separated interchange at Biddle Road. To enhance safety and mobility, the plan recommends that the interchange consist of airport entrance and exit ramps passing over Biddle Road to eliminate several turning conflicts. Additional terminal expansion is also anticipated to take place during this period.

Long-term improvements include acquiring land for future development, specifically 8.8 acres in front of the terminal area as well as 100 acres at the north end of the airport property.

It should be noted that the Airport Master Plan was completed prior to September 11, 2001 and some of the recommendations discussed above may need to be reconsidered in light of any long-term drop future in passenger and/or air cargo activity.

Off-Site Transportation System Improvement Projects

Improvements in the vicinity of the Rogue Valley International-Medford Airport to enhance off-site transportation system access include the following:

- Construct the North Medford Interchange improvements included in the Highway 62 Unit 1 strategy.

- Improve existing and likely future traffic operations at the intersection of Highway 62 with Poplar Drive by adding additional vehicle turning lanes. Further consideration of the potential for grade-separation of this intersection should be made as part of the on-going study for Highway 62 Unit 2 improvements.

- Improve the intersections of Highway 62 with Delta Waters Road and West Vilas Road as identified and discussed in the Street Plan chapter.

- Address long-term improvement needs at the existing at-grade intersection of Highways 99, 62 and 238 which could include future grade-separation.

- Extend and provide bicycle and pedestrian facilities along Biddle Road to the airport terminal access roads.

- Support and encourage provision of public transportation services to the airport to meet the travel needs of passengers, employees and other airport visitors.

- Work with Jackson County to develop an appropriate long-term strategy for airport terminal area access (identified in the *Airport Master Plan* as a future grade separation).

Land Use Issues

To address land use compatibility issues in the vicinity, the City of Medford should work cooperatively with the Jackson County Airport Authority (the owner/operator of the airport) to evaluate the City's current comprehensive plan and code to ensure the following:

- That the types and levels of public facilities and services needed to support development located at or planned for the airport are provided;

- That there is adequate mapping of the airport area as required by OAR 660-013;

- Develop and consider any ordinances necessary to carry out the requirements of OAR 660-013 consistent with applicable statewide planning requirements. This might include revisions to the City's existing Airport Approach (A-A) and Airport Radar (A-R) Zoning Districts if these are determined to be inadequate to meet the requirements of OAR 660-013 for the safety provisions of an Airport Overlay Zone;

- Consider land use plans in the vicinity of the airport to minimize potential safety and noise related impacts associated with the airport.

Chapter 10
Non-Motorized Transportation Plan

Overview

This chapter documents the review and assessment of needs, deficiencies, policies and improvement options affecting the bicycle and pedestrian transportation systems within the Medford Urban Growth Boundary (UGB). Included is a discussion of the local and regional policy context for developing and maintaining the non-motorized travel modes, an evaluation of needs and deficiencies in the existing systems, a discussion of various short-, mid- and longer-term improvement strategies for enhancing and expanding these systems, and a summary of improvements.

Information contained in this chapter was obtained largely from the existing conditions inventory discussed in Chapter 3 as well as the goals and policies related to non-motorized travel from several relevant planning documents. In addition, the bicycle and pedestrian recommendations in the *2001-2023 Rogue Valley Regional Transportation Plan* were reviewed to identify benefits that could be realized by the implementation of RTP roadway improvement projects that are expected to be completed within the 20-year planning horizon. Input was also solicited from the Jackson County Bicycle Advisory Committee and the TSP Citizen's Advisory Committee. A summary of these recommendations is included in Appendix F.

Bicycle Plan

Policy Context and Background

The *2001-2023 Rogue Valley Regional Transportation Plan (RTP)* prepared for the Medford Urbanized Area by the Rogue Valley Metropolitan Planning Organization (RVMPO) and adopted in 2002, establishes regional policy direction with respect to the bicycle transportation system within the Medford UGB. The RTP recommends that:

- *"Local governments shall complete a bikeway network that serves bicyclists needs, especially for travel to employment centers, commercial districts, transit centers, institutions, and recreational destinations. In urban areas, bike lanes shall be provided on all arterial and major collector streets; all other urban streets shall be constructed such that the pavement is wide enough to allow safe travel by both motor vehicles and bicycles on the shared roadway (OAR 660-12-0045(6)). In rural areas, arterial and collector streets shall include four-to-six foot shoulders on each side."* (Policy 10-1)

- *"Local governments shall work with ODOT to improve bicycling on state highways within their boundaries."* (Policy 10-2)

- *"Local governments shall provide regular maintenance of existing bicycle facilities, including pavement management and sweeping as part of the regular pavement-sweeping schedule."* (Policy 10-3)

- *"Where applicable, local governments shall revise their zoning codes to require the provision of amenities to help meet bicyclist and pedestrian needs, including the provision of bicycle storage facilities."* (Policy 10-7)

- *"Local governments shall support bicycle and pedestrian safety, both through enforcement of safety laws and regulations and through support of programs that provide bicycle and pedestrian safety education."* (Policy 10-8)

- *"Local governments shall use the media, transportation committees, bicycle plans, and other methods to promote use of bicycling and walking for transportation purposes."* (Policy 10-10)

The City of Medford's existing *Comprehensive Plan* includes a goal and policy specifically directed at enhancing the bicycle transportation system. Goal 5 indicates that the City will take actions *"To encourage and facilitate safe and convenient bicycle transportation within the Medford planning area."* This goal is further defined by a policy directing that "*The City of Medford shall recognize bicycle transportation as a viable component of a city-wide circulation system, both as an important transportation mode, and as an air quality strategy, and shall make every reasonable effort to implement a coordinated Bicycle Facilities Master Plan."*

Development of the bicycle transportation system is further supported by specific *Comprehensive Plan* objectives. These objectives focus on building a network of bicycle facilities (largely on the arterial and collector street system) that connect the downtown area, most residential neighborhoods, commercial centers and local schools. The system should also include bicycle storage in the downtown, as well as on-going safety and education programs. The *Comprehensive Plan* goal, policies and objectives were reviewed and modified as appropriate during the development of the TSP. New goals, policies and implementation strategies are included in Chapter 13.

The City of Medford's Vision for the 21st Century identifies a series of "elements" aimed at meeting the City's circulation needs in the coming decades. Elements of the vision that pertain to the bicycle system focus on providing bikeways and sidewalks in accordance with transportation improvement projects listed in the RTP, completing the Bear Creek Path through Medford, and providing bicycle/pedestrian connections to other east-west linear routes.

As the non-motorized transportation system extends beyond the city limits of Medford, goals and policies inherent in the Jackson County *Bicycle Master Plan* were also considered in developing improvement strategies and recommendations for the City. The County's bicycle plan was completed in May 1996 and adopted August 1996. The County Bicycle Advisory Committee, established by the Board of Commissioners in 1978, played a vital role in the development of this Plan. This Committee has provided review and comment on the development of bicycle-related policies, strategies and recommendations for the City.

In addition to regional and local policy strategies governing bicycle transportation system enhancements, two state strategies must also be satisfied. The first is associated with State Planning Goal 12, the Transportation Planning Rule (TPR). The TPR requires the Oregon Department of Transportation (ODOT) and the cities and counties of Oregon to cooperate and to develop balanced transportation systems, including bicycle facilities. Oregon Revised Statute (ORS) 366.514 requires the provision of bicycle and pedestrian facilities on all arterial and major collector construction, reconstruction, or relocation projects where conditions permit. Additionally, in any fiscal year, at least one percent of road improvement funds in a jurisdiction must be allocated for bicycle/pedestrian projects.

The second directive is based on alternatives to the TPR requirement for a per-capita reduction in vehicle miles of travel (VMT) that have been approved for implementation in the Rogue Valley metropolitan area (RVMPO). This requirement is intended to reduce vehicular congestion in the urban portions of Oregon and to encourage the development and use of alternative transportation modes such as transit, walking and bicycling. The RVMPO Alternative Measures package was endorsed in 2002 by the Land Conservation and Development Commission, and includes seven measures with targets for implementation that are phased in five-year increments through 2020. The Alternative Measures pertaining to bicycle facility planning are listed in Table 10-1.

Table 10-1
Alternative RTP Performance Measures Related to the Bicycle System for the Rogue Valley MPO

Measure	Intent	Current 2000	Benchmark 2005	Benchmark 2010	Benchmark 2015	Target 2020
Measure 1: Transit and bicycle/ pedestrian mode share	Demonstrate a shift in travel behavior away from the automobile	% of daily trips Transit: 1.0 Bike/Ped: 8.2	% of daily trips Transit: 1.2 Bike/Ped: 8.4	% of daily trips Transit: 1.6 Bike/Ped: 8.4	% of daily trips Transit: 2.2 Bike/Ped: 9.8	% of daily trips Transit: 3.0 Bike/Ped: 11.0
Measure 3: Percent of arterials and collectors with bicycle facilities	Track the progress of including these facilities on the street network and demonstrate improved accessibility for bicyclists	21%	28%	37%	48%	60%
Measure 7: Alternative Transportation Funding *	Demonstrate commitment to implementing the alternative transportation projects upon which many of the measures rely	N/A	$950,000	$2.5 million	$4.3 million	$6.4 million

Source: Land Conservation and Development Commission, OAR 660-012-0035(5), April 3, 2002.
* Dollar Amounts are cumulative from 2000 through 2020.

Needs

Although bicycle facilities are located on several arterial and collector streets in the Medford UGB, many streets presently lack bicycle amenities. The facilities that do exist cover only a limited geographic area and, in most cases, are disconnected from each other. Many of the City's public schools are poorly connected with surrounding neighborhoods, reducing the opportunity for convenient and safe bicycle travel for employees and students. Nearly half of Medford's 19 public schools are currently not served by bikeways. Major employee and commercial centers also suffer from a general lack of connectivity. For example, the Rogue Valley Mall currently generates a significant amount of bicycle and pedestrian traffic, and the nearby Bear Creek Path provides connections for walkers and bicylists to many parts of Medford. Yet the mall and the path are poorly connected to other parts of the city. Major activity centers along Crater Lake Avenue also need improved bicycle connections. Bikeways will also need to be improved and extended to serve Medford's existing and planned Transit Oriented Districts (TODs). Primarily located on the urban fringe, the existing and planned TODs currently lack bicycle facilities. Providing these amenities will promote use of alternative travel modes and reduce reliance on the automobile.

To fulfill requirements of the TPR, the Alternative Measures package calls for increasing the percentage of arterial and collector streets containing bicycle and pedestrian facilities. In 2000, bikeways existed on 21 percent of the arterial and collector streets in the RVMPO area (including the urban growth areas for

Medford, Central Point and Phoenix). By 2020, the Alternative Measures package requires that 60 percent of these facilities include bicycle/pedestrian amenities.

Adding bicycle facilities (along with bicycle detection devices to facilitate travel through signalized intersections) will also increase safety. Analysis of reported bicycle accident data reveals that safety improvements are needed on a number of roadways throughout Medford. Highway 62, McAndrews Road and Riverside Avenue are among the roads that have experienced several bicycle-related accidents in recent years. Table 10-2 lists reported accidents in the Medford area between January 1, 1999 and December 31, 2001.

Table 10-2
Reported Bicycle Accident Locations, 1999-2001

	Number of Reported Accidents			
Location	**Fatal**	**Injury**	**PDO**	**Probable Cause**
4th & Central			1	Bicyclist disregarded signal
8th & Ivy		1		Bicyclist traveling in wrong direction
8th & Oakdale		1		Turning car failed to yield to bicyclist
8th & Riverside		1		Turning car failed to yield to bicyclist
Columbus & Locust		1		Bicyclist traveling in wrong direction
Court & Ohio		1		Turning car failed to yield to bicyclist
Crater Lake Avenue & Grand		1		Car hit bicyclist in crosswalk
Crater Lake Avenue & Poplar		1		Bicyclist disregarded signal
Highway 62 & Hilton		2		Turning car failed to yield to bicyclist
Highway 62 & Poplar		2		Turning car failed to yield to bicyclist
Main & Bartlett		1		Bicyclist failed to yield to turning car
McAndrews & Biddle		1		Turning car failed to yield to bicyclist
McAndrews & Court	1			Bicyclist failed to yield to turning car
McAndrews & Poplar			1	Bicyclist failed to yield to turning car
Riverside & Jackson		1		Bicyclist traveling in wrong direction
Riverside & Main		1		Turning car failed to yield to bicyclist
Riverside & Ohio		1		Bicyclist disregarded signal
Stewart & Kings		1		Bicyclist failed to yield, impaired visibility
Totals	1	17	2	

Source: ODOT (2002)
Note: PDO means "Property Damage Only"

Chapter 3 includes an inventory of the existing bicycle system. Figure 3-6 depicts existing bicycle facilities including lanes, widened shoulders and multi-use pathways. Accident locations and major bicycle destinations (such as schools, parks, employment and shopping destinations) are also shown in this figure.

Strategies

A number of strategies were developed to provide the basis for a discussion of policies and priorities to be used in guiding Medford's bicycle facility improvements in the coming decades. In part, these strategies were derived from existing policies, and an assessment of current deficiencies, current improvement programs, and anticipated projects identified in the RTP for implementation within the Medford UGB. As shown in Tables F-2 though F-5 and in Figure F-1 that can be found in Appendix F, the RTP outlines a list of planned/programmed projects that include components specifically related to bicycle enhancement. These improvements have been categorized into short-, medium-, and long-term timeframes though 2023. While it should be noted that the timing and prioritization of improvements listed in the RTP are subject to change based on the outcome of the City's TSP planning process, these projects do provide a starting point for discussion of bicycle system improvements and priorities.

In addition, while the TPR and the RVMPO Alternative Measures package aim to include bicycle facilities on most arterial and collector streets, the TSP recognizes the physical limitations on some roadways in the Medford UGB. Limited right-of-way, presence of major utilities that would require relocation and other factors would generally preclude the reasonable implementation of bicycle facilities on a number of streets including portions of Barnett Road and Crater Lake Avenue, and these limitations were considered in the development of improvement strategies. Table 10-3 describes each strategy and identifies relevant polices that could be satisfied by the strategy.

Table 10-3
Bicycle System Improvement Strategies

Strategy	Description	Objectives of the Strategy
Fill in Gaps	Improve/construct facilities linking existing and planned bikeways (filling in "missing links")	• Increase percentage of bicycle facilities on arterial and collector streets • Improve connections to employment centers, commercial districts, transit centers, institutions, and recreational destinations • Increase percentage of daily trips made via bicycle
Focus on Schools	Provide bikeways to/from all public schools where none exist (emphasis on arterials and collectors)	• Primarily improve connections to schools • Secondarily improve connections to employment and commercial districts, transit, institutions and recreation • Encourage and facilitate safe and convenient bicycle transportation for younger riders • Increase percentage of daily trips made via bicycle • Secondarily increase percentage of bicycle facilities on arterial and collector streets
Focus on Activity Centers	Provide bikeways to/from commercial and neighborhood employment centers and parks where none exist (emphasis on arterials and collectors)	• Primarily improve connections to employment and commercial districts, transit, institutions, and recreation • Increase percentage of daily trips made via bicycle • Increase percentage of bicycle facilities on arterial and collector streets • Encourage and facilitate safe and convenient bicycle transportation
Connect to Transit Routes	Provide bikeways to/from major transit stops where none exist (emphasis on arterials and collectors)	• Primarily improve connections to transit • Secondarily improve connections to employment and commercial districts, institutions and recreation • Increase percentage of daily trips made via bicycle and transit • Encourage and facilitate safe and convenient bicycle transportation

The strategies listed above directly and indirectly respond to the bicycle system planning policies dictated by the TPR, RTP, and the City's *Comprehensive Plan*. To varying degrees, the strategies also reflect the goals of the Medford Vision Strategic Plan, the *Jackson County Bicycle Master Plan* and the RVMPO Alternative Measures package. While many policies do not relate to the actual physical expansion of the bikeway system, they are equally important to the overall bicycle network. Provision of supportive land uses, bicycle storage facilities and routine bikeway maintenance all contribute to improvement of the bicycling environment and encouragement of bicycling as a transportation mode of choice.

The various alternative strategies have been evaluated using criteria that were developed to weigh the benefits and impacts of implementing each improvement strategy, and to initiate discussion of bicycle system priorities. Evaluation criteria were developed based on existing adopted policies, state TPR requirements, and/or factors identified as particularly relevant for comparing and contrasting the alternative strategies. The evaluation criteria were used to assess the degree that each strategy:

- Improved connectivity of the bicycle system;
- Increased the percentage of arterial and collector streets that included bicycle facilities;
- Served key destinations, including TODs, schools, commercial centers, downtown Medford and major recreation sites;
- Improved safety at locations with reported bicycle accidents; and
- Had a potential for reducing reliance on the automobile for trip-making within the UGB.

Table 10-4 presents an evaluation matrix that summarizes each of these strategies and assesses them in relation to the evaluation criteria. This evaluation not only gauged the impacts and potential benefits of each strategy, but also served as a prioritization tool leading to the identification of a phased program of improvements.

Actions

Presently about 42 percent of arterial and collector streets within the Medford UGB have some form of bicycle facilities, like wide shoulders, shared lines, multi-use paths or dedicated bicycle lanes. Analysis of the improvement strategies and policy criteria along with community input throughout the planning process suggests that Medford's bicycle network will be completed most effectively by placing a greater emphasis on filling gaps and providing new and improved connections to schools and activity centers. While not fully satisfying as many criteria as the aforementioned strategies, enhancing connections to transit routes and the Bear Creek Path are also important.

Planning for Medford's future bicycle system also considered components that contribute to an effective bicycle network. The ODOT *Bicycle and Pedestrian Plan* lists several principles of bikeway and walkway planning. The principles include:

- Accommodating bicyclists and pedestrians on arterial and collector streets;
- Providing appropriate facilities;
- Creating and maintaining a system of closely spaced, interconnected local streets; and
- Overcoming barriers such as freeway crossings, intersections, rivers and canyons.

Improvements to the bicycle circulation system in the City of Medford include the following:

- Construct new bicycle lanes as part of roadway improvement projects
- Retrofit bicycle lanes onto existing arterial and major collector streets
- Overcome barriers to bicycle circulation
- Identify future opportunities for multi-use paths
- Implement safety and operational street improvements that benefit bicyclists
- Create a Bicycle Advisory Committee
- Provide bicycle support facilities
- Maintain the bicycle circulation system

Table 10-4
Summary Evaluation of Bicycle System Improvement Strategies

	STRATEGIES				
	Fill in Gaps	**Focus on Schools**	**Focus on Activity Centers**	**Connect to Transit Routes**	**Connect to Bear Creek Path**
Description of Strategy	Improve/construct facilities linking existing and planned bikeways (filling in "missing links")	Provide bikeways to/from all public schools where none exist (emphasis on arterials and collectors)	Provide bikeways to/from employment centers and parks where none exist (emphasis on arterials and collectors)	Provide bikeways to/from major transit stops where none exist (emphasis on arterials and collectors)	Provide connections to the Bear Creek Path from the surrounding street system (emphasis on arterials and collectors)
POLICY CRITERIA					
Serves key destinations					
• ***TODs***	Serves Downtown and West Medford TODs but not North Medford and SE Medford TODs	No schools currently within the TODs, a few schools just beyond the Downtown, North Medford and West Medford TOD boundaries	High service to TODs	Serves Downtown, North Medford, and West Medford TODs; but does not serve SE Medford TOD	Primarily serves Downtown and West Medford TODs.
• ***Schools***	High service	High service	Moderate service	Moderate service	Moderate service to schools (serves the fewest schools among the strategies)
• ***Commercial centers***	High service	Moderate service	High service	Moderate service	Moderate service, focused on central portions of city
• ***Downtown***	Moderate service	Minimal service	High service	High service	Minimal service
• ***Major recreation sites***	Moderate service	High service	High service	Moderate service	Moderate service
Improves safety at locations with reported bicycle accidents	Moderate, primarily along McAndrews Road where several bike accidents have occurred	Minimal due to the low number of reported bicycle-related accidents near schools	Moderate, primarily along McAndrews Road	Moderate, primarily along McAndrews Road	Minimal due to fewer streets in need of bicycle improvements
Increases % of arterial and collector streets with bicycle facilities	Provides significant new facilities	Provides a moderate number of new facilities	Provides significant new facilities	Provides a moderate number of new facilities	Provides the lowest number of new facilities
Improves connectivity of bicycle system	Greatly improves overall connectivity by linking together existing and planned bikeways	Improves local connectivity within vicinity of schools	Greatly improves overall connectivity due to the numerous activity centers throughout the Medford area	Improves connectivity along arterials and collectors with transit routes	Improves east/west connectivity, but provides the least amount of overall connectivity among the strategies
Reduces reliance on automobile travel	Greatest potential of the strategies by improving the bicycling environment	Improves bicycling for a one group of users. Some use could be made of this system for other trip purposes.	High potential. Serves many major employment destinations.	High potential. Concentrates improvements in major commuter travel corridors.	Likely low level of impact for most trip purposes.

Meaning of terms: "Minimal" – Strategy fulfills 0 to 33% of criterion; "Moderate" – Strategy fulfills 34 to 66% of criterion; "High" – Strategy fulfills 67 to 100% of criterion.

These projects are further discussed in the paragraphs below.

Construction of New Bicycle Lanes as Part of Roadway Improvements

A number of bicycle facility improvements will be constructed as part of the street improvements (including new construction and street reconstruction projects) that are described in Chapter 5 and illustrated in Figure F-1. In addition to the percent of arterial and collector streets that currently have bicycle lanes, the planned/ programmed improvements identified in Figure F-1 will cover another 26 percent of the arterial and major collector street system, bringing the total coverage to about 68 percent. 100 percent coverage of arterial and collector streets would contribute to an ideal bicycling environment, but this goal is probably not feasible due to lack of right-of-way, built or natural environmental impacts, extraordinarily high costs, the priority need for on-street parking, or other factors.

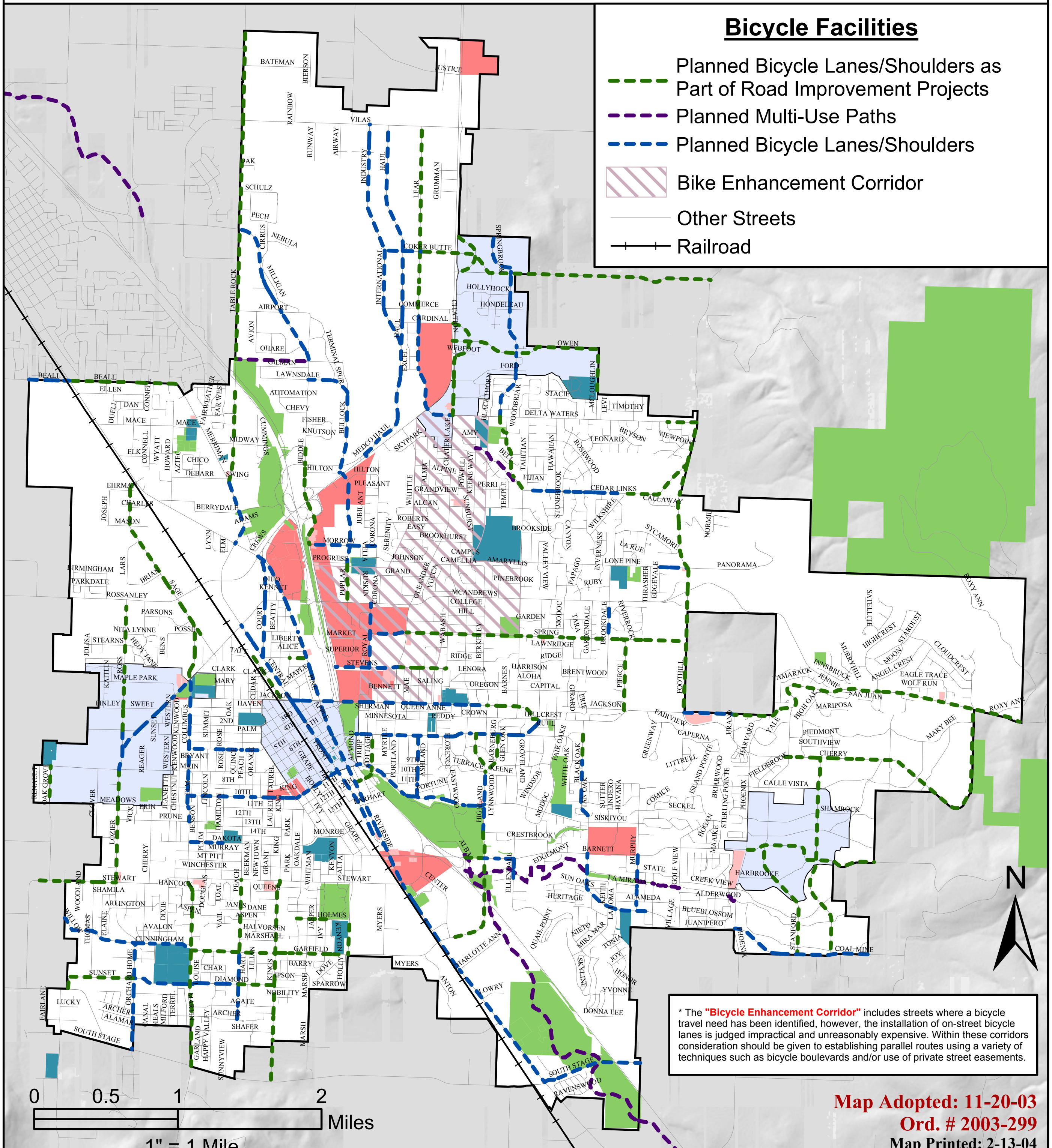
Retrofitting Bicycle Lanes onto Existing Streets

Beyond the bicycle system improvements that will be constructed as part of a street improvement project, other improvements are will be made through retrofitting the existing street system. The improvements are intended to address the strategic approach to providing improved bicycle circulation in Medford that was discussed in the section on "Strategies". They are also intended to meet State, regional, and local goals and requirements for bicycle system enhancements that were discussed earlier in this under "Policy Context and Background". Figure 10-1 illustrates the bicycle facility improvements, and Table 10-5 provides a detailed list of the same projects. If fully implemented, the bicycle facilities will result in a coverage of 88 percent of Medford's arterial and collector street system. This would exceed Medford's share of the RTP Alternative Measures goal of 60 percent for the RVMPO region.

Table 10-5
New Bicycle Facilities

Street	From	To
On-Street Bicycle Lanes		
Beall Lane	Urban Growth Boundary	Highway 99
Biddle Road	Airport Road (south)	Airport Road (north)
Biddle Road	Business Park Drive	Table Rock Road
Black Oak Drive	Lawrence Avenue	Barnett Road
Black Oak Drive	Siskiyou Boulevard	Acorn Way
Brookdale Avenue	Spring Street	McAndrews Road
Bullock Road	Highway 62	North end of street
Cedar Links Road	Springbrook Road	Wilkshire Drive
Central Avenue	McAndrews Road	Riverside Avenue
Coal Mine Road	North Phoenix Road	East Urban Growth Boundary
Coker Butte Road	North-South Industrial Road	Lear Way
Columbus Avenue	Prune Street	McAndrews Road
Court Street	Highway 62	Edwards Street
Cunningham Avenue/Willow Way	Urban Growth Boundary	Columbus Avenue
Dakota Street	Columbus Avenue	Hamilton Street
Delta Waters Road	Highway 62	Crater Lake Avenue
Diamond Street	Orchard Home Drive	Peach Street

Figure 10-1:
Planned Bicycle Facilities



Commercial Employment Centers			
Neighborhood Commercial Centers			
Schools		TOD Boundaries	
Parks		UGB	

CITY OF MEDFORD OREGON

The Geographic Information Systems (GIS) data made available on this map are developed and maintained by the City of Medford and Jackson County. GIS data is not the official representation of any of the information included. The maps and data are made available to the public solely for informational purposes.

THERE MAY BE ERRORS IN THE MAPS OR DATA. THE MAPS OR DATA MAY BE OUTDATED, INACCURATE, AND MAY OMIT IMPORTANT INFORMATION. THE MAPS OR DATA MAY NOT BE SUITABLE FOR YOUR PARTICULAR USE. THIS INFORMATION IS BEING PROVIDED "AS IS" OR "WITH ALL FAULTS". THE ENTIRE RISK AS TO THE QUALITY OR PERFORMANCE IS WITH THE BUYER AND IF INFORMATION IS DEFECTIVE, THE BUYER ASSUMES THE ENTIRE COST OF ANY NECESSARY CORRECTIONS OR SERVICING.

Table 10-5 Continued
New Bicycle Facilities Along Existing Streets

Street	From	To
On-Street Bicycle Lanes		
East-West Collector Street	Biddle Road	Bullock Road
Ellendale Drive	Dyer Road	Barnett Road
Highland Drive	Greenwood Road	Barneburg Road
Highway 99	South Stage Road	Barnett Road
Hillcrest Road	Foothill Road	North Phoenix Road (old alignment)
Jackson Street	Central Avenue	Berkeley Way
Juanipero Way	Lawrence Avenue	Olympic Avenue
Lear Way	Highway 62	Commerce Drive
Lone Pine Road	Edgevale Avenue	Foothill Road
Lozier Lane	South Stage Road	Garfield Road
Main Street	Almond Street	Hillcrest Road
McAndrews Road	Jacksonville Highway	Sage Road
McLoughlin Drive	North of Delta Waters Road	Owen Drive
Medco Road	Skypark Drive	Vilas Road
Morrow Road	Biddle Road	Corona Avenue
Murphy Road	Juanipero Way	Barnett Road
North-South Industrial Road	Medco Road	Vilas Road
Peach Street	Archer Drive	Garfield Street
Poplar Drive	Progress Drive	Highway 62
Riverside Avenue	Highway 62	Barnett Road
Royal Avenue	Stevens Street	McAndrews Road
Sage Road	McAndrews Road	North of McAndrews Road
Siskiyou Boulevard	10th Street	Highland Drive
South Stage Road	Highway 99	East of Interstate 5
Spring Street	Royal Avenue	Crater Lake Avenue
Springbrook Road	Delta Waters Road	Urban Growth Boundary
Stevens Street	Biddle Road	Crater Lake Avenue
Table Rock Road	Highway 99	Merriman Road
Willamette Avenue	Siskiyou Boulevard	Main Street
4th Street	Columbus Avenue	Oakdale Avenue
10th Street	Columbus Avenue	Central Avenue
10th Street	Interstate 5	Siskiyou Boulevard
Multi-Use Paths		
Bear Creek Pathway	Existing southern terminus	South Urban Growth Boundary
Larson Creek Path	Bear Creek Path	Black Oak Drive
Larson Creek Path	Murphy Road	Golf View Drive
Lone Pine Creek Path	Biddle Road	w/o Table Rock Rd/Bear Creek
Lone Pine Creek Path	Keene Way Drive	Springbrook Avenue
SE Medford Plan area multi-use paths	Various locations as indicated in SE Medford Plan	
Other Corridors*		
Crater Lake Avenue	Delta Water Road	Jackson
McAndrews Road	Springbrook Road	Biddle Road

* "Other corridors" include streets where a bicycle travel need has been identified by installation of on-street bicycle lanes is judged impractical and unreasonably expensive. Consideration, in these corridors, should be given to establishing parallel routes using a variety of techniques such as bicycle boulevards and/or use of private street easements. One suggestion is to provide improved connectivity through part of this area by using Towne Center Drive south of McAndrews Road to Royal Court, and Royal Court from Towne Center Drive to Royal Avenue. A suggestion for the installation of bike lanes on McAndrews Road between Poplar Drive and Royal Avenue would further enhance this connectivity.

The projects listed above will help eliminate gaps in the existing bicycle network. The addition of bicycle lanes on streets such as North Biddle Road, Jackson Street and Highland Drive will provide more seamless connections for bicycle travel while improving safety. As many gaps are found in the outer neighborhoods and business areas of the City, completing these missing links will also improve general connectivity.

The improvements in Table 10-5 will also increase access to many of the potentially significant bicycle trip attractors in the Medford UGB including schools, parks, commercial employment centers, neighborhood shopping centers and other locations. These activity centers are illustrated in Figure 10-1. With the improvements, access to many of Medford's schools is expected to improve. Bicycle facilities on roads including Diamond Street, Jackson Street and Juanipero Way will increase safety for students traveling via bicycle. Adding bicycle facilities to Columbus Avenue, Royal Avenue and several other streets will improve connections to activity centers throughout the City. This will provide more travel options to employment and retail destinations like downtown Medford and the Rogue Valley Mall while reducing reliance on the automobile.

Of particular importance in the list of projects included in Table 10-5 are the two streets identified as "other corridors". Due to limited available right-of-way and high cost associated with widening these two streets to add bicycle lanes, other strategies need to be developed to provide bicycle connectivity through these important north/south and east/west corridors. This need should be addressed by the City's Bicycle Advisory Committee.

Retrofitting of the existing street system for bicycle facilities can be accomplished in a number of ways that are dependent on the conditions associated with each improvement project. These include, but are not limited to:

- Utilize all opportunities to add bike lanes during reconstruction or re-striping projects.

- Where existing street width is adequate, narrow existing travel lanes or remove on-street parking to stripe pavement for bike lanes

- Where curb-to-curb street width is inadequate consider street widening to add bike lanes where costs and impacts to adjacent properties are not prohibitive

- Where right-of-way is limited or very expensive and roadway widening is not realistic, consider developing bike facilities along parallel streets or along creek, railroad or other corridor that serves the same travel need. On-street "bicycle boulevard" treatments that give travel preference to bicyclists should be considered. Use of easements along private streets or construction of narrow pathways adjacent to streets (e.g., behind drainage ditches, along the edge of street without curbs, or setback from the edge of street if possible) should also be considered.

Overcome Barriers to Bicycle Circulation

The City of Medford should also work to overcome "barriers" in the bicycle system that interrupt travel continuity and/or require significant out-of-direction travel to reach popular attractors. Significant barriers include Interstate 5 and Bear Creek. For instance, Rogue Valley Mall (a generator of high bicycle traffic) lies within close proximity to a sizeable residential area and the Biddle Road commercial corridor, yet they are separated by Interstate 5. Connections exist only in a few locations and existing facilities for both bicycle and pedestrian circulation are sub-standard. Rather than establish full street connections through these barriers, the City should explore creating multi-use paths to reduce land-acquisition and construction costs. Direct passages through natural and constructed barriers will promote increased bicycle travel while reducing dependence on the automobile. Development of accessways to provide connectivity and/or shorter travel distances should be implemented wherever possible consistent with Medford's existing *Land Development Code*.

Identify Opportunities for Multi-Use Paths

Previous Medford Bicycle Plans, the *Bear Creek Greenway Plan*, the 1997 *Medford Parks, Recreation and Leisure Services Plan*, and the *Southeast Plan* identify several important corridors for future multi-use paths. Those in the proposed Bicycle Plan include the extension of the Bear Creek Greenway, the several corridors adopted in the Southeast Plan, the Larson Creek corridor connection between the Bear Creek Greenway and the Southeast Plan area, and shorter corridors on Lone Pine Creek near Kennedy School and near the future Table Rock Park. The update of the Medford Parks Plan will inventory other corridors and greenways that are suitable for future multi-use paths.

The Bear Creek Path is an example of a successful non-motorized facility, although some consideration should be given to bringing up to standard the existing segments of this facility that are less than the City's standard 10-foot wide path.

Upon identifying these corridors, the City should work to preserve them for future paths, which will serve both utilitarian and recreational purposes. However, while multi-use paths function well in greenways, creek corridors and along some limited access roadways; they should not take the place of bicycle lanes on arterial and major collector streets. Multi-use paths that parallel major roadways typically cross numerous intersecting driveways and streets that often generate high motor vehicle volumes. Because these paths are usually separated from the roadway, visibility by bicyclists and motorists is reduced. The combination of less visibility and the longer reaction distance needed for a bicyclist to yield to a vehicle crossing the path increases collision potential. Motorists often fail to look for a bicyclist in an unconventional location. Additionally, confusion may arise as to whether motorists or bicyclists have the right-of-way at the intersections of paths and driveways, while dedicated bicycle lanes clearly have the right-of-way in these areas. Consideration should be given to establishing an interconnected system of multi-use paths where multiple street and driveway crossings are unlikely and where such facilities can be constructed without causing significant environmental degradation.

Safety and Operational Improvements

Medford's bicycle system can also be improved with Transportation System Management (TSM) techniques often used to improve vehicular traffic flow. As shown in Table 10-2, most bicycle-related accidents occur at intersecting streets. The city should evaluate contributing causes to existing bicycle accidents to identify street or intersection improvements that would address potential safety problems affecting bicyclists (this could include sight distance, lack of clear right-of-way, or other factors).

Additionally, to facilitate bicycle movement along arterial and collector streets, consideration should be given to installing bicycle loop detectors at signalized intersections where bicycle lanes are present. These detectors will allow bicyclist to activate the traffic signal in a manner similar to an automobile. This capability is particularly important on side streets where, unless the presence of a vehicle or bicycle is detected, no green signal is given for the side street traffic movement. These detectors should be spaced to extend a signal cycle based on the average speed of a bicyclist, not the average speed of an automobile. Signalized intersections without loop detectors should have activation buttons at a comfortable reaching distance.

Create a Bicycle Advisory Committee

City leaders should create a Bicycle Advisory Committee. The committee should be charged with promoting and upholding the bicycle-related goals and objectives established in the Medford *Transportation System Plan*. This committee could be instrumental in refining the improvement projects of the TSP and developing priorities for implementation. Additionally, as Medford continues to grow, the Bicycle Advisory Committee should insure that proposed land development projects comply with the bicycle component of the TSP. This committee should also increase education to promote bicycle safety. Education can be in the form of signage along roadways advising travelers of the "rules of the road" pertaining to motorists and cyclists, school and/or adult outreach activities, or through various other public outlets including organized bicycle rides.

Provide Bicycle Support Facilities and/or Activities

Within activity centers or at other major destinations that might attract bicyclists, secure bicycle storage facilities should be provided. The City's *Land Development Code* defines bicycle parking facilities as either lockable enclosures or stationary racks that are securely anchored to the surface or to a structure. These facilities must be located on-site in well-lighted areas and within 50 feet of a heavily-used entrance. Other bicycle support facilities might include "Share the Road" signage along arterial and collector roads that do not yet have bicycle lanes.

The City should also consider the following activities to support an improved bicycle circulation system in the Medford UGB:

- Continue to coordinate with local and regional bicycling proponents such as the Jackson County Bicycle Advisory Committee and the Bear Creek Greenway Committee.

- Perform accurate record keeping of bicycle volume and accident counts.

- Assure that city of Medford employees, particularly Police Department staff, have adequate training regarding bicycle safety and enforcement issues. Continue and enhance the "Cops on Bikes" program.

- Initiate a "Share the Road" or similar public information campaign, coordinated with agencies such as RVTD, the Rogue Valley Council of Governments, Jackson County, local bicycling organizations, and nearby municipalities.

- Support RVTD's efforts to facilitate Transportation Demand Management (TDM) strategies that integrate bicycling and transit, such as "bikes on buses", bicycle storage facilities at transit stations and stops, etc.

- Encourage and support efforts by Medford schools or other community organizations to develop and use a bicycle safety curriculum for students.

Maintain the Bicycle Circulation System

Ongoing maintenance of bicycle facilities is also important. The City of Medford should establish a maintenance schedule for streets containing these facilities as well as for the City's multi-use path network. Maintenance should provide for consistent removal of debris including small branches and other roadside debris that could create a safety hazard for a bicyclist. As roadways become prone to cracks and potholes, these impediments to safe bicycle travel should also be remedied within a short timeframe. The City should also consider removing any raised pavement markers (RPMs) that are located along bicycle lanes.

Summary of Bicycle System Projects

To enhance bicycle safety and to encourage bicycling as a viable travel mode and an alternative to the single occupant automobile, the City of Medford should implement the projects identified below. Priorities for bicycle system improvements as identified in the goals and policies for this mode are to serve major destinations (such as schools, parks, shopping and employment areas) while filling in gaps to create an interconnected system. Figure 10-2 illustrates a complete bicycle circulation network including existing facilities, facilities that would be added as a part of roadway improvement projects, and facilities that will fill gaps and serve activity centers as discussed in this chapter.

- Construct new bicycle lanes as part of roadway improvements.

- Retrofit bicycle lanes onto existing streets by parking removal, street widening, narrowing travel lanes, or providing additional space through other means.

- Complete Bear Creek Greenway, the Larson Creek Greenway, limited segments of a greenway along Lone Pine Creek (particularly near the Kennedy School) and identify other opportunities for multi-use paths.

- Overcome barriers to bicycle circulation through the use “bicycle boulevards”, accessways, multi-use paths or easements, or other creative strategies.

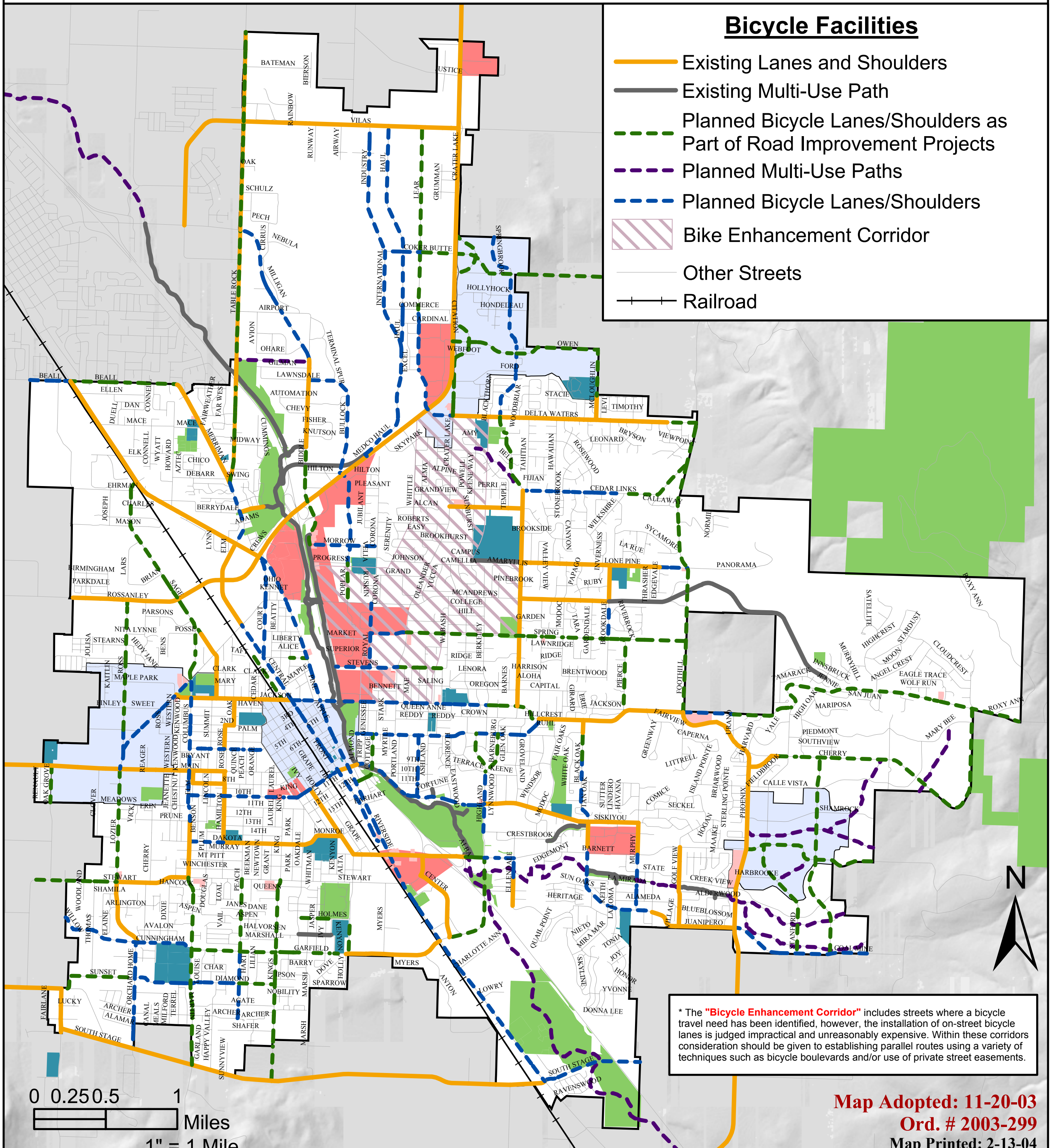
- Implement safety improvements such as evaluating and addressing where possible the contributing causes to existing bicycle accidents to identify appropriate street or intersection improvements (this could include sight distance, lack of clear right-of-way, or other factors).

- Implement operational improvements such as installing bicycle loop detectors at signalized intersections where bicycle lanes are present

- Create a City Bicycle Advisory Committee to prioritize bikeway improvements, advocate and advise on bicycle issues and needs, and encourage bicycle education

- Improve the general bicycling environment:
    - Support facilities like parking and safe storage, “share the road” signage or others
    - Routine maintenance
    - Encourage RVTD’s “Bikes on Buses” and similar programs
    - Support efforts to encourage safe bicycle use through staff training, data collection about bicycle use, public education and outreach, and other activities.

Figure 10-2:
Medford Bicycle Facilities Plan



Commercial Employment Centers

Neighborhood Commercial Centers

Schools

TOD Boundaries

Parks

UGB

CITY OF MEDFORD OREGON

Pedestrian Plan

Policy Context and Background

The *2001-2023 Rogue Valley Regional Transportation Plan (RTP)* prepared for the Medford Urbanized Area by the Rogue Valley Metropolitan Planning Organization (RVMPO) and adopted in 2002, establishes regional policy direction with respect to the pedestrian transportation system within the Medford UGB. The RTP recommends that:

- *"Local governments shall require or provide sidewalks/pedestrian pathways along all streets within the urban growth boundary. Sidewalks and walkways should be required in new developments in the metropolitan area and they should be provided in connection with most major street improvement projects (OAR 660-12-045 (3)(B)). Pedestrian walkway or accessway connections shall be required between adjacent developments when roadway connections cannot be provided. Also, a systematic approach to filling gaps in the sidewalk system and an annual allocation for construction is recommended." (*Policy 10-4)

- *"The location and design of all sidewalks shall comply with the requirements of the Americans with Disabilities Act." (*Policy 10-5)

- *"Local governments shall provide sidewalks and other amenities to make pedestrian access to bus stops easier. RVTD shall continue to provide bicycle racks on buses, and bicycle racks and lockers at transit stations to improve bicycle access to transit."* (Policy 10-6)

- *"Where applicable, local governments shall revise their zoning codes to require the provision of amenities to help meet bicyclist and pedestrian needs, including the provision of bicycle storage facilities."* (Policy 10-7)

- *"Local governments shall support bicycle and pedestrian safety, both through enforcement of safety laws and regulations and through support of programs that provide bicycle and pedestrian safety education."* (Policy 10-8)

- *"All signalized intersections in urban areas shall have marked crosswalks."* (Policy 10-9)

- *"Local governments shall use the media, transportation committees, bicycle plans, and other methods to promote use of bicycling and walking for transportation purposes."* (Policy 10-10)

The RVMPO has also prepared analysis of *Transit Oriented Design and Transit Corridor Strategies* (May 1999) to support the agency's transit oriented development (TOD) program. This program includes components related to land use, transit service enhancements, and improvements to the pedestrian circulation system to encourage the use of transportation modes other than single occupant automobiles. A key focus of the TOD strategies was the identification of "Major Transit Stops" along primary, high frequency transit service corridors. Providing safe and convenient pedestrian connections to the Major Transit Stops will be important to ensuring the success of both Medford's enhanced transit system and the City's Transit Oriented Developments.

The City of Medford's existing *Comprehensive Plan* includes a goal and policy specifically directed at protecting and enhancing the pedestrian circulation system. Goal 6 indicates that the City will take actions *"To encourage and facilitate safe and convenient pedestrian movement within the Medford Urban Growth Boundary."* This goal is further defined by a policy directing that *"Sidewalks shall be recognized as an integral part of a complete urban transportation network, and shall be considered for inclusion in all transportation-related public improvement projects pursuant to the standards in the Land*

Development Code." This goal and accompanying policies were reviewed and modified as appropriate during the development of the TSP. New goals, policies and implementation strategies are included in Chapter 13.

The City of Medford's Vision for the 21st Century foresees a community that is *"served by a safe, accessible, efficient, and well planned transportation system"*. The Vision Statement includes a series of "elements" aimed at meeting the City's circulation needs in the coming decades. Elements of the vision that pertain to the pedestrian circulation system focus on providing bikeways and sidewalks in accordance with transportation improvement projects listed in the RTP, completing the Bear Creek Path through Medford, and providing bicycle/pedestrian connections to other east-west linear routes.

In addition to regional and local policy strategies governing pedestrian circulation system enhancements, two state strategies must also be satisfied. The first is associated with State Planning Goal 12, the Transportation Planning Rule (TPR). The TPR requires the Oregon Department of Transportation (ODOT) and the cities and counties of Oregon to cooperate and to develop balanced transportation systems, including pedestrian facilities. Oregon Revised Statute (ORS) 366.514 requires the provision of bicycle and pedestrian facilities on all arterial and major collector construction, reconstruction, or relocation projects where conditions permit. Additionally, in any fiscal year, at least one percent of road improvement funds in a jurisdiction must be allocated for bicycle/pedestrian projects.

The second directive is based on alternatives to the TPR requirement for a per-capita reduction in vehicle miles of travel (VMT) that have been approved for implementation in the Rogue Valley metropolitan area (RVMPO). This requirement is intended to reduce vehicular congestion in the urban portions of Oregon and to encourage the development and use of alternative transportation modes such as transit, walking and bicycling. The RVMPO Alternative Measures package was endorsed in 2002 by the Land Conservation and Development Commission, and includes seven measures with targets for implementation that are phased in five-year increments through 2020. The Alternative Measures pertaining to pedestrian facility planning are listed in Table 10-6.

Table 10-6
Alternative RTP Performance Measures Related to the Pedestrian System for the Rogue Valley MPO

Measure	Intent	Current 2000	Benchmark 2005	Benchmark 2010	Benchmark 2015	Target 2020
Measure 1: Transit and bicycle/ pedestrian mode share	Demonstrate a shift in travel behavior away from the automobile	% of daily trips Transit: 1.0 Bike/Ped: 8.2	% of daily trips Transit: 1.2 Bike/Ped: 8.4	% of daily trips Transit: 1.6 Bike/Ped: 8.4	% of daily trips Transit: 2.2 Bike/Ped: 9.8	% of daily trips Transit: 3.0 Bike/Ped: 11.0
Measure 4: Percent of arterials and collectors in TOD areas with sidewalks	Demonstrate improvements in pedestrian accessibility in these portions of the MPO area – where pedestrian access is most crucial	47%	50%	56%	64%	75%
Measure 7: Alternative Transportation Funding *	Demonstrate commitment to implementing the alternative transportation projects upon which many of the measures rely	N/A	$950,000	$2.5 million	$4.3 million	$6.4 million

Source: Land Conservation and Development Commission, OAR 660-012-0035(5), April 3, 2002.

* Dollar amounts are cumulative from 2000 through 2020.

Needs

The City of Medford sidewalk system varies widely from neighborhood to neighborhood. Sidewalks exist in most of the downtown area and in surrounding older neighborhoods, particularly to the west and south of the downtown core. These sidewalks provide connections linking many of the residential areas to such pedestrian attractors as schools, commercial areas and employment opportunities. However, many of the older neighborhoods on the east side of the city either do not have sidewalks or have only a limited and disconnected sidewalk system. On the arterial and collector street system, the availability of sidewalks is generally erratic and incomplete. On many blocks, sidewalks may be present on one side of the street and absent on the other, or partial sidewalks may be in place sporadically throughout the block, lacking continuity. Major activity centers also suffer from a general lack of connectivity. For example, the Rogue Valley Mall currently generates a significant amount of pedestrian and bicycle traffic, and the nearby Bear Creek Path provides connections for walkers and bicyclists to many parts of Medford. Yet the mall and the path are poorly connected to other parts of the city.

Within the City's existing and planned TODs, the presence of sidewalks and multi-use paths to provide and maintain a high quality pedestrian environment is crucial to encouraging a reduction in travel via the single occupant automobile. Many arterial and collector streets within the TODs currently lack such facilities. For instance, the East Medford, North Medford and West Medford TODs contain very few sidewalks. To fulfill requirements of the TPR, the Alternative Measures package calls for increasing the percentage of arterial and collector streets with sidewalks in TOD areas. In 2000, sidewalks existed on 47 percent of arterials and collectors in TODs (primarily in the Downtown TOD). By 2020, the Alternative Measures package requires that 75 percent of these roadways must include sidewalks.

In addition to providing sidewalks along arterial and collector streets within the designated TODs, some of the existing sidewalks in these areas are considered "not ideal" because they are located immediately adjacent to edge of street pavement (generally outside of the downtown area). This forces the pedestrian to walk in very close proximity to moving vehicles with the attendant concerns about safety, noise, pollution and other factors that can make the walking experience unpleasant. By setting the sidewalks back from the curb line (through use of planter strips or other type of buffer), the pedestrian environment can be enhanced and the use of these facilities can be encouraged. Pedestrian setbacks can be installed when existing roadways are improved or when new streets are built. Priority should be given to adding sidewalks over creating new setbacks for existing sidewalks. Existing setbacks along sidewalks within the designated TODs are summarized in Table 10-7.

Table 10-7
Sidewalk Location on Arterial and Collector Streets in Medford TODs

Street	From	To	Side	Sidewalk Location
North Medford TOD				
Crater Lake Avenue	RVTD	Coker Butte	East	None
Crater Lake Avenue	RVTD	Coker Butte	West	None
Coker Butte	Crater Lake Avenue	East	North	None

Table 10-7 Continued
Sidewalk Location on Arterial and Collector Streets in Medford TODs

Street	From	To	Side	Sidewalk Location
West Medford TOD				
Columbus	8th	Main	East	Adjacent
Columbus	8th	Main	West	None
Columbus	Main	Jackson	East	Adjacent
Columbus	Main	Jackson	West	Adjacent
Main/J'ville Highway	Columbus	Chestnut	North	Adjacent
Main/J'ville Highway	Columbus	Chestnut	South	Adjacent
Main/J'ville Highway	Chestnut	Jeanette	North	Setback
Main/J'ville Highway	Chestnut	Jeanette	South	Adjacent
Main/J'ville Highway	Jeanette	Oakgrove	North	None
Main/J'ville Highway	Jeanette	Oakgrove	South	None
Ross				None
Lozier				None
Downtown TOD				
Main Street	Orange	Gennessee	Both	Adjacent
Main Street	Gennessee	Crater Lake Avenue	North	Setback
Main Street	Gennessee	Crater Lake Avenue	South	Adjacent
8th	Orange	Main	Both	Adjacent
Riverside	Maple	Jackson	Both	Varies
Riverside	Jackson	Earhart	Both	Adjacent
Central	Maple	9th	Both	Adjacent
Central	9th	11th	East	Adjacent
Central	9th	11th	West	Setback
Central	11th	12th	East	Setback
Central	11th	12th	West	Adjacent
Central	12th	13th	East	Varies
Central	12th	13th	West	Setback
Central	13th	Earhart	Both	Setback
Oakdale	2nd	6th	Both	Setback
Oakdale	6th	11th	Both	Adjacent
Jackson	Holly	Central	Both	Setback
Jackson	Central	Biddle	Both	Adjacent
Jackson	Biddle	Hawthorne	North	Adjacent
Jackson	Biddle	Hawthorne	South	Setback
Jackson	Hawthorne	Crater Lake Avenue	Both	Adjacent
Holly	Jackson	1st	East	None
Holly	Jackson	1st	West	Varies
Holly	1st	2nd	East	Setback
Holly	1st	2nd	West	Adjacent
Holly	2nd	5th	Both	Setback
Holly	5th	6th	Both	Setback
Holly	6th	Main	Both	Adjacent
Holly	Main	8th	East	Adjacent
Holly	Main	8th	West	None
Holly	8th	10th	East	Setback
Holly	8th	10th	West	Adjacent
Holly	10th	Monroe	Both	Setback
4th	Peach	Oakdale	Both	Setback
4th	Oakdale	Jackson	Both	Adjacent
10th	Mistletoe	Oakdale	Both	Setback
10th	Oakdale	Ivy	Both	Adjacent
10th	Ivy	Holly	North	Setback
10th	Ivy	Holly	South	Adjacent
10th	Holly	I-5 Overpass	Both	Adjacent
10th	I-5 Overpass	Siskiyou	North	None
10th	I-5 Overpass	Siskiyou	South	Setback

Table 10-7 Continued
Sidewalk Location on Arterial and Collector Streets in Medford TODs

Street	From	To	Side	Sidewalk Location
East Medford TOD				
Barnett Road	Maaike	North Phoenix	North	Adjacent
Barnett Road	Maaike	North Phoenix	South	Adjacent
North Phoenix Road	Barnett	Calle Vista	East	None
North Phoenix Road	Barnett	Calle Vista	West	Adjacent

Pedestrian safety is also an issue of concern. Analysis of accident data reveals that there are a number of locations within the Urban Growth Boundary where collisions involving pedestrian have been reported. Highway 62 and Riverside Avenue are among roadways that have experienced numerous pedestrian-related accidents in recent years. Several streets in the downtown area also experienced a number of accidents. Improvements such as installation of traffic control devices, marked crosswalks to define safe crossing locations, and construction of corner ramps to meet Americans with Disabilities Act (ADA) standards are ways to enhance pedestrian safety. Table 10-8 summarizes recently reported pedestrian accidents in the Medford area at the intersections of arterial/arterial and arterial/collector streets.

As indicated in the table, there were 17 reported accidents involving pedestrians at the major intersections in the City. Most of these accidents resulted from motorists failing to see and/or yield to pedestrians in crosswalks where traffic signal control was in place. Accident reports indicated that many of the motor vehicle drivers were distracted at the time of the collision. A few accidents occurred involving pedestrians making mid-block crossings near the intersection of Main with Oakdale and along Riverside Avenue.

Table 10-8
Reported Pedestrian Accidents, 1999-2001

	Number of Reported Accidents			
Location	Fatal	Injury	PDO	Probable Cause
8th & Front		1		Car did not yield to ped. in crosswalk
8th & Riverside		1		Car did not yield to ped. in crosswalk
10th & Central		1		Car did not yield to ped. in crosswalk
10th & Cottage		1		Car did not yield to ped. in crosswalk
10 & Grape		2		Car did not yield to ped. in crosswalk
Crater Lake Avenue & Grand		1		Car did not yield to ped. in crosswalk
Highway 62 & Hilton		1		Car did not yield to ped. in crosswalk
Highway 62 & Poplar		1		Car did not yield to ped. in crosswalk
Main & Columbus		1		Car did not yield to ped. in crosswalk
Main & Oakdale		1		Ped crossed between intersections
Riverside & Barnett		1		Car did not yield to ped. in crosswalk
Riverside & Earhart		1		Ped crossed between intersections
Riverside & Jackson		2		Ped crossed between intersections
Riverside & Main		1		Car did not yield to ped. in crosswalk
Stevens & Royal		1		Car did not yield to ped. in crosswalk
Totals	0	17	0	

Source: ODOT, 2002
Note: PDO means Property Damage Only

A more complete inventory of pedestrian facilities is presented in Chapter 3, the existing conditions inventory. Figure 3-7 in that chapter depicts the location of existing sidewalks, widened shoulders and multi-use paths that are available for pedestrian circulation. Accident locations and major pedestrian destinations (such as schools, parks, employment and shopping destinations) are also shown in this figure.

Strategies

A number of strategies were developed to provide the basis for a discussion of policies and priorities to be used in guiding Medford's pedestrian facility improvements in the coming decades. In part, these strategies were derived from existing policies, and an assessment of current deficiencies, improvement programs, and anticipated projects identified in the RTP for implementation within the Medford UGB. As shown in Tables F-2 though F-5 and in Figure F-1 that can be found in Appendix F, the RTP outlines a list of planned/programmed projects that include components specifically related to pedestrian enhancement. These improvements have been categorized into short-, medium-, and long-term time frames through 2023. While it should be noted that the timing and prioritization of improvements listed in the RTP are subject to change based on the outcome of the City's TSP planning process, these projects do provide a starting point for discussion of pedestrian system improvements and priorities.

In addition, while the TPR and the RVMPO Alternative Measures package aim to include pedestrian facilities on most arterial and collector streets, the TSP recognizes the physical limitations on some roadways in the Medford UGB. Practical limits on street right-of-way may preclude the construction of sidewalks on some streets. Table 10-9 describes each strategy, and identifies relevant polices that could be satisfied by the strategy.

Table 10-9
Pedestrian System Improvement Strategies

Strategy	Description	Objectives of the Strategy
Focus on Schools	Provide sidewalks/paths to/from all public schools where none exist, or improve existing sidewalks where deficient (emphasis on arterials and collectors)	• Primarily improve connections to schools • Encourage and facilitate safe and convenient pedestrian travel, particularly for children • Increase percentage of daily trips made via walking • Secondarily increase percentage of pedestrian facilities on arterial and collector streets
Focus on Activity Centers	Provide sidewalks/paths to/from commercial and neighborhood employment centers and parks where none exist, or improve existing sidewalks where deficient (emphasis on arterials and collectors)	• Improve connections to employment and commercial districts, institutions, and recreation • Provide connections to major transit stops • Increase percentage of daily trips made via walking • Increase percentage of pedestrian facilities on arterial and collector streets • Encourage and facilitate safe and convenient pedestrian travel
Focus on TODs	Provide a complete pedestrian circulation network within TOD boundaries (all streets). Where feasible, would also improve existing sidewalks to setback pavement from curbline	• Increase percentage of arterials and collectors in TOD areas with sidewalks • Provide safe and convenient connections to major transit stops • Encourage and facilitate safe and convenient pedestrian travel • Increase percentage of daily trips made via walking
Focus on Major Transit Stops	Provide sidewalks/paths to/from Major Transit Stops where none exist, or improve existing sidewalks where deficient (emphasis on arterials and collectors)	• Provide safe and convenient connections to major transit stops • Increase percentage of pedestrian facilities on arterial and collector streets, including TOD areas • Encourage and facilitate safe and convenient pedestrian travel • Increase percentage of daily trips made via walking

The strategies listed above directly and indirectly respond to the pedestrian system planning policies dictated by the TPR, RTP, and the City's *Comprehensive Plan*. To varying degrees, the strategies also reflect the goals of the Medford Vision Strategic Plan, RVMPO *Transit Oriented Design and Transit Corridor Development Strategies*, and the RVMPO Alternative Measures package. While many policies do not relate to the actual physical expansion of the pedestrian system, they are equally important to the overall pedestrian network. Provision of supportive land uses along with safety and educational programs all contribute to improvement of the walking environment and encouragement of walking as a transportation mode of choice.

The various alternative strategies have been evaluated using criteria that were developed to weigh the benefits and impacts of implementing each improvement strategy, and to initiated discussion of pedestrian system priorities. Evaluation criteria were developed based on existing adopted policies, state TPR requirements and/or factors identified as particularly relevant for comparing and contrasting the alternative strategies. The strategies can be analyzed to determine the degree that each:

- Serves key destinations, including TODs, schools, commercial centers, downtown Medford and major recreation sites;
- Improves safety at locations with reported pedestrian accidents;
- Improves access to transit;
- Increases the percentage of arterial and collector streets with sidewalks/paths;
- Improves connectivity of the pedestrian system;
- Enhances pedestrian comfort; and
- Has the potential for reducing reliance on the automobile for trip-making within the UGB.

Table 10-10 presents an evaluation matrix that summarizes each of these strategies and assesses them in relation to the evaluation criteria. This evaluation not only gauged the impacts and potential benefits of each strategy, but also served as a prioritization tool leading to the identification of a phased program of improvements.

Actions

Presently about 55 percent of arterial and collector streets within the Medford UGB have sidewalks on one or both sides of the street. Analysis of the improvement strategies and policy criteria along with community input throughout the planning process suggests that Medford's pedestrian system will be completed most effectively by placing a greater focus on connecting activity centers and adding facilities in the City's transit-oriented developments (TODs). City leaders also strongly support new and improved connections to schools. While not fully satisfying as many criteria as the aforementioned strategies, enhancing connections to Major Transit Stops is also important.

Planning for Medford's future pedestrian system also took into account various components that contribute to an effective pedestrian network. The ODOT *Bicycle and Pedestrian Plan* lists several principles of bikeway and walkway planning. The principles include:

- Accommodating bicyclists and pedestrians on arterial and collector streets;
- Providing appropriate facilities;
- Creating and maintaining a system of closely spaced, interconnected local streets; and
- Overcoming barriers such as freeway crossings, intersections, rivers and canyons.

Pedestrians also have certain needs and desires that should be accommodated whenever possible. Pedestrians need safe streets and walking areas, direct routes, protection from weather and other elements, an attractive and clean environment, access to transit, and social interaction. Pedestrian circulation is also strongly influenced by land use including proximity of mixed uses within reasonable walking distance.

Table 10-10
Summary Evaluation of Pedestrian System Improvement Strategies

	STRATEGIES			
	Focus on Schools	**Focus on Activity Centers**	**Focus on TODs**	**Focus on Major Transit Stops**
Description of Strategy	Provide walkways to/from all public schools where none exist, or improve existing sidewalks where deficient (emphasis on arterials/collectors)	Provide walkways to/from employment centers and parks where none exist, or improve existing walkways where deficient (emphasis on arterials/collectors)	Provide complete pedestrian circulation network within TOD boundaries (all streets), and sets back existing sidewalks from curbline.	Provide walkways to/from major transit stops where none exist, or improve existing walkways where deficient (emphasis on arterials/collectors)
POLICY CRITERIA				
Serves key destinations				
• ***TODs***	Minimal service due to current lack of public schools within TOD boundaries	Moderate service due to limited number of activity centers currently within TOD boundaries	High service	Moderate service as TODs focus on future transit stops. Improvements limited to arterials and collectors.
• ***Schools***	High service	Moderate service due to close proximity to several parks	Minimal service due to lack of existing public schools within TOD boundaries	Minimal service due to low number of major transit stops within close proximity to schools
• ***Commercial centers***	Minimal service	High service	Service to commercial centers in TODs but not elsewhere	Serves many commercial centers that are located in close proximity to major transit stops
• ***Downtown***	Minimal service due to close proximity to some public schools	High service	High service	Moderate service
• ***Major recreation sites***	Moderate service due to close proximity to several schools	High service	Service to sites near Downtown and West Medford TODs	Moderate service
Improves safety at locations with reported pedestrian accidents	Minimal safety improvements due to low number of reported pedestrian accident locations near schools	High safety improvements due to higher number of reported pedestrian accident locations near activity centers	Improves safety in the Downtown TOD (has a large share of pedestrian accidents); no reported pedestrian accidents within other Medford TODs	Improves safety in several locations with pedestrian accidents (e.g., Highway 62, Crater Lake Avenue, and in the Downtown TOD)
Improves access to transit	Moderate improvement due to close proximity of many schools to transit routes	Moderate improvement due to close proximity of many activity centers to transit routes	Moderate improvement due to close proximity of TODs to transit routes	Greatly improves local and overall access to transit
Increases % of arterial and collector streets with sidewalks	Moderate increase because many schools are adequately served	Moderate increase because many activity centers are adequately served	High increase by providing pedestrian facilities on new streets	Moderate increase because some major transit stops are adequately served
Improves connectivity of pedestrian system	Moderate improvement focused on schools areas	Highest improvement due to large number of activity centers throughout Medford	Moderate improvement focused on TOD areas	Moderate Improvement near major transit stops
Potential to reduce reliance on automobile	Minimal potential due to busing for longer trips	Greatest citywide potential for improvement	High potential for improvement, integral part of TOD development	Moderate potential, limited by transit service
Enhances pedestrian comfort	High improvement near schools	Greatest citywide potential for improvement	High improvement in TOD areas	High improvement along major transit corridors

Meaning of terms: “Minimal” – Strategy fulfills 0 to 33% of criterion; “Moderate” – Strategy fulfills 34 to 66% of criterion; “High” – Strategy fulfills 67 to 100% of criterion.

- Construct sidewalks as part of roadway improvement projects
- Add new sidewalks along existing arterial and major collector streets
- Overcome barriers to pedestrian circulation
- Identify future opportunities for multi-use paths
- Provide and improve access to schools and major transit stops
- Implement safety and operational street improvements that benefit pedestrians
- General improvements to enhance the pedestrian environment
- Maintain the pedestrian circulation system

These projects are further discussed in the paragraphs below.

Construct Sidewalks as Part of Roadway Improvements

A number of pedestrian facility improvements will be constructed as part of the street improvements (including new construction and street reconstruction projects) that are described in Chapter 5 and illustrated in Figure F-1. In addition to the percent of arterial and collector streets that currently have sidewalks, the plan/programmed improvements identified in Figure F-1will cover another 25 percent, bringing the total to about 80 percent of arterials and collectors containing some form of pedestrian amenities. 100 percent coverage of these streets would contribute to an ideal pedestrian environment, but this may not be entirely possible due to the same sorts of limitations that may be experienced in retrofitting bicycle improvements such as lack of right-of-way, built or natural environmental impacts, extraordinarily high construction costs or other factors.

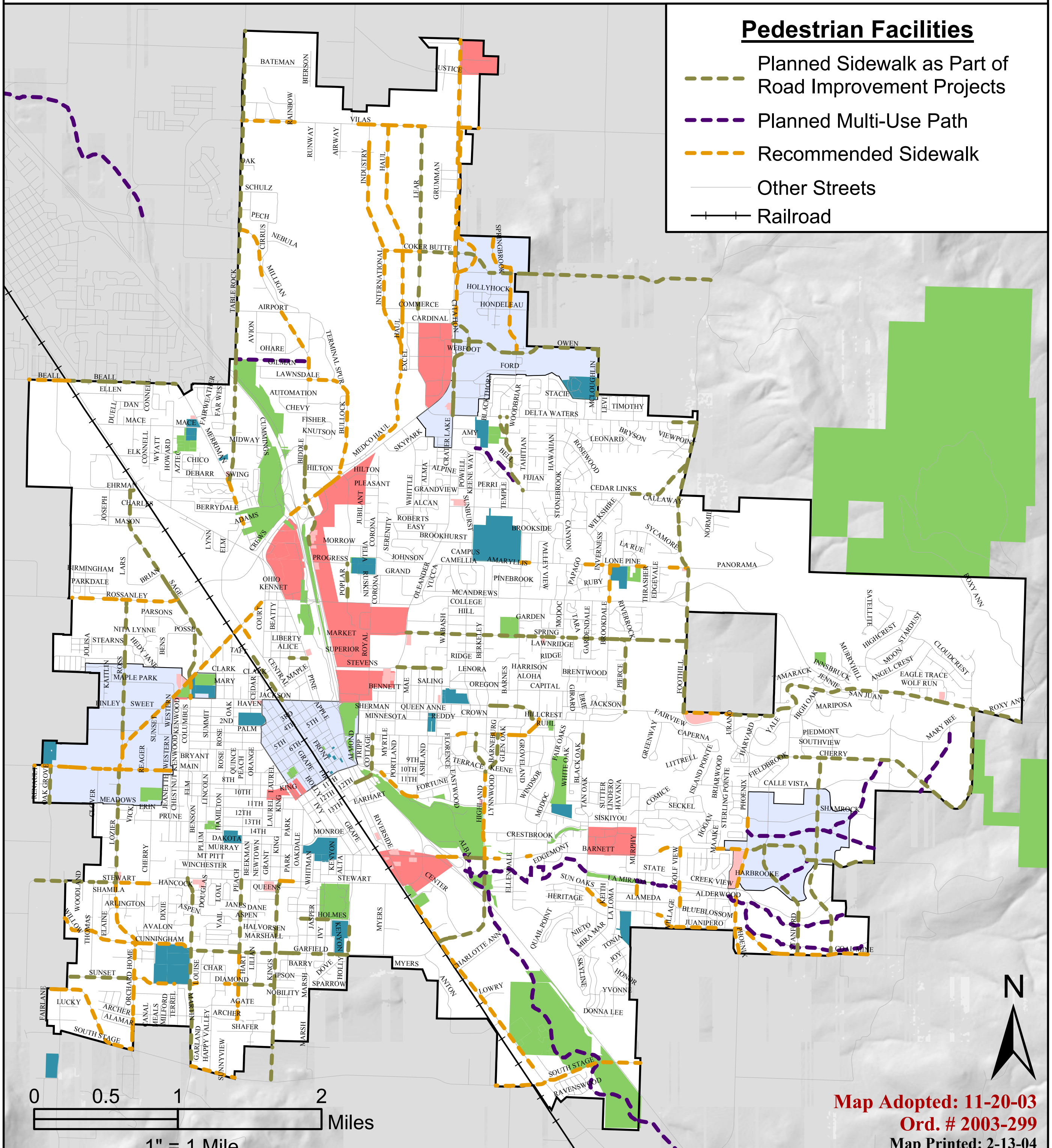
Add New Sidewalks Along Existing Arterial and Major Collector Streets

Beyond the sidewalk improvements that will be constructed as part of a street improvement project, other improvements will be made by adding sidewalks to the existing street system. The improvements are concentrated on Medford's arterial and major collector streets. The improvements are intended to address the strategic approach to providing improved pedestrian circulation in Medford that was discussed in the section on "Strategies". They are also intended to meet State, County and local goals and requirements also discussed earlier in this chapter under "Policy Context and Background". Figure 10-3 illustrates the physical improvements, and Table 10-11 provides a detailed list of the same projects. If fully implemented, the pedestrian facilities will result in a coverage of 93 percent of Medford's arterial and collector street system.

Table 10-11
New Pedestrian Facilities

Street	From	To
Along Existing Streets		
Barnett Road	East of Ellendale Drive	West of Hilldale Avenue
Barnett Road	Highland Drive	East of Highland Drive
Barnett Road	Interstate 5 overcrossing	
Barnett Road	East of Murphy Road	West of Golf View Drive
Beall Lane	Urban Growth Bouncary	Highway 99
Biddle Road	North of Business Park Drive	Table Rock Road
Biddle Road	Gilman Road	Airport Road (north)
Brookdale Avenue	McAndrews Road	Lone Pine Road
Bullock Road	Highway 62	North end of street
Central Avenue	McAndrews Road	North of Edwards Street
Coal Mine Road	North Phoenix Road	Urban Growth Boundary
Coker Butte Road	North-South Industrial Road	Lear Way
Columbus Avenue	Jackson Street	McAndrews Road

Figure 10-3: Medford Major Pedestrian Facilities Plan



Commercial Employment Centers
Neighborhood Commercial Centers
Schools
TOD Boundaries
Parks
UGB

CITY OF MEDFORD OREGON

The Geographic Information Systems (GIS) data made available on this map are developed and maintained by the City of Medford and Jackson County. GIS data is not the official representation of any of the information included. The maps and data are made available to the public solely for informational purposes.

THERE MAY BE ERRORS IN THE MAPS OR DATA. THE MAPS OR DATA MAY BE OUTDATED, INACCURATE, AND MAY OMIT IMPORTANT INFORMATION. THE MAPS OR DATA MAY NOT BE SUITABLE FOR YOUR PARTICULAR USE. THIS INFORMATION IS BEING PROVIDED "AS IS" OR "WITH ALL FAULTS". THE ENTIRE RISK AS TO THE QUALITY OR PERFORMANCE IS WITH THE BUYER AND IF INFORMATION IS DEFECTIVE, THE BUYER ASSUMES THE ENTIRE COST OF ANY NECESSARY CORRECTIONS OR SERVICING.

Table 10-11 Continued
New Pedestrian Facilities Along Existing Streets

Street	From	To
Crater Lake Avenue	North of Owen Road	Vilas Road
Cunningham Avenue/Willow Way	Urban Growth Boundary	Columbus Avenue
Diamond Street	Columbus Avenue	West of Louise Avenue
Diamond Street	Lozier Lane	Terrel Drive
Diamond Street	McKenzie Way	Peach Street
East-West Collector Street	Biddle Road	Bullock Road
Golf View Drive	Alameda Street	Creek View Drive
Golf View Drive	South of Barnett Road	Barnett Road
Highland Drive	Barnett Road	Barneburg Road
Highway 62	South of Coker Butte Road	Burlcrest Drive
Highway 62	West of I-5 SB ramps	Bullock Road
Highway 62	North of Kingsley Drive	Urban Growth Boundary
Highway 99	South of Stewart Avenue	North of South Stage Road
Hillcrest Road	Foothill Road	North Phoenix Road (old alignment)
Juanipero Way	Lawrence Avenue	Mira Mar Avenue
Juanipero Way	East of Olympic Avenue	West of Larson Creek Drive
Jacksonville Highway	Ross Lane/Lozier Lane	Jeanette Avenue/Western Avenue
Jacksonville Highway	Urban Growth Boundary	West of Ross Lane/Lozier Lane
Lone Pine Road	East of Edgevale Avenue	Foothill Road
Lone Pine Road	East of Inverness Drive	West of Willow Glen Way
Lone Pine Road	Larue Road	Thrasher Lane
Lone Pine Road	East of Papago Drive	West of Inverness Drive
Lone Pine Road	Springbrook Road	Pinedale Street
Lozier Lane	South Stage Road	Stewart Avenue
Main Street	East of Berkeley Way	Hillcrest Road
Main Street	West of Keene Way	East of Keene Way
McAndrews Road	Jacksonville Highway	Court Street
McLoughlin Drive	North of Delta Waters Road	Owen Drive
Medco Road	Skypark Drive	Vilas Road
Murphy Road	Alameda Street	La Mirada Drive
North Phoenix Road	Shamrock Drive	South of Calle Vista Drive
North Phoenix Road	Urban Growth Boundary	Barnett Road
North-South Industrial Road	Medco Road	South of Vilas Road
Oak Grove Road	Urban Growth Boundary	Jacksonville Highway
Peach Street	Archer Drive	Garfield Street
Rossanly Drive	Urban Growth Boundary	Sage Road
Sage Road	McAndrews Road	North of McAndrews Road
Siskiyou Boulevard	10th Street	Willamette Avenue
South Stage Road	Columbus Avenue	East of Sunnyview Lane
South Stage Road	West of Highway 99	East of Interstate 5
South Stage Road	Urban Growth Boundary	Lozier Lane
Springbrook Road	Owen Drive	Urban Growth Boundary
Stewart Avenue	Kings Highway/Kings Street	Oakdale Avenue
Stewart Avenue	Lozier Lane	East of Cherry Street
Table Rock Road	De Barr Avenue	Table Rock Village entrance
Table Rock Road	Berrydale Avenue	Adams Lane
Vilas Road	Table Rock Road	Urban Growth Boundary
Multi-Use Paths		
Bear Creek Pathway	Existing southern terminus	South Urban Growth Boundary
Larson Creek Path	Bear Creek Path	Black Oak Drive
Larson Creek Path	Murphy Road	Golf View Drive
Lone Pine Creek Path	Biddle Road	w/o Table Rock Rd/Bear Creek

Table 10-11 Continued
New Pedestrian Facilities Along Existing Streets

Street	From	To
Multi-Use Paths Cont.		
Lone Pine Creek Path	Keene Way Drive	Springbrook Avenue
SE Medford Plan area multi-use paths	Various locations as indicated in SE Medford Plan	

The physical improvements listed above will enhance connections to the City's many activity centers. Adding sidewalks along streets like Highway 62, Hillcrest Road and McAndrews Road will provide safer and more attractive opportunities for pedestrians to reach employment and retail centers. In addition to adding sidewalks to arterial and collector streets, a number of the pedestrian facilities are located in Medford's Transit Oriented Districts (TODs). Many of the streets in these areas lack necessary amenities for safe and comfortable pedestrian travel. To promote the use of alternative travel modes (including walking, bicycling and transit), sidewalks and paths must be provided. Within the Medford TODs, some of the key existing streets that have been targeted for new pedestrian improvements include Barnett Road, Jacksonville Highway and Springbrook Road. In the SE Medford TOD, current planning activities have identified an entire pedestrian circulation system including both sidewalks and paths. For the West Medford and Delta Waters TODs, additional pedestrian facilities beyond those to be added on the arterial and collector street system will be identified through the development of specific plans for these areas.

Overcome Barriers to Pedestrian Circulation

The City of Medford should also work to overcome "barriers" in the pedestrian system that interrupt travel continuity and/or require significant out-of-direction travel to reach popular attractors. Significant barriers include Interstate 5, and Bear Creek. For instance, the Rogue Valley Mall (a generator of high pedestrian volumes) lies within close proximity to a sizeable residential area and the Biddle Road commercial corridor, yet they are separated by Interstate 5. Connections exist only in a few locations and existing facilities for both bicycle and pedestrian circulation are sub-standard. Rather than establish full street connections through these barriers, the City should explore creating multi-use paths to reduce land-acquisition and construction costs. Direct passages through natural and constructed barriers will promote increased pedestrian travel while reducing dependence on the automobile.

Other barriers to pedestrian circulation include circuitous streets that require significant out-of-direction travel to reach destinations that are fairly close as the crow flies. For the past several years, the City has implemented a policy of providing pedestrian accessways to overcome this problem. This policy will continue to be implemented as required by the City's *Land Development Code*. In addition, locations for future accessways should be evaluated by the City during the land development process, particularly to enhance access to major transit stops and/or other major potential pedestrian destinations.

Still other barriers include things like power poles that are placed in the center of a 5-foot sidewalk. Getting around these barriers can be a problem for the able-bodied, but the sidewalk would not meet ADA standards for wheelchair accessibility. Problems with these sorts of barriers must be addressed during all construction and/or retrofit projects. The City of Medford should eliminate or relocate impediments to safe and comfortable pedestrian movement such as utility poles and mailboxes in the pedestrian right-of-way.

Identify Future Opportunities for Multi-Use Paths

Previous Medford Bicycle Plans, the *Bear Creek Greenway Plan*, the 1997 *Medford Parks, Recreation, and Leisure Services Plan*, and the *Southeast Plan* identify several important corridors for future multi-use paths. These multi-use paths can also be used by pedestrians and have been included in the Pedestrian Plan. Proposed multi-use paths include the extension of the Bear Creek Greenway, several corridors adopted in the *Southeast Plan*, the Larson Creek corridor connection between the Bear Creek Greenway and the Southeast Plan Area, and shorter corridors on Lone Pine Creek near Kennedy School and near the future Table Rock Park. The update of the Medford Parks Plan will inventory other corridors and greenways that are suitable for future multi-use paths.

The Bear Creek Path is an example of a successful non-motorized facility, although consideration should be given to bringing up to standard the existing segments of this facility that are less than a standard 10-foot wide path.

Provide and Improve Access to Schools and Major Transit Stops

Safe access to schools is very important to City leaders and residents. Medford's "Safe Routes to Schools" program aims to provide sidewalks within one mile of all schools within the City. The program implements projects largely with annual Community Development Block Grants (CDBG) provided by the federal government. Areas eligible for CDBG grants and listed as high priority for pedestrian improvements include Jackson School, Lone Pine School, Oak Grove School, Roosevelt School and Washington School. These grants can also be applied to neighborhood revitalization areas. Liberty Park is Medford's first neighborhood targeted for revitalization. Streets in this neighborhood include Beatty, Edwards, and Manzanita streets. These important programs are illustrated in Table 10-12 and should be continued as a high priority for the City.

Table 10-12
School Access Sidewalk Improvement Projects

Project No.	Vicinity of School	Street(s)	Improvement
545	Jefferson School	Holmes and Kenyon Streets	Install sidewalks
546	Lone Pine School	Spring Street	Install sidewalks
547	Washington School	Plum Street, 11th to Dakota	Widen street to add curb, gutter and sidewalks
548	Washington School	Withington Street, Plum to Hamilton	Install sidewalks
549	Washington School	Newtown Street, Dakota to Stewart	Install sidewalks
550	Washington School	Prune, 11th, 12th Streets	Install sidewalks
551	Howard School	Mace and Howard Streets	Install sidewalks
552	Roosevelt School	Ashland, Lindley, Bessie, Hillcrest, and Oregon Streets	Install sidewalks
553	Wilson School	Grand Avenue	Install sidewalks

Safe and direct access to major transit stops should also be provided. Figure 7-1 illustrates RVTD's proposed major transit stops, primarily along arterial streets at locations with significant transit boarding activity. Major transit stops are located throughout the City. The City of Medford should provide safe and convenient pedestrian access to the major transit stops as a high priority improvement. Sidewalks and paths should be provided on arterial and collector streets accessing each major transit stops to serve existing and potential transit riders. Where appropriate, necessary and practical, pedestrian accessways serving these stops should also be provided. The pedestrian waiting areas should have amenities that make the transit experience comfortable. Amenities include shelters, benches, posted schedules and trash receptacles.

Safety and Operational Improvements

As shown in Table 10-8, the vast majority of pedestrian-related accidents occur at intersecting streets, primarily in crosswalks. The City's current crosswalk policy directs the Public Works Department to apply objective engineering standards when determining where crosswalks need to be painted and maintained. These standards are based on pedestrian volumes, existence of positive pedestrian control (traffic signals, stop signs or school crossing guards), and the ability to channel pedestrian traffic among other factors. The policy is to paint and maintain crosswalks yielding the greatest safety, while not repainting others where positive crossing protection is not provided. The intent of this policy is to increase the effectiveness of crosswalks, while not misleading the public into thinking that an uncontrolled crossing is safe because a crosswalk is provided. State law establishes that pedestrian crossings exist at all intersections whether marked or not.

The City of Medford is also developing other standards pertaining to pedestrian safety at intersections such as unique crosswalk paving colors and materials, curb extensions or "bulb-outs", pedestrian refuge islands, and grade-separated crossings. The applicability of these policies should be evaluated as intersections are constructed or reconstructed. When considering right-turn channelization, the potential benefits and impacts to pedestrian safety should be analyzed. On the technology side, signal timing should used to promote safe crossings. Signals must be timed so that pedestrians (including slower walkers) may safely pass through an intersection before losing the green indication. Pedestrian detection devices should be installed at all crossing locations including activation buttons that meet ADA standards and are can be clearly understood by the user.

The City of Medford should also increase education to improve pedestrian safety. This can be in the form of signage along roadways advising travelers of the "rules of the road" pertaining to motorists and walkers, or through various media outlets.

General Improvements to Enhance the Pedestrian Environment

The city should consider a variety of general improvement strategies to enhance the overall pedestrian environment. These could include, but not be limited to:

- *Adaptable sidewalk improvements that fit the environment* – As appropriate, fit the pedestrian improvement into the surrounding environment considering available right-of-way, adjacent land use, and traffic volumes and speeds on adjacent street. Several roadways within Medford contain pedestrian facilities that do not meet current City standards. For instance, a number of streets in the older eastside neighborhoods contain substandard sidewalks or no pedestrian facilities at all. As acceptable to the affected neighborhoods, these facilities should be constructed or reconstructed to improve safety and the overall walking experience. The City should work to minimize the potential adverse impacts on neighboring property owners when constructing or reconstructing sidewalks and other pedestrian facilities on existing roadways.

- *Sidewalks setbacks* - Where possible, new and reconstructed sidewalks should be setback from the adjacent curb and street consistent with the City's street design standards and current practices. These "buffers" (usually consisting of planter strips) further separate pedestrian traffic from nearby vehicles, reducing the negative impacts of noise and pollution on pedestrians. The use of buffers is especially effective on roadways with higher speeds and traffic volumes, and the City's street standards include them on arterial and collector streets. Sidewalks with planter strips near bus stops however should have adequate paved space for waiting passengers. Where physical constraints prohibit the use of buffers, wider sidewalks should be used as indicated in Table 5-6. Additionally, in commercial areas the planter strip area should be paved and landscaped with tree wells to provide sufficient physical space for the anticipated heavier pedestrian volumes in these areas. Applying these measures will further enhance pedestrian safety and comfort.

- *Address the need for pedestrian connectivity and accessibility through the land use/land development process* – Land use is also a key consideration in pedestrian facility planning. While older neighborhoods tend to have mixed land uses that lend themselves to walking trips, newer developments have been characterized by separated land uses that make it physically challenging to walk for other than recreational purposes. This separation greatly reduces the opportunity for trips to be made without an automobile.

  One of the goals of Medford's TODs is to reintroduce the concept of mixed-use development in neighborhoods. Incorporating employment centers and neighborhood shopping centers within close proximity to residential areas will provide greater multi-modal travel options. When making land use decisions, City leaders should consider integrating land uses to promote more pedestrian trips while reducing dependence on the automobile.

  Furthermore, building design can also promote a pedestrian-friendly environment. Situating buildings adjacent to the sidewalk while locating parking in the rear creates a more-attractive environment for those traveling by foot. Orienting building entrances toward transit stops also enhances the pedestrian experience. The City of Medford has implemented many of these measures as part of its *Land Development Code*. As additional planning occurs in the TODs and with neighborhood plans or neighborhood circulation plans, specific opportunities for developing pedestrian-friendly land uses and infrastructure should be identified and pursued.

Maintain the Pedestrian Circulation System

Ongoing maintenance of sidewalks and paths is also important. The City of Medford should establish a maintenance schedule and budget for pedestrian facilities along arterial and collector streets. Maintenance should include the elimination of debris and trash that could create a safety hazard for a pedestrian. As sidewalks and paths become prone to cracks, these impediments should also be remedied within a short timeframe.

Pedestrian Advisory Committee

The City should consider adding a role for review of pedestrian needs and improvement priorities to the Bicycle Advisory Committee that was recommended earlier in this chapter for development of the bicycle circulation system.

Summary of Pedestrian System Projects

To enhance pedestrian safety and to encourage walking as a viable travel mode and an alternative to the single occupant automobile, the City of Medford should implement the improvements identified below. Priorities for pedestrian system improvements as identified in the goals and policies for this mode are to first serve schools, followed by major transit stops and then to serve all other destinations. Figure 10-3 illustrates the pedestrian improvements, including sidewalks along identified arterial and collector streets and a variety of multi-use paths as discussed in the Bicycle Plan.

- Priorities for sidewalk improvements are "Safe Routes to School", transit and then general accessibility to activity centers (like shopping and employment)

- Construct new and/or setback sidewalks (wherever possible) as part of roadway improvement projects.

- Add new sidewalks or pathways along existing arterial and major collector streets to fill in gaps and connect to schools, transit stops and other important pedestrian destinations (see Figure 10-3). Use adaptable sidewalk standards that fit the environment considering available right-of-way, adjacent land use, and speeds and volumes of traffic on the adjacent street.

- Add new sidewalks in vicinity of schools as identified in Table 10-12.

- Overcome barriers to pedestrian circulation through the use of accessways, multi-use paths or easements or other creative strategies. Ensure ADA compliance on pedestrian facilities.

- Complete Bear Creek Greenway, Larson Creek Greenway, selected improvements along Lone Pine Creek, and identify other opportunities for multi-use paths.

- Implement safety improvements such as evaluating and addressing where possible the contributing causes to existing pedestrian accidents to identify appropriate street or intersection improvements (this could include sight distance, lack of clear right-of-way, or other factors).

- Implement operational improvements such as crosswalks where active pedestrian protection can be provided (such as a signal or flashing beacon), curb extension to reduce street crossing distances for pedestrians, adequate signal timing for safe pedestrian street crossing, pedestrian detection such signal pushbuttons or other devices as appropriate

- Improve the general pedestrian environment:
  - Incorporate planter strips or other separation from vehicle traffic into pedestrian improvement projects
  - Address the need for pedestrian connectivity and accessibility through the land use/land development process including development of pedestrian-friendly mixed-use development and pedestrian-friendly building/site orientation and design
  - Develop accessways between buildings to shorten walking distances
  - Provide street lighting
  - Conduct routine maintenance of pedestrian system

- Encourage schools, safety organizations and law enforcement agencies to provide information/instruction regarding pedestrian safety.

- As appropriate, use an established city transportation committee, such as the proposed Bicycle Advisory Committee to help identify and prioritize pedestrian system improvement projects, to advocate and advise of pedestrian issues, and to encourage pedestrian education

Chapter 11
Rail Plan

Freight Rail

As discussed in Chapter 3, freight rail service in the Medford area is provided by the Central Oregon & Pacific Railroad (CORP). In the Rogue Valley, CORP currently carries between 1 and 5 million tons of freight each year, with lower volumes to the north toward the main railyard in Eugene, and to the south into California[15]. Freight movement along CORP trackage is constrained by steep grades, low height tunnels, and tight turns that limit operating speeds to about 25 to 35 miles per hour. Forty-three miles of track are limited to an operating speed of only 10 miles per hour. CORP's line south from Medford is one of the most rugged rail lines in the western United States with gradients that approach 3.25 percent. The alignment of CORP trackage through the Medford UGB is illustrated in Figure 6-1.

The CORP is undertaking an aggressive maintenance program and is trying to increase operating speeds to 25 miles per hour and to ease some of the height restrictions currently in place on the line. Loan guarantees by the Federal Railroad Administration are being sought to help fund maintenance needs.

Passenger Rail Service

Needs

Passenger rail service is not directly available in Medford. The existing freight rail line that serves the Rogue Valley region (the Central Oregon and Pacific Railroad) is constrained by low speeds and steep grades to the north and south that would make operation of passenger rail service very slow and thus unattractive. The rail route between Medford and Eugene generally follows an alignment built in the 1880s. Intercity passenger rail service is available in Klamath Falls which lies on the major north/south rail line connecting California with destinations in the Willamette Valley and further north. North/south passenger rail service is operated by Amtrak in the California-Oregon-Washington corridor with its Coast Starlight route. The Coast Starlight provides one northbound and one southbound train each day as it passes through Klamath Falls. Intercity shuttle bus connections can be made from Medford to Klamath Falls to connect with the Coast Starlight service.

Amtrak also provides four trips per day between Portland and Seattle on its Cascades route. Intercity bus connections to the train service in Portland are available from Medford via Greyhound bus lines. These connections are available for three trips each day in both northbound and southbound directions.

The intercity passenger rail line in Oregon is part of the federally designated Pacific Northwest High Speed Rail Corridor that connects Eugene, Oregon with destinations in Washington State and with Vancouver, B.C. The federal designation gives this route preference for Federal Railroad Administration funding to develop advanced technology passenger train service. The States of Oregon and Washington, in cooperation with the Province of British Columbia, are working together to incrementally improve passenger train operations in the corridor. The Oregon Department of Transportation is developing Oregon's portion of the corridor, with the long-range goal of providing safe service at speeds of more than 100 miles per hour in rural areas. The 2001 Oregon Rail Plan provides further guidance on the development of future passenger rail service along the I-5 corridor and elsewhere in the state. Key components of this plan as they pertain to Medford are described below.

---

[15] *Oregon Rail Plan*, ODOT, 2001

Oregon Rail Plan

The *2001 Oregon Rail Plan* updates the *1992 Oregon Rail Passenger Policy and Plan.* The *1992 Passenger Policy and Plan* proposed an extension of passenger rail service from Eugene to Roseburg as a "Second Stage" expansion beyond the current Eugene to Portland service. The "Third Stage" of service expansion would extend passenger rail service further south to Medford. Second Stage package improvements were estimated at $32 million and Third Stage package improvements were estimated at $275 million due to the extensive track upgrades that would be required through the mountainous terrain south of Roseburg.

The *Oregon Rail Passenger Policy and Plan* proposed two daily round trip passenger runs from Medford to Portland in the Third Stage with travel times of six to eight hours, depending upon the schedule ultimately adopted. There is no mention in the *Passenger Policy and Plan* of service south of Medford, such as destination service to Ashland or cities in California. Annual operating and maintenance costs for the Eugene to Medford service were estimated to be $15.8 million for the Third Stage with projected ridership for the entire segment south of Eugene being less than 500 passengers per day.

The *Oregon Rail Passenger Policy and Plan* did not propose an implementation schedule for any passenger rail expansion stages. Passenger rail service between Eugene and Medford would be constrained by a twisting track alignment, steep grades, and slow speeds. Given the need for significant trackway improvements, coupled with the competition for scarce resources on a statewide basis, it is not clear whether the Third Stage proposal from the *Passenger Policy and Plan* would be implemented within the 20-year planning horizon for the Medford TSP. It is conceivable that passenger rail service might not be available until after 2022 in the Rogue Valley region.

Even if Third Stage passenger rail service is available by the end of the planning period, reductions in traffic on the street and highway system are expected to be minimal. Traffic to and from a passenger terminal would be minor and would be unlikely to cause or contribute to any significant congestion. Likewise, intercity volumes on I-5 should be unaffected by the minor diversion from auto to train travel.

The need for passenger rail service in the Rogue Valley between Ashland and Grants Pass, then on to Portland as proposed in the Third Stage of the *Oregon Rail Passenger Policy and Plan* was further explored in the recently completed Southern Oregon Commuter Rail Study. Study objectives included both tourism enhancement as well as improved connections to train service for intercity and/or commuter travel. This study and its key findings is discussed below.

Southern Oregon Commuter Rail Study

The 1999 session of the Oregon Legislature instructed the Oregon Department of Transportation (ODOT) to examine the potential for frequent local passenger service (commuter rail) between Grants Pass and Ashland, a distance of approximately 45 miles. This service was proposed to operate on trackage owned by the Central Oregon and Pacific Railroad (CORP). The majority of this trackage is in Federal Railroad Administration Class I and Class II conditions permitting top passenger train speeds of 15 and 30 mph. Freight train service on this line includes several local switchers, as well as through trains providing service to the north through Glendale to Roseburg and connection to CORP trackage in California to the south.

The Southern Oregon Commuter Rail Study was a joint effort of ODOT's Rail Division, the Rogue Valley Transportation District (RVTD), and the Rogue Valley Metropolitan Planning Organization (RVMPO). The overall goal of the study was to define costs, benefits and impacts of the project so that regional partners could compare implementation of this service with other regional transportation priorities. The study was published in June 2001. Key findings include:

- With substantial upgrading of the track and signal system, the rail line connecting the eight Rogue Valley communities is well suited to serve as the backbone of an effective commuter transportation system for the region.

- With top speeds of up to 60 miles per hour, commuter trains can travel the 45-mile corridor from Ashland to Grants Pass in about 80 minutes, making several intermediate stops.

- The estimated costs for upgrading the rail infrastructure (including track, ties, switches, a new 1.5-mile track through Medford Yard, new sidings, and a modern train movement signaling system), making at-grade crossing safety improvements, acquiring passenger equipment, and operating the system at three potential levels of service are summarized in the table below.

Table 11-1
Southern Oregon Commuter Rail Service
Estimated System Capital Expenditures and Operating Costs

Level of Service*	Capital Expenditures	Annual Operating Costs
Level 1	$42,737,000	$3,977,000
Level 2	$70,410,000	$4,552,000
Level 3	$96,671,000	$8,077,000

Source: Southern Oregon Rail Study, ODOT, 2001
* Levels of Service Explained:
Level 1: Full service (6 round trips in the morning and 6 in the evening) between Ashland and Central Point
Level 2: Level 1, plus limited service (2 round trips in the morning and 2 in the evening) between Central Point and Grants Pass
Level 3: Full service (6 round trips in the morning and 6 in the evening) between Ashland and Grants Pass

Ridership estimates range from a low of 475 passenger per day (based on daily) to a high of 850 per day (when the service is extended to Grants Pass). Daily ridership estimates are for new riders only as transfer of existing riders from public transit is not included in the total. The study also briefly explored the possibility of seasonal excursion service over the line during times when commuter trains are not operating.

In summary, the study found no fatal flows to prevent operating a commuter service over the existing railroad line between Ashland and Grants Pass. While only a field environmental review has been made to date, it is very unlikely that a full EIS would alter this conclusion. If the study moves beyond the preliminary investigation stage, the main issues to be addressed will likely involve financing, capital costs, and operating subsidies.

Railroad Crossings

Table 3-18 presents a summary of existing railroad crossings in the Medford UGB including type of rail line (main or spur), type of crossing (at-grade or grade-separated), type of traffic control, and a visual assessment of the condition of pavement at the crossing. According to this table, there are two grade-separated railroad crossings in the UGB (on McAndrews Road and on the new Highway 238 alignment), and 17 at-grade crossings of the Central Oregon and Pacific Railroad's (CORP) mainline. All but two of these crossings are fully controlled with gates, warning signs, lights and bells. One crossing, at the new Garfield Avenue crossing just west of Highway 99, has active warning signs that alert motorists to the presence of the train.

The two at-grade crossings without gates are stop sign-controlled with railroad crossing bar signs and wigwags. These two crossings carry low traffic volumes and are primarily for local traffic circulation in industrial areas. In addition, there are two spur line crossings; one in the northwest industrial portion of the city on Joseph Street (which has signs and flashers), and the other in an industrial area south of downtown on Fir Street (which has only pavement markings to warn of the crossing). Consideration should be given to providing addition warning signage and/or flashing devices to alert motorists to the potential for train activity at the Fir Street crossing.

Strategies

The City of Medford has no direct responsibility for the development, operations or maintenance or the Central Oregon & Pacific Railroad or for the provision of freight rail service in the Rogue Valley. However, there are specific actions that that city can take to ensure safety around existing rail trackage and general land use compatibility with the freight rail corridor. The City can offer support and encouragement to CORP and ODOT in securing state and/or federal funding to improve existing rail trackage and service. The City can also offer support if and when market forces should dictate the need for developing rail reload or intermodal facility in the Medford area or when passenger rail service becomes more viable.

Specific actions for the City include:

- Consistent with *Oregon Rail Plan* recommendations, establish city policy that:
  - Seeks to avoid or minimize the number of future railroad at-grade crossings when new streets are planned for growing portions of the community;
  - Avoids creating intersections of major streets and railroads where possible;
  - Locates new parallel streets at least 500 feet from railroads to allow for industrial development between the tracks and the highway;
  - Plans community development (particularly residential uses) with sensitivity to rail noise and other potential conflicts.

- Consider adding additional railroad crossing protection at existing Clark, Joseph and Fir Street crossings.

- Improve at-grade railroad crossing on South Stage Road.

- Provide for on-going maintenance and repair of streets at existing at-grade crossings.

- Work with railroads and appropriate state agencies to minimize the blockage of public streets at railroad crossings to facilitate traffic movement, especially emergency service vehicles.

- Encourage efforts to make intercity passenger rail service available to the Medford area.

Chapter 12
Parking Management

Overview

This chapter addresses the Transportation Planning Rule requirement that local governments adopt land use and subdivision regulations to reduce reliance on the automobile through the use of parking management strategies. The TPR requires that these regulations implement a parking plan that *"achieves a 10 percent reduction in the number of parking spaces per capita in the MPO area over the planning period"* (OAR 660-012-0045 (5)(c)). This reduction can be achieved through a variety of means including a reduction in the number of new parking spaces, redevelopment of existing parking spaces for other uses, or other strategies.

This chapter includes a discussion of the state and regional goals and requirements for parking management, identifies key issues with respect to existing parking practices, identifies opportunities for alternative management practices for both the on- and off-street parking supply, summarizes current city parking practices, and give direction for future parking management practices.

Policy Context and Background

It has long been known that the availability of free parking in our cities has contributed significantly to many of the quality of life problems experienced in these same cities. According to the Congress for the New Urbanism:

> *"Existing parking policies and practices that favor free parking promote solo driving, increase the costs of development, and encourage a built environment that rewards driving over walking, cycling or using transit. Free parking has a number of direct and indirect impacts on travel choices, congestion and pollution and is at odds with state and federal policies to reduce auto travel and emissions. The parking standards of most communities result in buildings set back from the street like islands in a sea of parking spaces. This built landscape does not contribute to the public realm; it is difficult to serve by transit and demonstrates a community's dedication to cars over people."*[16]

With the goal of reducing reliance on the single-occupant auto, encouraging the use of walking, bicycling and transit, and improving the quality of life in Oregon's communities, the Transportation Planning Rule requires that Transportation System Plans address the need for parking management to achieve these goals. More specifically, the TPR requires that metropolitan area jurisdictions reduce their overall parking capacity by 10 percent over the next 20 years. As indicated in the *2001-2023 Rogue Valley Regional Transportation Plan*, the challenge of this goal is to reduce the parking supply in ways that not only help to achieve multi-modal travel goals, but which is also equitable for all parties involved.

The *2001-2023 Regional Transportation Plan* identifies a number of policies for implementation by local governments that are relevant to the issue of parking management to achieve the per capita reduction in parking supply in the City of Medford. These policies include:

[16] "Free Parking", Transportation Tech Sheet, Congress for the New Urbanism (www.cnu.org), 1999.

Policy 1: Local governments shall consider establishing maximum parking requirements (or parking caps) in their current zoning codes to reduce the amount of off-street parking supply provided by businesses.

Policy 2: Local governments shall consider establishing lower minimum parking requirements in their current zoning codes to encourage in-fill development and the use of alternative travel modes.

Policy 3: Local governments shall consider the imposition of parking fees as an indirect measure aimed at decreasing the amount of parking provided by new developments. Such fees may be levied on the developer, the tenant or the end-user.

Policy 4: Local governments shall consider the redesignation of existing, general-use parking spaces to a different, special use so as to encourage the use of alternative transportation modes.

Policy 5: Local governments shall manage the roadway space so as to have a measurable impact on the amount of parking in the region. Such strategies include the redesignation of parking spaces to other uses such as bike lanes, bus stops, turn lanes, and no parking zones, and the revision of street standards allowing for narrower street widths.

Policy 6: Local governments shall consider parking optimization strategies that would make better use of parking that remains following implementation of parking reduction required by the TPR. Such strategies include, for example, the lowering of the minimum parking requirements, establishing parking maximums, levying parking fees on developers, tenants or end-users, allowing shared parking among adjacent businesses, and forming Parking Management Associations (PMAs) in specific areas such as downtown Medford.

Collectively, these policies encourage each city in the RVMPO area to consider their existing parking policies – both for on-street spaces and off street parking facilities – in light of the need to address the TPR requirement to reduce the overall per capita parking supply. These policies address a variety of strategic approaches that could be undertaken to address the goal. In the following paragraphs some of these strategies are further discussed and an assessment of potential parking reduction benefits that could be realized is include.

Parking Management Considerations

Parking is very expensive to build, maintain and manage. Construction costs alone can range from \$3,000 to \$5,000 per surface parking space, and between \$15,000 and \$25,000 per space in a structure. This cost does not include the loss of land for other purposes, or the ongoing costs associated with parking maintenance and management. Nevertheless, free parking is provided to accommodate an overall average of 99 percent of daily trips throughout the United States[17]. Even in areas where parking prices are high, employers often provide free parking for their employees. The free parking subsidy means that developers, employers and municipalities must provide and management this extensive "free" supply. As noted above, provision of this free supply conflicts with many other community goals for reducing congestion and improving the quality of life.

Implementation of parking management strategies can address some of the problems inherent in the provision of extensive free parking. Through application of one or more of these strategies it may be possible to provide less parking, and to better balance the demand for the existing supply.

---

[17] Hu, P.S. and J. Young, *Summary of Travel Trends, 1990 Nationwide Person Transportation Survey*, Office of Highway Information Management, Federal Highway Administration, Washington, DC, 1998.

The strategies discussed below are organized into two categories – supply strategies and demand strategies. According to the Congress for New Urbanism[18], nationwide experience has shown that the most effective parking management program use of combination of both approaches. It should be stressed that implementation of any parking management approach should be evaluated in light of current local conditions including general community goals, economic issues and other factors. Some of these strategies apply to both on- and off street facilities and other to one or the other as indicated.

Supply Strategies

Supply strategies seek to limit the number of parking spaces through a variety of techniques. Among the many techniques that can be considered in Medford are:

- **Reduce Minimum Parking Requirements** – through zoning, municipalities control the supply of off street parking that a developer must provide. Reductions in this minimum provide the opportunity for a developer to support transit, carpooling, bicycling or to contribute to a municipal parking lot or shared parking facility.
- **Establish Parking Maximums** – though zoning, establish a maximum number of off street parking spaces that can be built as a part of a land development project. This measure is intended to address those land uses that build to accommodate peak demand leaving large empty lots at other times of the year. This measure requires a careful balance be established between having too little parking and having too much. Overflow parking needs during peak periods needs to be addressed. Parking maximums should be specific to land use type and should avoid placing a business at a competitive disadvantage relative to its peers.
- **Redesignate Parking Spaces for Priority Users** – change some of the existing, general on and off street parking supply to special use parking to promote the use of alternative travel modes and meet the requirements of the TPR. These could include preferential parking for carpools or the designation of spaces for handicapped parking. This designation would also remove these spaces from consideration in the parking reduction requirements of the TPR.[19]
- **Management of Roadway Space** - There is considerable competition for use of the paved roadway space: through lanes and turn lanes for motor vehicles, bicycle lanes, on-street parking spaces, loading zones, and bus stops. Management of the roadway space and the allocation for these uses can have a measurable impact on the amount of parking in the region. Changing parking spaces to other uses can help to improve traffic flow, to promote use of alternative modes, and to meet the TPR requirements. Potential uses for converted on-street parking spaces might include:
    - Adding bicycle lanes – Remove existing on-street parking and re-stripe the street for bike lanes, rather than by widening the roadway.
    - Providing transit stops – to accommodate expansions in service by RVTD.
    - Adding turn lanes - Re-striping for turn lanes to reduce intersection congestion. This could require removal of parking, which is sometimes permitted as close as 20 feet from a crosswalk at an intersection.
    - Designating no-parking zones – to increase sight distance at intersections and enhance bicycle, pedestrian and automobile safety.
    - Adopting street standards that prohibit on-street parking along certain types of streets or reduce the street width.
- **Allow Use of Shared Parking to Meet Parking Requirements** - Shared parking is the use of one or more parking facilities between developments with similar or different land uses. Each land use experiences varying parking demand depending on the time of day and the month of the

[18] Parking Management", Transportation Tech Sheet, Congress for the New Urbanism (www.cnu.org), 1999.
[19] OAR 660-12-005(12) exempts park and ride lots, handicapped parking and parking spaces for carpools and vanpools from consideration as parking spaces for purposes of the TPR.

year. Thus, it is possible for different land uses to pool their parking resources to take advantage of different peak use times.

Demand Strategies

Demand strategies generally seek to limit or influence the use of available parking spaces through a variety of pricing techniques. Among the many techniques that can be considered in Medford are:

- **Institute Parking Fees** – Parking fees imposed on developers for each parking space are an indirect way of reducing the amount of parking provided by new developments. Fees can be levied on the developer, the tenant, or the end-user.
- **Time-Based Pricing** – Set parking fees at rates that discourage long-term parking to encourage ridesharing or the use of alternative travel modes.
- **Modify/Cash Out Employer Parking Subsidies** – Many employers currently subsidize parking either by providing it for fee on-site or by subsidizing off street spaces for their employees. Under this option, employers can either reduce or eliminate the parking subsidy or can offer all employees the subsidy in cash.
- **On-Street Pricing** – This strategy would require meters or permits for on-street parking. Meter rates can be set to increase over time that become progressively more expensive the longer the vehicle remains parked. This can be effective in retail areas where businesses want short-term parking spaces available for customers. The perceived negative effect of pay parking on retail customers can be offset by providing a short period of free parking (e.g., 15 or 20 minutes) that is incorporated into the meter but must be actuated by the parking motorist.

Table 12-1 summarizes a variety of parking management strategies and indicates the relative range of effectiveness of each in reducing parking demand.

Table 12-1
Typical Parking Demand Reductions Associated with Various Management Strategies

Parking Management Strategy	Description	Parking Demand Reduction
Shared Parking	Share parking facilities among a group of users rather than assigning each an individual space	15-40%
More accurate requirements	Reduce minimum parking requirements at sites with lower parking demand	10-30%
Trade-off with TDM strategies	Reduce parking requirements at facilities with TDM programs	10-30%
Parking Pricing	Charge motorists for using parking facilities using cost recovery prices	10-30%
Favor Short-Term Use	Avoid discounts for long-term leases	Varies
Cashing Out	Provide the cash equivalent of free parking to commuters who use alternative modes	10-30%
Unbundle Parking	Rent and sell parking facilities separately, rather than automatically including with housing and commercial leases and purchases.	Varies
Location Efficient Development and Mortgages	Design and manage development at more accessible locations to encourage use of alternative modes	20-50%

Table 12-1 Continued
Typical Parking Demand Reductions Associated with Various Management Strategies

Parking Management Strategy	Description	Parking Demand Reduction
Address spillover problems	Use management, pricing and enforcement strategies to address spillover problems	Varies
Develop overflow parking plans	Use overflow parking plans, rather than excessive supply, to address occasional event.	Varies
Regulate use of parking facilities	Use regulations to encourage more efficient use of existing parking supply	Varies
Parking maximums	Limit maximum parking supply in an area	Varies
In Lieu fees	Use developer fees to fund public parking instead of requiring individual facilities to provide off street parking	Varies

Source: *The TDM Encyclopedia – Parking Management*, Victoria Transport Policy Institute, 2002.

Bicycle Parking

The same consideration for parking needs that is given to motorists should also be given to bicyclists. Convenient, safe and secure parking should be provided at all destinations, particularly in the downtown and near major bicycle trip attractors such as libraries, recreational facilities, schools, and commercial centers.

Medford's existing *Land Development Code* requires that bicycle racks or lockers be provided to accommodate bicycle parking needs and to encourage the use of this travel mode. The Code further provides that bicycle parking should be separated from motor vehicle parking and maneuvering areas by a barrier or sufficient distance to prevent damage to parked bicycles and stipulates the specific number of bicycle parking spaces that should be provided with each land use category. Typically commercial, office and institutional uses require that the bicycle parking supply should equal 10 percent of the automobile parking supply. For industrial uses, bicycle parking should equal 20 percent of the auto parking supply. Schools should provide four bicycle parking spaces per classroom. The *Land Development Code* also specifies location of bicycle parking facilities to ensure that they are safe, well-lighted and reasonably close to building entrances. Bicycle parking design standards are identified along with shared bicycle parking opportunities.

Best Management Practices

A synthesis of "Best Management Practices" for parking has been assembled by the Victoria Transport Policy Institute[20]. These practices represent the best advice concerning a policy approach to parking management that has been culled from a substantial body of literature. Best management practices include:

- Emphasize the efficient use of resources. Such things as user information, shared parking opportunities, parking pricing strategies, and provision of overflow parking all promote more efficient use of existing parking capacity and avoid the need for excessive supply.

[20] "Parking Management: Strategies for More Efficient Use of Parking Resources", Victoria Transport Policy Institute, November, 2002.

- The most convenient parking spaces should be managed and priced to favor priority users such as people with disabilities, carpool/vanpool vehicles, delivery vehicles, business customers and clients.

- Parking prices should be higher during peak periods. There should be little or no discounts for long-term leases.

- Parking should be considered a high quality service. Signs, maps and brochures should be used to provide accurate information to users. Facilities should be attractive and safe. User needs and potential problems should be anticipated and addressed.

- Parking services should not be "one-size-fits-all". A parking facility may provide a variety of services tailored to different users including convenient short-term parking for shoppers and longer term parking for commuters and residents.

- Parking management policies and practices should be coordinated throughout a district or region so that prices and management practices are consistent in comparable areas.

- Stakeholders should be consulted and involved in planning parking policies and programs.

- New technologies should be used to improve user information, convenience and safety and for revenue control.

- Parking management planning should anticipate potential spillover problems, and respond with appropriate regulations and enforcement programs. Enforcement should be adequate to maintain a high level of compliance, while being predictable and courteous.

Parking Management Strategies

Based on the foregoing review of parking management strategies, the City of Medford should implement the following actions.

On-Street Parking Management

The use of street space for parking is a conscious choice about the use of a valuable community resource. This same space could be used for multiple other purposes including vehicle travel lanes, bicycle lanes and/or widened sidewalks that could enhance the pedestrian-friendly appearance of a street. Thus, the decision to use this space for on-street parking should be based on a managed approach that seeks to maximize overall community return on investment. Goals that should be considered in evaluating the use of street space for parking include: economic vitality, neighborhood livability, reduced reliance on the automobile through enhancements in the bicycling and pedestrian environment, traffic congestion and safety, achieving state goals for per capita parking reduction, and other factors. Accordingly, the following should be the approach to managing the City's current and future on-street parking supply.

- Prohibit on-street parking on arterial and major collector streets in order to maximize the capacity of the transportation system and to help reduce the regional parking supply. Exceptions to this prohibition could be made in the Downtown Parking District, in adopted Transit Oriented Districts (TODs), or where permitted through the development and use of special plans adopted in the Medford *Comprehensive Plan*. Typically, locations that would retain on-street parking along arterials or major collectors would have adjacent curb-fronting commercial land uses that are dependent on the availability of closely-situated parking to retain economic viability or residences that have no other or minimal options for parking. Where on-street parking spaces are removed, the street space could be used to gain additional travel lanes, bicycle lanes or sidewalks.

- Expand the Downtown Parking district boundaries to be consistent with the CBD overlay boundaries and manage as a financially self-supportive operation.

- For the areas where on-street parking will be added or remain (particularly in Downtown or other adopted Transit Oriented Districts (TODs)), these spaces should be managed to assist in slowing traffic, facilitating pedestrian movement and efficiently supporting local businesses and residences consistent with the land use and mobility goals for each street.

- Consider use of residential parking permits to limit impacts of overflow parking from nearby employment centers, schools or other institutional uses where parking supply limits are implemented.

- Provide on-street carpool and vanpool parking spaces and/or loading zones in preferential locations. These spaces should be given preference in location and allowable parking duration over general purpose on-street parking spaces.

- In all decisions about on-street parking strive to achieve a balance among parking needs, congestion and safety for all users including pedestrians.

- Consider allowing use of available on-street parking to satisfy parking requirements for development. The availability of parking to meet this demand should be determined through a parking utilization analysis.

Off-Street Parking Management

City management of off-street parking includes both facilities that are owned by the city and those that are owned privately but subject to land use review and approval by the city. Key issues with off-street parking include both the supply (does existing code require an excessive supply) and design (not only should it be safe for vehicles, but also safe and friendly for pedestrians and bicyclists). Consistent with the approach of balancing competing community goals discussed above for on-street parking, the following strategies are made for management of the City's off street parking supply.

- Require the appropriate supply and design of off-street parking facilities to address the need for balance between parking supply and achieving community goals for economic vitality, neighborhood livability, reduced reliance on the automobile, enhancement of walking, bicycling and transit.

- Undertake review of existing parking demand patterns in Medford to facilitate review of the Municipal Code for the purpose of establishing parking maximums that represent typical daily needs for specific land uses.

- Develop pricing management strategy for city-owned public parking facilities with a particular focus on long-term, employee parking demand. The intent of this strategy is to discourage employees from using single occupant vehicles to commute to work while reflecting more closely the true costs of constructing, maintaining and operating these facilities.

- Consider offering parking incentives for carpools or vanpools such as preferential parking, free parking (if a parking pricing strategy is implemented), or other incentives.

Photo courtesy of MURA

- For off-street parking lots over 3 acres in size, provide street-like features along major driveways (including curbs, sidewalks, and street trees or planting strips) to enhance pedestrian safety. This may also require re-orienting of parking spaces to facilitate the most efficient pedestrian pathways that directs pedestrians toward the building – both from the curb and from various locations within the parking lot. Consider traffic calming techniques in parking lots as appropriate such as pavement treatment, raised pedestrian walkways, etc.

Parking Supply Reduction

As a part of the regional effort to meet the TPR goal of a 10 percent per capita reduction in the parking supply over the next 20 years, the City of Medford should undertake the following actions:

- Every five years the City should develop an estimate of the parking supply in areas designated for commercial, industrial and institutional uses by the Medford Comprehensive Plan with the objective of measuring progress toward meeting the 10 percent parking supply reduction goal.

- Allow non-residential development to satisfy the off street parking requirements currently in the City Municipal Code by developing and implementing a Transportation Demand Management program to increase the use by employees and/or customers of travel modes other than the single occupant auto.

- Permit and encourage major facilities with high parking demand (particularly high seasonal demand) to meet their parking needs through a combination of shared, leased and new off street parking facilities.

- Encourage employers to charge their employees for parking in the downtown and at other locations where good transit service is available.

Chapter 13
Plan Goals and Implementation

The overall goal of Medford's *Transportation System Plan* is to provide for a multi-modal transportation system that supports the safe, efficient and accessible movement of people and goods while achieving the City's vision for its future as an outstanding livable community. This goal recognizes that Medford plays a unique role in Southern Oregon as the financial, medical, tourist and business hub for a large geographic area. The goal also recognizes the importance of all travel modes to ensure that viable alternatives to auto travel are available and that the community's economic needs for transportation services are met. The TSP is also a key component of the City's plan for encouraging compact urban development to reduce vehicle miles of travel and improve existing air quality problems.

Modal plans for walking, bicycling, transit, automobile, rail, air transportation, and freight truck were developed as part of the TSP and include action plans for projects, programs, policies and ordinances. This chapter represents a synthesis of the modal plans and includes a discussion of the priorities and strategies developed for each that have been combined into the plan. These modal plans are founded on the guidance provided by the 2002 community visioning process that lead to the *Vision Strategic Plan*. The adopted *Vision Strategic Plan* calls for:

- An efficient arterial street system that provides good north-south and east-west connectivity
- A sidewalk system and a network of bikeways that allows travel throughout the city.
- Encouragement of mixed-use development that puts shopping and work opportunities in close proximity to residential areas thus allowing for more efficient use of transit, bicycle and pedestrian travel modes.
- Partnering with the region to enhance transit service and amenities.
- Completion of the Bear Creek Greenway with east-west bicycle and pedestrian connections to a variety of destinations.
- Aggressive implementation of transportation improvements through planning, community education and funding.
- Convenient and affordable air transportation service.
- Competitive freight and passenger rail service.
- Effective partnerships with state and federal highway agencies to ensure that the community is well-served by inter- and intra-state highways.

This chapter includes the transportation goals, policies and implementation strategies that are based on the foregoing elements of the Vision Strategic Plan. It presents a discussion of the strategic policy choices and alternatives considered in each modal plan and how these were synthesized to identify priorities and establish a multi-modal plan to meet the requirements of the state Transportation Planning Rule (Goal 12). This chapter also presents an assessment of anticipated transportation revenues, cost estimates for multi-modal transportation projects, priorities for short, medium and long-term implementation, and identification of unfunded improvement needs for the 20-year planning period. A revenue shortfall has been identified and there is discussion of potential new funding sources included near the end of this chapter. Lastly, this chapter identifies issues that will require further refinement planning to determine an appropriate course of action.

Goals, Policies and Implementation Strategies

Overall Transportation System

GOAL 1: To provide a multi-modal transportation system for the Medford planning area that supports the safe, efficient, and accessible movement of all people and goods, and recognizes the area's role as the financial, medical, tourism, and business hub of Southern Oregon and Northern California.

Policy 1-A: The City of Medford shall manage projected travel demand consistent with community, land use, environmental, economic and livability goals.

Implementation 1-A(1): Utilize the projections in the *Regional Transportation Plan* (RTP) regarding projected travel demand over the 20-year planning period in managing transportation system.

Implementation 1-A(2): Utilize the *Medford Comprehensive Plan*, including the land use plan covering the 20-year planning period, in managing transportation system.

Implementation 1-A(3): Design and improve arterial streets so that the minimum overall performance during peak travel periods meets Level of Service "D."

Implementation 1-A(4): Consider revisions to the City's concurrency ordinance to manage development-related traffic impacts consistent with other community goals.

Policy 1-B: The City of Medford shall use the *Transportation System Plan* as the legal basis and policy foundation for decisions involving transportation issues.

Implementation 1-B(1): Utilize the *Medford Transportation System Plan* to identify the measures and programs to be undertaken to increase mobility for all travel modes, including implementing standards and ordinances, and design standards and construction specifications for capital construction projects that are consistent with the Plan.

Implementation 1-B(2): Update the *Medford Transportation System Plan* as necessary to remain consistent with regional and statewide plans and laws.

Implementation 1-B(4): Coordinate transportation planning and construction with appropriate agencies.

Implementation 1-B(5): Adopt the *Regional Transportation Plan* (RTP) by reference in the *Medford Comprehensive Plan* to the extent that this Plan is consistent with the *Medford Transportation System Plan*. Where inconsistencies exist, the City shall work cooperatively with the RVMPO to resolve differences.

Implementation 1-B(6): Require *Comprehensive Plan*, *Land Development Code*, and Zoning Map amendments to contain findings that show how the action is in conformity with the adopted tenets of the *Medford Transportation System Plan*.

Implementation 1-B(7): Include projects and programs adopted in the *Medford Transportation System Plan* that are of regional or statewide significance, or that require the use of state or federal funding, within the Regional Transportation Improvement Program and State Transportation Improvement Program.

Overall Transportation System – Funding

Policy 1-C: The City of Medford's top priority for the use of transportation funds shall be to address the maintenance, operational, and safety needs of the transportation system.

Implementation 1-C(1): Utilize a street utility fee as the primary funding source for street system operations and maintenance activities and utilize state highway fuel tax funds to meet the financial requirements of the street operations and maintenance program.

Implementation 1-C(2): Participate in cooperative agreements with state and local jurisdictions for maintenance and operations activities, based on equitable determinations of responsibility and benefit.

Implementation 1-C(3): Pursue federal, state, and private grants to augment operations and construction.

Policy 1-D: The City of Medford's second priority for the use of transportation funds shall be to maximize efficient use of the existing transportation system through use of Transportation System Management (TSM) and Transportation Demand Management (TDM) measures prior to expending transportation funds on capacity improvements.

Implementation 1-D(1): Utilize transportation demand management measures as the first choice for accommodating travel demand and relieving congestion in a travel corridor, before street widening projects are undertaken.

Policy 1-E: The City of Medford's third priority for the use of transportation funds shall be to fund capital improvements that add capacity to the transportation system. These improvements shall be prioritized based on availability of funds, reducing reliance on the automobile, improving safety, relieving congestion, responding to growth, and system-wide benefits.

Implementation 1-E(1): Give priority to funding projects that most increase capacity and relieve congestion, such as intersection improvements as opposed to general street widening, consistent with the adopted level of service (LOS) standards.

Implementation 1-E(2): Require new development to mitigate its impacts on the transportation system through on-site system improvements consistent with the TSP required as conditions of approval. Also require off-site improvements consistent with the TSP when they can be found to be proportional to the impacts on the transportation system ("Dolan finding").

Implementation 1-E(3): Collect transportation system development charges (SDC's), as defined by *Oregon Revised Statutes* and local ordinances, to mitigate impacts of new development on area-wide transportation facilities in the Medford planning area.

Implementation 1-E(4): Utilize the projects and needs identified in the *Medford Transportation System Plan* as the basis for selecting and prioritizing transportation improvement projects in the Capital Improvement Program and into regional and state transportation improvement programs, consistent with the adopted goals and policies of the *Medford Comprehensive Plan.*

Implementation 1-E(5): Seek federal funding for capital improvements through participation in the Metropolitan Planning Organization (MPO) or other designated distribution process as provided in federal transportation legislation.

Implementation 1-E(6): Utilize the sale of bonds as a means to finance capital improvements to the transportation system. Select such projects through authorization by the City Council or a vote of the citizens of the City.

Implementation 1-E(7): Investigate establishing a trust fund account for acquisition of property for future right-of-way opportunities

Street System

GOAL 2: To provide a comprehensive street system that serves the mobility and multi-modal transportation needs of the Medford planning area.

Street System - Classification

Policy 2-A: The City of Medford shall classify streets so as to provide an optimal balance between mobility and accessibility for all transportation modes consistent with street function.

Implementation 2-A(1): Utilize the Street Classification Map of the *Medford Transportation System Plan* to identify land for public rights-of-way and to give advance notice to property owners and citizens regarding future expansions of the street system.

Implementation 2-A(2): Provide a grid network of higher order (i.e., Arterial, Collector) streets that link the central core and major industrial areas with major highways and that connect with each other and the lower order street system.

Implementation 2-A(3): Provide a grid network of interconnected lower order (local) streets that disperses traffic and supplies connections to higher order streets, employment centers, and neighborhood activity centers, and provides appropriate emergency access.

Implementation 2-A(4): Develop and adopt conceptual Neighborhood Circulation Plans as stand alone plans or as part of neighborhood or area plans to be implemented as development of these areas occurs. Such Plans shall indicate the function of proposed streets and design standards needed to minimize disruption of existing neighborhoods while assuring adequate access commensurate with the intensity of planned new development and redevelopment. Such plans shall also identify key neighborhood destinations and an interconnected system of bicycle and pedestrian facilities to serve these destinations, as well as to connect with areas outside of the neighborhood.

Implementation 2-A(5): Develop a system of Collector and local residential streets that have adequate capacity to accommodate planned land uses, but preserve the quiet, privacy, and safety of neighborhood living by staying within their capacity.

Policy 2-B: When classifying streets, the City of Medford shall consider impacts to neighborhood livability. Prior to upgrading a street classification in a residential area to a higher order classification, the City shall consider alternatives that would preserve the livability of the affected residential neighborhood. And, if reclassification proceeds, shall consider mitigation measures.

Implementation 2-B(1): Apply the following measures to mitigate noise, aesthetic, and safety impacts when streets that are adjacent to or bisect residential areas are reclassified and constructed to Collector or Arterial street standards: (a) Connect affected residential areas to other areas of the community with safe and efficient bicycle and pedestrian improvements; and (b) Consider mitigation measures to physically buffer the affected residential areas from traffic noise. These may include installation of major landscape/streetscape components such as landscaped buffers, walls or fencing, tree plantings, and the creation of open spaces.

Street System - Design

Policy 2-C: The City of Medford shall design the street system to safely and efficiently accommodate multiple travel modes within public rights-of-way.

Implementation 2-C(1): Apply the street design standard that most safely and efficiently provides multi-modal capacity respective to the functional classification of the street, mitigating noise, energy consumption, neighborhood disruption, economic losses, and other social, environmental, or institutional disruptions. Use of adopted neighborhood plans should determine the specific look and character of each neighborhood and its street system.

Implementation 2-C(2): Limit Major Arterial streets to a total cross-section width of no more than five travel lanes, except at intersections. Accommodate travel demand that would otherwise require a width of more than five lanes through increased system connectivity, transit service, use of transportation demand management (TDM) strategies, and other alternative modes of transportation.

Implementation 2-C(3): Require pedestrian/bicycle accessways when there is not a direct street connection, to pass through long blocks, or to connect cul-de-sac streets with nearby streets, or to connect to nearby bicycle paths, etc. to create more direct non-motorized access where appropriate.

Implementation 2-C(4): Involve affected citizens in an advisory role in transportation project design.

Implementation 2-C(5): Design the transportation system with consideration of the needs of persons with disabilities by meeting the requirements in the Americans with Disabilities Act (ADA).

Implementation 2-C(6): Assure that the design and operation of the transportation system allows for the safe and rapid movement of fire, medical, and police vehicles.

Implementation 2-C(7): Require new development and redevelopment projects, as appropriate, to connect to and extend local streets to planned future streets, to neighborhood activity centers, such as parks, schools, and retail centers, to transit routes, and to access adjoining undeveloped or underdeveloped property.

Implementation 2-C(8): Require new development and redevelopment projects to include accessibility for all travel modes and coordinate with existing and planned developments.

Implementation 2-C(9): Limit cul-de-sac streets, minimum access streets, and other "dead end" development to situations where access cannot otherwise be made by a connected street pattern due to topography or other constraints.

Implementation 2-C(10): Adopt maximum block length standards for local streets to assure good circulation.

Implementation 2-C(11): Incorporate into the *Land Development Code* standards to govern the spacing of street intersections, signal installation, driveway access, and sight distance.

Policy 2-D: The City of Medford shall balance the needed street function for all travel modes with adjacent land uses through the use of context-sensitive street and streetscape design techniques.

Implementation 2-D(1): Identify unique street design treatments, such as boulevards or "main" streets, through the development and use of special area plans, neighborhood plans, or neighborhood circulation plans adopted in the *Medford Comprehensive Plan*.

Implementation 2-D(2): Utilize design techniques for local streets, such as reduced widths and lengths, curb extensions, and other traffic calming measures, to lower vehicular speeds, provide a human-scale environment, facilitate pedestrian crossing, and minimize adverse impacts on the character and livability of neighborhoods and business districts, while still allowing for emergency vehicle access.

Implementation 2-D(3): When designing new or reconstructed streets, make adjustments as necessary to avoid valuable topographical features, natural resources, historic properties, schools, cemeteries, significant cultural features, etc. that affect the livability of the community and the surrounding neighborhood.

Policy 2-E: The City of Medford shall design to enhance livability by assuring that aesthetics and landscaping are a part of Medford's transportation system.

Implementation 2-E(1): Incorporate aesthetic streetscape features into public rights-of-way, such as street trees, shrubs, and grasses; planting strips and raised medians; street furniture, planters, special lighting, public art, and paving materials which include architectural details.

Policy 2-F: The City of Medford shall bring Arterial and Collector streets up to full design standards where appropriate, and facilitate improving existing local streets to urban design standards where appropriate.

Implementation 2-F(1): Balance the needs of pedestrians, bicyclists, and motor vehicles when reconstructing streets that cannot meet full functional classification standards.

Street System – Transportation Demand Management

Policy 2-G: The City of Medford shall undertake efforts to reduce per capita vehicle miles traveled (VMT) and single-occupancy vehicle (SOV) demand through transportation demand management (TDM) strategies.

Implementation 2-G(1): Promote the use of alternative commute options to reduce motor vehicle travel generated by employment sites and schools by serving as an institutional model for the community through participation in the Transportation Management Association (TMA), providing incentives for City of Medford employees to utilize transportation demand management (TDM) strategies, and actively participating in local, state, and national TDM activities, such as Car Free Day. (Examples of TDM strategies include free or subsidized bus passes, trip reduction planning, compressed work weeks, telecommuting options, flexible work schedules, ride matching for car/van pools, customer and employee parking management, guaranteed rides home in emergencies, indoor bicycle storage, shower/locker facilities, etc.)

Implementation 2-G(2): Encourage employers to design and implement trip-reduction plans, including strategies that encourage use of alternative transportation modes, discourage commuting in single occupancy vehicles, and promote telecommuting and the use of work hours that do not contribute to peak-hour congestion. Encourage private sector employers to take advantage of tax incentive programs for transportation demand management efforts. Encourage the formation of employer transportation management associations that allow the pooling of resources in implementing trip reduction plans, such as guaranteed emergency ride home and vanpool programs.

Implementation 2-G(3): Support and assist the efforts of the Rogue Valley Transportation District in maintaining a regional transportation demand management program, which includes such components as a rideshare matching program, carpool/vanpool matching, park-and-ride lots, and information regarding transit service, bicycle routes, telecommuting, etc.

Implementation 2-G(4): Participate in public outreach to raise awareness about the use of transportation demand management (TDM) strategies, such as periodic newsletters for decision-makers, employers, schools, organizations, and individuals; information handouts at appropriate public events; advertising and public service announcements; school outreach; services for employers; and recognition for TDM efforts. Actively market to groups having the greatest potential for reducing single occupancy vehicle trips, such as large employment sites and commuting students.

Implementation 2-G(5): Encourage school districts to promote and utilize walking, bicycling, and school busing whenever possible to reduce motor vehicle trips needed to transport students to and from classes and events.

Street System – Transportation System Management and Safety

Policy 2-H: The City of Medford shall manage and maintain the transportation system in an efficient, clean, and safe manner.

Implementation 2-H(1): Require Traffic Impact Analyses (TIAs), as appropriate, in conjunction with development applications to assess impacts on the existing and planned transportation system, and require transportation system improvements that are identified through the TIA or by other *Municipal Code* requirements as a condition of approval of development permits and land use actions.

Implementation 2-H(2): Utilize access management, including access location and spacing, to increase the capacity and safety of the transportation system. Incorporate access management techniques, such as raised medians, access management plans, driveway consolidation, driveway relocation, and closure of driveway access, into Arterial and Collector street design and development applications.

Implementation 2-H(3): Continue to modernize the traffic signal system and improve its efficiency by ultimately connecting all signals to the centralized traffic control center. Employ traffic signal timing plans that maximize efficiency during different time periods. Provide a program to identify locations for new/modified signals.

Implementation 2-H(4): Utilize Intelligent Transportation Systems (ITS) such as real-time traffic monitoring cameras and management projects, that provide motorist information and incident response/clearance programs, to alleviate traffic congestion.

Implementation 2-H(5): Provide adequate funding to preventatively maintain and manage public paved surfaces, sidewalks, bikeways, bridges, traffic control devices, street lighting, etc., at the lowest life-cycle cost.

Implementation 2-H(6): Provide a street cleaning program that uses best management practices (BMPs) to reduce impacts on air and water quality from street debris.

Policy 2-I: The City of Medford shall promote transportation safety.

Implementation 2-I(1): Maintain an inventory of traffic control devices (i.e., traffic signals, signs, striping, and markings).

Implementation 2-I(2): Require maintenance of sight-distance areas adjacent to intersections and driveways, to keep clear of fencing, landscaping, foliage, etc. that could obstruct the view of motorists, bicyclists, and pedestrians.

Implementation 2-I(3): Actively enforce motor vehicle codes related to transportation safety.

Implementation 2-I(4): Promote traffic safety education and awareness, emphasizing the responsibilities required of motor vehicle drivers, in order to reduce the per capita number of motor vehicle accidents.

Street System – Parking Management

Policy 2-J: The City of Medford shall prohibit on-street parking on Arterial and Major Collector streets in order to maximize the capacity of the transportation system except in the Downtown Parking District, in adopted Transit Oriented Districts (TODs), or where permitted through the development and use of special plans adopted in the *Medford Comprehensive Plan*.

Implementation 2-J(1): Remove existing on-street parking in preference to widening Arterial and Collector streets to gain additional travel lanes, bicycle lanes, and sidewalks, except where on-street parking has been determined to be essential through special plans adopted in the *Medford Comprehensive Plan.*

Implementation 2-J(2): Expand the Downtown Parking district boundaries to be consistent with the CBD overlay boundaries and manage as a financially self-supportive operation.

Policy 2-K: The City of Medford shall manage on-street parking in the Downtown and in other adopted Transit Oriented Districts (TODs) to assist in slowing traffic, facilitating pedestrian movement, and efficiently supporting local businesses and residences consistent with the land use and mobility goals for each street.

Implementation 2-K(1): If necessary to preserve the supply of on-street parking in residential areas for use by residents, restrict the overflow parking of nearby employment centers, entertainment venues, schools, or other institutions through use of a residential parking permit program.

Implementation 2-K(2): In areas where demand exists, provide on-street carpool and vanpool parking spaces and/or loading zones having preferential location/timing over general purpose on-street parking spaces, giving consideration to locations where on-street parking is needed to support an existing business district.

Policy 2-L: The City of Medford shall require an appropriate supply and design of off-street parking facilities to promote economic vitality, neighborhood livability, efficient use of urban space, reduced reliance on single occupancy motor vehicles, and to make certain areas, such as Transit Oriented Districts (TODs), more pedestrian friendly.

Implementation 2-L(1): Require a minimum and maximum number of off-street parking spaces based on the typical daily needs of the specific land use type. A parking space maximum standard assures that unnecessary consumption of land area is avoided. Designate areas of the City where no off-street parking would be required.

Implementation 2-L(2): Set prices for city-owned public parking facilities to a level that discourages employees from using single occupancy vehicles to commute to work, and that reflects the relative demand for parking and the cost of constructing, maintaining, and operating such facilities. Offer free or discounted prices for carpool parking in public parking facilities.

Implementation 2-L(3): For off-street lots over three (3) acres in size, require street-like features along major driveways and safe pedestrian access facilities between the street, locations within the lot and buildings.

Policy 2-M: The City of Medford shall undertake efforts to contribute to a reduction in the regional per capita parking supply to promote the use of alternatives to the single occupancy motor vehicle.

Implementation 2-M(1): Every five years, estimate the parking supply in areas designated for commercial, industrial, and institutional uses by the *Medford Comprehensive Plan* in order to monitor progress toward meeting the goal of reducing parking supply per capita by ten percent over the 20-year planning period.

Implementation 2-M(2): Allow non-residential development to satisfy off-street parking requirements through preparation and implementation of a trip reduction plan to increase the use of alternative modes of transportation by employees and customers.

Implementation 2-M(3): Assure that major facilities with a high parking demand meet the demand through a combination of shared, leased, and new off-street parking facilities, access by transit, and encourage designs that reduce parking need.

Implementation 2-M(4): Encourage employers to charge for employee parking.

Public Transportation System

GOAL 3: To facilitate the increased use of public transportation in the Medford planning area, as the adequacy of transit service is a measure of the quality of life in a community.

Policy 3-A: The City of Medford shall undertake efforts to increase the percentage of total daily trips taken in the Medford planning area by transit, consistent with the target benchmarks in the "Alternative Measures" of the *2001-2023 Rogue Valley Regional Transportation Plan* (RTP).

Policy 3-B: The City of Medford shall support the provision of convenient and accessible transit service to, from, and within the Medford planning area, especially to higher density residential areas, employment centers, and major commercial areas.

Implementation 3-B(1): Support efforts to implement funding strategies that provide adequate, long-term, and stable revenue sources for the transit system, including fares that balance the need for passenger revenues with the goal of maximizing ridership.

Implementation 3-B(2): Support efforts by the Rogue Valley Transportation District to develop and implement a transit system that effectively combines components of radial, neighborhood, and circumferential services, with a minimum of required transfers, to best serve the citizens of and visitors to Medford.

Implementation 3-B(3): Support efforts by the Rogue Valley Transportation District to increase transit service, including increasing the frequency of service (shorter headways), extending the hours of operation, expanding weekend service, and providing express transit service during peak travel periods.

Implementation 3-B(4): Assure that land use planning activities promote transit service viability and accessibility, including locating mixed residential-commercial, multiple-family residential, and employment land uses on or near (within ¼-mile walking distance) transit corridors.

Implementation 3-B(5): Provide transit-supportive street system, streetscape, land division, and site design and operation requirements that promote efficient bus operations and pedestrian connectivity, convenience, and safety.

Implementation 3-B(6): In conjunction with the Rogue Valley Transportation District, establish designs for and implement effective and safe transit stops on Arterial and Collector streets.

Implementation 3-B(7): Work with the Rogue Valley Transportation District to ensure that transit transfer stations and park-and-ride facilities are accessible by pedestrian, bicycle, transit, and motor vehicle travel modes, including provisions for secured bicycle parking, passenger loading, and taxi service, and encourage transit service to intercity passenger bus and aviation terminals.

Implementation 3-B(8): Work with employers to increase commuter transit ridership through employer-based incentives, such as subsidized transit passes.

Policy 3-C: The City of Medford shall undertake efforts to increase the percentage of dwelling units in the Medford planning area located within one-quarter mile walking distance of transit routes, consistent with the target benchmarks in the "Alternative Measures" of the *2001-2023 Rogue Valley Regional Transportation Plan* (RTP).

Policy 3-D: The City of Medford shall link intercity passenger transportation facilities in central Medford to adequate pedestrian facilities, and strive to link all intercity passenger transportation facilities to transit, taxi, and/or shuttle services. The City shall encourage continued operations and future expansion of intercity bus service to and from Medford.

Policy 3-E: The City of Medford shall encourage efforts to make intercity passenger rail service available to the Medford planning area.

Bicycle System

GOAL 4: To facilitate the increased use of bicycle transportation in the Medford planning area, as bicycle facilities are a measure of the quality of life in a community.

Policy 4-A: The City of Medford shall undertake efforts to increase the percentage of total daily trips taken by bicycling in Medford consistent with the target benchmarks in the "Alternative Measures" of the *2001-2023 Rogue Valley Regional Transportation Plan* (RTP).

Implementation 4-A(1): Develop a network of bicycle facilities linking Downtown, other Transit Oriented Districts (TODs), residential neighborhoods, commercial/employment centers, schools, parks and greenways, community centers, civic and recreational facilities, and transit centers.

Implementation 4-A(2): Design streets and other public improvement projects to facilitate bicycling by providing bicycle-friendly paving, lane width, traffic control, storm drainage grates, striping, signage, lighting, etc.

Implementation 4-A(3): Review all development plans for bicycle system continuity and expansion of the system.

Implementation 4-A(4): Work with the Oregon Department of Transportation to improve bicycling conditions on state highways within the Medford planning area.

Implementation 4-A(5): Provide interconnected off-street multi-use paths along stream and waterway corridors, such as Bear Creek and Larson Creek, and in other suitable locations where multiple street or driveway crossings are unlikely and where such facilities can be constructed without causing significant environmental degradation.

Implementation 4-A(6): Regularly review Medford *Land Development Code* provisions to assure that bicycle facility standards for development projects are adequate to achieve the goals and policies of the *Medford Comprehensive Plan*, including the *Transportation System Plan.*

Implementation 4-A(7): Consider development of on-street "bicycle boulevard" treatments using local streets to enhance the connectivity of this system

Policy 4-B: The City of Medford shall undertake efforts to increase the percentage of Arterial and Collector street miles in Medford having bicycle facilities, consistent with the targeted benchmarks in the "Alternative Measures" of the *Regional Transportation Plan* (RTP).

Implementation 4-B(1): Assure that bicycle facility improvements are a factor in Medford's

annual capital improvement programming and budgeting, using the *Transportation System Plan* as the basis to determine priorities.
Implementation 4-B(2): Utilize all opportunities to add bike lanes on Collector and Arterial streets, such as during reconstruction and re-striping projects. Give priority to bicycle traffic over on-street parking on Collector and Arterial streets designated in the *Transportation System Plan* as, or otherwise determined to be, important bicycling routes. Alternatives should be considered where on-street parking is determined to be essential to the success of adjacent businesses in a pedestrian-friendly environment, such as in Downtown, other TODS, activity centers, etc.

Policy 4-C: The City of Medford shall encourage bicycling as an alternative mode of transportation as well as a recreational activity.

Implementation 4-C(1): Form a bicycle advisory and planning committee to support the City's bicycle transportation goals and advise the City on issues related to bicycles.
Implementation 4-C(2): Continue to coordinate with local and regional bicycling proponents, such as the Jackson County Bicycle Advisory Committee and the Bear Creek Greenway Committee.
Implementation 4-C(3): Regularly maintain bicycle facilities and take actions to improve crossings of railroad tracks, creeks, major streets, etc.
Implementation 4-C(4): Perform accurate record keeping of bicycle volume and accident counts.
Implementation 4-C(5): Whenever feasible, provide public bicycle storage facilities at critical locations within the Downtown and at other activity centers.
Implementation 4-C(6): Install "Share the Road" signage on those Collector and Arterial streets that do not yet have bike lanes.
Implementation 4-C(7): Assure that City of Medford employees, particularly Police Department staff, have adequate training regarding bicycle safety and enforcement issues. Continue and enhance the "Cops on Bikes" program.
Implementation 4-C(8): Initiate a "Share the Road" or similar public information campaign, coordinated with agencies such as the Rogue Valley Transportation District, the Rogue Valley Council of Governments, Jackson County, local bicycling organizations, and nearby municipalities, etc.
Implementation 4-C(9): Support the Rogue Valley Transportation District efforts to facilitate transportation demand management (TDM) strategies that integrate bicycling and transit, such as "bikes on buses", bicycle storage facilities at transit stations and stops, etc.
Implementation 4-C(10): Encourage and support efforts by Medford schools or other community organizations to develop and use a bicycle safety curriculum for students.

Pedestrian System

GOAL 5: To facilitate the increased use of pedestrian transportation in the Medford planning area.

Policy 5-A: The City of Medford shall develop a connected, comprehensive system of pedestrian facilities that provides accessibility for pedestrians of all ages, focusing on activity centers such as Downtown, other Transit Oriented Districts (TODs), commercial centers, schools, parks/greenways, community centers, civic and recreational facilities, and transit centers.

Implementation 5-A(1): Require development and street construction/renovation projects to include sidewalks and walkways.

Implementation 5-A(2): Design street intersections, particularly Arterial and Collector street intersections, with convenient, safe, and accessible pedestrian crossing facilities.

Implementation 5-A(3): Require development within activity centers, business districts, and Transit Oriented Districts (TODs) to focus on and encourage pedestrian travel, and require sidewalks, accessways, and walkways to complement access to transit stations/stops and multi-use paths.

Implementation 5-A(4): Utilize an interconnecting network of multi-use paths and trails to compliment and connect to the sidewalk system, using linear corridors such as creeks, canals, utility easements, railroad rights-of-way, etc.

Policy 5-B: The City of Medford's first priority for pedestrian system improvements shall be access to schools; the second priority shall be access to transit stops.

Implementation 5-B(1): Complete the pedestrian facility network based on the priorities established in the *Transportation System Plan*, with emphasis on gaps in the system.

Policy 5-C: The City of Medford shall undertake efforts to increase the percentage of total daily trips taken by walking in Medford consistent with the targeted benchmarks in the "Alternative Measures" of the *2001-2023 Rogue Valley Regional Transportation Plan* (RTP).

Implementation 5-C(1): Encourage walking for both travel and recreation, emphasizing the health, economic, and environmental benefits for the individual and community.

Implementation 5-C(2): Prepare for consideration by the City Council ordinances that require pedestrian-friendly development design that encourages walking.

Policy 5-D: The City of Medford shall undertake efforts to increase the percentage of Collector and Arterial street miles in Medford's adopted Transit Oriented District (TODs) having sidewalks, consistent with the targeted benchmarks in the "Alternative Measures" of the *2001-2023 Rogue Valley Regional Transportation Plan* (RTP).

Policy 5-E: The City of Medford shall promote pedestrian safety and awareness.

Implementation 5-E(1): Develop crosswalk marking and traffic calming policies that address pedestrian safety in appropriate locations, including signalized intersections, controlled intersections near schools, activity centers, Transit Oriented Districts (TODs), and other locations of high pedestrian volumes.

Implementation 5-E(2): Establish standards for maintenance of pedestrian facilities, accessways and paths, including the removal of hazards and obstacles, and maintenance of benches, landscaping, etc.

Implementation 5-E(3): Comply with the requirements of the Americans with Disabilities Act (ADA) regarding the location and design of sidewalks, walkways, and multi-use paths, and discourage the placement of obstructions within sidewalks.

Implementation 5-E(4): Increase enforcement of pedestrian safety laws and regulations, focusing attention on areas of high pedestrian volumes and in activity centers and Transit Oriented Districts (TODs).

Implementation 5-E(5): Encourage schools, safety organizations, and law enforcement agencies to provide information/instruction regarding pedestrian safety, focusing on accident prevention and education of roadway users regarding their responsibilities when driving, bicycling, and walking.

Implementation 5-E(6): Work toward completion of street lighting systems on all Arterial and Collector streets, and facilitate the formation of neighborhood street lighting districts to provide appropriate street lighting on local streets.

Air Transportation

GOAL 6: To facilitate the provision of efficient, safe, and competitive movement of people and goods to and from the Rogue Valley International-Medford Airport, recognizing the value of the Rogue Valley International-Medford Airport as a regional resource.

Policy 6-A: The City of Medford shall encourage and support the operation, maintenance, and expansion of facilities and services provided at or near the Rogue Valley International - Medford Airport that accommodate domestic and international passenger air travel services, air cargo, charter flight operations, and airport shuttle service, while balancing adverse community impacts.

Implementation 6-A(1): Encourage the Jackson County Airport Authority to coordinate implementation of the *Rogue Valley International-Medford Airport Master Plan*, and any updates, with the City.

Implementation 6-A(2): Provide for transportation improvements that increase vehicular, pedestrian, bicycle, and public transportation connections to the Rogue Valley International-Medford Airport, and encourage direct transit service to the airport passenger terminal when warranted.

Implementation 6-A(3): Prepare for consideration by the City Council, amendments to the *Medford Comprehensive Plan* that provide for the types and levels of public facilities and services needed to support development located at or planned for the airport, including transportation facilities and services, as required by OAR 660-013 "Airport Planning". Consider the airport environs as a priority area for providing urban levels of public facilities and services.

Implementation 6-A(4): Prepare for consideration by the City Council, amendments to the *Medford Comprehensive Plan* that include the maps and information required by OAR 660-013 "Airport Planning". If the airport sponsor does not provide the economic and use forecast information required by the OAR, the City may limit the airport boundary to areas currently devoted to the airport uses described in the OAR.

Implementation 6-A(5): Prepare for consideration by the City Council ordinances to carry out the requirements of OAR 660-013 "Airport Planning", which require an Airport Safety Overlay Zone to promote aviation safety, if the currently adopted Airport Approach (A-A) and Airport Radar (A-R) Overlay Zoning Districts are not in compliance.

Implementation 6-A(6): Prepare for consideration by the City Council ordinances to carry out the requirements of OAR 660-013 "Airport Planning" regarding airport compatibility, consistent with applicable statewide planning requirements.

Implementation 6-A(7): Regularly review the *Medford Comprehensive Plan Map* and *Land Development Code* provisions to assure adequate mitigation of aviation impacts, and to assure that land uses near the Rogue Valley International-Medford Airport are compatible with and support airport operations, and minimize noise and safety conflicts and community impacts.

Freight Movement

GOAL 7: To facilitate the provision of a multi-modal transport system for the efficient, safe, and competitive movement of goods and services to, from, and within the Medford planning area.

Policy 7-A: The City of Medford shall promote accessibility to transport modes that fulfill the needs of freight shippers.

Implementation 7-A(1): Develop and adequately sign a street system that provides direct and efficient access to and between industrial and commercial centers, regional intermodal freight facilities, and statewide transport corridors.

Implementation 7-A(2): Utilize street design standards that meet the weight and dimensional needs of trucks for streets that serve industrial and commercial areas and those designated as "truck routes".

Implementation 7-A(3): Encourage the development of railroad freight services to industrial and commercial areas.

Implementation 7-A(4): Encourage the development of air freight services at the Rogue Valley International-Medford Airport.

Implementation 7-A(5): Encourage the development of intermodal freight transfer facilities.

Implementation 7-A(6): Review results of RVMPO Freight Study and incorporate these into the *Medford Transportation System Plan* as appropriate.

Policy 7-B: The City of Medford shall strive to balance the needs of moving freight with community livability.

Implementation 7-B(1): Work to increase freight transport safety awareness, and promote commercial vehicle safety programs provided by public or private agencies and organizations.

Implementation 7-B(2): Work with public agencies and private freight service providers to reduce the number and severity of commercial transport-related accidents.

Implementation 7-B(3): Encourage responsible agencies to develop and enforce regulations assuring the safe transport of hazardous materials through the Medford planning area, and prepare to respond to emergencies involving the transport of hazardous materials.

Implementation 7-B(4): Employ physical and/or legal measures to reduce through-commercial vehicle traffic on residential streets.

Implementation 7-B(5): Work with railroads and appropriate state agencies to minimize the blockage of public streets at railroad crossings to facilitate traffic movement, especially emergency service vehicles.

Implementation 7-B(6): Consistent with the Oregon Rail Plan, establish city policy that seeks to avoid or minimize the number of future railroad at-grade crossings when new streets are planned; avoids creating intersections of major streets and railroads where possible, locates new parallel streets at least 500 feet from railroads to allow for industrial development between the tracks and the roadway, and plans community development with sensitivity to rail noise and other potential conflicts.

Implementation 7-B(7): Coordinate on-going maintenance and repair of streets at existing at-grade rail crossings with applicable owner/operator of railroad trackage.

Policy 7-C: The City of Medford shall promote accessibility to, protection of, and the appropriate location of regional pipeline systems.

Transportation and Land Use

GOAL 8: To maximize the efficiency of Medford's transportation system through effective land use planning.

Policy 8-A: The City of Medford shall facilitate development or redevelopment on sites located where best supported by the overall transportation system that reduces motor vehicle dependency by promoting walking, bicycling and transit use. This includes altering land use patterns through changes to type, density, and design.

Implementation 8-A(1): Through revisions to the *Medford Comprehensive Plan* and *Land Development Code*, provide opportunities for increasing residential and employment density in locations that support increased use of alternative travel modes, such as along transit corridors.

Implementation 8-A(2): Maintain and continue enforcement of Land Use Development Code provisions which require new development to accommodate multi-modal trips by providing bicycle racks, connecting sidewalks, building entrances near the street, and transit facilities.

Policy 8-B: The City of Medford shall undertake efforts to increase the percentage of dwelling units and employment located in Medford's adopted Transit Oriented Districts (TODs), consistent with the targeted benchmarks in the "Alternative Measures" of the *2001-2023 Rogue Valley Regional Transportation Plan* (RTP).

Implementation 8-B(1): Through revisions to the *Medford Comprehensive Plan* and *Land Development Code*, pursue changes to planned land uses to concentrate employment, commercial, and high density residential land uses in Transit Oriented Districts (TODs).

Implementation 8-B(2): Complete and adopt a land use/transportation plan, design guidelines, street and streetscape standards and implementing ordinances for the SE Medford TOD, the West Medford TOD and the Delta Waters TOD, and mixed-use areas.

Implementation 8-B(3): Review and revise the *Land Development Code* to define "mixed-use development" for purposes of tracking this type of development. In the interim, the definition of mixed-use development contained in the TPR will be used.

Implementation 8-B(4): Establish a mechanism like that discussed in Appendix I of the TSP entitled "Development Tracking" for the purpose of tracking mixed-use development within the City consistent with the requirements of the RTP Alternative Measures 5 and 6.

Development and Evaluation of Transportation System Alternatives and Priorities

The Medford *Transportation System Plan* builds on the analysis of mode-specific improvement needs and the assessment of the intermodal dependencies, relationships and alternatives that was incorporated into the 2002 *Regional Transportation Plan*. The approach taken in developing the Medford TSP was based on the identification, analysis and evaluation of a series of significant policy choices for the auto, transit, bicycle, pedestrian and truck freight modes. These choices not only provided direction for mode-specific action plans, but also influenced the manner in which each modal plan was integrated into the overall TSP. The policy choices can be equated to transportation system alternatives in that they provided a clear range of options from which the highest priority needs for each mode and for the overall TSP could be identified. The policy choices:

- Influenced the nature and extent of street system improvements including TSM strategies based on an evaluation of alternative level of service standards and functional classification system refinements.
- Identified a range of transit service and facility improvement options including TDM strategies based on the different options available to the City for working with RVTD.
- Determined priorities and improvements for the bicycle and pedestrian system that reflect community goals for safe travel, modes choices and neighborhood livability.
- Addressed freight mobility needs – particularly in relation to street system improvement needs and priorities.
- Identified and assessed transportation/land use strategies that influence travel demand and, ultimately, the urban form of the city.

Additional analysis was conducted to evaluate improvement needs and options for air transportation, rail, intercity bus, and other modes largely based on information contained in the Regional Transportation Plan or from other relevant and recent studies.

Prioritizing Options

The TSP identifies numerous street, intersection, bicycle, pedestrian and transit projects to meet existing and future multi-modal travel needs. Recognizing that the identified needs outstrip the available funding from existing revenue sources, it was important to determine which projects or groups of projects should be funded and when the project(s) should be constructed. Several factors were considered in making these determinations:

- How critical is the need for the project(s)?
- How urgent is that need?
- Is the City meeting its benchmark commitments to the RTP Alternative Measures (for increasing bicycle and pedestrian facilities on arterial and collector streets and for helping to increase the share of all trips that are made by transit)?
- Are the projects supportive of the City's land use and other Comprehensive Plan goals?
- Does the project(s) support the City's Vision Statement for Transportation, and if so, how well?
- Does the range of projects identified for funding in various time periods include a reasonable mix of representatives from all travel modes?

To address these larger policy issues, the City's Transportation Vision Statement and the goals and policies presented earlier in this chapter were used to develop project prioritization and/or evaluation criteria to determine first, which projects would be funded (given that the identified improvement needs outstripped the anticipated resources); and second, to rank and group projects for short-range, medium-range and long-range implementation

Project prioritization criteria included the following:

- Cost-effectiveness potential (benefits in relation to project costs)
- Potential for safety improvement (a high priority)
- Effectiveness in address existing and likely future congestion problems
- Enhances multi-modal transportation options
- Satisfies the RTP Alternative Measures designed to reduce reliance on the single occupant auto and to reduce area wide vehicle miles of travel to improve air quality and enhance community quality of life
- Supports community economic development needs (including needs that relate to Medford's role as a regional center)
- Supports and/or facilitates better freight movement
- Improves transportation system connectivity (including autos, pedestrians and bicyclists)

- Potential for multi-agency support and funding
- Support for city's goals to encourage compact urban development, particularly in the Transit-Oriented Districts (TODs)
- Potential for the project to leverage additional funding that would not otherwise come to the region
- Supports environmental stewardship goals
- Supports enhanced neighborhood livability

These criteria were applied to each identified improvement project. As the criteria were applied, some subjective assessment of the projects was necessary. Consideration was also given to placing greater emphasis on projects that improved safety, addressed existing or future congestion problem, were cost-effective, addressed a multi-modal travel need, or would help the City meet regional commitments to the RTP Alternative Measures. Both the subjective assessment and the relative weighting that a project received reflected collective input from the TSP committees and the general public.

Financing Transportation System Improvements

This section summarizes transportation revenue sources and programs currently used by the City of Medford, projected revenue over the next 20 years, and potential new revenue sources to address a projected revenue shortfall.

Current Transportation Revenue Sources

The City of Medford finances capital improvements, maintenance and operation for its transportation system with revenues from a variety of sources including the following:

State Gas Taxes are collected by State based on the amount of gasoline delivered, and are distributed to local jurisdictions based on population. While the gas tax provides about ¼ of the City's overall transportation system revenue, it is unlikely to keep pace with future maintenance needs. Improved fuel efficiency may reduce the future purchasing power of the gas tax.

Street Utility Fees are fees assessed to all businesses and households in the City and are used to pay for maintenance projects. Street fees are based on generic trip generation rates for particular land use categories, since actual motor vehicle travel on City streets cannot be easily monitored. Street utility fees are only used to pay for maintenance projects.

System Development Charges are fees paid by land developers to cover a portion of the increased system capacity needed to accommodate new development. Development charges are calculated to include the costs of impacts on adjacent areas or services, such as increased school enrollment, parks and recreation use, or traffic congestion.

Street Bonds can be of two types: Revenue Bonds and General Obligation Bonds. Revenue bonds are typically secured by local gas tax receipts, street utility fees or other transportation-related stable revenue stream. Two revenue bond sales have been issued by Medford over the past five years to fund the 17-project list of street improvements. General Obligation Bonds, which must be approved by majority of the voters and which are typically secured by a property tax, also can be used to finance transportation improvements.

Grant Revenue is available through a number of state and federal programs for street, bicycle/pedestrian and transit improvements. Grant programs the City has pursued successfully include:

- The federal Congestion Mitigation and Air Quality program (CMAQ);
- Community Development Block Grants (CDBG) from the federal Housing and Urban Development Agency (HUD);

- Transportation and Growth Management (TGM) grants administered through ODOT for planning and design of transportation facilities;
- ODOT local access street grants; and
- ODOT bicycle and pedestrian facility grants.

Other Revenue from a variety of smaller sources most of which are generated locally including:

- Pedestrian-scale Street Light Utility Fees
- Developer share of specific projects
- Assessment Districts
- Signal Maintenance Charges to ODOT
- Developer Street Lighting Fees
- Developer Street Signing Fees
- MURA contributions
- Jurisdictional Transfers from Jackson County
- Jurisdictional Transfers from ODOT
- Fees from Moratorium Street Cuts

The City of Medford accounts for each of these revenue sources by placing them into one of five specific street improvement funds: These funds and their primary uses are summarized below:

1. **State Gas Tax Fund -** finances capital improvements, bond payments and personnel costs. This fund is often used for the "local match" required funds from various state and federal grant programs.

2. **Street Utility Fee Fund** - finances only maintenance and preservation, including associated personnel costs.

3. **System Development Charge (SDC) Fund -** assessed on new development and can be used only for capital improvements.

4. **Street Bond Fund** - used only for capital improvements on the 17-project list, this revenue source was authorized by City Council several years ago and is largely depleted.

5. **Street Construction Fund** - applied mainly to capital improvements but can also be used for maintenance and preservation. The street construction fund is accumulated from a variety of grant programs, fees and fund transfers. Grant programs include federal congestion management and air quality (CMAQ) grants, federal block grants, and various smaller ODOT grant programs. Inter-jurisdictional transfers (including those from ODOT and Jackson County for fiber optic cable installation and to cover the cost of urban upgrades for County roads coming to the City) are included, as are contributions from private developers for streetlights and street signs, and developer shares of specific street improvements. Funds from MURA, the City's redevelopment agency, are also included in the street construction fund for partial funding of improvements within the downtown core area.

Projected 20-Year Transportation Revenues

Based on data provided by the City's Public Works and Finance Departments, total revenue expected to be received from transportation sources by these funds is projected to be approximately $195 million over the next 20 years:[21]

- 2004-2008 (short-term): $51,533,000
- 2009-2013 (mid-term): $56,789,000
- 2014-2023 (long-term): $87,347,000

In general, eligible expenditures for these revenues (e.g., operations, maintenance and/or capital improvements) are fixed by revenue type. For example, fees collected for system maintenance cannot be used for capital expenditures without modifying the fee's enabling legislation. State gas tax revenues are able to be used for capital improvements, operations and maintenance, and bond payments. SDC's cannot be used for operations and maintenance, and street utility fees cannot be used for capital improvements.

The amount of revenue collected is not as strictly controlled. Fees assessed to fund existing operations and maintenance costs can be enacted, increased and decreased by the City Council without a vote, provided statutory requirements are met for public comment. If statutory requirements are met for public comment and public hearing, City Council can also increase or decrease fees collected for capital expenditures, such as System Development Charges, without voter approval. However, these decisions have potential political and economic consequences. For example, an increase in System Development Charges could drive new development to nearby communities that have lower fees.

Under the City's adopted ordinances for SDCs and street utility fees, annual revenues from both programs are scheduled to decrease beginning in 2014. SDC revenue is scheduled to decrease by 50% between 2014 and 2017 when the revenue bond repayments are complete. The street utility fund is slated to decrease by 35% between 2016 and 2019. Without an increase in transportation revenue, it is anticipated that, beginning in about 2019, existing revenues would be insufficient to maintain current levels of transportation operations and maintenance. No revenue would be available for capital improvements, leaving a substantial unfunded revenue gap. Without additional revenue increases, many of the basic safety, congestion relief, urban upgrade or multi-modal (e.g., bicycle and pedestrian) improvement projects that have been identified in the modal plans could not be constructed.

Based on policy direction received during development of the TSP and to partially fund the anticipated revenue gap, it was assumed that increases of 3 percent per year for the entire 20-year planning period would be authorized by the City for both Street Utility Fees and System Development Charges. While not entirely eliminating the anticipated gap between identified transportation needs and available financial resources, these revenue increases would provide sufficient funding to implement a wide variety of multi-modal improvement projects. Typical projects included in the TSP multi-modal action plan include the remainder of the 17-project list; safety projects that address existing high crash rate locations and other safety needs; projects that address current and anticipated congestion problem locations; projects to encourage the use of alternative travel modes such as walking, bicycling and transit through the provision of needed infrastructure; economic development projects; and projects that make more efficient use of the existing transportation system.

Revenue estimates based on existing funding sources pending legislation to increase state transportation revenues (Medford's estimated share), and the SDC and Street Utility increases are summarized in Table 13-1 for three time periods. These time periods include:

[21] Per spreadsheets from Cory Crebbin, Public Works director dated 6/20/03. Grants and other miscellaneous income includes assumed HUD (CBDG) and CMAQ grant funding for sidewalk improvements; a grant from ODOT for installation of fiber optic communications equipment; and approximately $600,000 from the Medford Urban Renewal Agency (MURA) as that agency's share of transportation improvements in the downtown core.

- First five years of the TSP (fiscal year 2004 through 2008)
- Second five years of the TSP (fiscal year 2009 through 2013)
- Last ten years of the TSP (fiscal year 2014 through 2023)

Table 13-1
City of Medford 20-Year Annual Transportation Revenue Estimates

Budget Item	**2004-2008**	**2009-2013**	**2014-2023**
Revenue Estimates			
Existing Revenue Sources:			
- State Gas Tax	$12,000,000	$12,000,000	$24,000,000
- Street System Development Charges (SDC)	$11,905,000	$11,920,000	$15,950,000
- Street Utility Fees	$24,128,000	$29,369,000	$44,447,000
- Miscellaneous (CBDG, grants, MURA, etc.)	$1,250,000	$1,250,000	$2,500,000
- Jurisdiction Transfers from Jackson County	$2,250,000	$2,250,000	$450,000
Total Estimated Revenue from Existing Sources	*$51,533,000*	*$56,789,000*	*$87,347,000*
Anticipated Revenue Sources:			
- State Transportation Revenue Increase	$2,500,000	$2,500,000	$5,000,000
- SDC Increase of 3% per year	$643,000	$1,774,000	$7,300,000
- Street Utility Fee Increase of 3% per year	$1,003,000	$2,738,000	$11,038,000
Total Estimated Revenue from Anticipated Sources	*$4,146,000*	*$7,012,000*	*$23,338,000*
Total Estimated Revenues	**$55,679,000**	**$63,801,000**	**$110,685,000**
Fixed Expenditures			
Operating Expenses (staff, indirect, non-road capital)	$5,343,000	$6,820,000	$19,812,000
Revenue Bond Repayment (17-project list)	$7,365,000	$7,365,000	$3,297,000
Maintenance	$19,462,000	$24,905,000	$72,352,000
South Medford Interchange Local Match	$4,037,000	$4,037,000	$807,000
Total Fixed Expenditures	**$36,207,000**	**$39,090,000**	**$96,268,000**
Balance Available for Capital Street Projects	$19,472,000	$24,711,000	$14,417,000
Fund Balance Carried Forward	$10,002,000	$0	$0
Total Revenue Available for Capital Projects	**$29,474,000**	**$24,711,000**	**$14,417,000**

The net result of the analysis documented in Table 13-1 is that the City will have available for expenditure nearly $30 million during the first five years of the 20-year planning period. Approximately one-third of this revenue is expected to be carried over from prior fiscal years. During the second five-year period, approximately $24 million is expected to be available for multi-modal transportation system improvements. During the last ten-year period, approximately $14 million is projected to be available for transportation improvements. This drop in revenue is a direct result of the drop in the base rates charged for SDCs and street utility fees as discussed above.

Costs and Action Plans

This section presents a summary of the projects to be funded over the 20-year planning period that have been organized into three categories that reflect short- (2004-2008), medium- (2009-2013), and long-term (2014-2023) implementation. Projects within these tables have been further sorted into groups that reflect the project's primary purpose including: 17-project list, safety projects, projected intended to address existing or future congestion problems, projects that support development of alternative transportation modes, high priority TSM and economic development projects, and all other projects. A fourth table presents Tier 2 projects for which a need has been identified but no funding is currently anticipated to be available. A fifth table of Tier 3 projects is also identified. This list includes potential projects which are also unfunded and that may require further refinement planning to clarify purpose and need. Tier 3 projects are assumed for implementation beyond 2023 and were originally identified as Tier 2 projects in the *2001-2023 Rogue Valley Regional Transportation Plan* or as jurisdictional transfer projects from Jackson County to the City of Medford.

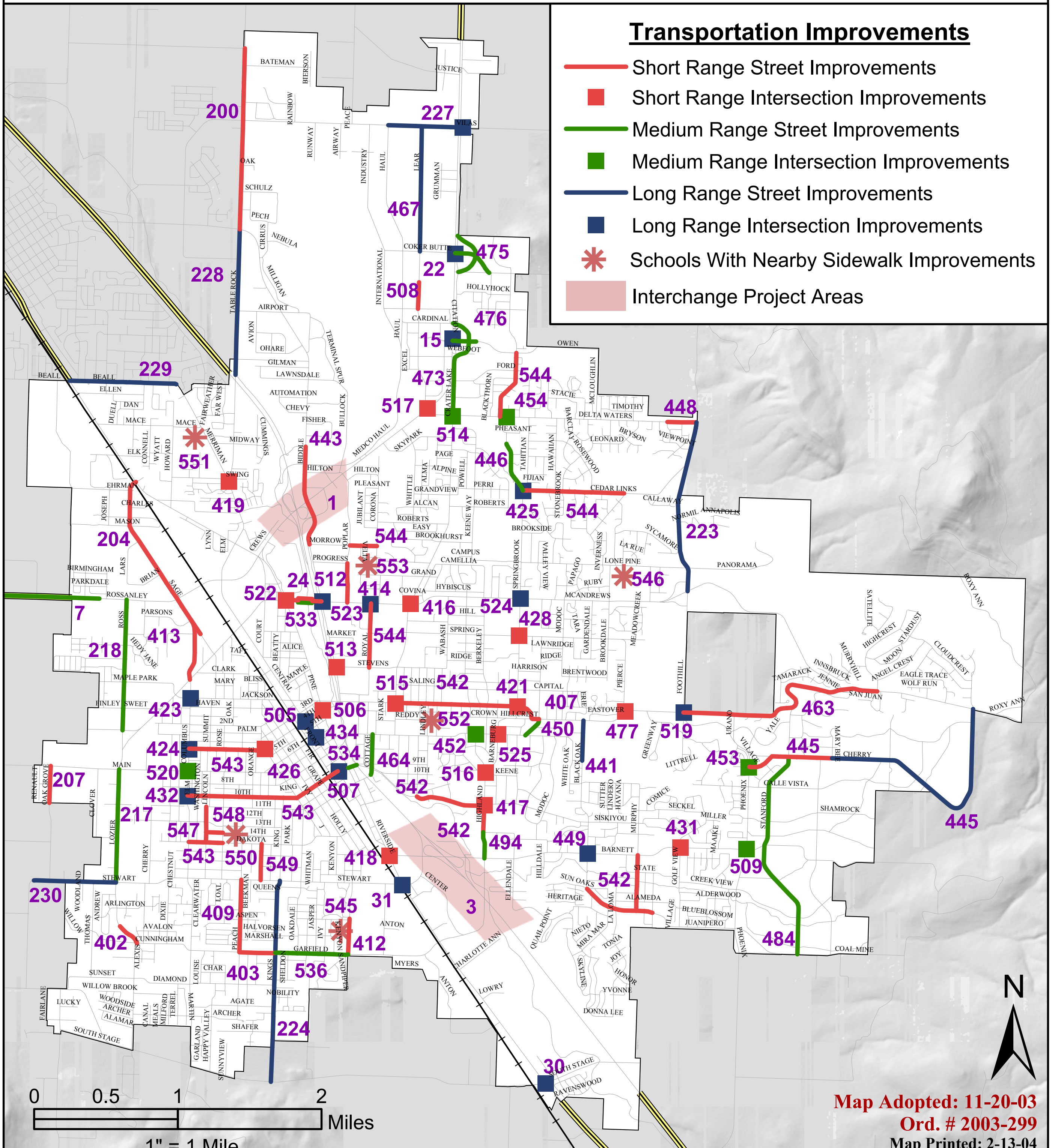
As indicated in the project phasing tables, a short-fall will likely exist between the total improvement needs (Tier 1 and Tier 2 projects) and anticipated revenue over the 20-year planning period with total project needs identified at nearly $120 million and anticipated revenue expected to be about $67 million (assuming both existing revenue sources and the 3 percent annual increases in SDCs and Street Utility Fees as described above). The remaining difference between project needs and anticipated revenues over the 20-year period is estimated to be approximately $53 million.

Tables 13-2 through 13-4 present the Tier 1 list of improvement projects identified for funding and implementation in the Medford UGB by the City of Medford, ODOT and Jackson County. Tier 1 projects are also illustrated in Figure 13-1. Table 13-2 depicts projects to be implemented within the short-range planning period (fiscal year 2004 through 2008). Table 13-3 illustrates projects in the medium-range implementation period (fiscal year 2009 through 2013), while Table 13-4 represents the long-range period (2014 through 2023).

Table 13-2
Transportation System Improvements
Medford UGB – Short-Range (2004-2008)

Project ID No.	Location	Improvements	Funding Agency: Medford	Funding Agency: Other	Cost
Medford Tier 1 Improvements – Short Range (2004-2008)					
402	Lozier Lane, 500' from Cunningham north	Construct new three lane road with bike lanes and sidewalks	♦		$500,000
403	Garfield Rd, Peach to Kings Highway	Widen to three lanes with curb, gutter, bike lanes and sidewalks	♦		$1,600,000
407	Jackson St, Berkeley Way to Valley View Dr	Realign and widen to three lanes with curb, gutter, bike lanes and sidewalks	♦		$2,750,000
409	Peach St, Stewart to Garfield	Widen to two lanes with curb, gutter, bike lanes and sidewalks	♦		$1,700,000
412	S Holly, Garfield to Holmes	Construct new three lane road with bike lanes and sidewalks	♦		$3,700,000
413	Columbus Ave, McAndrews to Sage	Realign, extend Columbus to Sage Rd, and widen to three lanes with bike lanes and sidewalks	♦		$3,000,000
414	Poplar, McAndrews to Progress	Widen to three lanes with curb, gutters, bike lanes and sidewalks	♦		$600,000
416	Crater Lake at McAndrews	Add second NBL lane, second EBL and EBR lane	♦		$1,600,000
417	Siskiyou at Highland	Realign intersection, add NBL lane, extend EBR lane, signalize	♦		$750,000
419	Table Rock at Merriman	Signalize with intersection improvements or roundabout.	♦		$750,000
448	Delta Waters Rd, Provincial to Foothill	Widen to three lanes with curb, gutter, bike lanes and sidewalks	♦		$1,000,000
		Sub-total 17-Project List			***$17,950,000***

Figure 13-1: Planned Tier 1 Medford Transportation Improvements



999 = Project ID Number
(See Tables 13-2, 13-3 & 13-4 for project ID number detail)

Other Streets
Highway
UGB
Railroad

The Geographic Information Systems (GIS) data made available on this map are developed and maintained by the City of Medford and Jackson County. GIS data is not the official representation of any of the information included. The maps and data are made available to the public solely for informational purposes.

THERE MAY BE ERRORS IN THE MAPS OR DATA. THE MAPS OR DATA MAY BE OUTDATED, INACCURATE, AND MAY OMIT IMPORTANT INFORMATION. THE MAPS OR DATA MAY NOT BE SUITABLE FOR YOUR PARTICULAR USE. THIS INFORMATION IS BEING PROVIDED "AS IS" OR "WITH ALL FAULTS". THE ENTIRE RISK AS TO THE QUALITY OR PERFORMANCE IS WITH THE BUYER AND IF INFORMATION IS DEFECTIVE, THE BUYER ASSUMES THE ENTIRE COST OF ANY NECESSARY CORRECTIONS OR SERVICING.

Table 13-2 Continued
Transportation System Improvements
Medford UGB – Short-Range (2004-2008)

Project ID No.	Location	Improvements	Funding Agency Medford	Funding Agency Other	Cost
Medford Tier 1 Improvements – Short Range (2004-2008) Cont.					
421	Jackson at Sunrise	Install new traffic signal	♦		$225,000
426	4th at Oakdale	Install new traffic signal (MURA/City)	♦	♦	
428	Springbrook at Spring	Install new traffic signal	♦		$225,000
431	Barnett at Golfview	Install new traffic signal	♦		$225,000
440	Other identified infill locations	City sidewalk improvements (see Table 10-11 for projects)	♦	♦	
463	Hillcrest, N. Phoenix to Highcrest	Add sidewalks	♦		
477	Hillcrest Rd at Pierce	Install new traffic signal	♦		$175,000
505	4th at Central	Install WBL; convert WB approach to left, left, thru (City/MURA)	♦	♦	
506	4th at Riverside	Extend NBR lane (City/MURA)	♦	♦	
516	Way/Barneburg Road	Install all-way stop (potential roundabout due to odd approach alignment)	♦		
518	High crash rate locations	Safety improvement projects as needed (see Table 5-10)	♦		$250,000
	McAndrews at Riverside	Restripe WB approach to thru, thru/right, right and modify signal	♦		
525	Main St at Barneburg	Install new traffic signal	♦		$175,000
529	Other identified infill locations	City bicycle lane improvements (see Table 10-5 for projects)	♦	♦	
530	Arterial or collector locations as needed	Install new or upgrade existing traffic signals	♦	♦	
		Sub-total Safety			***$3,795,000***
418	Barnett at Riverside	Add third northbound through lane	♦		$750,000
513	Biddle at Stevens	Add right-turn overlap on WB approach	♦		$15,000
515	Crater Lake at Jackson	Add left-turn lanes on all approaches and protect movements	♦		$1,690,000
517	Hwy 62 at Delta Waters	Add second WBL lane, second EBT lane and EBR lane – ODOT share (not included in total)		♦	
517	Hwy 62 at Delta Waters	Add second WBL lane, second EBT lane and EBR lane – Medford share	♦		$400,000
		Sub-total Congestion			***$2,855,000***
	Biddle, Midway to Morrow	Restripe for bike lanes	♦		$10,000
445	Cherry Lane, N Phoenix Rd to Hillcrest	Widen to three lanes with bike lanes and sidewalks (North Phoenix Road to 500 feet west of Stanford Avenue)	♦		$1,000,000
527	At transit stops	Improvements at transit stops (see Table 7-5)	♦	♦	$300,000

Table 13-2 Continued
Transportation System Improvements
Medford UGB – Short-Range (2004-2008)

Project ID No.	Location	Improvements	Funding Agency Medford	Funding Agency Other	Cost
Medford Tier 1 Improvements – Short Range (2004-2008) Cont.					
542	Siskiyou, Jackson, Highland, Juanipero and Murphy	Remove on-street parking and stripe for bicycle lanes, add bicycle signage (see Table 10-5)	♦		$41,000
543	10th, Dakota and 4th	Remove on-street parking and stripe for bicycle lanes, add bicycle signage (see Table 10-5)	♦		$41,000
544	Royal, Morrow, Cedar Links and Springbrook	Remove on-street parking and stripe for bicycle lanes, add bicycle signage (see Table 10-5)	♦		$32,000
545	Jefferson School area (Holmes, Kenyon)	Install sidewalks	♦		$60,000
	Lone Pine School area (Spring)	Install sidewalks	♦		$136,000
547	Washington School area (Plum, 11	Widen street to add curb, gutter and sidewalks	♦		$240,000
548	Washington School area (Withington, Plum to Hamilton)	Install sidewalks	♦		$35,000
549	Washington School area (Newtown, Dakota to Stewart)	Install sidewalks	♦		$30,000
550	Washington School area (Prune, 11th, 12th)	Install sidewalks	♦		$194,000
551	Howard School area (Mace, Howard)	Install sidewalks	♦		$420,000
	Roosevelt School area (Ashland, Lindley, Bessie, Hillcrest, Oregon)	Install sidewalks	♦		$410,000
553	Wilson School area (Grand)	Install sidewalks	♦		$145,000
		Sub-total Alternative Modes			***$3,094,000***
508	Lear Way, Commerce to 1,000' north	Construct new three lane road with bike lanes and sidewalks	♦		$400,000
528	Truck route locations	Install truck routing signs	♦	♦	
532	Arterial or collector locations		♦	♦	
538	Arterial and collector streets as needed	Install ITS equipment to facilitate traffic flow and enhance system communications	♦		
		Sub-total High Priority TSM/Economic Development			***$1,250,000***
		Medford Short-Range Costs -			**$28,944,000**
		Available Funding -			**$29,000,000**
ODOT Tier 1 Improvements – Short Range (2004-2008)					
1	Hwy 62/N Medford Interchange Corridor Solutions	Construct five lane overpasses, widen bridge, reconfigure interchange, intersection improvements at Poplar - Federal share		♦	($16,661,000)

Table 13-2 Continued
Transportation System Improvements
Medford UGB – Short-Range (2004-2008)

Project ID No.	Location	Improvements	Funding Agency Medford	Funding Agency Other	Cost
ODOT Tier 1 Improvements – Short Range (2004-2008) Cont.					
1	N Medford Interchange	Construct new interchange – ODOT/MPO share		♦	$18,339,000
3	S Medford Interchange	Construct new interchange – ODOT share		♦	$35,700,000
3	S Medford Interchange	Construct new interchange – Medford/Developer/MURA share	♦	♦	($15,000,000)
24	McAndrews, Biddle to Riverside	Reconstruction of overpass to accommodate added lanes (assumed to be part of I-5 seismic retrofit project)		♦	$0
		ODOT Short-Range Costs -			**$54,039,000**
		Available Funding -			**$54,039,000**
Jackson County Tier 1 Improvements – Short Range (2004-2008)					
200	Table Rock Road, Pine/ Biddle to Wilson	Widen to five lanes with bike lanes and sidewalks	♦	♦	$4,160,000
204	Sage Road, Posse to Ehrman Way	Widen to three lanes with bike lanes and sidewalks. Intersection improvements at Hwy 238.	♦	♦	$1,760,000
207	Oak Grove Rd, Medford UGB to Hwy 238	Widen to two & three lanes with bike lanes and sidewalks	♦	♦	$390,000
		Jackson County Short-Range Costs -			**$6,310,000**
		Available Funding -			**$6,310,000**

Source: *2001-2023 Rogue Valley Regional Transportation Plan*, 2002 and *LOS Study*, JRH Transportation Engineering, 2003.

Table 13-3
Transportation System Improvements
Medford UGB – Medium-Range (2009-2013)

Project ID No.	Location	Improvements	Funding Agency Medford	Funding Agency Other	Cost
Medford Tier 1 Improvements – Medium Range (2009-2013)					
440	Other identified infill locations	City sidewalk improvements (see Table 10-11 for projects)	♦	♦	
452	Highland Dr at Main St	Install new traffic signal	♦		$225,000
453	Lane	Install new traffic signal	♦		$225,000
454	Delta Waters Rd at Springbrook Rd	Waters, add signal and WBR	♦		$575,000
518	High crash rate locations	Safety improvement projects as needed (see Table 5-10)	♦		$250,000
	Other identified infill locations	City bicycle lane improvements (see Table 10-5 for projects)	♦	♦	
530	locations as needed	Install new or upgrade existing traffic signals	♦	♦	
		Sub-total Safety			***$2,525,000***
450	Valley View Dr, Main and Hillcrest	Geometric improvements	♦		$500,000

Table 13-3 Continued
Transportation System Improvements
Medford UGB – Medium-Range (2009-2013)

Project ID No.	Location	Improvements	Funding Agency: Medford	Funding Agency: Other	Cost
Medford Tier 1 Improvements – Medium Range (2009-2013) Cont.					
473	Crater Lake Ave, Delta Waters to Owen Drive	Widen to three lanes with bike lanes and sidewalks	♦	♦	
509	Barnett at N. Phoenix	Widen and add WBR lane and second EBL lane	♦		$900,000
514	Crater Lake at Delta Waters	Add EBL and WBL turn lanes and protect movements. Add EBR lane	♦		
520	Main at Columbus	Add NBL and SBL lanes and protect movements. Extend second WB lane further west. Add SBR lane.	♦		$1,350,000
		Sub-total Congestion			***$5,010,000***
446	Links to Delta Waters	Widen to three lanes with curb, gutter, bike lanes and sidewalks	♦		
464	Cottage, 12	Remove parking and re-stripe with bike lanes	♦		$5,000
494	Highland, Barnett Rd to Siskiyou Blvd	Widen to three lanes with bike lanes and sidewalks	♦		$1,280,000
	At transit stops	Improvements at transit stops (see Table 7-5)	♦	♦	
		Sub-total Alternative Modes			***$2,835,000***
531	Arterial or collector locations as needed		♦		$400,000
538	Arterial and collector streets as needed	Install ITS equipment to facilitate traffic flow and enhance system communications	♦		$200,000
		Sub-total High Priority TSM/Economic Development			***$600,000***
475	Coker Butte Rd, Crater Lake Hwy to east of Crater Lake Ave	Move Coker Butte Rd north and realign Crater Lake Ave	♦	♦	$2,050,000
476	Owen Drive (formerly Elliot Rd), Hwy 62 to e/o Crater Lake Avenue	Realign Crater Lake Avenue to provide separation from Highway 62 (Cardinal becomes right in/right out and Elliot intersection is closed)	♦	♦	$2,050,000
484	Stanford, Coal Mine Rd to Cherry Lane	Construct new three lane road with bike lanes and sidewalks	♦		$5,330,000
533	McAndrews Rd Bridge at Bear Creek	Repair bridge (assume 80% federal share/20% city share – city share shown)	♦		$1,000,000
534	10th Street Bridge at Bear Creek	Repair bridge (assume 80% federal share/20% city share – city share shown)	♦		$1,000,000
536	Garfield, Holly to Kings Highway	Widen to provide curb, gutter, bike lanes and sidewalk	♦		$1,602,000
		Sub-total Other Projects			***$13,032,000***
		Medford Medium-Range Costs -			**$24,002,000**
		Available Funding -			**$24,000,000**

Table 13-3 Continued
Transportation System Improvements
Medford UGB – Medium-Range (2009-2013)

Project ID No.	Location	Improvements	Funding Agency Medford	Funding Agency Other	Cost
ODOT Tier 1 Improvments – Medium Range (2009-2013)					
7	Hwy 238 Unit 2 – Hanley Road and Rossanley Drive	Widen to two lanes with bike lanes and sidewalks (on Rossanley)		♦	$9,800,000
		ODOT Medium-Range Costs -			**$9,800,000**
		Available Funding -			**$9,800,000**
Jackson County Tier 1 Improvments – Medium Range (2009-2013)					
217	Lozier Lane, Stewart to Jacksonville Hwy	Widen to three lanes with bike lanes and sidewalks	♦	♦	$1,280,000
218	N Ross Lane, McAndrews Rd to Rossanley Rd	Widen to three lanes with bike lanes and sidewalks	♦	♦	$1,170,000
		Jackson County Medium-Range Costs -			**$2,450,000**
		Available Funding -			**$2,450,000**

Source: *2001-2023 Rogue Valley Regional Transportation Plan*, 2002 and *LOS Study*, JRH Transportation Engineering, 2003.

Table 13-4
Transportation System Improvements
Medford UGB – Long-Range (2013-2023)

Project ID No.	Location	Improvements	Funding Agency Medford	Funding Agency Other	Cost
Medford Tier 1 Improvement s – Long Range (2013-2023)					
423	Jackson at Columbus	Install new traffic signal	♦		$225,000
424	Columbus at 4th	Install new traffic signal	♦		$225,000
425	Springbrook at Cedar Links	Install new traffic signal	♦		$225,000
432	10th at Columbus	Install new traffic signal	♦		$225,000
434	6th at Central	Signal upgrade (MURA/City)	♦	♦	$130,000
440	Other identified infill locations	City sidewalk improvements (see Table 10-11 for projects)	♦	♦	$1,000,000
507	10th at Central	Remove parking at intersection and restripe to accommodate third thru lane	♦		$50,000
512	McAndrews at Biddle	Add EBR lane and WBTL lane	♦		$1,800,000
518	High crash rate locations	Safety improvement projects as needed (see Table 5-10)	♦		$500,000
529	Other identified infill locations	City bicycle lane improvements (see Table 10-5 for projects)	♦	♦	$2,000,000
530	Arterial or collector locations as needed	Install new or upgrade existing traffic signals	♦	♦	$500,000
		Sub-total Safety			***$6,880,000***
449	Barnett at Black Oak	Install SBR turn lane	♦		$540,000
519	Hillcrest at N. Phoenix	Add EBR turn lane and provide signal overlap	♦		$390,000
523	McAndrews at Royal	Add second NBL lane from Royal onto McAndrews	♦		$420,000

Table 13-4 Continued
Transportation System Improvements
Medford UGB – Long-Range (2014-2023)

Project ID No.	Location	Improvements	Funding Agency Medford	Funding Agency Other	Cost
Medford Tier 1 Improvement s – Long Range (2014-2023) Cont.					
524	McAndrews at Springbrook	Add SBR lane	♦		$390,000
		Sub-total Congestion			***$1,740,000***
441	Black Oak, Hillcrest to Acorn	Widen to two lanes with curb, gutter and sidewalks	♦		$325,000
445	Cherry Lane, N Phoenix Rd to Hillcrest	Widen to three lanes with bike lanes and sidewalks (eastern ¾)	♦		$3,000,000
527	At transit stops	Improvements at transit stops (see Table 7-5)	♦	♦	$300,000
		Sub-total Alternative Modes			***$3,625,000***
467	Lear Way, Coker Butte to Vilas	Construct new two lane road with bike lanes and sidewalks	♦		$1,600,000
538	Arterial and collector streets as needed	Install ITS equipment to facilitate traffic flow and enhance system communications	♦		$200,000
		Sub-total High Priority TSM/Economic Development			***$1,800,000***
		Medford Long-Range Costs -			**$14,045,000**
		Available Funding -			**$14,000,000**
ODOT Tier 1 Improvement s – Long Range (2014-2023)					
15	Coker Butte Rd at Hwy 62 and Crater Lake Ave	Install new traffic signals	♦	♦	$375,000
22	Owen Drive, Hwy 62 and Crater Lake Ave	Install new traffic signals	♦	♦	$375,000
30	Highway 99 at South Stage Road	Add second northbound left turn lane and southbound right turn lane	♦	♦	$1,790,000
31	Highway 99 at Stewart	Add third SB through lane	♦	♦	$1,000,000
		ODOT Long-Range Costs -			**$3,540,000**
		Available Funding -			**$3,540,000**
Jackson County Tier 1 Improvements – Long Range (2013-2023)					
223	Foothill Rd, McAndrews to Delta Waters	Widen to three lanes with bike lanes and sidewalks	♦	♦	$2,240,000
224	Kings Hwy, South Stage Rd to Stewart Ave	Widen to three lanes with bike lanes and sidewalks	♦	♦	$2,240,000
227	Vilas Rd, Haul Rd to Crater Lake Ave, Hwy 62 at Vilas	Widen to five lanes with bike lanes and sidewalks, Realign Crater Lake Avenue signalize intersection	♦	♦	$1,600,000
228	Table Rock Rd, Bear Creek to Biddle Rd	Widen to three lanes with bike lanes and sidewalks	♦	♦	$1,120,000
229	Beall Lane, Front St. (Hwy 99) to Merriman Rd	Widen to three lanes with bike lanes and sidewalks	♦	♦	$1,120,000
230	Stewart Ave, Hull Rd to Lozier Lane	Widen to three lanes with bike lanes and sidewalks	♦	♦	$960,000
		Jackson County Long Range Costs -			**$9,280,000**
		Available Funding -			**$9,280,000**

Source: *2001-2023 Rogue Valley Regional Transportation Plan*, 2002 and *LOS Study*, JRH Transportation Engineering, 2003.

Table 13-5
Transportation System Improvements
Medford UGB – Tier 2 (Projects without Funding or Beyond 2023)

Project ID No.	Location	Improvements	Funding Agency Medford	Funding Agency Other	Cost
Medford Tier 2 Improvements					
444	N Fir Street Extension	Extend Fir Street as three-lane section from Jackson to McAndrews	♦		$8,676,000
					$8,676,000
			♦		
422	Columbus at Prune	Install new traffic signal	♦		$225,000
427	Crater Lake at Roberts (west)	Install new traffic signal	♦		$225,000
430	Keene at McAndrews	Install new traffic signal	♦		$225,000
	Biddle at Jackson		♦		
511		Add SBL lane and widen Bullock to accommodate the added lane	♦		$700,000
521	McAndrews at Columbus	Add second SBL lane (on McAndrews)	♦		$770,000
526	McAndrews Rd at Foothills ramp terminus	Install signals when warranted	♦		$350,000
	McAndrews at Springbrook	Add second EBL land and widen Springbrook to accommodate the added lane	♦		
541	McAdnrews at Riverside		♦		$290,000
		Sub-total Congestion			***$4,875,000***
447	Table Rock Rd, Merriman Rd to I-5	Widen to three lanes with curb, gutter, bike lanes and sidewalks.	♦		$1,000,000
455	Garfield, Columbus to Peach	Widen to three lanes with bike lanes and sidewalk	♦		$1,074,000
456	Sunset, South Stage Rd to Orchard Home	Widen to provide curb, gutter, bike lanes and sidewalk	♦		$780,000
457	Pierce, Hillcrest to Spring	Widen to provide curb, gutter, bike lanes and sidewalk	♦		$650,000
458	Diamond, Peach to Kings Hwy	Widen to provide curb, gutter, bike lanes and sidewalk	♦		$520,000
459	Main	Widen to provide curb, gutter, bike lanes and sidewalk	♦		$390,000
460	12th, Central to Cottage	Widen to provide curb, gutter, bike lanes and sidewalk	♦		$390,000
461	Barneburg, Keene to Main	Widen to provide curb, gutter, bike lanes and sidewalk	♦		$390,000
462	Edwards, Niantic to Riverside	Widen to provide curb, gutter, bike lanes and sidewalk	♦		$130,000
465	Columbus, South Stage to Stewart	and sidewalks	♦		$2,080,000
466	Spring St, Crater Lake Ave to Sunrise	Widen to five lanes with curb, gutter, bike lanes and sidewalks	♦		$1,920,000
	Spring St, Sunrise to Pierce Rd	Widen to three lanes with curb, gutter, bike lanes and sidewalks	♦		$1,120,000
469	Foothill Rd, Hillcrest to McAndrews Rd	and sidewalks	♦	♦	
470	Hillcrest, Highcrest to Cherry	Widen to three lanes with bike lanes and sidewalks	♦		$1,120,000

Table 13-5 Continued
Transportation System Improvements
Medford UGB – Tier 2 (Projects without Funding or Beyond 2023)

Project ID No.	Location	Improvements	Funding Agency Medford	Funding Agency Other	Cost
Medford Tier 2 Improvements Cont.					
471	Spring St, Pierce to Foothill Rd	Construct new three lane road with bike lanes and sidewalks	♦		$1,100,000
472	Cedar Links Rd, Foothill Rd to 1000' east of Wilkshire Rd	Widen to three lanes with bike lanes and sidewalks	♦	♦	$640,000
474	Holmes, Oakdale to Kenyon	Widen to three lanes with bike lanes and sidewalks	♦		$160,000
478	Coker Butte, Crater Lake Ave to Foothill	Realign and widen to rural two lane with shoulder bikeway	♦		$1,500,000
481	Coal Mine Rd (realigned), N. Phoenix to Santa Barbara Dr	Realign and widen to three lane road with bike lanes and sidewalks	♦		$7,000,000
		Sub-total Alternative Modes			***$23,084,000***
498	Hillcrest, Main St to Foothill Road	Transportation System Management Improvements	♦		$1,904,000
		Sub-total High Priority TSM/Economic Development			***$1,904,000***
420	Main at Hamilton	Signal upgrade	♦		$225,000
433	8th at Hamilton	Signal upgrade	♦		$130,000
435	8th at Central	Signal upgrade	♦		$130,000
436	8th at Orange	Signal upgrade	♦		$125,000
437	Delta Waters, Waterford to Bailey	Curb, gutter, storm drain improvements north side	♦		$100,000
438	Main at Oakdale	Signal upgrade	♦		$100,000
439	12th at Riverside	Signal upgrade	♦		$100,000
451	Sunrise at Barneburg	Geometric improvements	♦		$300,000
499	McAndrews Rd at Ross Ln	Install new traffic signal	♦	♦	$225,000
500	Willamette St at Main St	Install new traffic signal	♦		$225,000
501	Brookdale at Spring	Install new traffic signal	♦		$225,000
502	Cottage St at Main St	Install new traffic signal	♦		$225,000
503	Foothill Rd and Lone Pine Rd	Install new traffic signal	♦	♦	$225,000
504	Springbrook Rd at Lone Pine Rd	Install new traffic signal	♦		$225,000
535	Barnett Road Extension e/o N Phoenix Road	Construct new five lane arterial with sidewalks and bike lanes	♦		$6,000,000
539	N/S Collector Street in SE Medford TOD	Construct new three lane road with bike lanes and sidewalks	♦		$5,800,000
		Sub-total Other Projects			***14,360,000***
		Medford Tier 2 Costs -			**$52,899,000**
		Available Funding -			**$000**

Table 13-5 Continued
Transportation System Improvements
Medford UGB – Tier 2 (Projects without Funding or Beyond 2023)

Project ID No.	Location	Improvements	Funding Agency Medford	Funding Agency Other	Cost
ODOT Tier 2 Improvements					
25	Haul Road, Biddle to Delta Waters (Hwy 62 Unit 2)	Construct new four lane road with bike lanes and sidewalks	♦	♦	$37,000,000
26	Haul Road, Delta Water (Hwy 62 Unit 2)	Construct new four lane road with bike lanes and sidewalks	♦	♦	$77,000,000
27	Crater Lake Avenue, Eliot to Corey	Widen to provide curb, gutter, bike lanes and sidewalks		♦	$4,420,000
29	Hwy 99/Hwy 62/Hwy 238	Grade separation or flyover (EA identifies need for further improvements in the future)	♦	♦	N/A
		ODOT Tier 2 Costs -			**$118,420,000**
		Available Funding -			**$000**
Jackson County Tier 2 Improvements					
260	Hwy 238 at Sage Rd	Add NBR and SBR lanes. Add second WBL lane and widen Sage to accommodate the added lane.	♦	♦	$1,640,000
261	Crater Lake Avenue at Vilas Road	Install new traffic signal		♦	$175,000
262	Highway 238 at Ross Lane	Install new traffic signal and NBR lane	♦	♦	$625,000
263	McAndrews at Ross Lane	Install new traffic signal	♦	♦	$225,000
264	Main at Ross	Add second EBL lane and widen Ross to accommodate the added lane. Add WBR lane.	♦	♦	$1,510,000
265	Highway 62 at Vilas Road	Add second east and westbound through lanes	♦	♦	$7,304,000
		Jackson County Tier 2 Costs -			**$11,479,000**
		Available Funding -			**$000**

Source: *2001-2023 Rogue Valley Regional Transportation Plan*, 2002 and *LOS Study*, JRH Transportation Engineering, 2003.

Table 13-6
Transportation System Improvements
Medford UGB – Tier 3 (Projects Beyond 2023)

Project ID No.	Location	Improvements	Funding Agency Medford	Funding Agency Other	Cost
Medford Tier 3 Improvements					
479	Manzanita-Spring connection, crossing with I-5	Construct new grade-separate crossing	♦		$15,000,000
480	Lone Pine Rd, Foothill to Cherry	Construct new three lane roadway with bike lanes and sidewalks	♦		$8,200,000
482	Elliot Rd, Crater Lake Ave to Foothill Rd	Construct new three lane road with bike lanes and sidewalks	♦		$6,150,000
483	Tamarack Rd, McAndrews to Lone Pine Extension	Construct new two lane roadway with bike lanes and sidewalks	♦		$5,850,000

Table 13-6 Continued
Transportation System Improvements
Medford UGB – Tier 3 (Projects Beyond 2023)

Project ID No.	Location	Improvements	Funding Agency Medford	Funding Agency Other	Cost
Medford Tier 3 Improvements Cont.					
485	Bellinger-Cunningham connector, Hull Rd to Orchard Home	Construct of new three lane road with bike lanes and sidewalks	♦		$3,280,000
486	Springbrook, Blackthorn to Coker Butte Rd	Construct new three lane road with bike lanes and sidewalks	♦		$2,870,000
487	Ross Lane, Jacksonville Hwy to McAndrews Rd	Widen to five lanes with bike lanes and sidewalks	♦	♦	
488	Manzanita, extension from Riverside to Spring	Construct new five lane roadway with bike lanes and sidewalks	♦	♦	
489	Diamond St, Orchard Home Dr to Peach	Construct new two lane road with bike lanes and sidewalks	♦		$2,340,000
490	McAndrews Rd, Ross Ln to Jackson St	Widen to five lanes with bike lanes and sidewalks	♦	♦	
491	Cherry, Hillcrest to Lone Pine	Construct new two lane road with bike lanes and sidewalks	♦		$1,560,000
492	Cunningham, Orchard Home to Columbus Ave	Widen to five lanes with bike lanes and sidewalks	♦		$1,280,000
493	Hillcrest Rd, Foothill Rd to Phoenix Rd	Realign and widen to five lanes with bike lanes and sidewalks	♦		$1,280,000
495	Coker Butte Rd, Lear to Haul Rd	Construct new five lane road with bike lanes and sidewalks	♦		$1,230,000
496	Stewart Ave, Lozier Ln to Dixie	Widen to five lanes with bike lanes and sidewalks	♦	♦	
497	Highland, Siskiyou Blvd to Keene Way	Widen to four lanes with curb, gutter, bike lanes and sidewalks	♦		$720,000
537	South Stage Road, Hwy 99 to e/o I-5	Construct three lane road with bike lanes and sidewalks, and including overcrossing of I-5	♦	♦	
554	Delta Waters Rd, Crater Lake Avenue, Garfield Rd, Cedar Links Drive	1st priority - Jurisdictional transfer road resurfacing	♦		$440,000
555	Stewart Avenue, Peach Street, Kings Highway	2nd priority - Jurisdictional transfer road resurfacing	♦		$480,000
556	Table Rock Road, Cherry Lane	3rd priority - Jurisdictional transfer road resurfacing	♦		$400,000
557	Columbus Ave, Coker Butte Rd, Lozier Lane	4th priority - Jurisdictional transfer road resurfacing	♦		$410,000
558	Airport Road, W Main St, Orchard Home Dr, Garfield Rd, Cunningham Lane	5th priority - Jurisdictional transfer road resurfacing	♦		$390,000
559	N Phoenix Rd, Foothill Rd, Orchard Home Rd	6th priority - Jurisdictional transfer road resurfacing	♦		$410,000
560	Bullock Rd, Hillcrest Rd, Ross Lane No.,	7th priority - Jurisdictional transfer road resurfacing	♦		$390,000
561	Foothill Road, Diamond St, Myers Lane	8th priority - Jurisdictional transfer road resurfacing	♦		$420,000

Table 13-6 Continued
Transportation System Improvements
Medford UGB – Tier 3 (Projects Beyond 2023)

Project ID No.	Location	Improvements	Funding Agency: Medford	Funding Agency: Other	Cost
Medford Tier 3 Improvements Cont.					
562	Eucalyptus Dr, Sycamore Way, Ellendale Dr, Greenwood St, Prune St, Harbrooke St, Corona Ave, Roberts Rd, Cherry St, Hillcrest Rd, Lawnsdale Rd, E. Vilas Rd	9th priority - Jurisdictional transfer road resurfacing	♦		$370,000
563	Orchard Home Dr, Bateman Dr, Cottonwood Rd, Gilman Rd, N runway Dr, Midway Rd, Cloudcrest, Harvard Pl, Highcrest Dr, Princeton Way	10th priority - Jurisdictional transfer road resurfacing	♦		$450,000
564	Stanford Ave, Stardust Way, Yale Dr, Crews Rd, Archer Dr, Lowry Lane, Connell Ave, Ellen Ave, Marilee St, Stage Rd So., Alamar St, Canal St, Meals Dr, Milford Dr,, Midway Rd	11th priority - Jurisdictional transfer road resurfacing	♦		$390,000
565	Rio St, E. Vilas Rd, Pech Rd, Schultz Rd, Table Rock Rd, Annapolis Dr, Cadet Dr Normil Terrace	12th priority - Jurisdictional transfer road resurfacing	♦		$370,000
		Medford Tier 3 Costs -			**$82,300,000**
		Available Funding -			**$000**

Potential Sources of Additional Transportation Revenue

Medford is not unique in struggling to match needs with available revenues for the local transportation system. However, as a regional center, non-local traffic contributes substantially to travel demand on the City's transportation system. At the same time, the City's regional role creates the opportunity to distribute a portion of its future transportation system needs beyond the City's boundaries. The City's regional role was taken into account in developing potential new funding sources, which include a local option gas tax and local vehicle registration fees. Local improvements districts, transportation benefit districts and other potential funding mechanisms also discussed, although they would generate funds for specific projects rather than the citywide transportation system.

Any of these potential sources would need to be evaluated in greater detail for potential revenue and administrative costs, and the degree of public and political acceptance. A synopsis of potential new sources of transportation revenue is presented below followed by a discussion of factors to consider when imposing and implementing a new transportation revenue source.

Summary of Potential Transportation Revenue Sources

Maintain Existing SDC Rate

One revenue-generating option for the City Medford that would likely be implemented with relative ease would be to continue the existing SDC surcharge that was imposed for bond repayment after the current sunset dates of 2012 and 2014. By maintaining the existing rate structure, this revenue source could generate over $10 million between 2014 and 2023 putting the transportation capital improvement program slightly in the black for this time period (with a net balance in anticipated revenues over expenses of approximately $990,000).

Increase SDC Rate Incrementally over Time

Related to the above strategy, the SDC base rate could also be increased incrementally over time to raise additional revenue for transportation capacity improvements. Based on analysis provided by the City Public Works Department, a 3 percent annual increase in the current SDC base rate would generate an additional $9.7 million over the 20-year planning period.

Increase Street Utility Fee Rate Incrementally over Time

Another option available to the City would be to increase the existing Street Utility Fee base rate to provide additional resources to maintain the transportation system over the planning period. An increase of 3 percent per year is estimated to raise approximately $14.8 million over the 20-year planning period according to analysis conducted by the City's Public Works Department.

Grants

The City has successfully pursued many state and federal grant programs, including grants from the federal Congestion Mitigation and Air Quality (CMAQ) program; Community Development Block Grants (CDBG); state Transportation and Growth Management (TGM) grants; and state Highway Bridge Replacement and Rehabilitation (HBRR) grants. Additional grant programs for which selected City projects would be eligible include Transportation Enhancement activities for pedestrians and bicycle projects, historic preservation, landscaping and other scenic beautification, and environmental mitigation as specified under TEA-21. These grants and other programs will likely continue to provide a substantial portion of the City's transportation revenue in coming years. Additionally, with legislative negotiations currently underway to structure the next federal transportation funding authorization legislation (the continuation of TEA-21) for adoption in 2004, the City should explore options for a legislative earmark.

Revenue Bonds

Similar to the bond measures adopted by the City Council for the 17-project list, additional revenue bonds could be sold and secured against future gas tax or other guaranteed transportation revenue source. While revenue bonds provide an immediate source of cash to use in constructing large projects, a disadvantage of this revenue source is its long term commitment of funding from existing sources for repayment. No new revenues are generated with this approach.

General Obligation Bonds

This type of bond must be approved by voters and is typically secured by property tax. Similar to Washington County's Major Street Transportation Improvement Program (MTIP), general obligation bonds represent a new, and potentially significant revenue source, however, voters will need to be convinced that the improvements that would be funded by these bonds are in the best interest of local taxpayers.

Local Option Gas Tax

If implemented, a local gas tax would be assessed at the pump and added to existing state and federal gasoline taxes as a revenue source for transportation capital improvements. Currently the state administers local option gas tax assessments in the City of Woodburn, Multnomah County and

Washington County, while The Dalles, Sandy and Tillamook administer their own local gas taxes. [22] Information collection from the ODOT Fuels Tax Group indicates that Woodburn collects a monthly average of about $10,000 in local gas taxes from a $0.01/gallon tax, equivalent to about $6 per capita annually. Pendleton brings in about $275,500 annually from its local gas tax, equivalent to about $15 per capita. In The Dalles, a three-cent local option gas tax yields about $300,000 per year, or $25 per capita. The City of Sandy has a $0.01/gallon local gas tax that yielded about $150,000 in 2001, or about $27/capita.

Using 2002 statewide per capita gas consumption (1.567 million gallons and a stateside population of 3,505,000 – or 447 gallons/person), a range of annual revenue was determined based on the City of Medford's existing population of about 63,500:

- $0.01/gallon would yield about $285,000 annually
- $0.02/gallon would yield about $570,000 annually
- $0.03/gallon would yield about $855,000 annually

The foregoing analysis assumes uniform price elasticity for gasoline with the addition of this range of tax. The per capita tax rate equates to about $4.50/person for the population of Medford. It should be noted that per capita revenue estimates are unique to each jurisdiction as they are based on the proportionate share of resident and non-resident gasoline purchases. A local option gas tax would be borne in part by non-residents who also contribute to the need for maintenance, operations and street improvements on the City's roadway system. As a regional center for Southern Oregon and Northern California, it is likely that drivers who live outside of Medford purchase a relatively high share of the gasoline pumped in the City.

Local Vehicle Registration Fee

As only counties can enact a local vehicle registration fee in Oregon, such a program would have to be developed cooperatively with Jackson County.

Local Improvement Districts (LIDs)

Local improvement districts levy special assessment charge on property owners within a defined area such as a neighborhood, street frontage or industrial/commercial district, with each property assessed a portion of total project cost. LIDs are commonly used for street paving, drainage, parking facilities and sewer lines. The justification for such levies is that many of these public works improvements provide a direct benefit or enhancement to the value of nearby land, thereby providing direct financial benefits to its owners. LIDs are used typically for local street projects that cannot be funded through other means. State law and City code govern the formation of LIDs, the assessment methodology, and other factors. LIDs are usually funded by the participants, but may also be combined with other funding sources to leverage all available resources.

Transportation Benefit Districts (TBDs)

While not common in Oregon, TBDs are quasi-municipal corporations used in Washington and other states to fund a specific transportation improvement or facility. TBDs can impose a property tax and/or impact fees on properties within a defined boundary.

Tax-Increment Financing

Similar to urban renewal districts, a tax increment financing district assesses an incremental increase in property taxes on parcels within a defined area to finance improvements that are expected to increase the values of properties within the district.

[22] Oregon Department of Transportation, Fuels Tax Group, web page, May 2003. Information on specific amounts provided by e-mail from Fuels Tax Group staff, May 2003.

<u>Other Potential Revenue Sources</u>
Other revenue options that have been explored in Portland and other cities in Oregon are summarized below.

Special Excise Tax: Excise taxes are levied on specific types of commodities. Commodities that are relatively price insensitive (e.g., cigarettes and alcohol) are often used for this type of tax. Because of the relationship with road usage, excise taxes on automotive parts would seem to be the most logical for funding transportation services. The public would likely view this tax as a sales tax and give it limited support.

Auto Sales Tax: An auto sales tax would levy a tax on all new cars sold in the City. The City does not have the authority to levy a sales tax, so voters would have to approve a change in the City charter. A tax on the retail selling price of autos does not parallel the use of transportation facilities. Voters would likely have a negative view of a sales tax on autos, similar to historic views of a general sales tax in Oregon.

Real Estate Transfer Tax: A real estate transfer tax is based on the selling price of real estate when property is sold. There is a very weak connection between the purchase of real estate and the cost of providing transportation services to a specific user. As such, a real estate transfer tax would probably be challenged in court.

Factors to Consider for Potential New Sources of Funding

Based on a comparative evaluation of proposed transportation funding measures in Seattle, Denver, San Jose and Sonoma, California,[23] as well as a serial levy passed three times in Washington County, Oregon, critical success factors leading to voter approval of transportation funding packages include:

- A sunset date that does not extend too far into the future. Washington County's first three MSTIP (Major Street Transportation Improvement Program) levies had time frames no longer than six years. Seattle's recent approval of funding for extensive rail improvements has a nine-year sunset. In contrast, a measure that was defeated in Denver had no sunset clause.

- Using surveys, focus groups and stakeholders groups to help identify improvement priorities and frame general budget amounts based on how much voters are willing to pay and how long they are to pay it.

- Geographic equity of improvement projects.

- A mix of projects, which could be a blend of transit and highway improvements in major metropolitan areas, or in smaller cities like Medford, a combination of street improvements to arterial and collector roads.

- Use of an established revenue source, such as gas tax or utility fee, particularly a funding program that has been perceived in the community as successful, such as a specific grant program or assessment district. This finding also implies that increasing the rate at which existing taxes or fees are assessed may have a greater chance of success than initiating a new funding program.

- Strategic use of media based on responding to anticipated arguments by opponents rather than saturating the community.

---

[23] From Mineta Institute for Surface Transportation Policy Studies, Institute Report 00-1, "Why Campaigns for Local Transportation Funding Initiatives Succeed or Fail: An Analysis of Four Communities and National Data", 2001.

Issues for Further Refinement Planning

The TSP provides substantial direction for transportation decision-making and investment in the Medford UGB. However, there remain a number of issues that will require further refinement planning to clarify appropriate direction and priorities for certain specific components of the transportation system. These issues include:

- The City of Medford should prepare and adopt neighborhood land use and local traffic circulation plans for the remaining portions of the city that do not currently have these plans. These plans should indicate the function of proposed streets and design standards needed to minimize disruption of existing neighborhoods while assuring adequate accessibility for new planned development and redevelopment. These plans should also address neighborhood centers, major transit stops, and bicycle and pedestrian needs.

- The City should continue with current and proposed planning efforts to encourage transit oriented development and other mixed use, transit-supportive land uses within the City.

- The City should continue to participate in the RVMPO Freight Study and incorporate the Study's recommendations into a future update of the TSP as appropriate.

- The City should appoint and work with a Bicycle Advisory Committee to establish a specific, prioritized list of bicycle improvement projects. Of particular importance will be refinement of improvements for the Crater Lake Avenue Corridor and the McAndrews Road Corridor.

Outstanding Issues

During the TSP planning process, several issues have been identified that could not be adequately addressed in time frame available for TSP preparation. These issues can be addressed in future transportation and/or land use studies. These issues are documented in this section to provide a record of the issue and to suggest a course of action for the city in addressing them. Outstanding issues include:

- The need for an overcrossing of I-5 via an easterly extension of South Stage Road

- The need for and feasibility of a future I-5 crossing at Stevens or Spring Streets to provide more opportunities for vehicular and non-motorized connections between the downtown core area and the Biddle Road commercial corridor and neighboring residential development.

- The City should encourage the County and the RVMPO to investigate the need for and feasibility of a future extension of Foothill Road northward from its current northern terminus to directly intersect Highway 140 in White City. This connection is presently available via several different streets but it is not direct. A recommended roadway cross-section for this corridor should also be addressed.

APPENDIX A

RVMPO Travel Model Inventory – Medford

Appendix A
RVMPO Travel Model Inventory - Medford

Mode Allowed: a=Auto, b=Bus, c=Bike, t=Comme., w=Ped.

Median Type: 0=No, 1=Paint, 2=CLT, 3=Raised

Bike Lane: 0=No, 1=Lane, 2=Shoulder, 3=Path

On-St. Parking: 0=No, 1=Yes

Curbs: 0=No, 1=Yes

Side Walk: 0=No, 1=Yes

Street Class: 0=Freeway, 1=State H., 2=Arterial, 3=Collector, 4=Resident., 5=FW Ramp, 6=Connect.

Tnode Control: 0 - Freeflow, 2 - Stop Sign, 5 - Signal

Street Name	Street From	Segment To	Node A	No. B	Link Length	Mode Allowed	No. Lanes	Posted Speed	Median Type	Bike Lane	On-St. Parking	Curbs	Side Walk	Street Class	Tnode Control	Tnode Lanes T	Tnode Lanes L	Tnode Lanes R	Tnode Lanes TLR	Tnode Lanes TL	Tnode Lanes TR	Tnode Lanes	ROW Width	Street Condition
62	VILAS	1640	1555	1640	0.37	abct	2	45	2	2	0	0	0	1	0	2	0	0	0	0	0	2	0	G
62	1640	VILAS	1640	1555	0.37	abct	2	45	2	2	0	0	0	1	5	2	1	1	0	0	0	4	0	G
62	1640	COKER BUTTE	1640	1935	0.63	abct	2	45	2	2	0	0	0	1	0	2	1	0	0	0	0	3	0	G
62	COKER BUTTE	1640	1935	1640	0.63	abct	2	45	2	2	0	0	0	1	0	2	0	0	0	0	0	2	0	G
62	COKER BUTTE	2005	1935	2005	0.14	abct	2	45	2	2	0	0	0	1	0	2	0	0	0	0	0	2	0	G
62	2005	COKER BUTTE	2005	1935	0.14	abct	2	45	2	2	0	0	0	1	0	2	0	0	0	0	1	4	0	G
62	2005	CARDINAL	2005	2130	0.31	abct	2	45	3	1	0	1	1	1	5	2	0	1	0	0	0	3	0	G
62	CARDINAL	2005	2130	2005	0.31	abct	2	45	3	2	0	0	0	1	0	2	0	0	0	0	0	2	0	G
62	CARDINAL	2170	2130	2170	0.21	act	2	45	3	1	0	1	1	1	0	2	1	0	0	0	0	3	0	G
62	2170	CARDINAL	2170	2130	0.21	act	2	45	3	2	0	0	0	1	5	2	1	0	0	0	0	3	0	G
62	2170	5004	2170	5004	0.09	act	2	45	3	1	0	1	1	1	0	2	0	0	0	0	0	2	0	G
62	5003	2250	5003	2250	0.07	act	2	45	2	2	0	1	0	1	0	1	1	0	0	0	1	3	0	G
62	5004	2250	5004	2250	0.13	act	2	45	3	1	0	1	1	1	0	2	0	0	0	0	0	2	0	G
62	DELTA WATERS	2315	2275	2315	0.1	abct	2	45	2	1	0	1	0	1	0	2	0	0	0	0	0	2	0	G
62	DELTA WATERS	5003	2275	5003	0.1	act	2	45	2	2	0	1	0	1	0	2	0	0	0	0	0	2	0	G
62	2315	DELTA WATERS	2315	2275	0.1	abct	2	45	2	1	0	1	1	1	5	2	2	1	0	0	0	5	0	G
62	2315	WHITTLE	2315	2345	0.07	abct	2	45	2	1	0	1	0	1	0	2	1	0	0	0	0	3	0	G
62	WHITTLE	2315	2345	2315	0.07	abct	2	45	2	1	0	1	1	1	0	2	0	0	0	0	0	2	0	G
62	WHITTLE	2375	2345	2375	0.22	abct	2	45	2	1	0	0	0	1	0	2	1	0	0	0	0	3	0	G
62	2375	WHITTLE	2375	2345	0.22	abct	2	45	2	1	0	1	1	1	0	2	0	1	0	0	0	3	0	G
62	2375	POPLAR	2375	2410	0.3	abct	2	45	2	1	0	0	0	1	5	2	1	0	0	0	1	4	0	G
62	POPLAR	2375	2410	2375	0.3	abct	2	45	2	1	0	1	1	1	0	2	0	0	0	0	0	2	0	G
62	POPLAR	FRED2	2410	2435	0.07	actw	3	45	2	1	0	1	1	1	5	2	1	0	0	0	1	4	0	G
62	FRED2	POPLAR	2435	2410	0.07	actw	3	45	2	1	0	1	1	1	5	2	1	0	0	0	1	4	0	G
62	FRED2	Hilton	2435	5000	0.08	actw	3	35	2	1	0	1	1	1	0	2	0	0	0	0	1	3	0	G
62	FRED MEYER	I-5N	2460	2516	0.15	actw	2	35	2	1	0	1	1	1	0	2	0	1	0	0	0	3	0	G
62	FRED MEYER	Hilton	2460	5000	0.07	actw	3	35	2	1	0	1	1	1	5	2	1	0	0	0	1	4	0	G
62	I-5N	FRED MEYER	2516	2460	0.15	actw	3	35	2	1	0	1	1	1	0	2	0	0	0	0	1	3	0	G
62	I-5N	I-5	2516	2565	0.12	actw	2	35	2	1	0	1	1	1	5	2	2	0	0	0	0	4	0	G
62	I-5	I-5N	2565	2516	0.12	actw	2	35	2	1	0	1	1	1	0	1	0	0	0	0	1	2	0	G
62	I-5	TARGET	2565	2575	0.13	act	2	35	2	1	0	0	0	1	5	2	1	0	0	0	0	3	0	TG
62	R. V. MALL	TARGET	2574	2575	0.12	actw	3	35	2	1	0	1	1	1	5	2	0	1	0	0	0	3	0	TG
62	R. V. MALL	99	2574	2700	0.12	act	3	35	2	1	0	0	0	1	5	0	3	1	0	0	0	4	0	TG
62	TARGET	I-5	2575	2565	0.13	actw	2	35	2	1	0	1	1	1	5	2	0	1	0	0	0	3	0	TG
62	TARGET	R. V. MALL	2575	2574	0.12	act	2	35	2	1	0	0	0	1	5	2	2	0	0	0	0	4	0	TG
62	99	R. V. MALL	2700	2574	0.12	actw	3	35	2	1	0	1	1	1	5	2	0	0	0	0	1	3	0	TG
62	Fred Meyer	Hilton	5000	2435	0.08	actw	3	35	2	1	0	1	1	1	0	2	0	0	0	0	1	3	0	G
62	Hilton	Fred M	5000	2460	0.07	actw	3	35	2	1	0	1	1	1	5	2	1	0	0	0	1	4	0	G
62	2250	5003	2250	5003	0.07	act	2	45	2	1	0	1	1	1	0	2	0	0	0	0	0	2	0	G
62	5003	DELTA WATERS	5003	2275	0.1	act	2	45	2	1	0	1	1	1	5	2	1	0	0	0	1	4	0	G
62	5004	2170	5004	2170	0.09	act	2	45	2	2	0	1	0	1	0	2	0	1	0	0	0	3	0	G
62	2250	5004	2250	5004	0.13	act	2	45	2	2	0	1	0	1	0	2	0	0	0	0	0	2	0	G
99	BEALL	2245	2210	2245	0.1	at	2	50	2	0	0	0	0	1	0	2	0	0	0	0	0	2	0	G
99	2245	BEALL	2245	2210	0.1	at	2	50	2	0	0	0	0	1	5	1	1	0	0	0	1	3	0	G
99	2245	MACE	2245	2320	0.26	at	2	50	2	0	0	0	0	1	0	2	1	0	0	0	0	3	0	G
99	MACE	2245	2320	2245	0.26	at	2	50	2	0	0	0	0	1	0	2	0	0	0	0	0	2	0	G
99	MACE	2390	2320	2390	0.26	at	2	50	2	0	0	0	0	1	0	2	0	0	0	0	0	2	0	G
99	2390	MACE	2390	2320	0.26	at	2	50	2	0	0	0	0	1	0	1	0	0	0	0	1	2	0	G
99	2390	EHRMAN	2390	2455	0.29	at	2	50	2	0	0	0	0	1	5	1	1	0	0	0	1	3	0	G
99	EHRMAN	2390	2455	2390	0.29	at	2	50	2	0	0	0	0	1	0	2	0	0	0	0	0	2	0	G
99	EHRMAN	HOWARD	2455	2535	0.23	at	2	40	2	0	0	0	0	1	0	2	1	0	0	0	0	3	0	G
99	HOWARD	EHRMAN	2535	2455	0.23	at	2	40	2	0	0	0	0	1	5	1	1	0	0	0	1	3	0	G
99	HOWARD	2615	2535	2615	0.36	at	2	40	2	0	0	0	0	1	0	2	1	0	0	0	0	3	0	G
99	2615	HOWARD	2615	2535	0.36	at	2	40	2	0	0	0	0	1	0	1	1	0	0	0	1	3	0	G
99	W. TABLE ROC	2615	2630	2615	0.16	at	2	40	2	0	0	0	0	1	0	2	1	0	0	0	0	3	0	G
99	2615	W. TABLE ROC	2615	2630	0.16	at	2	40	2	0	0	0	0	1	5	2	1	0	0	0	0	3	0	G
99	W. TABLE ROC	TABLE ROCK	2630	2690	0.15	at	2	40	3	0	0	1	1	1	0	2	0	0	0	0	0	2	0	G
99	TABLE ROCK	W. TABLE ROC	2690	2630	0.15	atw	2	40	3	0	0	1	1	1	5	1	0	0	0	0	1	2	0	G
99	TABLE ROCK	big X	2690	2700	0.09	at	2	35	3	0	0	1	1	1	5	2	2	0	0	0	0	4	0	G
99	big X	TABLE ROCK	2700	2690	0.09	atw	2	35	3	0	0	1	1	1	0	2	0	1	0	0	0	3	0	G
10TH	210	COTTAGE	3695	3710	0.12	atw	1	25	0	0	0	1	1	3	0	0	1	0	0	0	1	2	27	G
10TH	210	RIVERSIDE	3695	3715	0.05	atw	2	25	0	0	0	1	1	3	5	1	0	0	0	0	1	2	27	G
10TH	COTTAGE	210	3710	3695	0.12	atw	2	25	0	0	0	1	1	3	0	2	0	0	0	0	0	2	24	G
10TH	COTTAGE	SISKIYOU	3710	3780	0.09	atw	1	30	0	0	0	1	1	3	0	1	1	0	0	0	0	2	27	G
10TH	RIVERSIDE	210	3715	3695	0.05	atw	1	25	0	0	0	1	1	3	0	1	0	0	0	0	0	1	27	G

Street Name	Street From	Segment To	Node A	No. B	Link Length	Mode Allowed	No. Lanes	Posted Speed	Median Type	Bike Lane	On-St. Parking	Curbs	Side Walk	Street Class	Tnode Control	Tnode Lanes T	L	R	TLR	TL	TR	Tnode Lanes	ROW Width	Street Condition
10TH	RIVERSIDE	CENTRAL	3715	3760	0.07	atw	2	25	0	0	0	1	1	2	5	1	0	0	0	1	0	2	26	G
10TH	CENTRAL	RIVERSIDE	3760	3715	0.07	atw	2	25	0	0	0	1	1	2	5	1	1	0	0	0	0	2	26	G
10TH	CENTRAL	FRONT	3760	3805	0.08	abtw	2	25	0	0	0	1	1	2	5	0	0	0	0	1	1	2	23	G
10TH	SISKIYOU	COTTAGE	3780	3710	0.09	atw	2	30	0	0	0	1	1	3	0	1	1	0	0	0	1	3	27	G
10TH	FRONT	CENTRAL	3805	3760	0.08	abtw	2	25	0	0	0	1	1	2	5	1	0	0	0	0	1	2	23	G
10TH	FRONT	GRAPE	3805	3865	0.13	abtw	2	25	0	0	0	1	1	2	0	0	0	0	0	1	1	2	23	G
10TH	GRAPE	FRONT	3865	3805	0.13	abtw	2	25	0	0	0	1	1	2	5	0	0	0	0	1	1	2	23	G
10TH	GRAPE	3881	3865	3881	0.03	abtw	2	25	0	0	0	1	1	2	0	0	0	0	0	1	1	2	23	G
10TH	HOLLY	3881	3880	3881	0.03	abtw	2	25	0	0	0	1	1	2	0	0	0	0	0	1	1	2	23	G
10TH	HOLLY	IVY	3880	3885	0.06	abtw	2	25	0	0	0	1	1	2	0	0	0	0	0	1	1	2	23	G
10TH	3881	GRAPE	3881	3865	0.03	abtw	2	25	0	0	0	1	1	2	0	0	0	0	0	1	1	2	23	G
10TH	3881	HOLLY	3881	3880	0.03	abtw	2	25	0	0	0	1	1	2	5	0	0	0	0	1	1	2	23	G
10TH	IVY	HOLLY	3885	3880	0.06	abtw	2	25	0	0	0	1	1	2	5	0	0	0	0	1	1	2	23	G
10TH	IVY	OAKDALE	3885	3930	0.06	abtw	2	25	0	0	0	1	1	2	5	0	1	0	0	0	1	2	23	G
10TH	ELM	COLUMBUS	3890	3895	0.11	atw	1	25	0	0	1	1	1	3	2	0	0	0	1	0	0	1	18	G
10TH	ELM	HAMILTON	3890	3905	0.1	atw	1	25	0	0	1	1	1	3	2	0	0	0	1	0	0	1	18	G
10TH	COLUMBUS	ELM	3895	3890	0.11	atw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	18	G
10TH	HAMILTON	ELM	3905	3890	0.1	atw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	18	G
10TH	HAMILTON	ORANGE	3905	3920	0.13	atw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	15	G
10TH	MISTLETOE	ORANGE	3910	3920	0.12	atw	1	25	0	0	0	1	1	3	0	0	0	0	1	0	0	1	15	G
10TH	MISTLETOE	KING	3910	3925	0.08	atw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	15	G
10TH	ORANGE	HAMILTON	3920	3905	0.13	atw	1	25	0	0	0	1	1	3	2	0	0	0	1	0	0	1	15	G
10TH	ORANGE	MISTLETOE	3920	3910	0.12	atw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	15	G
10TH	KING	MISTLETOE	3925	3910	0.08	atw	1	25	0	0	0	1	1	3	0	0	0	0	1	0	0	1	15	G
10TH	KING	OAKDALE	3925	3930	0.15	atw	1	25	0	0	1	1	1	3	5	0	0	0	0	1	1	2	15	G
10TH	OAKDALE	IVY	3930	3885	0.06	abtw	2	25	0	0	0	1	1	2	0	0	0	0	0	1	1	2	23	G
10TH	OAKDALE	KING	3930	3925	0.15	atw	1	25	0	0	0	1	1	3	0	0	0	0	1	0	0	1	15	G
12TH	COTTAGE	FRANQUETTE	3800	3815	0.06	at	1	25	0	0	0	0	0	3	0	0	0	0	0	1	0	1	12	G
12TH	FRANQUETTE	COTTAGE	3815	3800	0.06	at	1	25	0	0	0	0	0	3	0	1	0	0	0	0	0	1	12	G
12TH	FRANQUETTE	RIVERSIDE	3815	3845	0.06	at	1	25	0	0	0	0	0	3	5	0	0	0	0	0	1	1	12	G
12TH	RIVERSIDE	FRANQUETTE	3845	3815	0.06	at	1	25	0	0	0	0	0	3	0	0	0	0	0	0	1	1	12	G
4TH	JACKSON	RIVERSIDE	3245	3310	0.16	abtw	2	25	0	0	0	1	1	2	5	1	0	0	0	0	1	2	26	G
4TH	RIVERSIDE	JACKSON	3310	3245	0.16	abtw	2	25	0	0	0	1	1	2	5	2	0	1	0	0	0	3	26	G
4TH	RIVERSIDE	BARTLETT	3310	3355	0.09	abtw	2	25	0	0	0	1	1	2	5	0	0	0	0	1	1	2	23	G
4TH	BARTLETT	RIVERSIDE	3355	3310	0.09	abtw	2	25	0	0	0	1	1	2	5	1	1	0	0	0	0	2	23	G
4TH	BARTLETT	CENTRAL	3355	3395	0.05	abtw	2	25	0	0	0	1	1	2	5	1	0	0	0	1	0	2	23	G
4TH	CENTRAL	BARTLETT	3395	3355	0.05	abtw	2	25	0	0	0	1	1	2	5	0	0	0	0	1	1	2	23	G
4TH	CENTRAL	FRONT	3395	3435	0.06	abtw	2	25	0	0	0	1	1	2	5	0	1	0	0	0	1	2	23	G
4TH	FRONT	CENTRAL	3435	3395	0.06	abtw	2	25	0	0	0	1	1	2	5	1	0	0	0	0	1	2	23	G
4TH	FRONT	GRAPE	3435	3480	0.13	atw	2	25	0	0	0	1	1	2	0	0	0	0	0	1	1	2	23	G
4TH	GRAPE	FRONT	3480	3435	0.13	atw	2	25	0	0	0	1	1	2	5	0	0	0	0	1	1	2	23	G
4TH	GRAPE	3511	3480	3511	0.03	atw	2	25	0	0	0	1	1	2	0	0	0	0	0	1	1	2	23	G
4TH	HOLLY	3511	3510	3511	0.03	atw	2	25	0	0	0	1	1	2	0	0	0	0	0	1	1	2	23	G
4TH	HOLLY	IVY	3510	3540	0.05	atw	2	25	0	0	0	1	1	2	0	0	0	0	0	1	1	2	23	G
4TH	3511	GRAPE	3511	3480	0.03	atw	2	25	0	0	0	1	1	2	0	0	0	0	0	1	1	2	23	G
4TH	3511	HOLLY	3511	3510	0.03	atw	2	25	0	0	0	1	1	2	0	0	0	0	0	1	1	2	23	G
4TH	IVY	HOLLY	3540	3510	0.05	atw	2	25	0	0	0	1	1	2	0	0	0	0	0	1	1	2	23	G
4TH	IVY	OAKDALE	3540	3570	0.05	atw	2	25	0	0	0	1	1	2	2	0	0	1	0	1	0	2	23	G
4TH	OAKDALE	IVY	3570	3540	0.05	atw	2	25	0	0	0	1	1	2	0	0	0	0	0	1	1	2	23	G
4TH	OAKDALE	TURN	3570	3590	0.03	atw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	18	G
4TH	COLUMBUS	SUMMIT	3575	3580	0.13	atw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	18	G
4TH	SUMMIT	COLUMBUS	3580	3575	0.13	atw	1	25	0	0	1	1	1	3	2	0	0	0	1	0	0	1	18	G
4TH	HAMILTON	SUMMIT	3581	3580	0.07	atw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	18	P
4TH	SUMMIT	HAMILTON	3580	3581	0.07	atw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	18	G
4TH	HAMILTON	ORANGE	3581	3585	0.11	atw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	18	G
4TH	ORANGE	HAMILTON	3585	3581	0.11	atw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	18	P
4TH	ORANGE	TURN	3585	3590	0.13	atw	1	25	1	0	1	1	1	3	0	0	0	0	1	0	0	1	18	G
4TH	TURN	OAKDALE	3590	3570	0.03	atw	1	25	0	0	1	1	1	3	2	0	0	0	1	0	0	1	18	G
4TH	TURN	ORANGE	3590	3585	0.13	atw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	18	G
8TH	330	MAIN	3515	3445	0.07	atw	2	25	3	0	0	1	1	2	0	1	0	0	0	1	0	2	24	G
8TH	RIVERSIDE	330	3560	3515	0.07	atw	2	25	3	0	0	1	1	2	0	2	0	0	0	0	0	2	24	F
8TH	BARTLETT	RIVERSIDE	3605	3560	0.04	atw	2	20	3	0	1	1	1	2	5	1	1	0	0	1	0	3	40	G
8TH	CENTRAL	BARTLETT	3625	3605	0.05	atw	2	20	3	0	1	1	1	2	0	0	0	0	0	1	1	2	40	G
8TH	FRONT	CENTRAL	3690	3625	0.06	atw	2	20	3	0	0	1	1	2	5	1	0	0	0	0	1	2	40	G
8TH	GRAPE	FRONT	3720	3690	0.12	atw	3	20	3	0	0	1	1	2	5	1	0	0	0	1	1	3	40	G
8TH	HOLLY	GRAPE	3792	3720	0.06	atw	2	25	3	0	1	1	1	2	5	0	0	0	0	1	1	2	40	G
8TH	IVY	HOLLY	3810	3790	0.06	atw	2	25	3	0	1	1	1	2	5	0	0	0	0	1	1	2	40	G
8TH	OAKDALE	IVY	3835	3810	0.05	atw	2	25	3	0	1	1	1	2	5	0	0	0	0	1	1	2	44	G
8TH	ELM	HAMILTON	3850	3855	0.16	abctw	2	30	3	1	1	1	1	2	5	0	0	0	0	1	1	2	44	G
8TH	HAMILTON	ORANGE	3855	3860	0.13	abtw	2	30	3	0	1	1	1	2	5	0	0	0	0	1	1	2	44	G
8TH	ORANGE	OAKDALE	3860	3835	0.29	abtw	2	25	3	0	1	1	1	2	5	1	0	1	0	1	0	3	44	G
BARNEBURG	MAIN	OAKWOOD	3465	3545	0.08	at	1	25	0	0	0	0	0	3	0	0	0	0	0	1	0	1	9	G
BARNEBURG	OAKWOOD	MAIN	3545	3465	0.08	at	1	25	0	0	0	0	0	3	2	0	0	0	1	0	0	1	9	G
BARNEBURG	OAKWOOD	WOODLAWN	3545	3665	0.11	at	1	25	0	0	0	0	0	3	0	0	0	0	0	0	1	1	9	G

Street Name	Street From	Segment To	Node A	No. B	Link Length	Mode Allowed	No. Lanes	Posted Speed	Median Type	Bike Lane	On-St. Parking	Curbs	Side Walk	Street Class	Tnode Control	Tnode Lanes						Tnode Lanes	ROW Width	Street Condition
																T	L	R	TLR	TL	TR			
BARNEBURG	WOODLAWN	OAKWOOD	3665	3545	0.11	at	1	25	0	0	0	0	0	3	0	0	0	0	0	0	1	1	9	G
BARNEBURG	WOODLAWN	HIGHLAND	3665	3745	0.1	at	1	25	0	0	0	0	0	3	2	0	0	0	1	0	0	1	10.5	G
BARNEBURG	HIGHLAND	WOODLAWN	3745	3665	0.1	at	1	25	0	0	0	0	0	3	0	0	0	0	0	1	0	1	10.5	G
BARNETT	GOLF VIEW	MAAIKE	4095	4100	0.27	atw	2	40	0	0	0	1	1	2	0	1	0	0	0	1	0	2	24	G
BARNETT	GOLF VIEW	MURPHY	4095	4130	0.31	atw	2	40	0	0	0	1	1	2	5	1	1	0	0	0	1	3	24	G
BARNETT	MAAIKE	GOLF VIEW	4100	4095	0.27	atw	2	40	0	0	0	1	1	2	0	0	0	0	0	1	1	2	24	G
BARNETT	MAAIKE	N. PHOENIX	4100	4105	0.2	atw	2	40	0	0	0	1	1	2	5	1	1	1	0	0	0	3	24	G
BARNETT	N. PHOENIX	MAAIKE	4105	4100	0.2	atw	2	40	0	0	0	1	1	2	0	1	0	0	0	0	1	2	24	G
BARNETT	HILLDALE	BLACK OAK	4115	4120	0.28	abtw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	30	G
BARNETT	HILLDALE	ELLENDALE	4115	4185	0.23	abtw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	27	G
BARNETT	BLACK OAK	HILLDALE	4120	4115	0.28	abtw	2	35	2	0	0	1	1	2	0	2	1	0	0	0	0	3	27	G
BARNETT	BLACK OAK	STATE	4120	4125	0.14	abtw	2	35	2	0	0	1	1	2	0	1	0	0	0	0	1	2	30	G
BARNETT	STATE	BLACK OAK	4125	4120	0.14	abtw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	30	G
BARNETT	STATE	MURPHY	4125	4130	0.21	abtw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	30	G
BARNETT	MURPHY	GOLF VIEW	4130	4095	0.31	atw	2	40	0	0	0	1	1	2	0	0	0	0	0	1	1	2	24	G
BARNETT	MURPHY	STATE	4130	4125	0.21	abtw	2	35	3	0	0	1	1	2	0	2	0	0	0	0	0	2	30	G
BARNETT	HOLLY	GRAPE	4135	4140	0.06	actw	1	25	2	1	1	1	1	3	2	0	0	0	1	0	0	1	26	G
BARNETT	GRAPE	HOLLY	4140	4135	0.06	actw	1	25	2	1	1	1	1	3	2	0	0	0	1	0	0	1	26	G
BARNETT	GRAPE	FIR	4140	4150	0.07	actw	2	35	2	1	1	1	1	3	0	1	0	0	0	1	0	2	34	G
BARNETT	180	STEWART	4145	4155	0.09	actw	2	35	2	1	0	1	1	2	5	1	1	0	0	1	0	3	27	G
BARNETT	180	4171	4145	4171	0.12	actw	2	35	2	1	0	1	1	2	0	2	0	1	0	0	0	3	27	G
BARNETT	FIR	GRAPE	4150	4140	0.07	actw	1	35	2	1	1	1	1	3	2	0	0	1	0	1	0	2	34	G
BARNETT	FIR	RIVERSIDE	4150	4165	0.13	actw	2	35	2	1	0	1	1	3	5	1	1	0	0	0	1	3	34	G
BARNETT	STEWART	180	4155	4145	0.09	actw	3	35	2	1	0	1	1	2	0	2	0	1	0	0	0	3	27	G
BARNETT	STEWART	WINCO E.	4155	4160	0.1	actw	2	35	2	1	0	1	1	2	5	1	0	0	0	0	1	2	36	G
BARNETT	WINCO E.	STEWART	4160	4155	0.1	actw	3	35	2	1	0	1	1	2	5	2	0	0	0	0	1	3	36	G
BARNETT	WINCO E.	RIVERSIDE	4160	4165	0.12	actw	2	35	2	1	0	1	1	2	5	1	1	1	0	0	0	3	34	G
BARNETT	RIVERSIDE	FIR	4165	4150	0.13	actw	2	35	1	1	0	1	1	3	0	1	0	0	0	0	1	2	34	G
BARNETT	RIVERSIDE	WINCO E.	4165	4160	0.12	actw	2	35	2	1	0	1	1	2	5	2	1	0	0	0	0	3	34	G
BARNETT	I5-ALBA	4171	4170	4171	0.07	actw	2	35	2	1	0	1	1	2	0	2	0	0	0	0	0	2	27	G
BARNETT	I5-ALBA	210	4170	4175	0.08	atw	2	35	2	0	0	1	1	2	0	2	0	0	0	0	0	2	27	G
BARNETT	4171	180	4171	4145	0.12	actw	2	35	2	1	0	1	1	2	0	2	0	0	0	0	0	2	27	G
BARNETT	4171	I5-ALBA	4171	4170	0.07	actw	2	35	2	1	0	1	1	2	5	2	1	0	0	0	0	3	27	G
BARNETT	210	I5-ALBA	4175	4170	0.08	atw	2	35	2	0	0	1	1	2	5	1	0	0	0	0	1	2	27	G
BARNETT	210	HIGHLAND	4175	4180	0.07	atw	2	35	2	0	0	1	1	2	5	2	1	0	0	0	0	3	27	G
BARNETT	HIGHLAND	210	4180	4175	0.07	atw	2	35	2	0	0	1	1	2	0	2	0	0	0	0	0	2	27	G
BARNETT	HIGHLAND	ELLENDALE	4180	4185	0.21	abtw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	27	G
BARNETT	ELLENDALE	HILLDALE	4185	4115	0.23	abtw	2	35	2	0	0	1	1	2	0	1	0	0	0	0	1	2	27	G
BARNETT	ELLENDALE	HIGHLAND	4185	4180	0.21	abtw	2	35	2	0	0	1	1	2	5	1	0	0	0	0	1	2	27	G
Barnett Rd	N Phoenix Rd	266	4105	4190	0.67	at	1	30	0	0	0	0	0	2	0	1	0	0	0	0	0	1		
Barnett Rd	266	N Phoenix Rd	4190	4105	0.67	at	1	30	0	0	0	0	0	2	5	1	1	0	1	0	1	4		
Beall Lane	HWy 99	Freeman Rd	2210	2215	0.05	abt	1	35	0	2	0	0	0	3	0	0	0	0	0	1	0	1		
Beall Lane	Freeman Rd	HWy 99	2215	2210	0.05	abt	1	35	0	0	0	0	0	3	5	0	1	0	0	0	1	2		
Beall Lane	Freeman Rd	Bursell Rd	2215	2220	0.2	abt	1	35	0	0	0	0	0	3	0	0	0	0	1	0	0	1		
Beall Lane	Bursell Rd	Freeman Rd	2220	2215	0.2	abt	1	35	0	0	0	0	0	3	0	0	0	0	0	0	1	1		
Beall Lane	Bursell Rd	151	2220	2225	0.08	abt	1	35	0	0	0	0	0	3	0	1	0	0	0	0	0	1		
Beall Lane	151	Bursell Rd	2225	2220	0.08	abt	1	35	0	0	0	0	0	3	0	0	0	0	1	0	0	1		
Beall Lane	151	65	2225	2230	0.16	abt	1	35	0	0	0	0	0	3	0	1	0	0	0	0	0	1		
Beall Lane	65	151	2230	2225	0.16	abt	1	35	0	0	0	0	0	3	0	1	0	0	0	0	0	1		
Beall Lane	65	152	2230	2235	0.13	abt	1	35	0	0	0	0	0	3	0	1	0	0	0	0	0	1		
Beall Lane	152	65	2235	2230	0.13	abt	1	35	0	0	0	0	0	3	0	1	0	0	0	0	0	1		
Beall Lane	152	Merriman Rd	2235	2240	0.11	abt	1	35	0	0	0	0	0	3	0	1	0	0	0	0	0	1		
Beall Lane	Merriman Rd	152	2240	2235	0.11	abt	1	35	0	0	0	0	0	3	0	1	0	0	0	0	0	1		
BELKNAP	CENTER	RIVERSIDE	4465	4470	0.06	at	1	35	1	1	0	1	1	4	5	1	2	0	0	0	1	4		
BELKNAP	RIVERSIDE	CENTER	4470	4465	0.06	at	1	35	1	1	0	1	0	4	0	0	1	0	0	1	0	2		
BIDDLE	TABLE ROCK	AIRPORT	1810	2065	0.72	at	2	45	2	0	0	1	0	2	0	1	1	0	0	0	1	3	33	G
BIDDLE	AIRPORT	TABLE ROCK	2065	1810	0.72	at	2	45	2	0	0	1	0	2	5	1	1	0	0	0	1	3	33	G
BIDDLE	AIRPORT	GILMAN	2065	2160	0.39	at	2	45	2	0	0	1	0	2	0	1	0	0	0	0	1	2	33	G
BIDDLE	GILMAN	AIRPORT	2160	2065	0.39	at	2	45	2	0	0	1	0	2	0	1	1	0	0	0	1	3	33	G
BIDDLE	GILMAN	FISHER	2160	2265	0.36	at	2	45	2	1	0	1	0	2	0	2	1	0	0	0	0	3	33	G
BIDDLE	FISHER	GILMAN	2265	2160	0.36	at	2	45	2	1	0	1	0	2	0	1	0	0	0	0	1	2	33	G
BIDDLE	FISHER	HILTON	2265	2411	0.45	at	2	35	1	1	0	1	0	2	0	0	0	0	0	1	1	2	23	G
BIDDLE	HILTON	FISHER	2411	2265	0.45	at	2	45	2	1	0	1	0	2	0	1	0	0	0	0	1	2	33	G
BIDDLE	HILTON	0060 I5 ON/O	2411	2445	0.11	atw	2	35	1	0	0	1	1	2	5	1	1	0	0	0	1	3	30	G
BIDDLE	0060 I5 ON/O	HILTON	2445	2411	0.11	atw	2	35	1	0	0	1	1	2	0	0	0	0	0	1	1	2	23.5	G
BIDDLE	0060 I5 ON/O	2560	2445	2560	0.2	actw	2	35	1	0	0	1	1	2	5	1	1	0	0	0	1	3	30	G
BIDDLE	2560	0060 I5 ON/O	2560	2445	0.2	actw	2	35	1	0	0	1	1	2	5	2	1	1	0	0	0	4	30	G
BIDDLE	2560	2625	2560	2625	0.14	actw	2	35	2	0	0	1	1	2	0	2	0	0	0	0	0	2	30	G
BIDDLE	2625	2560	2625	2560	0.14	actw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	30	G
BIDDLE	2625	MORROW	2625	2655	0.07	actw	2	35	3	0	0	1	1	2	5	2	1	0	0	0	0	3	30	G
BIDDLE	MORROW	2625	2655	2625	0.07	actw	2	35	2	0	0	1	1	2	0	2	0	0	0	0	0	2	30	G
BIDDLE	MORROW	PROGRESS	2655	2715	0.13	actw	2	35	3	3	0	0	1	2	5	2	1	0	0	0	0	3	44	G
BIDDLE	PROGRESS	MORROW	2715	2655	0.13	actw	3	35	3	3	0	1	1	2	5	2	0	1	0	0	0	3	44	G
BIDDLE	PROGRESS	McANDREWS	2715	2860	0.27	actw	2	35	3	3	0	0	1	2	5	2	1	1	0	0	0	4	44	G

Street Name	Street From	Segment To	Node A	No. B	Link Length	Mode Allowed	No. Lanes	Posted Speed	Median Type	Bike Lane	On-St. Parking	Curbs	Side Walk	Street Class	Tnode Control	Tnode Lanes T	L	R	TLR	TL	TR	Tnode Lanes	ROW Width	Street Condition
BIDDLE	McANDREWS	PROGRESS	2860	2715	0.27	actw	3	35	3	1	0	1	1	2	5	2	0	0	0	0	1	3	44	G
BIDDLE	McANDREWS	BEAR CREEK P	2860	2915	0.07	abctw	2	35	3	3	0	0	1	2	5	2	1	0	0	0	0	3	44	G
BIDDLE	BEAR CREEK P	McANDREWS	2915	2860	0.07	abctw	2	35	3	1	0	1	1	2	5	2	2	1	0	0	0	5	44	G
BIDDLE	BEAR CREEK P	MARKET	2915	3050	0.27	abctw	2	35	3	3	0	0	1	2	5	2	1	0	0	0	0	3	39	G
BIDDLE	MARKET	BEAR CREEK P	3050	2915	0.27	abctw	2	35	3	1	0	1	1	2	5	2	0	1	0	0	0	3	39	G
BIDDLE	MARKET	STEVENS	3050	3080	0.12	abctw	2	35	3	3	0	0	1	2	5	2	1	0	0	0	0	3	44	G
BIDDLE	STEVENS	MARKET	3080	3050	0.12	abctw	2	35	3	1	0	1	1	2	5	2	0	1	0	0	0	3	44	G
BIDDLE	STEVENS	3165	3080	3165	0.14	abctw	2	35	3	3	0	0	1	2	0	2	0	0	0	0	0	2	44	G
BIDDLE	3165	STEVENS	3165	3080	0.14	abctw	2	35	3	1	0	1	1	2	5	2	0	1	0	0	0	3	44	G
BIDDLE	3165	JACKSON	3165	3245	0.12	abctw	2	35	3	3	0	0	1	2	5	1	1	0	0	0	1	3	44	G
BIDDLE	JACKSON	3165	3245	3165	0.12	abctw	2	35	3	1	0	1	1	2	0	2	0	0	0	0	0	2	44	G
BLACK OAK	HILLCREST	ACORN	3400	3655	0.27	at	1	25	0	0	0	0	0	3	0	0	0	0	0	0	1	1	10.5	G
BLACK OAK	ACORN	HILLCREST	3655	3400	0.27	at	1	25	0	0	0	0	0	3	5	0	1	1	0	0	0	2	10.5	G
BLACK OAK	ACORN	COUNTRY CLUB	3655	3825	0.15	atw	1	25	0	0	0	1	1	3	2	0	0	0	1	0	0	1	18	G
BLACK OAK	COUNTRY CLUB	ACRON	3825	3655	0.15	atw	1	25	0	0	0	1	1	3	0	0	0	0	0	1	0	1	18	G
BLACK OAK	COUNTRY CLUB	DELLWOOD	3825	3935	0.13	atw	1	25	0	0	0	1	1	3	0	0	0	0	1	0	0	1	18	G
BLACK OAK	DELLWOOD	SISKIYOU	3935	3990	0.17	atw	1	25	0	0	0	1	1	3	5	0	1	0	0	0	1	2	18	G
BLACK OAK	DELLWOOD	COUNTRY CLUB	3935	3825	0.13	atw	1	25	0	0	0	1	1	3	2	0	0	0	1	0	0	1	18	G
BLACK OAK	SISKIYOU	DELLWOOD	3990	3935	0.17	atw	1	25	0	0	0	1	1	3	0	0	0	0	1	0	0	1	18	G
BLACK OAK	SISKIYOU	GREENBROOK	3990	4040	0.09	atw	1	25	2	1	0	1	1	3	0	0	0	0	0	0	1	1	22	G
BLACK OAK	GREENBROOK	SISKIYOU	4040	3990	0.09	atw	1	25	2	1	0	1	1	3	5	0	1	0	0	0	1	2	22	G
BLACK OAK	GREENBROOK	BARNETT	4040	4120	0.12	atw	1	25	2	1	0	1	1	3	5	0	1	0	0	0	1	2	22	G
BLACK OAK	BARNETT	GREENBROOK	4120	4040	0.12	atw	1	25	2	1	0	1	1	3	0	1	1	0	0	0	0	2	22	G
BLACK OAK	BARNETT	LAWRENCE	4120	4345	0.24	abtw	1	25	1	0	0	1	1	3	0	0	0	0	0	1	0	1	20	G
BLACK OAK	LAWRENCE	BARNETT	4345	4120	0.24	abtw	1	25	1	0	0	1	1	3	5	0	1	0	0	0	1	2	30	G
BROOKDALE	LONE PINE	RUBY	2740	2741	0.13	at	1	35	1	1	0	1	0	3	0	0	0	0	0	0	1	1	18	G
BROOKDALE	RUBY	LONE PINE	2741	2740	0.13	at	1	35	1	1	0	1	0	3	2	0	1	1	0	0	0	2	18	G
BROOKDALE	RUBY	McANDREWS	2741	2870	0.12	at	1	35	1	1	0	1	0	3	5	1	1	1	0	0	0	3	18	G
BROOKDALE	McANDREWS	RUBY	2870	2741	0.12	at	1	35	1	1	0	1	0	3	0	0	0	0	0	1	0	1	18	G
BROOKDALE	McANDREWS	MEADOWCREEK	2870	2871	0.1	at	1	35	0	0	0	0	0	3	0	0	0	0	0	1	0	1	19	G
BROOKDALE	MEADOWCREEK	McANDREWS	2871	2870	0.1	atw	1	35	0	0	0	1	1	3	5	0	0	0	1	0	0	1	18	G
BROOKDALE	MEADOWCREEK	SPRING	2871	3020	0.16	at	1	35	0	0	0	0	0	3	2	0	0	0	1	0	0	1	19	G
BROOKDALE	SPRING	MEADOWCREEK	3020	2871	0.16	atw	1	35	0	0	0	1	1	3	0	0	0	0	0	0	1	1	19	G
CEDAR LINKS	FOOTHILL	WILKSHIRE	2400	2490	0.33	at	1	35	0	0	0	0	0	3	0	0	0	0	0	1	0	1	11	G
CEDAR LINKS	SPRINGBROOK	HAWAIIAN	2465	2470	0.23	abtw	1	35	0	0	0	1	1	3	0	0	0	0	0	1	0	1	20	G
CEDAR LINKS	HAWAIIAN	SPRINGBROOK	2470	2465	0.23	abtw	1	35	0	0	0	1	1	3	2	0	1	1	0	0	0	2	20	G
CEDAR LINKS	HAWAIIAN	ROSEWOOD	2470	2480	0.28	atw	1	35	0	0	0	1	1	3	0	0	0	0	0	1	0	1	20	G
CEDAR LINKS	ROSEWOOD	HAWAIIAN	2480	2470	0.28	atw	1	35	0	0	0	1	1	3	0	0	0	0	0	0	1	1	20	G
CEDAR LINKS	ROSEWOOD	2481	2480	2481	0.3	atw	1	35	0	0	0	1	1	3	0	1	0	0	0	0	0	1	25	G
CEDAR LINKS	2481	ROSEWOOD	2481	2480	0.3	atw	1	35	0	0	0	1	0	3	0	0	0	0	0	0	1	1	20	G
CEDAR LINKS	2481	WILKSHIRE	2481	2490	0.11	atw	1	35	0	0	0	1	1	3	0	0	0	0	0	0	1	1	25	G
CEDAR LINKS	WILKSHIRE	FOOTHILL	2490	2400	0.33	at	1	35	0	0	0	0	0	3	2	0	0	0	1	0	0	1	11	G
CEDAR LINKS	WILKSHIRE	2481	2490	2481	0.11	atw	1	35	0	0	0	1	0	3	0	1	0	0	0	0	0	1	20	G
CENTRAL	COURT	BEATTY	3060	3135	0.2	abtw	3	30	3	0	0	1	1	2	0	2	0	0	0	1	0	3	0	G
CENTRAL	BEATTY	MAPLE	3135	3180	0.05	abtw	3	30	3	0	0	1	1	2	0	2	0	0	0	1	0	3	0	G
CENTRAL	MAPLE	JACKSON	3180	3230	0.1	abtw	3	30	3	0	0	1	1	2	5	1	0	0	0	1	1	3	0	G
CENTRAL	JACKSON	2ND	3230	3265	0.04	abtw	3	30	3	0	0	1	1	2	0	2	0	0	0	0	1	3	0	G
CENTRAL	2ND	4TH	3265	3395	0.14	abtw	3	30	3	0	0	1	1	2	5	1	0	1	0	1	0	3	0	G
CENTRAL	4TH	5TH	3395	3420	0.07	atw	2	20	3	0	1	1	1	2	0	0	0	0	0	1	1	2	0	G
CENTRAL	5TH	6TH	3420	3556	0.06	atw	2	20	3	0	1	1	1	2	5	0	0	0	0	1	1	2	0	G
CENTRAL	MAIN	8TH	3555	3625	0.07	atw	2	20	3	0	1	1	1	2	5	1	0	0	0	1	0	2	0	G
CENTRAL	6TH	MAIN	3556	3555	0.07	atw	2	20	3	0	1	1	1	2	5	2	0	1	0	0	0	3	0	G
CENTRAL	8TH	10TH	3625	3760	0.14	atw	2	25	3	0	1	1	1	2	5	0	0	0	0	1	1	2	0	G
CENTRAL	10TH	12TH	3760	3875	0.14	abtw	3	25	3	0	0	1	1	2	0	1	0	0	0	1	1	3	0	G
CENTRAL	12TH	EARHART	3875	3960	0.15	abtw	3	35	3	0	0	1	1	2	0	2	0	0	0	1	0	3	0	G
CENTRAL	EARHART	BANK	3960	4020	0.18	abtw	3	35	3	0	0	1	1	2	0	2	0	0	0	1	0	3	0	G
CENTRAL	BANK	RIVERSIDE	4020	4085	0.15	abtw	2	35	3	0	0	1	1	2	0	2	0	0	0	0	0	2	0	G
CHERRY	N. PHOENIX	STANFORD	3595	3615	0.28	at	1	25	0	0	0	1	0	3	0	0	0	0	0	1	0	1	17	G
CHERRY	STANFORD	N. PHOENIX	3615	3595	0.28	at	1	25	0	0	0	1	0	3	2	0	0	0	1	0	0	1	17	G
CHERRY	STANFORD	ORCHARD VIEW	3615	3640	0.75	at	1	45	0	0	0	1	0	3	0	0	0	0	0	1	0	1	25	G
CHERRY	ORCHARD VIEW	STANFORD	3640	3615	0.75	at	1	45	0	0	0	1	0	3	0	0	0	0	0	0	1	1	25	G
CHERRY	ORCHARD VIEW	5005	3640	5005	0.56	at	1	45	0	0	0	1	0	3	0	0	0	0	1	0	0	1	9	G
CHERRY	5005	ORCHARD VIEW	5005	3640	0.56	at	1	45	0	0	0	1	0	3	0	0	0	0	0	0	1	1	9	G
Cherry Ln.	3295	5006	3295	5006	0.55	at	1	45	0	0	0	1	0	3	0	0	0	0	0	0	1	1	9	G
Cherry Ln.	5005	5006	5005	5006	0.18	at	1	45	0	0	0	1	0	3	0	0	0	0	1	0	0	1	9	G
Cherry Ln.	5006	3295	5006	3295	0.55	at	1	45	0	0	0	1	0	3	0	0	0	0	1	0	0	1	9	G
Cherry Ln.	5006	5005	5006	5005	0.18	at	1	45	0	0	0	1	0	3	0	0	0	0	0	0	1	1	9	G
Coal Mine Rd	N Phoenix Rd	266	4525	4540	0.65	at	1	35	0	0	0	0	0	4	0	1	0	0	0	0	0	1		
Coal Mine Rd	266	N Phoenix Rd	4540	4525	0.65	at	1	35	0	0	0	0	0	4	2	0	0	0	1	0	0	1		
COKER BUTTE	62	CRATER LAKE	1935	1940	0.02	at	1	45	0	0	0	0	0	2	0	0	0	0	1	0	0	1	8	A
COKER BUTTE	CRATER LAKE	62	1940	1935	0.02	at	1	45	0	0	0	0	0	2	2	0	1	1	0	0	0	2	9	A
COKER BUTTE	CRATER LAKE	1941	1940	1941	0.16	at	1	45	0	0	0	0	0	2	0	1	0	0	0	0	0	1	8	A
COKER BUTTE	1941	CRATER LAKE	1941	1940	0.16	at	1	45	0	0	0	0	0	2	0	0	0	0	1	0	0	1	9	A
COKER BUTTE	1941	1950	1941	1950	0.19	at	1	45	0	0	0	0	0	2	0	1	0	0	0	0	0	1	8	A

Street Name	Street From	Segment To	Node A	No. B	Link Length	Mode Allowed	No. Lanes	Posted Speed	Median Type	Bike Lane	On-St. Parking	Curbs	Side Walk	Street Class	Tnode Control	Tnode Lanes T	L	R	TLR	TL	TR	Tnode Lanes	ROW Width	Street Condition
COKER BUTTE	1950	1941	1950	1941	0.19	at	1	45	0	0	0	0	0	2	0	0	0	0	1	0	0	1	9	A
COLUMBUS	McANDREWS	JACKSON	3130	3195	0.13	at	2	35	0	0	0	1	1	2	2	0	0	0	0	1	1	2	30	G
COLUMBUS	JACKSON	McANDREWS	3195	3130	0.13	at	2	35	0	0	0	1	0	2	5	1	1	1	0	0	0	3	30	G
COLUMBUS	JACKSON	2ND	3195	3345	0.13	abt	2	35	0	0	0	1	0	2	0	0	0	0	0	1	1	2	22	G
COLUMBUS	2ND	JACKSON	3345	3195	0.13	abt	1	35	0	0	0	1	1	2	2	0	0	1	0	1	0	2	22	G
COLUMBUS	2ND	4TH	3345	3575	0.23	abt	2	35	0	0	0	1	0	2	0	1	0	0	0	1	0	2	22	G
COLUMBUS	4TH	2ND	3575	3345	0.23	abt	2	35	0	0	0	1	1	2	0	0	0	0	0	1	1	2	22	G
COLUMBUS	4TH	MAIN	3575	3755	0.16	abt	2	35	0	0	0	1	0	2	5	0	0	0	0	1	1	2	22	G
COLUMBUS	MAIN	4TH	3755	3575	0.16	abt	2	35	0	0	0	1	1	2	0	1	0	0	0	0	1	2	22	G
Columbus	Main	8th	3755	5002	0.02	abt	2	35	0	0	0	1	0	2	0	0	0	0	0	1	1	2	22	G
COLUMBUS	8TH	10TH	3870	3895	0.06	abt	2	35	0	0	0	1	0	2	0	1	0	0	0	1	0	2	22	G
COLUMBUS	8TH	MAIN	3870	5002	0.03	abt	2	35	0	0	0	1	1	2	5	0	0	0	0	1	1	2	22	G
COLUMBUS	10TH	8TH	3895	3870	0.06	abt	2	35	0	0	0	1	1	2	0	1	0	0	0	0	1	2	22	G
COLUMBUS	10TH	PRUNE	3895	3980	0.18	abt	1	35	1	0	0	1	0	2	0	0	1	0	0	0	1	2	22	G
COLUMBUS	PRUNE	10TH	3980	3895	0.18	abt	2	35	1	0	0	1	1	2	0	1	0	0	0	0	1	2	22	G
COLUMBUS	PRUNE	DAKOTA	3980	4071	0.16	abt	1	35	2	0	0	1	0	2	0	0	1	0	0	0	1	2	22	G
COLUMBUS	DAKOTA	PRUNE	4071	3980	0.16	abt	1	35	2	0	0	1	1	2	0	0	1	0	0	0	1	2	22	G
COLUMBUS	DAKOTA	MT. PITT	4071	4195	0.11	abt	1	35	2	0	0	0	0	2	0	0	1	0	0	0	1	2	12	G
COLUMBUS	MT. PITT	DAKOTA	4195	4071	0.11	abt	1	35	2	0	0	0	1	2	0	0	1	0	0	0	1	2	12	G
COLUMBUS	MT. PITT	STEWART	4195	4245	0.13	abt	1	35	2	0	0	0	0	2	5	1	1	0	0	0	1	3	12	G
COLUMBUS	STEWART	MT. PITT	4245	4195	0.13	abt	1	35	2	0	0	0	1	2	0	0	1	0	0	0	1	2	12	G
COLUMBUS	STEWART	BRENTCREST	4250	4400	0.22	at	1	45	0	0	0	0	0	2	0	0	0	0	0	0	1	1	16	G
COLUMBUS	BRENTCREST	STEWART	4400	4250	0.22	at	1	45	0	0	0	0	0	2	5	1	1	0	0	0	1	3	16	G
COLUMBUS	BRENTCREST	CUNNINGHAM	4400	4490	0.23	at	1	45	0	0	0	1	0	2	0	0	0	0	0	0	1	1	24.5	G
COLUMBUS	CUNNINGHAM	BRENTCREST	4490	4400	0.23	at	1	45	0	0	0	1	0	2	0	0	0	0	0	1	0	1	24.5	G
COLUMBUS	CUNNINGHAM	GARFIELD	4490	4495	0.03	at	1	45	0	0	0	1	0	2	0	0	0	0	0	1	0	1	16	G
COLUMBUS	GARFIELD	CUNNINGHAM	4495	4490	0.03	at	1	45	0	0	0	1	0	2	0	0	0	0	0	1	0	1	16	G
COLUMBUS	GARFIELD	4620	4495	4620	0.49	at	1	55	0	0	0	1	0	2	0	1	0	0	0	0	0	1	16	G
COLUMBUS	4620	GARFIELD	4620	4495	0.49	at	1	55	0	0	0	1	0	2	0	0	0	0	0	0	1	1	16	G
COLUMBUS	4620	S. STAGE	4620	4635	0.33	at	1	55	0	0	0	1	0	2	2	0	0	0	1	0	0	1	16	G
COLUMBUS	S. STAGE	4620	4635	4620	0.33	at	1	55	0	0	0	1	0	2	0	1	0	0	0	0	0	1	16	G
COLUMBUS	MAIN	8TH	5002	3870	0.03	abt	2	35	1	0	0	1	0	2	0	1	0	0	0	1	0	2	22	G
COTTAGE	MAIN	TAYLOR	3470	3620	0.14	atw	1	25	0	0	0	1	1	3	0	0	0	0	0	1	0	1	12.5	G
COTTAGE	TAYLOR	MAIN	3620	3470	0.14	atw	1	25	0	0	0	1	1	3	2	0	0	0	1	0	0	1	12.5	G
COTTAGE	TAYLOR	10TH	3620	3710	0.09	atw	1	25	0	0	0	1	1	3	2	0	0	0	1	0	0	1	13	G
COTTAGE	10TH	TAYLOR	3710	3620	0.09	atw	1	25	0	0	0	1	1	3	0	0	0	0	0	0	1	1	12.5	G
COTTAGE	10TH	12TH	3710	3800	0.05	atw	1	25	0	0	0	1	1	3	0	1	0	0	0	0	0	1	12	G
COTTAGE	12TH	10TH	3800	3710	0.05	atw	1	25	0	0	0	1	1	3	2	0	0	0	1	0	0	1	15	G
COURT	0050 BIG X	OHIO	2700	2766	0.17	abtw	3	35	3	0	0	1	1	2	5	1	0	0	0	1	1	3	0	G
COURT	OHIO	McANDREWS	2766	2825	0.11	abtw	3	35	3	0	0	1	1	2	5	3	1	1	0	0	0	5	0	G
COURT	McANDREWS	2961	2825	2961	0.06	abtw	3	30	3	0	0	1	1	2	0	2	0	0	0	1	0	3	0	G
COURT	MANZANITA	CENTRAL	2960	3060	0.18	abtw	3	30	3	0	0	1	1	2	5	1	0	0	0	1	1	3	0	G
COURT	2961	MANZANITA	2961	2960	0.17	abtw	3	30	3	0	0	1	1	2	0	2	0	0	0	1	0	3	0	G
CRATER LAKE	VILAS	1635	1560	1635	0.37	at	1	45	0	0	0	0	0	3	0	1	0	0	0	0	0	1	28	G
CRATER LAKE	1635	VILAS	1635	1560	0.37	at	1	45	0	0	0	0	0	3	2	0	0	0	1	0	0	1	28	G
CRATER LAKE	1635	COKER BUTTE	1635	1940	0.64	at	1	45	0	0	0	0	0	3	2	0	0	0	1	0	0	1	28	G
CRATER LAKE	COKER BUTTE	1635	1940	1635	0.64	at	1	45	0	0	0	0	0	3	0	1	0	0	0	0	0	1	28	G
CRATER LAKE	COKER BUTTE	2080	1940	2080	0.34	at	1	45	0	0	0	0	0	3	0	0	0	0	0	1	0	1	28	G
CRATER LAKE	2080	COKER BUTTE	2080	1940	0.34	at	1	45	0	0	0	0	0	3	2	0	0	0	1	0	0	1	28	G
CRATER LAKE	2080	2165	2080	2165	0.31	at	1	45	0	0	0	0	0	3	0	0	0	0	1	0	0	1	28	G
CRATER LAKE	2165	2080	2165	2080	0.31	at	1	45	0	0	0	0	0	3	0	0	0	0	0	0	1	1	28	G
CRATER LAKE	2165	DELTA WATERS	2165	2285	0.37	at	2	45	0	0	0	0	0	2	5	1	1	0	0	0	1	3	28	G
CRATER LAKE	DELTA WATERS	2165	2285	2165	0.37	at	2	45	0	0	0	0	0	2	0	0	0	0	1	0	0	1	28	G
CRATER LAKE	DELTA WATERS	BRADBURY	2285	2350	0.09	abtw	2	35	0	0	0	1	1	2	0	2	1	0	0	0	0	3	28	G
CRATER LAKE	BRADBURY	DELTA WATERS	2350	2285	0.09	abt	2	35	0	0	0	1	0	2	5	2	1	1	0	0	0	4	28	G
CRATER LAKE	BRADBURY	GRANDVIEW	2350	2495	0.36	abtw	2	35	0	0	0	1	1	2	0	0	0	0	0	1	1	2	24	G
CRATER LAKE	GRANDVIEW	BRADBURY	2495	2350	0.36	abt	2	35	0	0	0	1	0	2	0	1	0	0	0	0	1	2	24	G
CRATER LAKE	GRANDVIEW	ROBERTS	2495	2540	0.18	abt	2	35	2	0	0	1	0	2	5	2	1	0	0	0	0	3	30	G
CRATER LAKE	ROBERTS	GRANDVIEW	2540	2495	0.18	abt	2	35	0	0	0	1	1	2	0	0	0	0	0	1	1	2	30	G
CRATER LAKE	ROBERTS	ROBERTS	2540	2595	0.12	abt	2	35	2	0	0	1	0	2	0	1	0	0	0	0	1	2	30	G
CRATER LAKE	ROBERTS	ROBERTS	2595	2540	0.12	abt	2	35	2	0	0	1	1	2	5	1	0	0	0	0	1	2	30	G
CRATER LAKE	ROBERTS	BROOKHURST	2595	2635	0.15	abt	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	30	G
CRATER LAKE	BROOKHURST	ROBERTS	2635	2595	0.15	abt	2	35	2	0	0	1	1	2	0	2	1	0	0	0	0	3	30	G
CRATER LAKE	BROOKHURST	JOHNSON	2635	2710	0.15	abt	2	35	2	0	0	1	1	2	0	1	0	0	0	0	1	2	30	G
CRATER LAKE	JOHNSON	BROOKHURST	2710	2635	0.15	abt	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	30	G
CRATER LAKE	JOHNSON	GRAND	2710	2760	0.11	abt	2	35	2	0	0	1	1	2	0	1	1	0	0	0	1	3	30	G
CRATER LAKE	GRAND	JOHNSON	2760	2710	0.11	abt	2	35	2	0	0	1	1	2	0	2	1	0	0	0	0	3	30	G
CRATER LAKE	GRAND	McANDREWS	2760	2900	0.21	abtw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	30	G
CRATER LAKE	McANDREWS	GRAND	2900	2760	0.21	abt	2	35	2	0	0	1	1	2	0	1	1	0	0	0	1	3	30	G
CRATER LAKE	McANDREWS	WOODROW	2900	2940	0.12	abtw	2	35	2	0	0	1	1	2	0	2	1	0	0	0	0	3	30	G
CRATER LAKE	WOODROW	McANDREWS	2940	2900	0.12	abtw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	30	G
CRATER LAKE	WOODROW	SPRING	2940	2980	0.08	abtw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	30	G
CRATER LAKE	SPRING	WOODROW	2980	2940	0.08	abtw	2	35	2	0	0	1	1	2	0	1	0	0	0	0	1	2	30	G
CRATER LAKE	SPRING	3102	2980	3102	0.13	abtw	2	35	2	0	0	1	1	2	0	1	1	0	0	0	1	3	30	G

Street Name	Street From	Segment To	Node A	No. B	Link Length	Mode Allowed	No. Lanes	Posted Speed	Median Type	Bike Lane	On-St. Parking	Curbs	Side Walk	Street Class	Tnode Control	Tnode Lanes T	L	R	TLR	TL	TR	Tnode Lanes	ROW Width	Street Condition
CRATER LAKE	STEVENS	3102	3100	3102	0.12	abtw	2	35	2	0	0	1	1	2	0	1	1	0	0	0	1	3	30	G
CRATER LAKE	STEVENS	SALING	3100	3170	0.13	abtw	2	35	1	0	0	1	1	2	0	1	0	0	0	0	1	2	23	G
CRATER LAKE	3102	SPRING	3102	2980	0.13	abtw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	30	G
CRATER LAKE	3102	STEVENS	3102	3100	0.12	abtw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	30	G
CRATER LAKE	SALING	STEVENS	3170	3100	0.13	abtw	2	35	1	0	0	1	1	2	5	1	1	0	0	0	1	3	23	G
CRATER LAKE	SALING	BENNETT	3170	3190	0.04	abtw	2	35	0	0	0	1	1	2	0	1	0	0	0	0	0	1	23	G
CRATER LAKE	BENNETT	SALING	3190	3170	0.04	abtw	2	35	0	0	0	1	1	2	0	1	0	0	0	0	1	2	23	G
CRATER LAKE	BENNETT	JACKSON	3190	3255	0.08	abtw	2	35	0	0	0	1	1	2	5	1	0	1	0	1	0	3	23	G
CRATER LAKE	JACKSON	BENNETT	3255	3190	0.08	abtw	2	35	0	0	0	1	1	2	0	1	0	0	0	1	0	2	23	G
CRATER LAKE	JACKSON	3477	3255	3477	0.11	abtw	2	30	0	0	0	1	1	2	0	0	0	0	0	1	1	2	23	G
CRATER LAKE	MAIN	3477	3475	3477	0.11	abtw	2	30	0	0	0	1	1	2	0	0	0	0	0	1	1	2	23	G
CRATER LAKE	3477	JACKSON	3477	3255	0.11	abtw	2	30	0	0	0	1	1	2	5	0	0	0	0	1	1	2	23	G
CRATER LAKE	3477	MAIN	3477	3475	0.11	abtw	2	30	0	0	0	1	1	2	5	0	1	1	0	0	0	2	23	G
CUNNINGHAM	ORCHARD HOM	ORCHARD HM W	4480	4485	0.06	at	1	35	0	0	0	1	0	2	0	0	1	0	0	0	0	1	0	A
CUNNINGHAM	ORCHARD HOM	COLUMBUS	4480	4490	0.33	at	1	35	0	0	0	1	0	2	2	0	0	0	1	0	0	1	0	A
CUNNINGHAM	ORCHARD HM W	ORCHARD HOM	4485	4480	0.06	at	1	35	0	0	0	1	0	2	0	0	0	0	0	1	0	1	0	A
CUNNINGHAM	COLUMBUS	ORCHARD HOM	4490	4480	0.33	at	1	35	0	0	0	1	0	2	2	0	0	0	0	0	1	1	0	A
DAKOTA	HAMILTON	PLUM	4070	4072	0.1	abtw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	18	G
DAKOTA	HAMILTON	NEWTOWN	4070	4075	0.27	abctw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	15	G
DAKOTA	COLUMBUS	PLUM	4071	4072	0.23	abtw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	18	G
DAKOTA	PLUM	HAMILTON	4072	4070	0.1	abtw	1	25	0	0	1	1	1	3	2	0	0	0	1	0	0	1	18	G
DAKOTA	PLUM	COLUMBUS	4072	4071	0.23	abtw	1	25	0	0	1	1	1	3	2	0	0	0	1	0	0	1	18	G
DAKOTA	NEWTOWN	HAMILTON	4075	4070	0.27	abctw	1	25	0	0	1	1	1	3	2	0	0	0	1	0	0	1	20	G
DAKOTA	NEWTOWN	KING	4075	4080	0.14	abctw	1	25	0	0	1	1	1	3	2	0	0	0	1	0	0	1	18	G
DAKOTA	KING	NEWTOWN	4080	4075	0.14	abctw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	15	G
DAKOTA	KING	OAKDALE	4080	4090	0.15	abctw	1	25	0	1	1	1	1	3	2	0	0	0	1	0	0	1	18	G
DAKOTA	OAKDALE	KING	4090	4080	0.15	abctw	1	25	0	1	1	1	1	3	2	0	0	0	1	0	0	1	18	G
DELTA WATERS	LEAR WAY	62	2260	2275	0.07	abctw	2	30	1	0	0	1	0	3	5	1	1	0	0	0	1	3	18	G
DELTA WATERS	62	LEAR WAY	2275	2260	0.07	abctw	2	30	1	0	0	1	1	3	0	2	0	0	0	0	0	2	26	G
DELTA WATERS	62	2280	2275	2280	0.15	actw	2	30	2	1	0	1	1	3	0	0	0	0	0	0	0	0	31.5	G
DELTA WATERS	2280	62	2280	2275	0.15	actw	2	30	2	1	0	1	1	3	5	1	1	0	0	0	1	3	31.5	G
DELTA WATERS	2280	CRATER LAKE	2280	2285	0.07	actw	2	30	2	1	0	1	1	3	5	0	0	0	0	1	1	2	31.5	G
DELTA WATERS	CRATER LAKE	2280	2285	2280	0.07	actw	2	30	2	1	0	1	1	3	0	0	0	0	0	0	0	0	31.5	G
DELTA WATERS	CRATER LAKE	SPRINGBROOK	2285	2290	0.38	abctw	1	35	2	1	0	1	1	3	0	0	0	0	0	0	1	1	22	G
DELTA WATERS	SPRINGBROOK	CRATER LAKE	2290	2285	0.38	abct	2	30	2	1	0	1	0	3	5	0	0	0	0	1	1	2	22	G
DELTA WATERS	SPRINGBROOK	HAWAIIAN	2290	2300	0.34	abctw	1	35	2	1	0	1	1	3	0	0	0	0	0	0	1	1	22	G
DELTA WATERS	HAWAIIAN	SPRINGBROOK	2300	2290	0.34	abct	1	35	2	1	0	1	0	3	0	1	1	0	0	0	0	2	22	G
DELTA WATERS	HAWAIIAN	LEONARD	2300	2305	0.57	atw	1	35	0	0	1	1	1	3	0	0	0	0	0	0	1	1	22	G
DELTA WATERS	LEONARD	HAWAIIAN	2305	2300	0.57	at	1	35	0	0	1	1	0	3	0	1	1	0	0	0	0	2	22	G
DELTA WATERS	LEONARD	FOOTHILL	2305	2310	0.41	atw	1	35	0	0	1	1	0	3	2	0	0	0	1	0	0	1	22	G
DELTA WATERS	FOOTHILL	LEONARD	2310	2305	0.41	at	1	35	0	0	1	1	0	3	0	0	0	0	0	1	0	1	22	G
DIAMOND	HAPPY VALLEY	KINGS HWY.					1	25	0	0		0	0	3	2				1			1	12	
DIAMOND	KIINGS HWY.	H. VLY					1		0	0		0	0	3	0				1					
EDWARDS	COURT	NIANTIC	3060	3065	0.12	atw	1	30	0	0	1	1	1	3	0	0	0	0	1	0	0	1	18	G
EDWARDS	NIANTIC	COURT	3065	3060	0.12	atw	1	30	0	0	1	1	1	3	5	0	0	0	0	1	0	1	18	G
EDWARDS	NIANTIC	RIVERSIDE	3065	3070	0.19	atw	1	30	0	0	1	1	1	3	2	0	0	0	0	1	0	1	9	G
EDWARDS	RIVERSIDE	NIANTIC	3070	3065	0.19	atw	1	30	0	0	1	1	1	3	0	0	0	0	1	0	0	1	9	G
ELLENDALE	BARNETT	R.V. MANOR						35	0	1	0	1	1	3	0	1							22	G
ELLENDALE	RV MANOR	BARNETT					1	35	0	1	1	1	1	3	5		1				1			G
ELM	MAIN	8TH	3765	3850	0.09	abctw	2	30	3	1	0	1	1	2	0	0	1	0	1	0	0	2	40	G
FOOTHILL	2095	DELTA WATERS	2095	2310	0.68	at	1	45	0	0	0	0	0	2	0	0	0	0	0	0	1	1	12	A
FOOTHILL	DELTA WATERS	2095	2310	2095	0.68	at	1	45	0	0	0	0	0	2	0	1	0	0	0	0	0	1	11	A
FOOTHILL	DELTA WATERS	CEDAR LINKS	2310	2400	0.3	at	1	45	0	0	0	0	0	2	0	0	0	0	0	0	1	1	12	A
FOOTHILL	CEDAR LINKS	DELTA WATERS	2400	2310	0.3	at	1	45	0	0	0	0	0	2	0	0	1	1	0	0	0	2	11	A
FOOTHILL	CEDAR LINKS	NORMIL	2400	2440	0.15	at	1	45	0	0	0	0	0	2	0	0	0	0	0	0	1	1	12	A
FOOTHILL	NORMIL	CEDAR LINKS	2440	2400	0.15	at	1	45	0	0	0	0	0	2	0	0	0	0	0	1	0	1	11	A
FOOTHILL	NORMIL	EUCALYPTUS	2440	2610	0.33	at	1	45	0	0	0	0	0	2	0	0	0	0	0	0	1	1	12	A
FOOTHILL	EUCALYPTUS	NORMIL	2610	2440	0.33	at	1	45	0	0	0	0	0	2	0	0	0	0	0	0	1	1	11	A
FOOTHILL	EUCALYPTUS	LONE PINE	2610	2750	0.28	at	1	45	0	0	0	0	0	2	0	0	0	0	0	0	1	1	12	A
FOOTHILL	LONE PINE	EUCALYPTUS	2750	2610	0.28	at	1	45	0	0	0	0	0	2	0	0	0	0	0	1	0	1	11	A
FOOTHILL	LONE PINE	2895	2750	2895	0.25	at	1	45	0	0	0	0	0	2	0	1	0	0	0	0	0	1	11	A
FOOTHILL	2895	LONE PINE	2895	2750	0.25	at	1	45	0	0	0	0	0	2	0	0	0	0	0	1	0	1	11	A
FOOTHILL	2895	HILLCREST	2895	3325	0.75	at	1	45	0	0	0	0	0	2	5	1	1	0	0	0	1	3	11	A
FOOTHILL	HILLCREST	2895	3325	2895	0.75	at	1	45	0	0	0	0	0	2	0	1	0	0	0	0	0	1	11	A
FRONT	JACKSON	3340	3225	3340	0.07	abtw	1	25	0	0	1	1	1	4	0	0	0	0	0	1	0	1		A
FRONT	3340	JACKSON	3340	3225	0.07	abtw	1	25	0	0	1	1	1	4	2	0	0	0	1	0	0	1		A
FRONT	3340	4TH	3340	3435	0.15	abtw	1	25	0	0	1	1	1	4	5	0	0	0	1	0	0	1		A
FRONT	4TH	3340	3435	3340	0.15	abtw	1	25	0	0	1	1	1	4	0	0	0	0	0	0	1	1		A
FRONT	4TH	5TH	3435	3505	0.06	abtw	1	25	0	0	0	1	1	4	0	0	0	0	0	1	0	1		A
FRONT	5TH	4TH	3505	3435	0.06	abtw	1	25	0	0	1	1	1	4	5	0	0	0	1	0	0	1		A
FRONT	5TH	6TH	3505	3636	0.06	abtw	1	25	0	0	0	1	1	4	5	0	1	0	0	0	1	2		A
FRONT	MAIN	6TH	3635	3636	0.08	abtw	1	25	0	0	1	1	1	4	5	0	0	0	1	0	0	1		A
FRONT	MAIN	8TH	3635	3690	0.08	abtw	1	25	0	0	1	1	1	4	5	1	1	0	0	0	0	2		A
FRONT	6TH	5TH	3636	3505	0.06	abtw	1	25	0	0	1	1	1	4	0	0	0	0	1	0	0	1		A

Street Name	Street From	Segment To	Node A	No. B	Link Length	Mode Allowed	No. Lanes	Posted Speed	Median Type	Bike Lane	On-St. Parking	Curbs	Side Walk	Street Class	Tnode Control	Tnode Lanes T	L	R	TLR	TL	TR	Tnode Lanes	ROW Width	Street Condition
FRONT	6TH	MAIN	3636	3635	0.08	abtw	1	25	0	0	0	1	1	4	5	1	0	1	0	0	0	2		A
FRONT	8TH	MAIN	3690	3635	0.08	abtw	1	25	0	0	1	1	1	4	5	0	0	0	0	1	0	1		A
FRONT	8TH	10TH	3690	3805	0.13	abtw	1	25	0	0	0	1	1	4	5	0	0	1	0	1	0	2		A
FRONT	10TH	8TH	3805	3690	0.13	abtw	1	25	0	0	1	1	1	4	5	0	0	0	0	0	1	1		A
GARFIELD	COLUMBUS	4500	4495	4500	0.2	at	1	25	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0	A
GARFIELD	4500	COLUMBUS	4500	4495	0.2	at	1	25	0	0	0	1	0	3	2	0	0	0	1	0	0	1	0	A
GARFIELD	4500	PEACH	4500	4510	0.14	at	1	25	0	0	0	1	0	3	2	0	0	0	1	0	0	1	0	A
GARFIELD	PEACH	4500	4510	4500	0.14	at	1	25	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0	A
GARFIELD	PEACH	KINGS	4510	4515	0.26	atw	1	25	0	0	0	1	1	3	2	0	0	0	1	0	0	1	0	A
GARFIELD	KINGS	PEACH	4515	4510	0.26	atw	1	25	0	0	0	1	1	3	2	0	0	0	1	0	0	1	0	A
GARFIELD	WHITMAN	KINGS	4520	4515	0.29	atw	1	25	0	0	0	1	1	3	2	0	0	0	1	0	0	1	0	A
GARFIELD	KINGS	WHITMAN	4515	4520	0.29	atw	1	25	0	0	0	1	1	3	0	0	0	0	1	0	0	1	0	A
GARFIELD	WHITMAN	HOLLY					1	25	0	0	1	1	1	2	0	1	0	1	0	0	0	2	22	
GARFIELD	HOLLY	WHITMAN					1	25	0	0	1	1	0	2	0	0	0	0	1	0	0	1		
GARFIELD	RIVERSIDE	HOLLY					2	35	2	1	0	1	1	2	0	1	1	0	0	0	0	2		
GARFIELD	HOLLY	RIVERSIDE					2	35	2	1	0	1	1	2	5	1	1	0	0	0	1	3		
GOLF VIEW	BARNETT	JUANIPERO					1	35	0	1	0	1	0	3	2	0	1	1	0	0	0	2	22	
GOLF VIEW	JUANIPERO	BARNETT					1	35	0	1	0	1	1	3	2	0	0	0	1	0	0	1		
HAWTHORNE	JACKSON	SHERMAN	3250	3251	0.12	atw	1	25	0	0	0	1	1	3	0	0	0	0	0	1	0	1	18	G
HAWTHORNE	SHERMAN	JACKSON	3251	3250	0.12	atw	1	25	0	0	0	1	1	3	5	0	1	0	0	0	1	2	18	G
HAWTHORNE	SHERMAN	MAIN	3251	3450	0.1	atw	1	25	0	0	0	1	1	3	5	0	1	0	0	0	1	2	18	G
HAWTHORNE	MAIN	SHERMAN	3450	3251	0.1	atw	1	25	0	0	0	1	1	3	0	0	0	0	0	0	1	1	18	G
HIGHLAND	MAIN	WOODLAWN	3460	3550	0.08	abt	1	25	0	0	0	0	0	3	0	0	0	0	1	0	0	1	12	G
HIGHLAND	WOODLAWN	MAIN	3550	3460	0.08	abt	1	25	0	0	0	0	0	3	2	0	1	1	0	0	0	2	12	G
HIGHLAND	WOODLAWN	KEENE WAY	3550	3745	0.19	abt	1	25	0	0	0	0	0	3	0	0	0	0	1	0	0	1	12	G
HIGHLAND	KEENE WAY	WOODLAWN	3745	3550	0.19	abt	1	25	0	0	0	0	0	3	0	0	0	0	1	0	0	1	12	G
HIGHLAND	KEENE WAY	3966 (ROXY ANN)	3745	3966	0.16	abt	1	25	0	0	0	0	0	3	0	0	0	0	0	1	0	1	12	A
HIGHLAND	SISKIYOU	3966 (ROXY ANN)	3965	3966	0.09	abt	1	25	0	0	0	0	0	3	0	0	0	0	0	0	1	1	12	A
HIGHLAND	SISKIYOU	GREENWOOD	3965	4030	0.17	abt	1	35	0	0	0	1	0	3	0	0	0	0	0	1	0	1	12	A
HIGHLAND	3966	KEENE WAY	3966	3745	0.16	abt	1	25	0	0	0	0	0	3	0	0	0	0	1	0	0	1	12	A
HIGHLAND	3966	SISKIYOU	3966	3965	0.09	abt	1	25	0	0	0	0	0	3	2	0	0	1	0	1	0	2	12	A
HIGHLAND	GREENWOOD	SISKIYOU	4030	3965	0.17	abtw	1	35	0	0	0	1	1	3	2	1	1	1	0	0	0	3	12	A
HIGHLAND	GREENWOOD	4181	4030	4181	0.1	abt	1	35	0	0	0	1	0	3	0	0	1	1	0	0	0	2	22	G
HIGHLAND	BARNETT	4181	4180	4181	0.08	abt	1	35	0	0	0	1	0	3	0	0	0	0	0	0	0	0	22	G
HIGHLAND	4181	GREENWOOD	4181	4030	0.1	abt	1	35	0	0	0	1	0	3	0	0	0	0	0	0	1	1	22	G
HIGHLAND	4181	BARNETT	4181	4180	0.08	abt	1	35	0	0	0	1	0	3	5	0	1	1	0	0	0	2	22	G
HILLCREST	MARIPOSA	HIGHCREST	3175	3185	0.42	at	1	35	0	0	0	1	1	3	0	0	0	0	0	1	0	1	17	G
HILLCREST	MARIPOSA	STANFORD	3175	3285	0.41	at	1	35	0	0	0	1	0	3	0	0	0	0	0	1	0	1	15	P
HILLCREST	HIGHCREST	MARIPOSA	3185	3175	0.42	at	1	35	0	0	0	1	0	3	0	0	0	0	0	1	0	1	17	G
HILLCREST	HIGHCREST	CHERRY	3185	3295	0.68	at	1	40	0	0	0	1	0	3	0	0	0	0	1	0	0	1	12	G
HILLCREST	STANFORD	MARIPOSA	3285	3175	0.41	at	1	35	0	0	0	1	0	3	0	0	0	0	0	0	1	1	15	P
HILLCREST	STANFORD	N. PHOENIX	3285	3330	0.42	at	1	35	0	0	0	1	0	3	0	1	1	0	0	0	0	2	22	G
HILLCREST	CHERRY	HIGHCREST	3295	3185	0.68	at	1	40	0	0	0	1	0	3	0	0	0	0	0	0	1	1	15	G
HILLCREST	PIERCE	FOOTHILL	3320	3325	0.41	atw	1	40	0	1	0	1	1	3	0	1	1	0	0	0	0	2	22	A
HILLCREST	PIERCE	3405	3320	3405	0.27	at	1	35	0	1	0	1	0	3	0	0	0	0	0	0	0	0	22	A
HILLCREST	FOOTHILL	PIERCE	3325	3320	0.41	at	1	35	0	1	0	1	0	3	0	0	0	0	0	0	1	1	22	A
HILLCREST	FOOTHILL	N. PHOENIX	3325	3330	0.34	at	1	35	0	0	0	1	0	3	0	1	0	1	0	0	0	2	15	A
HILLCREST	N. PHOENIX	STANFORD	3330	3285	0.42	at	1	35	0	0	0	1	0	3	0	0	0	0	0	0	1	1	15	G
HILLCREST	N. PHOENIX	FOOTHILL	3330	3325	0.34	at	1	35	0	0	0	1	0	3	0	0	0	0	0	0	1	1	15	A
HILLCREST	BARNEBURG	SUNRISE	3360	3365	0.09	at	1	25	0	0	0	0	0	3	0	0	0	0	0	1	0	1	8	G
HILLCREST	SUNRISE	BARNEBURG	3365	3360	0.09	at	1	25	0	0	0	0	0	3	0	0	0	0	0	1	0	1	9	G
HILLCREST	JACKSON	VALLEY VIEW	3375	3380	0.05	at	1	35	0	0	0	0	0	3	2	0	0	0	1	0	0	1	8	G
HILLCREST	VALLEY VIEW	JACKSON	3380	3375	0.05	at	1	35	0	0	0	0	0	3	0	0	0	0	0	0	1	1	9	G
HILLCREST	VALLEY VIEW	MODOC	3380	3390	0.12	at	1	35	1	1	0	1	0	3	0	0	0	0	0	0	1	1	22	G
HILLCREST	MODOC	VALLEY VIEW	3390	3380	0.12	at	1	35	1	1	0	1	1	3	2	0	0	0	1	0	0	1	22	G
HILLCREST	MODOC	BLACK OAK	3390	3400	0.18	at	1	35	1	1	0	1	0	3	5	0	0	0	0	0	1	1	22	G
HILLCREST	BLACK OAK	MODOC	3400	3390	0.18	at	1	35	1	1	0	1	1	3	0	0	0	0	0	1	0	1	22	G
HILLCREST	BLACK OAK	3405	3400	3405	0.04	atw	1	35	2	1	0	1	1	3	0	0	0	0	0	0	0	0	22	A
HILLCREST	3405	PIERCE	3405	3320	0.27	atw	1	35	2	1	0	1	1	3	0	1	1	0	0	0	0	2	22	A
HILLCREST	3405	BLACK OAK	3405	3400	0.04	at	1	35	2	1	0	1	0	3	5	1	1	0	0	0	0	2	22	A
HOLLY	JACKSON	GRAPE	3210	3336	0.05	atw	1	25	0	0	1	1	1	3	0	0	0	0	0	1	0	1	18	G
HOLLY	1ST	GRAPE	3335	3336	0.07	atw	1	25	0	0	1	1	1	3	0	0	0	0	0	0	1	1	18	G
HOLLY	1ST	2ND	3335	3410	0.07	atw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	18	G
HOLLY	GRAPE	JACKSON	3336	3210	0.05	atw	1	25	0	0	1	1	1	3	2	0	0	0	1	0	0	1	18	G
HOLLY	GRAPE	1ST	3336	3335	0.07	atw	1	25	0	0	1	1	1	3	0	1	0	0	0	0	0	1	18	G
HOLLY	2ND	4TH	3410	3510	0.14	atw	1	25	0	0	1	1	1	3	2	0	0	0	1	0	0	1	18	G
HOLLY	4TH	2ND	3510	3410	0.14	atw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	18	G
HOLLY	4TH	5TH	3510	3565	0.1	atw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	18	G
HOLLY	5TH	4TH	3565	3510	0.1	atw	1	25	0	0	1	1	1	3	2	0	0	0	1	0	0	1	18	G
HOLLY	5TH	6TH	3565	3687	0.04	atw	1	25	0	0	1	1	1	3	2	0	0	0	1	0	0	1	20	G
HOLLY	MAIN	6TH	3685	3687	0.07	atw	1	25	0	0	1	1	1	3	2	0	0	0	1	0	0	1	20	G
HOLLY	MAIN	8TH	3685	3790	0.07	atw	1	25	0	0	1	1	1	3	5	0	0	0	0	1	0	1	20	G
HOLLY	6TH	5TH	3687	3565	0.04	atw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	20	G
HOLLY	6TH	MAIN	3687	3685	0.07	atw	1	25	0	0	1	1	1	3	5	0	0	0	0	0	1	1	20	G

Street Name	Street From	Segment To	Node A	No. B	Link Length	Mode Allowed	No. Lanes	Posted Speed	Median Type	Bike Lane	On-St. Parking	Curbs	Side Walk	Street Class	Tnode Control	Tnode Lanes T	L	R	TLR	TL	TR	Tnode Lanes	ROW Width	Street Condition
HOLLY	8TH	MAIN	3790	3685	0.07	atw	1	25	0	0	1	1	1	3	5	0	0	0	0	1	0	1	20	G
HOLLY	8TH	3791	3790	3791	0.11	atw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	19	G
HOLLY	3791	8TH	3791	3790	0.11	atw	1	25	0	0	1	1	1	3	5	0	0	0	0	0	1	1	20	G
HOLLY	3791	10TH	3791	3880	0.04	atw	1	25	0	0	1	1	1	3	5	0	0	0	1	0	0	1	19	G
HOLLY	2ND	1ST	3410	3335	0.07	atw	1	25	0	0	1	1	1	3	0	0	0	0	0	0	0	0	18	G
HOLLY	10TH	3791	3880	3791	0.04	atw	1	25	0	0	1	1	1	3	0	0	0	0	0	0	1	1	20	G
HOLLY	10TH	11TH	3880	3915	0.07	atw	1	25	0	0	1	1	1	3	2	0	0	0	1	0	0	1	18	G
HOLLY	11TH	10TH	3915	3880	0.07	atw	1	25	0	0	1	1	1	3	5	0	0	0	1	0	0	1	18	G
HOLLY	11TH	12TH	3915	3975	0.14	atw	1	25	0	0	1	1	1	3	2	0	0	0	1	0	0	1	18.5	G
HOLLY	12TH	11TH	3975	3915	0.14	atw	1	25	0	0	1	1	1	3	2	0	0	0	1	0	0	1	18.5	G
HOLLY	12TH	MONROE	3975	4045	0.18	atw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	18	G
HOLLY	MONROE	12TH	4045	3975	0.18	atw	1	25	0	0	1	1	1	3	2	0	0	0	1	0	0	1	18	G
HOLLY	MONROE	BARNETT	4045	4135	0.15	actw	1	25	0	1	0	1	1	3	2	0	0	0	1	0	0	1	18	G
HOLLY	BARNETT	MONROE	4135	4045	0.15	actw	1	25	0	1	1	1	1	3	0	0	0	0	1	0	0	1	18	G
HOLLY	BARNETT	O'GARA	4135	4215	0.11	actw	1	25	0	1	1	1	1	3	0	0	0	0	1	0	0	1	18	G
HOLLY	O'GARA	BARNETT	4215	4135	0.11	actw	1	25	0	1	1	1	1	3	2	0	0	0	1	0	0	1	18	G
HOLLY	O'GARA	STEWART	4215	4310	0.09	actw	1	25	0	1	1	1	1	3	5	0	1	0	0	0	1	2	18	G
HOLLY	STEWART	O'GARA	4310	4215	0.09	actw	1	25	0	1	1	1	1	3	0	0	0	0	1	0	0	1	18	G
HOLLY	STEWART	HOLMES	4310	4440	0.24	actw	1	25	0	1	1	0	1	3	0	0	0	1	0	0	0	1	19	G
HOLLY	HOLMES	STEWART	4440	4310	0.24	actw	1	25	0	1	1	0	1	3	5	0	1	0	0	0	1	2	19	G
HOLMES	OAKDALE	JASPER	4430	4435	0.14	at	1	25	0	0	0	0	0	3	0	0	0	0	1	0	0	1	15	G
HOLMES	JASPER	OAKDALE	4435	4430	0.14	atw	1	25	0	0	1	1	1	3	2	0	1	1	0	0	0	2	15	G
HOLMES	JASPER	HOLLY	4435	4440	0.22	atw	1	25	0	0	1	1	1	3	0	1	0	0	0	0	0	1	21	G
HOLMES	HOLLY	JASPER	4440	4435	0.22	at	1	25	0	0	1	0	0	3	0	0	0	0	1	0	0	1	9.5	G
99	SOUTH STAGE RD	84	4665	4700	0.46	abt	2	45	2	2	0	0	0	1	0	2	0	0	0	0	0	2		
99	84	SOUTH STAGE RD	4700	4665	0.46	abt	2	45	2	2	0	0	0	1	5	2	1	0	0	0	0	3		
I-5 N IN-OUT	BIDDLE	62	2445	5000	0.12	at	1	45	3	2	0	0	0	5	2	0	0	1	0	0	0	1	0	G
I-5 N IN-OUT	62	2521	2460	2521	0.15	at	1	45	3	2	0	0	0	5	0	1	0	0	0	0	0	1	0	G
I-5 N IN-OUT	SB OUT	62	2485	2565	0.16	at	1	45	3	2	0	0	0	5	5	0	0	2	0	1	0	3	0	G
I-5 N IN-OUT	62	2522	2516	2522	0.06	at	1	45	3	2	0	0	0	5	0	1	0	0	0	0	0	1	0	G
I-5 N IN-OUT	2521	62	2521	2460	0.15	at	1	45	3	2	0	0	0	5	2	0	0	1	0	0	0	1	0	G
I-5 N IN-OUT	2521	BIDDLE	2521	2560	0.12	at	1	45	3	2	0	0	0	5	5	0	1	0	0	0	1	2	0	G
I-5 N IN-OUT	2522	2561	2522	2561	0.08	at	1	45	3	2	0	0	0	5	0	1	0	0	0	0	0	1	0	G
I-5 N IN-OUT	BIDDLE	2521	2560	2521	0.12	at	1	45	3	2	0	0	0	5	0	1	0	0	0	0	0	1	0	G
I-5 N IN-OUT	BIDDLE	2561	2560	2561	0.09	at	1	45	1	2	0	0	0	5	0	1	0	0	0	0	0	1	0	G
I-5 N IN-OUT	2561	I-5	2561	2523	0.07	at	1	45	3	2	0	0	0	5	0	1	0	0	0	0	0	1	0	G
I-5 N IN-OUT	2561	BIDDLE	2561	2560	0.09	at	1	45	1	2	0	0	0	5	5	1	1	1	0	0	0	3	0	G
I-5 N IN-OUT	62	SB IN	2565	2605	0.1	at	1	45	3	2	0	0	0	5	0	1	0	0	0	0	0	1	0	G
I-5 N IN-OUT	I-5	2561	2606	2561	0.05	at	1	45	3	2	0	0	0	5	0	1	0	0	0	0	0	1	0	G
I-5 N IN-OUT	62	BIDDLE	5000	2445	0.12	at	1	45	3	2	0	0	0	5	5	0	0	1	0	1	0	2	0	G
I-5 N IN-OUT	BIDDLE	62	5009	2460	0.05	at	1	45	0	0	0	0	0	5	0	1	0	0	0	0	0	1	0	G
I-5 NB	t	To PINE ST	2267	1831	1.67	at	2	55	3	2	0	0	0	0	0	2	0	0	0	0	0	2		
I-5 NB	Fr. BIDDLE RD	t	2523	2267	0.68	at	2	55	3	2	0	0	0	0	0	2	0	0	0	0	0	2		
I-5 NB	To BIDDLE RD	Fr. BIDDLE RD	2606	2523	0.09	at	2	55	3	2	0	0	0	0	0	2	0	0	0	0	0	2		
I-5 NB	t	To BIDDLE RD	3452	2606	1.45	at	2	55	3	2	0	0	0	0	0	2	0	0	0	0	0	2		
I-5 NB	t	t	3622	3452	0.23	at	2	55	3	2	0	0	0	0	0	2	0	0	0	0	0	2		
I-5 NB	Fr. BARNETT RD	t	4026	3622	0.71	at	2	55	3	2	0	0	0	0	0	2	0	0	0	0	0	2		
I-5 NB	4174	Fr. BARNETT RD	4174	4026	0.24	at	2	55	3	2	0	0	0	0	0	2	0	0	0	0	0	2		
I-5 NB	To BARNETT RD	4174	4236	4174	0.2	at	2	55	3	2	0	0	0	0	0	2	0	0	0	0	0	2		
I-5 NB	Fr. FERN VALLEY RD	To BARNETT RD	4726	4236	2.76	at	2	55	3	2	0	0	0	0	0	2	0	0	0	0	0	2		
I-5 NB On Ramps	BARNETT RD	I-5	4170	4026	0.28	at	1	45	3	2	0	0	0	5	0	1	0	0	0	0	0	1	0	G
I-5 S. OUT	SB EXIT	BARNETT RD	4025	4155	0.19	at	1	45	3	2	0	0	0	5	5	1	1	0	0	0	1	3	0	G
I-5 S. OUT	NB EXIT	BARNETT RD	4236	4170	0.19	at	1	45	3	2	0	0	0	5	5	0	1	0	0	0	1	2	0	G
I-5 SB	Fr. PINE ST	t	1830	2266	1.69	at	2	55	3	2	0	0	0	0	0	2	0	0	0	0	0	2		
I-5 SB	t	To HWY 62	2266	2485	0.51	at	2	55	3	2	0	0	0	0	0	2	0	0	0	0	0	2		
I-5 SB	To HWY 62	Fr. HWY 62	2485	2605	0.24	at	2	55	3	2	0	0	0	0	0	2	0	0	0	0	0	2		
I-5 SB	Fr. HWY 62	t	2605	3451	1.45	at	2	55	3	2	0	0	0	0	0	2	0	0	0	0	0	2		
I-5 SB	t	t	3451	3621	0.23	at	2	55	3	2	0	0	0	0	0	2	0	0	0	0	0	2		
I-5 SB	t	To BARNETT RD	3621	4025	0.64	at	2	55	3	2	0	0	0	0	0	2	0	0	0	0	0	2		
I-5 SB	To BARNETT RD	4148	4025	4148	0.17	at	2	55	3	2	0	0	0	0	0	2	0	0	0	0	0	2		
I-5 SB	4148	Fr. BARNETT RD	4148	4235	0.3	at	2	55	3	2	0	0	0	0	0	2	0	0	0	0	0	2		
I-5 SB	Fr. BARNETT RD	To FERN VALLEY RD	4235	4725	2.78	at	2	55	3	2	0	0	0	0	0	2	0	0	0	0	0	2		
I-5 SB IN-OUT	BARNETT	4146	4145	4146	0.06	at	1	45	3	2	0	0	0	5	0	1	0	0	0	0	0	1	0	G
I-5 SB IN-OUT	4146	4147	4146	4147	0.04	at	1	45	3	2	0	0	0	5	0	1	0	0	0	0	0	1	0	G
I-5 SB IN-OUT	4147	I-5	4147	4148	0.04	at	1	45	3	2	0	0	0	5	0	1	0	0	0	0	0	1	0	G
I-5 SB IN-OUT	BARNETT	4172	4171	4172	0.05	at	1	45	3	2	0	0	0	5	0	1	0	0	0	0	0	1	0	G
I-5 SB IN-OUT	4172	4173	4172	4173	0.04	at	1	45	3	2	0	0	0	5	0	1	0	0	0	0	0	1	0	G
I-5 SB IN-OUT	4173	I-5	4173	4174	0.07	at	1	45	3	2	0	0	0	5	0	1	0	0	0	0	0	1	0	G
I-5 SB On Ramps	BARNETT RD	I-5	4145	4235	0.26	at	1	45	3	2	0	0	0	5	0	1	0	0	0	0	0	1	0	G
JACKSON	COLUMBUS	3196	3195	3196	0.11	abctw	1	25	0	1	1	1	1	3	0	0	0	0	0	0	0	0	18	G
JACKSON	3196	COLUMBUS	3196	3195	0.11	abctw	1	25	0	1	0	1	1	3	2	0	0	0	1	0	0	1	18	G
JACKSON	3196	SUMMIT	3196	3200	0.05	abctw	1	25	0	1	1	1	1	3	2	0	0	0	0	0	1	1	18	G
JACKSON	SUMMIT	3196	3200	3196	0.05	abctw	1	25	0	1	0	1	1	3	0	0	0	0	1	0	0	1	18	G
JACKSON	SUMMIT	SUMMIT	3200	3205	0.03	abctw	1	25	0	1	1	1	1	3	0	0	0	0	0	1	0	1	18	G

Street Name	Street From	Segment To	Node A	No. B	Link Length	Mode Allowed	No. Lanes	Posted Speed	Median Type	Bike Lane	On-St. Parking	Curbs	Side Walk	Street Class	Tnode Control	Tnode Lanes T	L	R	TLR	TL	TR	Tnode Lanes	ROW Width	Street Condition
JACKSON	SUMMIT	SUMMIT	3205	3200	0.03	abctw	1	25	0	1	0	1	1	3	2	0	0	0	0	1	0	1	18	G
JACKSON	SUMMIT	WOODSTOCK	3205	3215	0.23	abctw	1	25	0	1	1	1	1	3	0	0	0	0	0	0	1	1	18	G
JACKSON	HOLLY	WOODSTOCK	3210	3215	0.09	abctw	1	25	0	1	0	1	1	3	0	0	0	0	0	1	0	1	18	G
JACKSON	HOLLY	FIR	3210	3220	0.05	abctw	1	25	0	1	1	1	1	2	0	0	0	0	0	0	1	1	18	G
JACKSON	WOODSTOCK	SUMMIT	3215	3205	0.23	abctw	1	25	0	1	0	1	1	3	0	0	0	0	0	0	1	1	18	G
JACKSON	WOODSTOCK	HOLLY	3215	3210	0.09	abctw	1	25	0	1	1	1	1	3	0	0	0	0	0	0	1	1	18	G
JACKSON	FIR	HOLLY	3220	3210	0.05	abctw	1	25	0	1	0	1	1	2	0	0	0	0	0	1	0	1	18	G
JACKSON	FIR	FRONT	3220	3225	0.09	abctw	1	25	0	1	0	1	1	2	0	0	0	0	0	0	1	1	18	G
JACKSON	FRONT	FIR	3225	3220	0.09	abctw	1	25	0	1	0	1	1	2	0	0	0	0	0	1	0	1	18	G
JACKSON	FRONT	CENTRAL	3225	3230	0.06	actw	2	25	0	1	0	1	1	2	5	1	0	0	0	0	1	2	18	G
JACKSON	CENTRAL	FRONT	3230	3225	0.06	actw	2	25	0	1	0	1	1	2	0	0	0	0	0	1	0	1	18	G
JACKSON	CENTRAL	BARTLETT	3230	3235	0.06	actw	2	35	0	1	0	1	1	2	0	0	0	0	0	1	1	2	23	G
JACKSON	BARTLETT	CENTRAL	3235	3230	0.06	actw	2	35	0	1	0	1	1	2	5	1	1	0	0	0	0	2	23	G
JACKSON	BARTLETT	RIVERSIDE	3235	3240	0.14	actw	2	35	0	1	0	1	1	2	5	1	0	1	0	0	0	2	23	G
JACKSON	RIVERSIDE	BARTLETT	3240	3235	0.14	actw	2	35	0	1	0	1	1	2	0	0	0	0	0	1	1	2	23	G
JACKSON	RIVERSIDE	BIDDLE	3240	3245	0.17	atw	2	35	0	0	0	1	1	2	5	0	1	0	0	0	1	2	26.5	G
JACKSON	BIDDLE	RIVERSIDE	3245	3240	0.17	atw	2	35	0	0	0	1	1	2	5	1	0	0	0	0	1	2	26.5	G
JACKSON	BIDDLE	HAWTHORNE	3245	3250	0.08	atw	2	30	3	0	0	1	1	2	5	1	1	0	0	0	1	3	30	G
JACKSON	HAWTHORNE	BIDDLE	3250	3245	0.08	atw	2	30	3	0	0	1	1	2	5	1	1	0	0	0	1	3	30	G
JACKSON	HAWTHORNE	3252	3250	3252	0.2	atw	2	30	0	0	0	1	1	2	0	0	0	0	0	1	1	2	22.5	G
JACKSON	3252	HAWTHORNE	3252	3250	0.2	atw	2	30	0	0	0	1	1	2	5	1	1	0	0	0	1	3	23	G
JACKSON	3252	CRATER LAKE	3252	3255	0.09	atw	2	30	0	0	0	1	1	2	5	0	0	0	0	1	1	2	22.5	G
JACKSON	CRATER LAKE	3252	3255	3252	0.09	atw	2	30	0	0	0	1	1	2	0	1	1	0	0	0	1	3	23	G
JACKSON	CRATER LAKE	MARY	3255	3260	0.09	atw	2	30	0	0	0	1	1	3	0	1	0	1	0	0	0	2	22	G
JACKSON	MARY	CRATER LAKE	3260	3255	0.09	atw	2	30	0	0	0	1	1	3	5	0	0	0	0	1	1	2	22	G
JACKSON	MARY	3261	3260	3261	0.19	at	1	30	0	0	1	1	0	3	0	0	1	0	0	0	0	1	22	G
JACKSON	3261	MARY	3261	3260	0.19	atw	1	30	0	0	1	1	1	3	0	0	0	0	0	1	0	1	22	G
JACKSON	3261	OREGON	3261	3270	0.1	at	1	30	0	0	1	1	0	3	0	0	0	0	0	0	1	1	22	G
JACKSON	OREGON	3261	3270	3261	0.1	atw	1	30	0	0	1	1	1	3	0	1	0	0	0	0	0	1	22	G
JACKSON	OREGON	KEENE WAY	3270	3280	0.13	at	1	30	0	0	1	1	0	3	0	0	0	0	1	0	0	1	22	G
JACKSON	KEENE WAY	OREGON	3280	3270	0.13	atw	1	30	0	0	1	1	1	3	0	0	0	0	0	1	0	1	22	G
JACKSON	KEENE WAY	BERKELEY	3280	3290	0.12	at	1	30	0	0	1	1	0	3	0	0	0	0	1	0	0	1	22	G
JACKSON	BERKELEY	KEENE WAY	3290	3280	0.12	at	1	30	0	0	1	1	0	3	0	0	0	0	1	0	0	1	22	G
JACKSON	BERKELEY	SUNRISE	3290	3300	0.21	at	1	30	0	0	1	1	0	3	2	0	0	0	1	0	0	1	18	G
JACKSON	SUNRISE	BERKELEY	3300	3290	0.21	at	1	30	0	0	1	1	0	3	0	0	0	0	1	0	0	1	18.5	G
JACKSON	SUNRISE	HILLCREST	3300	3375	0.15	at	1	30	0	0	0	0	0	3	0	0	0	0	1	0	0	1	14	G
JACKSON	HILLCREST	SUNRISE	3375	3300	0.15	at	1	30	0	0	0	0	0	3	2	0	0	0	1	0	0	1	18	G
JUANIPERO	BLACK OAK	LA LOMA	4345	4375	0.2	abt	1	25	0	0	1	1	0	3	2	0	0	0	1	0	0	1	18	G
JUANIPERO	LA LOMA	BLACK OAK	4375	4345	0.2	abt	1	25	0	0	0	1	0	3	0	0	0	0	0	1	0	1	18	G
JUANIPERO	LA LOMA	MURPHY	4375	4390	0.2	abt	1	25	0	0	1	1	0	3	0	0	0	0	0	1	0	1	18	G
JUANIPERO	MURPHY	LA LOMA	4390	4375	0.2	abt	1	25	0	0	0	1	0	3	2	0	0	0	1	0	0	1	18	G
JUANIPERO	GOLF VIEW	N. PHOENIX					1	35	0	0	1	1	0	3	2	0	1	1	0	0	0	2	22	
JUANIPERO	N. PHOENIX	GOLF VIEW					1	35	0	0	1	1	1	3	0	0	0	0	0	0	1	1		
JUANIPERO	MURPHY	OLYMPIC					1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	18	
JUANIPERO	OLYMPIC	MURPHY					1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1		
JUANIPERO	GOLF VIEW	OLYMPIC					1	25	2	1	0	1	1	3	0	0	0	0	1	0	0	1		
JUANIPERO	OLYMPIC	GOLF VIEW					1	25	2	1	0	1	1	3	0	1	1	0	0	0	0	2		
KINGS	STEWART	QUEENS	4285	4370	0.16	at	1	35	0	0	0	1	1	2	0	0	0	0	0	0	1	1	0	A
KINGS	QUEENS	STEWART	4370	4285	0.16	at	2	35	0	0	0	1	1	2	5	0	1	0	0	0	1	2	0	A
KINGS	QUEENS	4516	4370	4516	0.12	at	1	35	0	0	0	0	0	2	0	0	0	0	1	0	0	1	0	A
KINGS	GARFIELD	4516	4515	4516	0.2	at	1	35	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	A
KINGS	GARFIELD	4565	4515	4565	0.19	at	1	35	0	0	0	0	0	2	0	1	0	0	0	0	0	1	0	A
KINGS	4516	QUEENS	4516	4370	0.12	at	1	35	0	0	0	0	0	2	0	0	0	0	0	1	0	1	0	A
KINGS	4516	GARFIELD	4516	4515	0.2	at	1	35	0	0	0	0	0	2	0	0	0	0	1	0	0	1	0	A
KINGS	4565	GARFIELD	4565	4515	0.19	at	1	35	0	0	0	0	0	2	0	0	0	0	1	0	0	1	0	A
KINGS	4565	4615	4565	4615	0.38	at	1	35	0	0	0	0	0	2	0	1	0	0	0	0	0	1	0	A
KINGS	4615	4565	4615	4565	0.38	at	1	35	0	0	0	0	0	2	0	1	0	0	0	0	0	1	0	A
KINGS	4615	S. STAGE	4615	4670	0.34	at	1	35	0	0	0	0	0	2	2	0	1	1	0	0	0	2	0	A
LEAR WAY	2150	CARDINAL	2145	2125	0.33	abt	1	30	0	0	0	1	1	4	2	0	0	0	1	0	0	1	18	G
Lear Way	2260	HWY 62	2260	2275	0.07	abt	1	30	1	0	0	1	1	4	0	0	0	0	0	0	0	0	18	G
Lear Way	HWY 62	2260	2275	2260	0.07	abt	1	30	1	0	0	1	0	4	0	0	0	0	0	0	0	0	18	G
Lear Way	2260	2150	2260	2150	0.11	abctw	2	35	1	0	0	1	0	3	0	2	0	0	0	0	0	2	18	G
Lear Way	2150	2260	2150	2260	0.11	abctw	2	35	1	0	0	1	0	3	0	2	0	0	0	0	0	2	18	G
LEAR WAY	2145	2150	2145	2150	0.12	abt	2	35	1	0	0	1	1	4	0	1	0	0	0	0	0	1	18	G
LEAR WAY	2150	2145	2150	2145	0.12	abt	2	35	1	0	0	1	1	4	0	1	0	0	0	0	0	1	18	G
LONE PINE	SPRINGBROOK	MODOC	2720	2725	0.25	act	1	35	1	1	0	1	0	3	0	0	0	0	0	0	1	1	18	G
LONE PINE	MODOC	SPRINGBROOK	2725	2720	0.25	actw	1	35	1	1	0	1	1	3	2	0	0	0	1	0	0	1	18	G
LONE PINE	MODOC	INVERNESS	2725	2735	0.33	act	1	35	1	1	0	1	1	3	0	0	0	0	0	1	0	1	0	A
LONE PINE	INVERNESS	MODOC	2735	2725	0.33	act	1	35	1	1	0	1	0	3	0	0	0	0	0	1	0	1	0	A
LONE PINE	INVERNESS	BROOKDALE	2735	2740	0.05	at	1	35	1	1	0	1	1	3	0	0	0	0	0	0	1	1	0	A
LONE PINE	BROOKDALE	INVERNESS	2740	2735	0.05	at	1	35	1	1	0	1	1	3	0	0	0	0	0	0	1	1	0	A
LONE PINE	BROOKDALE	THRASHER	2740	2745	0.29	at	1	35	1	1	0	1	0	3	0	0	0	0	0	0	1	1	0	A
LONE PINE	THRASHER	BROOKDALE	2745	2740	0.29	at	1	35	1	1	0	1	0	3	0	0	0	0	0	1	0	1	0	A
LONE PINE	THRASHER	FOOTHILL	2745	2750	0.25	at	1	35	0	0	0	1	0	3	2	0	0	0	1	0	0	1	10	A

Street	Street	Segment	Node	No.	Link	Mode	No.	Posted	Median	Bike	On-St.		Side	Street	Tnode	Tnode Lanes						Tnode	ROW	Street
Name	From	To	A	B	Length	Allowed	Lanes	Speed	Type	Lane	Parking	Curbs	Walk	Class	Control	T	L	R	TLR	TL	TR	Lanes	Width	Condition
LONE PINE	FOOTHILL	THRASHER	2750	2745	0.25	atw	1	35	0	0	0	1	1	3	0	0	0	0	0	1	0	1	18	G
LOZIER	W. MAIN	3950	3730	3950	0.24	at	1	30	0	0	0	0	0	3	0	1	0	0	0	0	0	1	0	A
LOZIER	3950	W. MAIN	3950	3730	0.24	at	1	30	0	0	0	0	0	3	5	0	1	0	0	0	1	2	0	A
LOZIER	3950	4110	3950	4110	0.31	at	1	30	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0	A
LOZIER	4110	3950	4110	3950	0.31	at	1	30	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0	A
LOZIER	4110	STEWART	4110	4300	0.23	at	1	30	0	0	0	0	0	3	5	0	1	0	0	0	1	2	0	A
LOZIER	STEWART	4110	4300	4110	0.23	at	1	30	0	0	0	0	0	3	0	1	0	0	0	0	0	1	0	A
MAIN	KEENEWAY	HIGHLAND	3440	3460	0.07	abt	1	30	0	0	0	1	0	3	0	0	0	0	0	0	1	1	22	G
MAIN	KEENEWAY	FLORENCE	3440	3495	0.22	abtw	1	30	0	0	0	1	1	3	0	0	0	0	0	1	0	1	18	G
MAIN	8TH	HAWTHORNE	3445	3450	0.03	abtw	2	25	0	0	0	1	1	2	0	0	0	0	0	1	1	2	22	G
MAIN	8TH	350	3445	3501	0.07	abtw	2	25	3	0	1	1	1	2	0	2	0	0	0	0	0	2	44	G
MAIN	HAWTHORNE	8TH	3450	3445	0.03	abtw	2	25	0	0	0	1	1	2	0	2	0	0	0	0	0	2	22	G
MAIN	HAWTHORNE	COTTAGE	3450	3470	0.12	abtw	2	30	0	0	0	1	1	2	0	1	0	0	0	0	1	2	23.5	G
MAIN	BERKELEY	HIGHLAND	3455	3460	0.07	at	1	30	0	0	0	1	0	3	0	0	0	0	0	1	0	1	22	G
MAIN	BERKELEY	BARNEBURG	3455	3465	0.08	at	1	35	0	0	0	1	0	3	0	0	0	0	1	0	0	1	22	G
MAIN	HIGHLAND	KEENEWAY	3460	3440	0.07	abt	1	30	0	0	0	1	0	3	0	0	0	0	1	0	0	1	22	G
MAIN	HIGHLAND	BERKELEY	3460	3455	0.07	at	1	30	0	0	0	1	0	3	0	0	0	0	1	0	0	1	22	G
MAIN	BARNEBURG	BERKELEY	3465	3455	0.08	at	1	35	0	0	0	1	0	3	0	0	0	0	1	0	0	1	22	G
MAIN	BARNEBURG	VALLEY VIEW	3465	3485	0.2	at	1	35	0	0	0	1	0	3	0	0	0	0	0	1	0	1	22	G
MAIN	COTTAGE	HAWTHORNE	3470	3450	0.12	abtw	2	25	0	0	0	1	1	2	5	0	0	0	0	1	1	2	23.5	G
MAIN	COTTAGE	CRATER LAKE	3470	3475	0.16	abtw	2	30	0	0	0	1	1	2	5	1	1	0	0	0	0	2	23.5	G
MAIN	CRATER LAKE	COTTAGE	3475	3470	0.16	abtw	2	30	0	0	0	1	1	1	0	1	0	0	0	1	0	2	23.5	G
MAIN	CRATER LAKE	3476	3475	3476	0.1	abtw	2	30	0	0	0	1	1	2	0	1	0	0	0	0	1	2	23.5	G
MAIN	3476	CRATER LAKE	3476	3475	0.1	abtw	2	30	0	0	0	1	1	2	5	1	0	0	0	0	1	2	23.5	G
MAIN	3476	WILLAMETTE	3476	3490	0.06	abtw	2	30	0	0	0	1	1	2	0	1	0	1	0	0	0	2	23.5	G
MAIN	VALLEY VIEW	BARNEBURG	3485	3465	0.2	at	1	35	0	0	0	1	0	3	0	0	0	0	1	0	0	1	22	G
MAIN	WILLAMETTE	3476	3490	3476	0.06	abtw	2	30	0	0	0	1	1	2	0	1	0	0	0	1	0	2	23.5	G
MAIN	WILLAMETTE	FLORENCE	3490	3495	0.13	abtw	1	30	0	0	0	1	1	3	0	0	0	0	0	0	1	1	18	G
MAIN	FLORENCE	KEENEWAY	3495	3440	0.22	abt	1	30	0	0	0	0	0	3	0	0	0	0	1	0	0	1	19.5	G
MAIN	FLORENCE	WILLAMETTE	3495	3490	0.13	abtw	1	30	0	0	0	1	1	3	0	0	0	0	0	1	0	1	18	G
MAIN	RIVERSIDE	BARTLETT	3500	3530	0.05	abtw	3	20	3	0	1	1	1	2	5	1	0	0	0	1	1	3	50	G
MAIN	350	RIVERSIDE	3501	3500	0.06	abtw	2	20	3	0	1	1	1	2	5	2	0	0	0	0	1	3	48	G
MAIN	BARTLETT	CENTRAL	3530	3555	0.05	abtw	3	20	3	0	1	1	1	2	5	2	0	0	0	1	0	3	50	G
MAIN	CENTRAL	FRONT	3555	3635	0.07	abtw	3	20	3	0	1	1	1	2	5	1	0	0	0	1	1	3	50	G
MAIN	FRONT	GRAPE	3635	3650	0.11	atw	3	20	3	0	1	1	1	2	5	1	0	0	0	1	1	3	52	G
MAIN	GRAPE	3686	3650	3686	0.03	atw	3	20	3	0	1	1	1	2	0	1	0	0	0	1	1	3	52	G
MAIN	HOLLY	IVY	3685	3725	0.05	atw	3	20	3	0	1	1	1	2	0	1	0	0	0	1	1	3	52	G
MAIN	3686	HOLLY	3686	3685	0.03	atw	3	20	3	0	1	1	1	2	5	1	0	0	0	1	1	3	52	G
MAIN	OAK GROVE	3705	3700	3705	0.15	abct	1	30	0	1	0	0	0	1	0	0	0	0	0	0	0	0	19	G
MAIN	3705	OAK GROVE	3705	3700	0.15	abct	1	30	0	1	0	0	0	1	5	0	0	0	0	1	0	1	19	G
MAIN	3705	LOZIER	3705	3730	0.33	abct	1	30	0	1	0	0	0	1	5	0	1	0	0	0	1	2	19	G
MAIN	IVY	OAKDALE	3725	3785	0.05	atw	3	20	3	0	1	1	1	2	5	1	1	0	0	0	1	3	36	G
MAIN	LOZIER	3705	3730	3705	0.33	abct	1	30	0	1	0	0	0	1	0	0	0	0	0	0	0	0	19	G
MAIN	LOZIER	REAGER	3730	3740	0.13	abct	1	30	0	1	0	0	0	2	0	0	0	0	0	1	0	1	19	G
MAIN	REAGER	LOZIER	3740	3730	0.13	abct	1	30	0	1	0	0	0	2	5	1	1	1	0	0	0	3	19	G
MAIN	REAGER	JEANNETTE	3740	3750	0.24	abct	1	30	0	1	0	1	0	2	0	0	0	0	0	0	1	1	19	G
MAIN	JEANNETTE	REAGER	3750	3740	0.24	abct	1	30	0	1	0	1	0	2	0	0	0	0	0	0	1	1	19	G
MAIN	JEANNETTE	COLUMBUS	3750	3755	0.12	abct	2	30	0	1	0	1	0	2	5	1	1	0	0	0	1	3	29	G
MAIN	COLUMBUS	JEANNETTE	3755	3750	0.12	abct	1	30	0	0	0	1	0	2	0	0	0	0	0	1	0	1	23	G
MAIN	COLUMBUS	ELM	3755	3765	0.03	abctw	2	30	0	1	0	1	1	2	0	2	0	0	0	0	0	2	0	G
MAIN	ELM	COLUMBUS	3765	3755	0.03	abctw	2	30	0	0	0	1	1	2	5	1	1	0	0	0	1	3	62	G
MAIN	HAMILTON	ELM	3770	3765	0.16	abctw	2	30	3	1	1	1	1	2	0	1	0	0	0	1	0	2	36	G
MAIN	ORANGE	HAMILTON	3775	3770	0.13	abtw	2	30	3	0	1	1	1	2	5	0	0	0	0	1	1	2	36	G
MAIN	6TH	ORANGE	3777	3775	0.1	abtw	2	30	3	0	1	1	1	2	5	0	0	0	0	1	1	2	36	G
MAIN	OAKDALE	6TH	3785	3777	0.15	abtw	2	30	3	0	1	1	1	2	0	1	0	0	0	0	1	2	36	G
MANZANITA	COURT	BEATTY	2960	2965	0.13	at	1	25	0	0	0	0	0	3	0	0	0	0	1	0	0	1	22	G
MANZANITA	BEATTY	COURT	2965	2960	0.13	at	1	25	0	0	0	0	0	3	2	0	1	0	0	0	0	1	22	G
MANZANITA	BEATTY	RIVERSIDE	2965	2970	0.11	at	1	25	0	0	0	0	0	3	5	0	1	0	0	0	0	1	22	G
MANZANITA	RIVERSIDE	BEATTY	2970	2965	0.11	at	1	25	0	0	0	0	0	3	0	0	0	0	1	0	0	1	22	G
McANDREWS	WABASH	KEENE WAY	2790	2800	0.12	at	1	35	0	0	1	1	0	2	0	0	0	0	1	0	0	1	22	G
McANDREWS	WABASH	CRATER LAKE	2790	2900	0.27	atw	2	35	0	0	0	1	1	2	5	1	1	0	0	0	1	3	22	G
McANDREWS	KEENE WAY	WABASH	2800	2790	0.12	atw	2	35	0	0	0	1	1	2	0	1	0	0	0	1	0	2	22	G
McANDREWS	KEENE WAY	HONEYSUCKLE	2800	2805	0.12	at	1	35	0	0	1	1	0	2	0	0	0	0	0	1	0	1	22	G
McANDREWS	HONEYSUCKLE	KEENE WAY	2805	2800	0.12	atw	2	35	0	0	0	1	1	2	0	0	0	0	0	1	1	2	22	G
McANDREWS	HONEYSUCKLE	SPRINGBROOK	2805	2815	0.26	at	1	35	0	0	1	1	0	2	5	1	1	0	0	0	1	3	28	G
McANDREWS	SPRINGBROOK	HONEYSUCKLE	2815	2805	0.26	atw	2	35	0	0	0	1	1	2	0	1	0	0	0	0	1	2	22	G
McANDREWS	SPRINGBROOK	MODOC	2815	2850	0.25	atw	1	35	0	0	1	1	1	2	0	0	0	0	1	0	0	1	28	A
McANDREWS	COURT	2826	2825	2826	0.08	at	2	35	2	0	0	1	0	2	0	2	1	0	0	0	0	3	34	G
McANDREWS	COURT	170	2825	2905	0.1	at	2	35	2	0	0	0	0	2	0	0	0	0	0	0	0	0	25	A
McANDREWS	2826	COURT	2826	2825	0.08	atw	2	35	2	0	0	1	1	2	5	2	1	0	0	0	0	3	30	G
McANDREWS	2826	RIVERSIDE	2826	2840	0.08	at	2	35	2	0	0	1	0	2	5	2	1	0	0	0	0	3	34	G
McANDREWS	RIVERSIDE	2826	2840	2826	0.08	atw	2	35	2	0	0	1	1	2	0	2	1	0	0	0	0	3	30	G
McANDREWS	RIVERSIDE	RV MALL	2840	2855	0.1	atw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	27	G
McANDREWS	MODOC	SPRINGBROOK	2850	2815	0.25	at	1	35	2	0	0	1	0	2	5	1	1	0	0	0	1	35	28	A

Street Name	Street From	Segment To	Node A	No. B	Link Length	Mode Allowed	No. Lanes	Posted Speed	Median Type	Bike Lane	On-St. Parking	Curbs	Side Walk	Street Class	Tnode Control	Tnode Lanes T	L	R	TLR	TL	TR	Tnode Lanes	ROW Width	Street Condition
McANDREWS	MODOC	BROOKDALE	2850	2870	0.38	atw	1	35	2	0	1	1	1	2	2	0	1	1	0	0	0	2	28	A
McANDREWS	RV MALL	RIVERSIDE	2855	2840	0.1	atw	2	35	2	0	0	1	1	2	5	2	0	1	0	0	0	3	27	G
McANDREWS	RV MALL	BIDDLE	2855	2860	0.17	atw	2	35	2	0	0	1	1	2	5	2	2	1	0	0	0	5	27.5	G
McANDREWS	BIDDLE	RV MALL	2860	2855	0.17	atw	2	35	2	0	0	1	1	2	5	2	1	1	0	0	0	4	33.5	G
McANDREWS	BIDDLE	2865	2860	2865	0.09	abtw	2	35	2	0	0	1	1	2	0	0	0	0	0	0	0	0	30	G
McANDREWS	2865	BIDDLE	2865	2860	0.09	abt	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	30	G
McANDREWS	2865	POPLAR	2865	2875	0.1	abtw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	30	G
McANDREWS	BROOKDALE	MODOC	2870	2850	0.38	at	1	35	2	0	0	1	0	2	0	0	0	0	1	0	0	1	28	A
McANDREWS	POPLAR	2865	2875	2865	0.1	abt	2	35	2	0	0	1	1	2	0	0	0	0	0	0	0	0	30	G
McANDREWS	POPLAR	ROYAL	2875	2880	0.15	atw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	30	G
McANDREWS	ROYAL	POPLAR	2880	2875	0.15	at	2	35	2	0	0	1	0	2	5	1	1	0	0	0	1	3	30	G
McANDREWS	ROYAL	CORONA	2880	2885	0.07	atw	2	35	2	0	0	1	1	2	0	2	1	0	0	0	0	3	30	G
McANDREWS	CORONA	ROYAL	2885	2880	0.07	atw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	30	G
McANDREWS	CORONA	2890	2885	2890	0.09	atw	2	35	2	0	0	1	1	2	0	0	0	0	0	0	0	0	30	G
McANDREWS	2890	CORONA	2890	2885	0.09	atw	2	35	2	0	0	1	1	2	0	1	0	0	0	0	1	2	30	G
McANDREWS	2890	CRATER LAKE	2890	2900	0.13	atw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	30	G
McANDREWS	CRATER LAKE	WABASH	2900	2790	0.27	atw	2	35	0	0	0	1	1	2	0	1	0	1	0	0	0	2	12	G
McANDREWS	CRATER LAKE	2890	2900	2890	0.13	atw	2	35	2	0	0	1	1	2	0	0	0	0	0	0	0	0	30	G
McANDREWS	170	COURT	2905	2825	0.1	atw	2	35	0	0	0	1	1	2	5	1	0	0	0	0	1	2	25	A
McANDREWS	170	160	2905	2950	0.13	at	2	35	0	0	0	1	0	2	0	0	0	0	0	0	0	0	25	A
McANDREWS	160	170	2950	2905	0.13	atw	2	35	0	0	0	1	1	2	0	0	0	0	0	0	0	0	25	A
McANDREWS	160	150	2950	2990	0.15	at	2	35	0	0	0	1	0	2	0	0	0	0	0	0	0	0	25	A
McANDREWS	150	160	2990	2950	0.15	atw	2	35	0	0	0	1	0	2	0	0	0	0	0	0	0	0	25	A
McANDREWS	150	SUMMIT	2990	3055	0.12	at	2	35	2	0	0	1	0	2	5	2	1	1	0	0	0	4	37.5	A
McANDREWS	SUMMIT	150	3055	2990	0.12	atw	2	35	0	0	0	1	0	2	0	0	0	0	0	0	0	0	25	A
McANDREWS	SUMMIT	CLARK	3055	3125	0.18	at	2	35	2	0	0	1	0	2	0	1	0	0	0	1	0	2	28	A
McANDREWS	CLARK	SUMMIT	3125	3055	0.18	atw	2	35	2	0	0	1	0	2	5	1	1	0	0	0	1	3	28	A
McANDREWS	CLARK	COLUMBUS	3125	3130	0.07	at	2	35	2	0	0	1	0	2	5	1	1	0	0	0	1	3	28	A
McANDREWS	COLUMBUS	CLARK	3130	3125	0.07	atw	2	35	2	0	0	1	0	2	0	1	0	0	0	0	1	2	28	A
McANDREWS	COLUMBUS	SWEET	3130	5001	0.17	at	1	35	0	0	0	0	0	2	0	0	0	0	0	0	1	1	28	A
McANDREWS	SWEET	3425	3315	3425	0.2	at	1	35	0	0	0	0	0	2	0	0	0	0	0	0	0	0	28	A
MCANDREWS	FOOTHILL	TAMARAK																						A
MCANDREWS	TAMARAK	FOOTHILL																						
McANDREWS	3425	SWEET	3425	3315	0.2	at	1	35	0	0	0	0	0	2	0	0	0	0	0	1	0	1	28	A
McANDREWS	3425	ROSS LN	3425	3430	0.1	at	1	35	0	0	0	0	0	2	2	0	0	0	1	0	0	1	28	A
McANDREWS	ROSS LN	3425	3430	3425	0.1	at	1	35	0	0	0	0	0	2	0	0	0	0	0	0	0	0	28	A
McANDREWS	SWEET	COLUMBUS	5001	3130	0.17	atw	2	35	2	0	0	0	1	2	5	1	1	0	0	0	1	3	28	A
MCANDREWS	BROOKDALE	FOOTHILL					2	35	3	3	0	1	1	2	0									
McANDREWS	INVERNESS																							
MCANDREWS	HILLCREST	TAMARACK					2	35	0	0	0	1	1	2	0	1	1	0	0	0	1	3	24	
MCLOUGHLIN	DELTA WATERS	ELEM SCHOOL					1		2	1	0	1	1	3	0								22	
MERRIMAN	BEALL LN	MORNINGSIDE	2240	2255	0.16	abtw	1	35	2	1	0	1	1	3	0	1	1	0	0	0	0	2	22	A
MERRIMAN	MORNINGSIDE	BEALL LN	2255	2240	0.16	abtw	1	35	2	1	0	1	1	3	0	1	0	0	0	0	0	1	22	A
MERRIMAN	MORNINGSIDE	MACE	2255	2340	0.21	abtw	1	35	2	1	0	1	1	3	0	0	0	0	0	0	1	1	22	A
MERRIMAN	MACE	MORNINGSIDE	2340	2255	0.21	abtw	1	35	2	1	0	1	1	3	0	0	0	0	0	0	1	1	22	A
MERRIMAN	MACE	DE BARR	2340	2405	0.35	abtw	1	35	2	1	0	1	1	3	0	0	1	0	0	0	1	2	22	A
MERRIMAN	DE BARR	MACE	2405	2340	0.35	abtw	1	35	2	1	0	1	1	3	0	1	1	0	0	0	0	2	22	A
MERRIMAN	DE BARR	TABLE ROCK	2405	2430	0.07	abtw	1	35	2	1	0	1	1	3	2	1	0	0	0	0	0	1	22	A
MERRIMAN	TABLE ROCK	DE BARR	2430	2405	0.07	abtw	1	35	2	1	0	1	1	3	0	0	1	0	0	10	1	2	22	A
MORROW	BIDDLE	2660	2655	2660	0.07	atw	1	35	1	0	1	1	1	3	0	1	0	0	0	0	0	1	20	G
MORROW	2660	BIDDLE	2660	2655	0.07	atw	1	35	1	0	1	1	1	3	5	0	1	1	0	0	0	2	20	G
MORROW	2660	POPLAR	2660	2670	0.2	atw	1	35	1	0	1	1	1	3	5	0	1	0	0	0	1	2	20	G
MORROW	POPLAR	2660	2670	2660	0.2	atw	1	35	1	0	1	1	1	3	0	1	0	0	0	0	0	1	20	G
MORROW	POPLAR	VELIA	2670	2675	0.08	atw	1	35	1	0	1	1	1	3	0	0	0	0	0	0	1	1	20	G
MORROW	VELIA	POPLAR	2675	2670	0.08	atw	1	35	1	0	1	1	1	3	5	0	1	0	0	0	1	2	20	G
MORROW	VELIA	CORONA	2675	2680	0.11	atw	1	35	1	0	1	1	0	3	2	0	0	0	1	0	0	1	20	A
MORROW	CORONA	VELIA	2680	2675	0.11	at	1	35	1	0	1	1	1	3	0	0	0	0	0	1	0	1	20	A
MURPHY	SISKIYOU	DOCTORS PARK	4000	4035	0.08	atw	1	25	1	1	0	1	1	3	0	1	1	0	0	0	0	2	22	G
MURPHY	DOCTORS PARK	SISKIYOU	4035	4000	0.08	atw	1	25	1	1	0	1	1	3	2	0	1	0	0	0	1	2	22	G
MURPHY	DOCTORS PARK	BARNETT	4035	4130	0.14	atw	1	25	1	1	0	1	1	3	5	0	1	0	0	0	1	2	22	G
MURPHY	BARNETT	DOCTORS PARK	4130	4035	0.14	atw	1	25	1	1	0	1	1	3	0	0	0	0	0	0	1	1	22	G
MURPHY	BARNETT	STATE	4130	4220	0.12	abtw	1	25	1	0	0	1	1	3	0	0	0	0	1	0	0	1	18	G
MURPHY	STATE	BARNETT	4220	4130	0.12	abtw	1	25	1	0	0	1	1	3	5	0	1	0	0	0	1	2	18	G
MURPHY	STATE	JUANIPERO	4220	4390	0.27	abt	1	25	1	0	0	1	0	3	2	0	0	0	1	0	0	1	18	G
MURPHY	JUANIPERO	STATE	4390	4220	0.27	abt	1	25	1	0	0	1	0	3	0	0	0	0	1	0	0	1	18	G
N. PHOENIX	HILLCREST	PRINCETON	3330	3415	0.11	at	1	45	1	2	0	0	0	2	0	0	0	0	0	1	0	1	11	A
N. PHOENIX	PRINCETON	HILLCREST	3415	3330	0.11	at	1	45	1	2	0	0	0	2	2	0	1	1	0	0	0	2	12	A
N. PHOENIX	PRINCETON	CHERRY LN	3415	3595	0.21	at	1	45	1	2	0	0	0	2	0	1	1	0	0	0	0	2	11	A
N. PHOENIX	CHERRY LN	PRINCETON	3595	3415	0.21	at	1	45	1	2	0	0	0	2	0	0	0	0	0	0	1	1	12	A
N. PHOENIX	CHERRY LN	3986	3595	3986	0.1	at	2	45	2	1	0	1	1	2	0	1	0	0	0	0	0	1	11	A
N. PHOENIX	3985	3986	3985	3986	0.41	at	2	45	2	1	0	1	0	2	0	0	0	1	0	0	1	2	12	A
N. PHOENIX	3985	BARNETT	3985	4105	0.17	at	2	45	2	1	0	1	1	2	5	0	1	0	0	0	1	2	11	A
N. PHOENIX	3986	CHERRY LN	3986	3595	0.1	at	2	45	2	1	0	1	0	2	0	0	0	0	0	0	1	1	12	A
N. PHOENIX	3986	3985	3986	3985	0.41	at	2	45	2	1	0	1	1	2	0	1	0	0	0	0	0	1	11	A

Street Name	Street From	Segment To	Node A	No. B	Link Length	Mode Allowed	No. Lanes	Posted Speed	Median Type	Bike Lane	On-St. Parking	Curbs	Side Walk	Street Class	Tnode Control	Tnode Lanes T	L	R	TLR	TL	TR	Tnode Lanes	ROW Width	Street Condition
N. PHOENIX	BARNETT	3985	4105	3985	0.17	at	2	45	2	1	0	1	0	2	0	1	0	0	0	0	0	1	12	A
N. PHOENIX	BARNETT	4451	4105	4451	0.24	at	1	45	0	1	0	1	1	2	0	1	0	0	0	0	1	2	12	A
N. PHOENIX	4450	4451	4450	4451	0.28	at	1	45	0	2	0	0	0	2	0	0	1	0	0	0	1	2	12	A
N. PHOENIX	4450	COAL MINE RD	4450	4525	0.21	at	1	45	0	2	0	0	0	2	0	0	0	0	0	1	0	1	12	A
N. PHOENIX	4451	BARNETT	4451	4105	0.24	at	1	45	1	2	0	0	0	2	5	0	1	0	0	0	1	2	12	A
N. PHOENIX	4451	4450	4451	4450	0.28	at	1	45	0	2	0	0	0	2	0	1	0	0	0	0	0	1	12	A
N. PHOENIX	COAL MINE RD	4450	4525	4450	0.21	at	1	45	0	2	0	0	0	2	0	1	0	0	0	0	0	1	12	A
OAK GROVE	W. MAIN	4066	3700	4066	0.15	at	1	35	0	0	0	0	0	3	0	0	0	0	0	0	1	1	0	A
OAK GROVE	4066	W. MAIN	4066	3700	0.15	at	1	35	0	0	0	0	0	3	5	0	0	0	1	0	0	1	0	A
OAKDALE	2ND	PENNSYLVANIA	3410	3525	0.15	atw	1	25	0	0	0	1	1	3	0	0	0	0	0	0	1	1	15	G
OAKDALE	PENNSYLVANIA	2ND	3525	3410	0.15	atw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	28.5	A
OAKDALE	PENNSYLVANIA	4TH	3525	3570	0.08	atw	1	25	0	0	0	1	1	3	2	0	0	0	1	0	0	1	18	G
OAKDALE	4TH	PENNSYLVANIA	3570	3525	0.08	atw	1	25	0	0	1	1	1	3	0	0	0	0	0	1	0	1	18	G
OAKDALE	4TH	5TH	3570	3630	0.07	atw	1	25	0	0	0	1	1	3	0	0	0	0	0	1	0	1	15	G
OAKDALE	5TH	4TH	3630	3570	0.07	atw	1	25	0	0	0	1	1	3	2	0	0	0	1	0	0	1	15	G
OAKDALE	5TH	6TH	3630	3786	0.06	atw	1	25	0	0	1	1	1	3	2	0	0	0	1	0	0	1	18	G
OAKDALE	MAIN	6TH	3785	3786	0.08	atw	1	25	0	0	1	1	1	3	2	0	0	0	1	0	0	1	15	G
OAKDALE	MAIN	8TH	3785	3835	0.07	abtw	1	25	0	0	1	1	1	3	5	1	0	0	0	1	0	2	23	G
OAKDALE	6TH	5TH	3786	3630	0.06	atw	1	25	0	0	1	1	1	3	0	0	0	0	0	0	1	1	15	G
OAKDALE	6TH	MAIN	3786	3785	0.08	atw	1	25	0	0	1	1	1	3	5	0	0	0	0	0	1	1	18	G
OAKDALE	8TH	MAIN	3835	3785	0.07	abtw	1	25	0	0	1	1	1	3	5	0	0	0	0	1	0	1	22	G
OAKDALE	8TH	3931	3835	3931	0.06	abtw	2	25	0	0	0	1	1	3	0	0	0	0	0	1	1	2	24	G
OAKDALE	10TH	3931	3930	3931	0.07	abtw	2	25	0	0	0	1	1	3	0	1	1	0	0	0	0	2	24	G
OAKDALE	10TH	11TH	3930	3970	0.07	atw	2	25	0	0	0	1	1	3	0	0	1	0	0	0	1	2	24	G
OAKDALE	3931	8TH	3931	3835	0.06	abtw	2	25	0	0	0	1	1	3	5	1	0	1	0	0	0	2	24	G
OAKDALE	3931	10TH	3931	3930	0.07	abtw	2	25	0	0	0	1	1	3	5	0	0	0	0	1	1	2	24	G
OAKDALE	11TH	10TH	3970	3930	0.07	atw	2	25	0	0	0	1	1	3	5	0	0	0	0	1	1	2	24	G
OAKDALE	11TH	4015	3970	4015	0.15	atw	1	25	0	0	0	1	1	3	0	0	0	0	0	0	0	0	25	G
OAKDALE	4015	11TH	4015	3970	0.15	atw	1	25	0	0	1	1	1	3	2	0	0	0	1	0	0	1	25	G
OAKDALE	4015	DAKOTA	4015	4090	0.13	atw	1	25	0	0	0	1	1	3	2	0	0	0	1	0	0	1	25	G
OAKDALE	DAKOTA	4015	4090	4015	0.13	atw	1	25	0	0	1	1	1	3	0	0	0	0	0	0	0	0	25	G
OAKDALE	DAKOTA	BELMONT	4090	4205	0.15	abtw	1	25	0	0	0	1	1	3	0	0	0	0	0	0	1	1	15	G
OAKDALE	BELMONT	DAKOTA	4205	4090	0.15	abtw	1	25	0	0	1	1	1	3	2	0	0	0	1	0	0	1	18	G
OAKDALE	BELMONT	STEWART	4205	4290	0.1	abtw	1	25	0	0	0	1	1	3	5	0	0	0	1	0	0	1	15	G
OAKDALE	STEWART	BELMONT	4290	4205	0.1	abtw	1	25	0	0	1	1	1	3	0	0	0	0	0	1	0	1	15	G
OAKDALE	STEWART	ARBOR	4290	4365	0.16	atw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	20	G
OAKDALE	ARBOR	STEWART	4365	4290	0.16	abtw	1	25	0	0	1	1	1	3	5	0	0	1	0	1	0	2	20	G
OAKDALE	ARBOR	HOLMES	4365	4430	0.09	atw	1	25	0	0	1	1	1	3	0	0	0	0	0	1	0	1	20	G
OAKDALE	HOLMES	ARBOR	4430	4365	0.09	atw	1	25	0	0	1	1	1	3	0	0	0	0	1	0	0	1	20	G
OAKDALE	HOLMES	GARFIELD																						
ORCHARD HOME	4395	CUNNINGHAM	4395	4480	0.23	at	1	40	0	0	0	0	0	3	0	0	0	0	1	0	0	1	0	A
ORCHARD HOME	CUNNINGHAM	4395	4480	4395	0.23	at	1	40	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	A
ORCHARD HOME	CUNNINGHAM	4550	4485	4550	0.16	at	1	40	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	A
ORCHARD HOME	4550	CUNNINGHAM	4550	4485	0.16	at	1	40	0	0	0	0	0	3	0	1	0	0	0	0	0	1	0	A
ORCHARD HOME	4550	SUNSET	4550	4575	0.08	at	1	40	0	0	0	0	0	3	0	0	0	0	0	0	1	1	0	A
ORCHARD HOME	SUNSET	4550	4575	4550	0.08	at	1	40	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	A
ORCHARD HOME	SUNSET	4605	4575	4605	0.27	at	1	40	0	0	0	0	0	3	0	1	0	0	0	0	0	1	0	A
ORCHARD HOME	4605	SUNSET	4605	4575	0.27	at	1	40	0	0	0	0	0	3	0	0	0	0	0	1	0	1	0	A
ORCHARD HOME	4605	S. STAGE	4605	4630	0.21	at	1	40	0	0	0	0	0	3	2	0	0	0	1	0	0	1	0	A
ORCHARD HOME	S. STAGE	4605	4630	4605	0.21	at	1	40	0	0	0	0	0	3	0	1	0	0	0	0	0	1	0	A
PEACH	STEWART	JANES	4260	4455	0.29	at	1	35	0	0	0	0	0	3	0	0	0	0	0	0	1	1	0	A
PEACH	JANES	STEWART	4455	4260	0.29	at	1	35	0	0	0	0	0	3	5	0	1	0	0	0	1	2	0	A
PEACH	JANES	GARFIELD	4455	4510	0.2	at	1	35	0	0	0	0	0	3	0	0	0	0	1	0	0	1	0	A
PEACH	GARFIELD	JANES	4510	4455	0.2	at	1	35	0	0	0	0	0	3	0	0	0	0	0	1	0	1	0	A
PEACH	GARFIELD	AGATE	4510	4566	0.2	at	1	35	0	0	0	0	0	3	0	0	0	0	1	0	0	1	0	A
PEACH	AGATE	GARFIELD	4566	4510	0.2	at	1	35	0	0	0	0	0	3	0	0	0	0	1	0	0	1	0	A
PIERCE	SPRING	QUAIL RUN	3025	3145	0.29	at	1	40	0	0	0	0	0	3	0	0	0	0	0	0	1	1	19	A
PIERCE	QUAIL RUN	SPRING	3145	3025	0.29	at	1	40	0	0	0	0	0	3	0	1	0	0	0	0	0	1	12	A
PIERCE	QUAIL RUN	HILLCREST	3145	3320	0.2	atw	1	40	0	0	0	1	1	3	2	0	1	1	0	0	0	2	19	A
PIERCE	HILLCREST	QUAIL RUN	3320	3145	0.2	at	1	40	0	0	0	0	0	3	0	0	0	0	0	1	0	1	12	A
POPLAR	HILTON	2520	2425	2520	0.17	abtw	2	35	0	0	0	1	1	3	0	0	0	0	0	0	0	0	28	G
POPLAR	0140 62	HILTON	2410	2425	0.06	abtw	2	35	0	0	0	1	1	3	0	0	0	0	0	1	1	2	29	G
POPLAR	HILTON	0140 62	2425	2410	0.06	abtw	3	35	3	0	0	1	1	3	5	1	1	1	0	0	0	3	29	G
POPLAR	2520	HILTON	2520	2425	0.17	abtw	2	35	0	0	0	1	1	3	0	0	0	0	0	1	1	2	28	G
POPLAR	2520	2671	2520	2671	0.17	abtw	1	35	0	0	0	1	1	3	0	0	1	0	0	0	1	2	28	G
POPLAR	MORROW	2671	2670	2671	0.13	abtw	1	35	0	0	0	1	1	3	0	1	0	0	0	0	0	1	28	G
POPLAR	MORROW	PROGRESS	2670	2730	0.14	abtw	1	35	0	0	0	1	1	3	0	1	0	1	0	0	0	2	23	G
POPLAR	2671	2520	2671	2520	0.17	abtw	1	35	0	0	0	1	1	3	0	0	0	0	0	0	0	0	28	G
POPLAR	2671	MORROW	2671	2670	0.13	abtw	1	35	0	0	0	1	1	3	5	0	1	0	0	0	1	2	28	G
POPLAR	PROGRESS	MORROW	2730	2670	0.14	abtw	1	35	0	0	0	1	1	3	5	0	1	0	0	0	1	2	23	G
POPLAR	PROGRESS	2770	2730	2770	0.14	abtw	1	35	0	0	0	1	1	3	0	0	0	0	0	0	0	0	18	G
POPLAR	2770	PROGRESS	2770	2730	0.14	abtw	1	35	0	0	0	1	1	3	0	0	0	0	0	1	0	1	18	G
POPLAR	2770	McANDREWS	2770	2875	0.13	abtw	1	35	0	0	0	1	1	3	5	0	1	0	0	0	1	2	18	G
POPLAR	McANDREWS	2770	2875	2770	0.13	abtw	1	35	0	0	0	1	1	3	0	0	0	0	0	0	0	0	18	G

Street Name	Street From	Segment To	Node A	No. B	Link Length	Mode Allowed	No. Lanes	Posted Speed	Median Type	Bike Lane	On-St. Parking	Curbs	Side Walk	Street Class	Tnode Control	Tnode Lanes T	L	R	TLR	TL	TR	Tnode Lanes	ROW Width	Street Condition
RIVERSIDE	OHIO	0270 (big x)	2765	2700	0.2	abtw	6	35	3	0	0	1	1	2	5	3	1	2	0	0	0	6	0	A
RIVERSIDE	McANDREWS	OHIO	2840	2765	0.13	abtw	4	35	3	0	0	1	1	2	5	2	0	0	0	1	1	4	0	A
RIVERSIDE	WALNUT	McANDREWS	2930	2840	0.07	abtw	4	30	3	0	0	1	1	2	5	2	0	1	0	1	0	4	0	A
RIVERSIDE	MANZANITA	WALNUT	2970	2930	0.18	abtw	3	30	3	0	0	1	1	2	0	2	0	0	0	1	0	3	0	A
RIVERSIDE	LIBERTY	MANZANITA	3030	2970	0.09	abtw	3	30	3	0	0	1	1	2	5	1	0	0	0	1	1	3	0	A
RIVERSIDE	EDWARDS	LIBERTY	3070	3030	0.11	abtw	3	30	3	0	0	1	1	2	0	2	0	0	0	1	0	3	0	A
RIVERSIDE	MAPLE	EDWARDS	3115	3070	0.08	abtw	3	30	3	0	0	1	1	2	5	2	0	0	0	1	0	3	0	A
RIVERSIDE	3155	MAPLE	3155	3115	0.11	abtw	3	30	3	0	0	1	1	2	0	2	0	0	0	1	0	3	0	A
RIVERSIDE	JACKSON	3155	3240	3155	0.11	abtw	3	30	3	0	0	1	1	2	0	3	0	0	0	0	0	3	0	A
RIVERSIDE	4TH	JACKSON	3310	3240	0.07	abtw	3	25	3	0	0	1	1	2	5	1	0	0	0	1	1	3	0	A
RIVERSIDE	5TH	4TH	3370	3310	0.07	abtw	3	25	3	0	0	1	1	2	5	2	0	1	0	1	0	4	0	A
RIVERSIDE	MAIN	6TH	3500	3502	0.07	abtw	3	25	3	0	1	1	1	2	5	2	0	0	0	1	0	3	0	A
RIVERSIDE	6TH	5TH	3502	3370	0.07	abtw	3	25	3	0	0	1	1	2	0	2	0	0	0	1	0	3	0	A
RIVERSIDE	3535	MAIN	3535	3500	0.04	abtw	3	25	3	0	1	1	1	2	5	2	0	0	0	1	0	3	0	A
RIVERSIDE	8TH	3535	3560	3535	0.04	abtw	3	25	3	0	1	1	1	2	0	0	0	0	0	0	0	0	0	A
RIVERSIDE	10TH	8TH	3715	3560	0.16	abtw	3	30	3	0	1	1	1	2	5	3	0	1	0	0	0	4	0	A
RIVERSIDE	12TH	10TH	3845	3715	0.12	abtw	3	30	3	0	1	1	1	2	5	2	0	1	0	1	0	4	0	A
RIVERSIDE	EARHART	12TH	3955	3845	0.16	abtw	3	30	3	0	1	1	1	2	5	1	0	0	0	1	1	3	0	A
RIVERSIDE	BANK	EARHART	4010	3955	0.17	abtw	3	35	3	0	1	1	1	2	0	1	0	0	0	1	1	3	0	A
RIVERSIDE	CENTRAL	BANK	4085	4010	0.14	abtw	3	35	3	0	1	1	1	2	0	2	0	0	0	1	0	3	0	A
RIVERSIDE	CENTRAL	BARNETT	4085	4165	0.08	abtw	3	35	3	0	0	1	1	2	5	0	1	0	0	1	1	3	0	A
RIVERSIDE	BARNETT	CENTRAL	4165	4085	0.08	abtw	3	35	3	0	0	1	1	2	0	2	0	0	0	0	0	2	0	A
RIVERSIDE	BARNETT	4210	4165	4210	0.11	abtw	2	35	3	0	0	1	1	2	0	0	0	0	0	0	0	0	0	A
RIVERSIDE	4210	BARNETT	4210	4165	0.11	abtw	2	35	3	0	0	1	1	2	5	1	1	0	0	0	1	3	0	A
RIVERSIDE	4210	STEWART	4210	4330	0.1	abtw	2	35	3	0	0	1	1	2	5	1	1	0	0	0	1	3	0	A
RIVERSIDE	STEWART	4210	4330	4210	0.1	abtw	2	35	3	0	0	1	1	2	0	0	0	0	0	0	0	0	0	A
RIVERSIDE	STEWART	4355	4330	4355	0.15	abt	2	35	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	A
RIVERSIDE	4355	STEWART	4355	4330	0.15	abt	2	35	2	0	0	1	1	1	5	2	1	1	0	0	0	4	0	A
RIVERSIDE	4355	BELKNAP	4355	4470	0.31	abt	2	35	2	0	0	1	0	1	5	2	1	1	0	0	0	4	0	A
RIVERSIDE	BELKNAP	4355	4470	4355	0.31	abt	2	35	2	0	0	1	1	1	0	0	0	0	0	0	0	0	0	A
RIVERSIDE	BELKNAP	LOWRY LN	4470	4555	0.25	abt	2	45	2	0	0	1	0	1	5	1	1	0	0	0	1	3	0	A
RIVERSIDE	LOWRY LN	BELKNAP	4555	4470	0.25	abt	2	45	2	0	0	1	0	1	5	1	1	0	0	0	1	3	0	A
RIVERSIDE	LOWRY LN	4666	4555	4666	0.22	abt	2	45	2	0	0	1	0	1	0	1	1	0	0	0	1	3	0	A
RIVERSIDE	S. STAGE	4666	4665	4666	0.77	abt	2	45	2	0	0	1	0	1	0	1	1	0	0	0	1	3	0	A
RIVERSIDE	4666	LOWRY LN	4666	4555	0.22	abt	2	45	2	0	0	1	0	1	5	1	1	0	0	0	1	3	0	A
RIVERSIDE	4666	S. STAGE	4666	4665	0.77	abt	2	45	2	0	0	1	0	1	5	1	1	0	0	0	1	3	0	A
ROBERTS	CRATER LAKE	N. KEENE WAY	2540	2545	0.17	atw	1	35	2	1	0	1	1	3	0	0	1	0	0	0	1	2	24	G
ROBERTS	N. KEENE WAY	CRATER LAKE	2545	2540	0.17	atw	1	35	2	1	0	1	1	3	5	0	1	1	0	0	0	2	24	G
ROBERTS	N. KEENE WAY	2550	2545	2550	0.14	abt	1	35	2	1	0	1	1	3	0	0	0	0	0	0	0	0	22	A
ROBERTS	2550	N. KEENE WAY	2550	2545	0.14	abt	1	35	2	1	0	1	1	3	0	0	1	0	0	0	1	2	22	A
ROBERTS	2550	SPRINGBROOK	2550	2555	0.19	abt	1	35	2	1	0	1	1	3	5	0	1	0	0	0	1	2	22	A
ROBERTS	SPRINGBROOK	2550	2555	2550	0.19	abt	1	35	2	1	0	1	1	3	0	0	0	0	0	0	0	0	22	A
ROSS LN	ROSSANLEY	3035	2830	3035	0.31	at	1	25	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	A
ROSS LN	3035	ROSSANLEY	3035	2830	0.31	at	1	25	0	0	0	0	0	3	2	0	1	1	0	0	0	2	0	A
ROSS LN	3035	3140	3035	3140	0.26	at	1	25	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	A
ROSS LN	3140	3035	3140	3035	0.26	at	1	25	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	A
ROSS LN	3140	3305	3140	3305	0.18	at	1	25	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	A
ROSS LN	3305	3140	3305	3140	0.18	at	1	25	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	A
ROSS LN	3305	McANDREWS	3305	3430	0.16	at	1	25	0	0	0	0	0	3	0	0	0	0	1	0	0	1	0	A
ROSS LN	McANDREWS	3305	3430	3305	0.16	at	1	25	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	A
ROSS LN	McANDREWS	3670	3430	3670	0.23	at	1	25	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	A
ROSS LN	3670	McANDREWS	3670	3430	0.23	at	1	25	0	0	0	0	0	2	0	0	0	1	0	1	0	2	0	A
ROSS LN	3670	238	3670	3730	0.05	at	1	25	0	0	0	0	0	2	5	1	1	1	0	0	0	3	0	A
ROSS LN	238	3670	3730	3670	0.05	at	1	25	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	A
ROSSANLEY	HANLEY WAY	2795	2785	2795	0.26	act	1	35	0	2	0	0	0	3	0	1	0	0	0	0	0	1	18	A
ROSSANLEY	2795	HANLEY WAY	2795	2785	0.26	act	1	35	0	2	0	0	0	3	2	0	0	0	1	0	0	1	18	A
ROSSANLEY	2795	2810	2795	2810	0.65	act	1	35	0	2	0	0	0	3	0	1	0	0	0	0	0	1	18	A
ROSSANLEY	2810	2795	2810	2795	0.65	act	1	35	0	2	0	0	0	3	0	1	0	0	0	0	0	1	18	A
ROSSANLEY	2810	2820	2810	2820	0.38	act	1	35	0	2	0	0	0	3	0	1	0	0	0	0	0	1	18	A
ROSSANLEY	2820	2810	2820	2810	0.38	act	1	35	0	2	0	0	0	3	0	1	0	0	0	0	0	1	18	A
ROSSANLEY	2820	ROSS LN	2820	2830	0.24	act	1	35	2	1	0	1	1	3	0	2	0	1	0	0	0	3	18	A
ROSSANLEY	ROSS LN	2820	2830	2820	0.24	act	1	35	2	1	0	1	1	3	0	2	0	0	0	0	0	2	18	A
ROSSANLEY	ROSS LN	STOWE	2830	2835	0.08	act	1	35	2	1	0	1	1	3	0	1	0	0	0	0	1	2	22	G
ROSSANLEY	STOWE	ROSS LN	2835	2830	0.08	act	1	35	2	1	0	1	1	3	0	2	1	0	0	0	0	3	18	A
ROSSANLEY	STOWE	SAGE	2835	2845	0.29	act	1	35	2	1	0	1	1	3	5	1	1	0	0	0	1	3	22	G
ROSSANLEY	SAGE	STOWE	2845	2835	0.29	act	1	35	2	1	0	1	1	3	0	2	1	0	0	0	0	3	22	G
ROYAL	McANDREWS	ROYAL CT N.	2880	2910	0.06	atw	1	25	0	0	0	1	1	3	0	0	0	0	0	0	1	1	18	G
ROYAL	ROYAL CT N.	McANDREWS	2910	2880	0.06	atw	1	25	0	0	0	1	1	3	5	0	1	0	0	0	1	2	18	G
ROYAL	ROYAL CT N.	SPRING	2910	2975	0.15	atw	1	25	0	0	1	1	1	3	0	0	0	0	0	1	0	1	18	G
ROYAL	SPRING	ROYAL CT N.	2975	2910	0.15	atw	1	25	0	0	0	1	1	3	0	0	0	0	0	1	0	1	18	G
ROYAL	SPRING	3045	2975	3045	0.11	atw	1	25	0	0	1	1	1	3	0	0	0	0	0	0	0	0	18	G
ROYAL	3045	SPRING	3045	2975	0.11	atw	1	25	0	0	0	1	1	3	0	0	0	0	0	0	1	1	18	G
ROYAL	3045	STEVENS	3045	3090	0.12	atw	1	25	0	0	1	1	1	3	5	0	1	0	0	0	1	2	18	G
ROYAL	STEVENS	3045	3090	3045	0.12	atw	1	25	0	0	1	1	1	3	0	0	0	0	0	0	0	0	18	G

Street Name	Street From	Segment To	Node A	No. B	Link Length	Mode Allowed	No. Lanes	Posted Speed	Median Type	Bike Lane	On-St. Parking	Curbs	Side Walk	Street Class	Tnode Control	Tnode Lanes T	L	R	TLR	TL	TR	Tnode Lanes	ROW Width	Street Condition
S. STAGE	4600	GRIFFIN S. 9	4600	4610	0.16	at	1	35	1	0	0	0	0	2	0	0	0	0	0	1	0	1	0	A
S. STAGE	HULL	SUNSET	4585	4590	0.22	at	1	45	1	0	0	0	0	2	2	0	0	0	0	0	1	1	0	A
S. STAGE	SUNSET	HULL	4590	4585	0.22	at	1	45	1	0	0	0	0	2	0	0	0	0	0	0	1	1	0	A
S. STAGE	SUNSET	4600	4590	4600	0.12	at	1	35	1	0	0	0	0	2	0	1	0	0	0	0	0	1	0	A
S. STAGE	4600	SUNSET	4600	4590	0.12	at	1	35	1	0	0	0	0	2	2	0	0	0	1	0	0	1	0	A
S. STAGE	GRIFFIN S. 9	4600	4610	4600	0.16	at	1	35	1	0	0	0	0	2	0	1	0	0	0	0	0	1	0	A
S. STAGE	GRIFFIN S. 9	4625	4610	4625	0.42	at	1	45	1	0	0	0	0	2	0	1	0	0	0	0	0	1	0	A
S. STAGE	4625	GRIFFIN S. 9	4625	4610	0.42	at	1	45	1	0	0	0	0	2	3	0	0	0	1	0	0	1	0	A
S. STAGE	4625	ORCHARD HOM	4625	4630	0.1	at	1	45	1	0	0	0	0	2	0	0	0	0	1	0	0	1	0	A
S. STAGE	ORCHARD HOM	4625	4630	4625	0.1	at	1	45	1	0	0	0	0	2	0	1	0	0	0	0	0	1	0	A
S. STAGE	COLUMBUS	4655	4635	4655	0.38	at	1	45	1	2	0	0	0	2	0	1	0	0	0	0	0	1	0	A
S. STAGE	4640	4660	4640	4660	0.4	at	1	45	1	2	0	0	0	2	0	1	0	0	0	0	0	1	0	A
S. STAGE	4640	4675	4640	4675	0.73	at	1	45	1	2	0	0	0	2	0	1	0	0	0	0	0	1	0	A
S. STAGE	4655	COLUMBUS	4655	4635	0.38	at	1	45	1	2	0	0	0	2	2	0	0	0	1	0	0	1	0	A
S. STAGE	4655	KINGS HWY	4655	4670	0.2	at	1	45	1	2	0	0	0	2	0	0	0	0	0	1	0	1	0	A
S. STAGE	4660	4640	4660	4640	0.4	at	1	45	1	2	0	0	0	2	0	1	0	0	0	0	0	1	0	A
S. STAGE	4660	KINGS HWY	4660	4670	0.13	at	1	45	1	2	0	0	0	2	2	0	0	0	0	0	1	1	0	A
S. STAGE	99	VOORHIES	4665	4680	0.26	at	1	45	1	2	0	0	0	2	0	0	0	0	0	1	0	1	0	A
S. STAGE	KINGS HWY	4655	4670	4655	0.2	at	1	45	1	2	0	0	0	2	0	1	0	0	0	0	0	1	0	A
S. STAGE	KINGS HWY	4660	4670	4660	0.13	at	1	45	1	2	0	0	0	2	0	1	0	0	0	0	0	1	0	A
S. STAGE	4675	4640	4675	4640	0.73	at	1	45	1	2	0	0	0	2	0	1	0	0	0	0	0	1	0	A
S. STAGE	4675	VOORHIES	4675	4680	0.43	at	1	45	1	2	0	0	0	2	0	1	0	1	0	0	0	2	0	A
S. STAGE	VOORHIES	99	4680	4665	0.26	at	1	45	1	2	0	0	0	2	5	0	0	1	0	1	0	2	0	A
S. STAGE	VOORHIES	4675	4680	4675	0.43	at	1	45	1	2	0	0	0	2	0	1	0	0	0	0	0	1	0	A
S. STAGE	COLUMBUS	SUNNYVIEW	4635	4645	0.25	at	1	45	1	2	0	0	0	2	0	0	0	0	0	1	0	1	0	A
S. STAGE	SUNNYVIEW	COLUMBUS	4645	4635	0.25	at	1	45	1	2	0	0	0	2	0	0	0	0	1	0	0	1	0	A
S. STAGE	SUNNYVIEW	4655	4645	4655	0.13	at	1	45	1	2	0	0	0	2	0	1	0	0	0	0	0	1	0	A
S. STAGE	4655	SUNNYVIEW	4655	4645	0.13	at	1	45	1	2	0	0	0	2	0	0	0	0	0	0	1	1	0	A
SAGE	EHRMAN	2530	2450	2530	0.12	at	1	40	1	0	0	1	0	2	0	0	0	0	0	0	0	0	0	A
SAGE	2530	EHRMAN	2530	2450	0.12	at	1	40	0	0	0	1	0	2	0	1	1	1	0	0	0	3	0	A
SAGE	2530	2570	2530	2570	0.09	at	1	40	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	A
SAGE	2570	2530	2570	2530	0.09	at	1	40	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	A
SAGE	2570	2780	2570	2780	0.36	at	1	40	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	A
SAGE	2780	2570	2780	2570	0.36	at	1	40	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	A
SAGE	2780	ROSSANLEY	2780	2845	0.32	at	1	40	0	0	0	1	0	2	5	0	1	0	0	0	1	2	0	A
SAGE	ROSSANLEY	2780	2845	2780	0.32	at	1	40	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	A
SAGE	ROSSANLEY	2935	2845	2935	0.15	at	1	40	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	A
SAGE	2935	ROSSANLEY	2935	2845	0.15	at	1	40	0	0	0	0	0	2	5	0	1	0	0	0	1	2	0	A
SAGE	2935	3040	2935	3040	0.15	at	1	40	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	A
SAGE	3040	2935	3040	2935	0.15	at	1	40	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	A
SAGE	3040	McANDREWS	3040	3055	0.15	at	1	40	0	0	0	1	0	2	5	0	1	0	0	0	1	2	0	A
SAGE	McANDREWS	3040	3055	3040	0.15	at	1	40	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	A
SISKIYOU	10TH	WILLAMETTE	3780	3900	0.31	atw	1	30	3	3	0	1	1	3	2	0	0	0	1	0	0	1	22	G
SISKIYOU	WILLAMETTE	10TH	3900	3780	0.31	atw	1	30	3	0	0	1	0	3	0	0	0	0	0	0	1	1	22	G
SISKIYOU	WILLAMETTE	EASTWOOD	3900	3940	0.35	at	1	30	0	0	1	1	0	3	0	0	0	0	0	1	0	1	22	G
SISKIYOU	EASTWOOD	WILLAMETTE	3940	3900	0.35	at	1	30	0	0	1	1	0	3	2	0	0	1	0	1	0	2	22	G
SISKIYOU	EASTWOOD	HIGHLAND	3940	3965	0.14	atw	1	30	0	0	1	1	1	3	2	1	1	1	0	0	0	3	22	G
SISKIYOU	GROVELAND	HIGHLAND	3945	3965	0.24	at	1	30	2	1	0	1	0	3	2	0	0	1	0	1	0	2	22	G
SISKIYOU	GROVELAND	BLACK OAK	3945	3990	0.52	atw	1	30	2	1	0	1	1	3	5	0	1	0	0	0	1	2	22	G
SISKIYOU	HIGHLAND	EASTWOOD	3965	3940	0.14	atw	1	30	0	0	0	1	1	3	0	0	0	0	0	0	1	1	22	G
SISKIYOU	HIGHLAND	GROVELAND	3965	3945	0.24	at	1	30	2	1	0	1	1	3	0	1	1	0	0	0	0	2	22	G
SISKIYOU	BLACK OAK	GROVELAND	3990	3945	0.52	at	1	30	2	1	0	1	0	3	0	0	0	0	0	0	1	1	22	G
SISKIYOU	BLACK OAK	SUTTER	3990	3995	0.18	atw	1	30	2	1	0	1	1	3	0	1	1	0	0	0	0	2	22	G
SISKIYOU	SUTTER	BLACK OAK	3995	3990	0.18	atw	1	30	2	1	0	1	1	3	5	0	1	0	0	0	1	2	22	G
SISKIYOU	SUTTER	MURPHY	3995	4000	0.17	atw	1	30	2	1	0	1	1	3	2	0	1	0	0	0	1	2	22	G
SISKIYOU	MURPHY	SUTTER	4000	3995	0.17	atw	1	30	2	1	0	1	1	3	0	0	0	0	0	0	1	1	22	G
SPRING	ROYAL	2976	2975	2976	0.13	atw	1	35	0	0	1	1	1	3	0	0	0	0	1	0	0	1	20	F
SPRING	2976	ROYAL	2976	2975	0.13	atw	1	35	0	0	1	1	1	3	2	0	0	0	1	0	0	1	20	F
SPRING	2976	CRATER LAKE	2976	2980	0.14	atw	1	35	0	0	1	1	1	3	5	0	0	0	1	0	0	1	20	F
SPRING	CRATER LAKE	2976	2980	2976	0.14	atw	1	35	0	0	1	1	1	3	0	0	0	0	1	0	0	1	20	F
SPRING	CRATER LAKE	WABASH	2980	2985	0.29	at	1	35	0	0	0	0	0	3	0	0	0	0	1	0	0	1	12	G
SPRING	WABASH	CRATER LAKE	2985	2980	0.29	at	1	35	0	0	0	0	0	3	5	0	0	1	0	1	0	2	12	G
SPRING	WABASH	KEENE WAY	2985	2995	0.13	at	1	35	0	0	0	0	0	3	0	0	0	0	1	0	0	1	12	G
SPRING	KEENE WAY	WABASH	2995	2985	0.13	at	1	35	0	0	0	0	0	3	0	0	0	0	1	0	0	1	12	G
SPRING	KEENE WAY	BERKELEY	2995	3000	0.13	at	1	35	0	0	0	0	0	3	0	0	0	0	0	0	1	1	12	G
SPRING	BERKELEY	KEENE WAY	3000	2995	0.13	at	1	35	0	0	0	0	0	3	0	0	0	0	1	0	0	1	12	G
SPRING	BERKELEY	SUNRISE	3000	3005	0.24	at	1	35	0	0	0	0	0	3	2	0	0	0	1	0	0	1	18	G
SPRING	SUNRISE	BERKELEY	3005	3000	0.24	at	1	35	0	0	0	0	0	3	0	0	0	0	0	1	0	1	18	G
SPRING	SUNRISE	VALLEY VIEW	3005	3010	0.16	at	1	35	0	0	0	0	0	3	0	0	0	0	0	0	1	1	12	G
SPRING	VALLEY VIEW	SUNRISE	3010	3005	0.16	at	1	35	0	0	0	0	0	3	2	0	0	1	0	1	0	2	22	G
SPRING	VALLEY VIEW	MODOC	3010	3015	0.15	at	1	35	0	0	0	0	0	3	0	0	0	0	1	0	0	1	18	G
SPRING	MODOC	VALLEY VIEW	3015	3010	0.15	atw	1	35	0	0	0	1	1	3	0	0	0	0	0	1	0	1	18	G
SPRING	MODOC	BROOKDALE	3015	3020	0.32	at	1	35	0	0	0	0	0	3	0	0	0	0	1	0	0	1	20	G
SPRING	BROOKDALE	MODOC	3020	3015	0.32	atw	1	35	0	0	0	1	1	3	0	0	0	0	1	0	0	1	17	G

Street	Street	Segment	Node	No.	Link	Mode	No.	Posted	Median	Bike	On-St.		Side	Street	Tnode	Tnode Lanes						Tnode	ROW	Street
Name	From	To	A	B	Length	Allowed	Lanes	Speed	Type	Lane	Parking	Curbs	Walk	Class	Control	T	L	R	TLR	TL	TR	Lanes	Width	Condition
SPRING	BROOKDALE	PIERCE	3020	3025	0.12	at	1	35	0	0	0	0	0	3	0	1	0	0	0	0	0	1	12	G
SPRING	PIERCE	BROOKDALE	3025	3020	0.12	atw	1	35	0	0	0	1	1	3	0	0	0	1	0	1	0	2	12	G
SPRINGBROOK	DELTA WATERS	BELL	2290	2370	0.2	at	1	35	0	0	0	0	0	3	0	0	0	0	1	0	0	1	10.5	G
SPRINGBROOK	BELL	DELTA WATERS	2370	2290	0.2	at	1	35	0	0	0	0	0	3	2	0	0	0	1	0	0	1	10.5	G
SPRINGBROOK	BELL	CEDAR LINKS	2370	2465	0.35	act	1	35	0	0	0	0	0	3	0	0	0	0	0	1	0	1	10.5	F
SPRINGBROOK	CEDAR LINKS	BELL	2465	2370	0.35	act	1	35	0	0	0	0	0	3	0	0	0	0	1	0	0	1	10.5	F
SPRINGBROOK	CEDAR LINKS	ROBERTS	2465	2555	0.12	actw	1	35	1	1	0	1	1	3	5	0	1	0	0	0	1	2	23	G
SPRINGBROOK	ROBERTS	CEDAR LINKS	2555	2465	0.12	actw	1	35	1	1	0	1	1	3	0	1	0	1	0	0	0	2	23	G
SPRINGBROOK	ROBERTS	BROOKSIDE	2555	2620	0.18	actw	1	35	0	1	1	1	1	3	0	0	0	0	0	1	0	1	23	G
SPRINGBROOK	BROOKSIDE	ROBERTS	2620	2555	0.18	actw	1	35	0	1	0	1	1	3	5	0	1	0	0	0	1	2	23	G
SPRINGBROOK	BROOKSIDE	LONE PINE	2620	2720	0.21	actw	1	35	1	1	1	1	1	3	0	0	0	0	0	1	0	1	23	G
SPRINGBROOK	LONE PINE	BROOKSIDE	2720	2620	0.21	actw	1	35	1	1	0	1	1	3	0	0	0	0	0	0	1	1	23	G
SPRINGBROOK	LONE PINE	ASHWOOD	2720	2775	0.15	actw	1	35	1	1	1	1	1	3	0	0	0	0	0	1	0	1	23	G
SPRINGBROOK	ASHWOOD	LONE PINE	2775	2720	0.15	actw	1	35	1	1	0	1	1	3	0	0	0	0	0	0	1	1	23	G
SPRINGBROOK	ASHWOOD	McANDREWS	2775	2815	0.11	actw	1	35	1	1	1	1	1	3	5	0	1	0	0	0	1	2	23	G
SPRINGBROOK	McANDREWS	ASHWOOD	2815	2775	0.11	actw	1	35	1	1	0	1	1	3	0	0	0	0	0	0	1	1	23	G
SPRINGBROOK	2920	SPRING	2920	3005	0.16	atw	1	35	1	1	0	1	1	3	2	1	1	1	0	0	0	3	28	G
SPRINGBROOK	SPRING	2920	3005	2920	0.16	atw	1	35	1	1	0	1	0	3	0	0	0	0	0	0	0	0	28	G
SPRINGBROOK	McANDREWS	2920	2815	2920	0.1	atw	1	35	1	1	0	1	1	3	0	0	0	0	0	0	0	0	28	G
SPRINGBROOK	SPRING	2920	3005	2920	0.16	atw	1	35	1	1	0	1	0	3	0	1	0	0	0	0	0	1	18	G
SPRINGBROOK	E. McAndrews	2920	2815	2920	0.1	atw	1	35	1	1	0	1	1	3	0	1	0	0	0	0	0	1	18	G
SPRINGBROOK	2920	E. McANDREWS	2920	2815	0.1	atw	1	35	1	1	0	1	0	3	5	0	1	0	0	0	1	2	18	G
SPRINGBROOK	DELTA WATERS	SHARMAN					1	25	1	0	1	1	1	3	0	0	0	0	0	0	1	1	22	G
SPRINGBROOK	COKER BUTTE	HONDELEAU					1	25	1	0	0	0	0	3	0	0	0	0	1	0	0	1	15	G
STEVENS	BIDDLE	3085	3080	3085	0.13	atw	2	30	0	0	0	1	1	2	0	0	0	0	0	0	0	0	28	G
STEVENS	3085	BIDDLE	3085	3080	0.13	atw	2	30	0	0	0	1	1	2	5	0	1	1	0	0	0	2	28	G
STEVENS	3085	ROYAL	3085	3090	0.1	atw	2	30	0	0	0	1	1	2	5	1	1	0	0	0	1	3	28	G
STEVENS	ROYAL	3085	3090	3085	0.1	atw	2	30	0	0	0	1	1	2	0	0	0	0	0	0	0	0	28	G
STEVENS	ROYAL	3095	3090	3095	0.1	atw	2	30	0	0	0	1	1	2	0	1	0	0	0	0	1	2	22	G
STEVENS	3095	ROYAL	3095	3090	0.1	atw	2	30	0	0	0	1	1	2	5	1	1	0	0	0	0	2	22	G
STEVENS	3095	CRATER LAKE	3095	3100	0.11	atw	2	30	0	0	0	1	1	2	5	0	1	0	0	0	1	2	22	G
STEVENS	CRATER LAKE	3095	3100	3095	0.11	atw	2	30	0	0	0	1	1	2	0	1	0	0	0	1	0	2	22	G
STEVENS	CRATER LAKE	3101	3100	3101	0.08	at	1	25	0	0	0	0	0	3	0	0	0	0	0	0	0	0	12	G
STEVENS	3101	CRATER LAKE	3101	3100	0.08	at	1	25	0	0	0	0	0	3	5	0	0	0	1	0	0	1	12	G
STEVENS	3101	EFFIE	3101	3105	0.19	at	1	25	0	0	0	0	0	3	0	0	0	0	0	0	1	1	12	G
STEVENS	EFFIE	3101	3105	3101	0.19	at	1	25	0	0	0	0	0	3	0	0	0	0	1	0	0	1	12	G
STEVENS	EFFIE	WABASH	3105	3110	0.08	at	1	25	0	0	0	0	0	3	0	1	0	0	0	0	0	1	12	G
STEVENS	WABASH	EFFIE	3110	3105	0.08	at	1	25	0	0	0	0	0	3	0	0	0	0	0	1	0	1	12	G
STEWART	BARNETT	CENTER	4155	4230	0.14	atw	2	35	3	0	0	1	1	2	5	1	2	0	0	0	1	4	46	A
STEWART	CENTER	BARNETT	4230	4155	0.14	atw	2	35	3	0	0	1	1	2	5	0	1	2	0	0	0	3	36	A
STEWART	CENTER	RIVERSIDE	4230	4330	0.16	atw	2	35	3	0	0	1	1	2	5	1	1	0	0	0	1	3	28	G
STEWART	DIXIE	COLUMBUS	4240	4245	0.14	atw	1	35	1	0	0	1	1	2	5	1	1	0	0	0	1	3	28	A
STEWART	DIXIE	4320	4240	4320	0.08	at	1	35	1	0	0	0	0	2	0	2	0	0	0	0	0	2	28	A
STEWART	COLUMBUS	DIXIE	4245	4240	0.14	atw	1	35	2	0	0	1	1	2	0	2	1	0	0	0	0	3	28	A
STEWART	COLUMBUS/4245	HAMILTON	4250	4255	0.24	abtw	1	35	1	0	0	1	1	2	0	2	1	0	0	0	0	3	28	A
STEWART	HAMILTON	COLUMBUS/4245	4255	4250	0.24	abtw	1	35	1	0	0	1	1	2	0	1	1	0	0	0	1	3	28	A
STEWART	HAMILTON	PEACH	4255	4260	0.14	abtw	1	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	28	A
STEWART	PEACH	HAMILTON	4260	4255	0.14	abtw	1	35	2	0	0	1	1	2	0	1	0	0	0	0	1	2	28	A
STEWART	PEACH	NEWTOWN	4260	4265	0.14	abtw	1	35	2	0	0	1	1	2	0	2	1	0	0	0	0	3	28	A
STEWART	NEWTOWN	PEACH	4265	4260	0.14	abtw	1	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	28	A
STEWART	NEWTOWN	KINGS	4265	4285	0.13	abtw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	28	G
STEWART	PARK	KINGS	4270	4285	0.07	abtw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	28	G
STEWART	PARK	OAKDALE	4270	4290	0.09	abtw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	28	G
STEWART	HULL	OAK GROVE	4275	4280	0.14	at	1	35	0	0	0	0	0	2	0	0	0	0	0	1	0	1	0	A
STEWART	HULL	BELLINGER	4275	4420	0.23	at	1	35	0	0	0	0	0	2	0	0	0	0	0	0	1	1	0	A
STEWART	OAK GROVE	HULL	4280	4275	0.14	at	1	35	0	0	0	0	0	2	0	1	0	0	0	0	0	1	0	A
STEWART	OAK GROVE	THOMAS	4280	4295	0.3	at	1	35	0	0	0	0	0	2	0	0	0	0	0	0	1	1	15	A
STEWART	KINGS	NEWTOWN	4285	4265	0.13	abtw	2	35	2	0	0	1	1	2	0	1	0	0	0	0	1	2	28	G
STEWART	KINGS	PARK	4285	4270	0.07	abtw	2	35	1	0	0	1	1	2	0	2	1	0	0	0	0	3	28	G
STEWART	OAKDALE	PARK	4290	4270	0.09	abtw	2	35	2	0	0	1	1	2	0	1	0	0	0	0	1	2	28	G
STEWART	OAKDALE	ALTA	4290	4315	0.3	atw	2	35	2	0	0	1	1	2	0	2	1	0	0	0	0	3	28	A
STEWART	THOMAS	OAK GROVE	4295	4280	0.3	at	1	35	0	0	0	0	0	2	0	0	0	0	0	0	1	1	15	A
STEWART	THOMAS	LOZIER	4295	4300	0.14	at	1	35	0	0	0	0	0	2	5	0	1	0	0	0	1	2	24	A
STEWART	LOZIER	THOMAS	4300	4295	0.14	at	1	35	0	0	0	0	0	2	0	0	0	0	0	1	0	1	15	A
STEWART	LOZIER	ORCHARD HOM	4300	4325	0.2	at	1	35	0	0	0	0	0	2	0	0	0	0	0	0	1	1	15	A
STEWART	4305	GRAPE	4305	4306	0.07	atw	2	35	2	0	0	1	1	2	0	1	0	0	0	0	1	2	28	A
STEWART	4305	MYERS	4305	4335	0.12	atw	2	35	2	0	0	1	1	2	0	1	0	0	0	0	1	2	28	A
STEWART	GRAPE	4305	4306	4305	0.07	atw	2	35	2	0	0	1	1	2	0	2	0	0	0	0	0	2	28	A
STEWART	GRAPE	HOLLY	4306	4310	0.06	atw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	28	A
STEWART	HOLLY	GRAPE	4310	4306	0.06	atw	2	35	2	0	0	1	1	2	0	2	1	0	0	0	0	3	28	A
STEWART	HOLLY	ALTA	4310	4315	0.06	atw	2	35	2	0	0	1	1	2	0	1	0	0	0	0	1	2	28	A
STEWART	ALTA	OAKDALE	4315	4290	0.3	atw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	28	G
STEWART	ALTA	HOLLY	4315	4310	0.06	atw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	28	A
STEWART	4320	DIXIE	4320	4240	0.08	at	1	35	1	0	0	0	0	2	0	1	0	0	0	0	1	2	28	A

Street Name	Street From	Segment To	Node A	No. B	Link Length	Mode Allowed	No. Lanes	Posted Speed	Median Type	Bike Lane	On-St. Parking	Curbs	Side Walk	Street Class	Tnode Control	Tnode Lanes T	L	R	TLR	TL	TR	Tnode Lanes	ROW Width	Street Condition
STEWART	4320	ORCHARD HOM	4320	4325	0.09	at	1	35	1	0	0	0	0	2	0	0	0	0	0	1	0	1	15	A
STEWART	ORCHARD HOM	LOZIER	4325	4300	0.2	at	1	35	1	0	0	0	0	2	5	0	1	0	0	0	1	2	24	A
STEWART	ORCHARD HOM	4320	4325	4320	0.09	at	1	35	0	0	0	0	0	2	0	1	0	0	0	0	0	1	15	A
STEWART	RIVERSIDE	CENTER	4330	4230	0.16	atw	2	35	3	0	0	1	1	2	5	2	1	1	0	0	0	4	46	G
STEWART	RIVERSIDE	MYERS	4330	4335	0.1	atw	2	35	2	0	0	1	1	2	0	2	1	0	0	0	0	3	28	A
STEWART	MYERS	4305	4335	4305	0.12	atw	2	35	2	0	0	1	1	2	0	2	0	0	0	0	0	2	28	A
STEWART	MYERS	RIVERSIDE	4335	4330	0.1	atw	2	35	2	0	0	1	1	2	5	1	1	0	0	0	1	3	28	G
SUNRISE	SPRING	HARRISON	3005	3120	0.24	atw	1	35	0	1	0	1	1	3	0	0	0	0	0	1	0	1	18	G
SUNRISE	HARRISON	SPRING	3120	3005	0.24	atw	1	35	0	1	0	1	0	3	2	0	1	0	0	0	1	2	20	G
SUNRISE	HARRISON	3301	3120	3301	0.14	atw	1	35	0	1	0	1	1	3	0	0	0	0	1	0	0	1	18	G
SUNRISE	JACKSON	3301	3300	3301	0.11	atw	1	35	0	1	0	1	0	3	0	0	0	0	1	0	0	1	18	G
SUNRISE	JACKSON	HILLCREST	3300	3365	0.08	at	1	35	0	0	0	0	0	3	0	0	0	0	1	0	0	1	10	G
SUNRISE	3301	HARRISON	3301	3120	0.14	atw	1	35	0	1	0	1	0	3	0	0	0	0	0	0	1	1	18	G
SUNRISE	3301	JACKSON	3301	3300	0.11	atw	1	35	0	1	0	1	1	3	2	0	0	0	1	0	0	1	18	G
SUNRISE	HILLCREST	JACKSON	3365	3300	0.08	at	1	35	0	0	0	0	0	3	2	0	0	0	1	0	0	1	10	G
SUNSET	(90 TURNS)	THOMAS	4560	4570	0.16	at	1	35	0	0	0	0	0	3	0	0	0	0	0	1	0	1	12	A
SUNSET	(90 TURNS)	(90TURNS)	4560	4595	0.08	at	1	35	0	0	0	0	0	3	0	1	0	0	0	0	0	1	12	A
SUNSET	THOMAS	(90 TURNS)	4570	4560	0.16	at	1	35	0	0	0	0	0	3	0	1	0	0	0	0	0	1	12	A
SUNSET	THOMAS	ORCHARD HOME	4570	4575	0.28	at	1	35	0	0	0	0	0	3	2	0	0	0	1	0	0	1	12	A
SUNSET	ORCHARD HOME	THOMAS	4575	4570	0.28	at	1	35	0	0	0	0	0	3	2	0	0	0	0	0	1	1	12	A
SUNSET	S. STAGE	(90 TURNS)	4590	4595	0.08	at	1	35	0	0	0	0	0	3	0	1	0	0	0	0	0	1	12	A
SUNSET	(90 TURNS)	(90 TURNS)	4595	4560	0.08	at	1	35	0	0	0	0	0	3	0	1	0	0	0	0	0	1	12	A
SUNSET	(90 TURNS)	S. STAGE	4595	4590	0.08	at	1	35	0	0	0	0	0	2	2	0	0	0	0	1	0	1	12	A
TABLE ROCK	VILAS	1630	1540	1630	0.31	at	1	45	0	0	0	0	0	2	0	1	0	0	0	0	0	1	0	A
TABLE ROCK	1630	VILAS	1630	1540	0.31	at	1	45	0	0	0	0	0	2	5	0	1	0	0	0	1	2	0	A
TABLE ROCK	1630	BIDDLE	1630	1810	0.44	at	1	45	0	0	0	0	0	2	5	0	0	0	1	0	0	1	0	A
TABLE ROCK	BIDDLE	1630	1810	1630	0.44	at	1	45	0	0	0	0	0	2	0	1	0	0	0	0	0	1	0	A
TABLE ROCK	BIDDLE	1900	1810	1900	0.21	at	1	45	0	0	0	0	0	2	0	0	0	0	0	0	1	1	0	A
TABLE ROCK	1900	BIDDLE	1900	1810	0.21	at	1	45	0	0	0	0	0	2	5	0	0	0	1	0	0	1	0	A
TABLE ROCK	1900	AIRPORT	1900	2055	0.37	at	1	45	0	0	0	0	0	2	0	0	0	0	0	1	0	1	0	A
TABLE ROCK	AIRPORT	1900	2055	1900	0.37	at	1	45	0	0	0	0	0	2	0	0	0	0	0	1	0	1	0	A
TABLE ROCK	AIRPORT	2100	2055	2100	0.1	at	1	45	0	0	0	0	0	2	0	1	0	0	0	0	0	1	0	A
TABLE ROCK	2100	AIRPORT	2100	2055	0.1	at	1	45	0	0	0	0	0	2	0	0	0	0	0	0	1	1	0	A
TABLE ROCK	2100	MORNINGSIDE	2100	2270	0.61	at	1	45	0	0	0	0	0	2	0	0	0	0	0	0	1	1	0	A
TABLE ROCK	MORNINGSIDE	2100	2270	2100	0.61	at	1	45	0	0	0	0	0	2	0	1	0	0	0	0	0	1	0	A
TABLE ROCK	MORNINGSIDE	MIDWAY	2270	2360	0.21	act	1	35	0	1	0	0	0	2	0	0	0	0	1	0	0	1	15	A
TABLE ROCK	MIDWAY	MORNINGSIDE	2360	2270	0.21	act	1	35	0	1	0	0	0	2	0	0	0	0	0	1	0	1	15	A
TABLE ROCK	MIDWAY	MERRIMAN	2360	2430	0.26	act	1	35	0	1	0	0	0	2	0	1	0	0	0	0	0	1	15	G
TABLE ROCK	MERRIMAN	MIDWAY	2430	2360	0.26	act	1	35	0	1	0	0	0	2	0	0	0	0	1	0	0	1	15	A
TABLE ROCK	MERRIMAN	BERRYDALE	2430	2510	0.14	abctw	2	35	2	1	0	1	1	2	5	1	1	0	0	0	1	3	24	G
TABLE ROCK	BERRYDALE	MERRIMAN	2510	2430	0.14	abct	2	35	2	1	0	1	0	2	0	1	1	0	0	0	0	2	24	G
TABLE ROCK	BERRYDALE	W. TABLE ROC	2510	2600	0.18	abt	2	35	2	0	0	1	0	2	0	2	1	0	0	0	0	3	28	G
TABLE ROCK	W. TABLE ROC	BERRYDALE	2600	2510	0.18	abt	2	35	2	0	0	1	0	2	5	1	1	0	0	0	1	3	28	G
TABLE ROCK	W. TABLE ROC	CUL-DE-SAC	2600	2690	0.22	abtw	1	35	0	0	0	1	1	2	0	1	0	0	0	0	0	1	12	G
TABLE ROCK	CUL-DE-SAC	W. TABLE ROC	2690	2600	0.22	abtw	2	35	0	0	1	1	1	2	2	1	0	0	0	1	0	2	12	G
VALLEY VIEW	HILLCREST	MAIN	3380	3485	0.15	at	1	35	0	0	1	1	0	3	0	0	0	0	1	0	0	1	22	G
VALLEY VIEW	MAIN	HILLCREST	3485	3380	0.15	at	1	35	0	0	1	1	0	3	2	0	0	1	0	1	0	2	22	G
VILAS	TABLE ROCK	1545	1540	1545	0.39	at	1	45	2	0	0	1	0	2	0	1	0	0	0	0	0	1	15	A
VILAS	1545	TABLE ROCK	1545	1540	0.39	at	1	45	2	0	0	1	0	2	5	0	1	0	0	0	1	2	18	A
VILAS	1545	1550	1545	1550	0.16	at	1	45	2	0	0	1	0	2	0	1	0	0	0	0	0	1	15	A
VILAS	1550	1545	1550	1545	0.16	at	1	45	2	0	0	1	0	2	0	1	0	0	0	0	0	1	15	
VILAS	1550	62	1550	1555	0.52	at	1	45	2	0	0	1	0	2	5	1	1	1	0	0	0	3	18	A
VILAS	62	1550	1555	1550	0.52	at	1	45	2	0	0	0	0	2	0	1	0	0	0	0	0	1	15	A
VILAS	62	CRATER LAKE	1555	1560	0.02	at	1	45	0	0	0	1	0	2	0	0	0	0	1	0	0	1	15	A
VILAS	CRATER LAKE	62	1560	1555	0.02	at	1	45	0	0	0	1	0	2	5	0	0	1	0	1	0	2	15	A
VILAS	CRATER LAKE	1565	1560	1565	0.36	at	1	45	0	0	0	1	0	2	0	1	0	0	0	0	0	1	10	A
W. TABLE R	TABLE ROCK	99	2600	2630	0.14	atw	2	35	1	0	0	1	1	2	5	1	2	1	0	0	0	4	10.5	A
W. TABLE R	99	TABLE ROCK	2630	2600	0.14	atw	1	35	1	0	0	1	1	2	0	1	0	0	0	0	1	2	10.5	A
WILLAMETTE	MAIN	SMITH	3490	3600	0.1	atw	1	25	1	0	1	1	1	3	0	0	0	0	0	1	0	1	18	F
WILLAMETTE	SMITH	MAIN	3600	3490	0.1	atw	1	25	1	0	1	1	1	3	2	0	0	0	1	0	0	1	18	F
WILLAMETTE	SMITH	10TH	3600	3795	0.17	atw	1	25	1	0	1	1	1	3	0	0	0	0	1	0	0	1	18	F
WILLAMETTE	10TH	SMITH	3795	3600	0.17	atw	1	25	1	0	1	1	1	3	0	0	0	0	0	0	1	1	18	F
WILLAMETTE	10TH	SISKIYOU	3795	3900	0.16	atw	1	25	1	0	1	1	1	3	2	0	0	0	1	0	0	1	22	G
WILLAMETTE	SISKIYOU	10TH	3900	3795	0.16	atw	1	25	1	0	1	1	1	3	0	0	0	0	1	0	0	1	18	F

APPENDIX B

RVTD Transit Stop Locations in the City of Medford

Appendix B - RVTD Transit Stop Locations in City of Medford

Route No.	Stop No.	Stop	Location	Time	Sign	Amenities	Key
1	00	Front St. Station		:30		B,BR,P,R,S,T,V,N	
1,40	10	Riverside	Red Lion N. of 6th St. at 25 mph sign		N/S		
1	20	Biddle/Jackson	Sears Shopping Center	:30	O/S		Sign Status:
1	30	Stevens/Biddle	751 Stevens at 30 mph sign		O/S		N/S = Needs Sign
1	40	Royal Ave	Grace Christian School		O/S		C/S = Current Sign
1	50	Royal Ave/S Royal Court	840 Royal Medical Building		O/S		O/S = Old Sign
1	60	Royal Ave	Across from RFCU		O/S		
1	70	On Biddle Road	342' north of McAndrews Rd (Toys-R -Us)		O/S		
1	80	On Progress Way	266' east of Biddle Rd (Subway)		O/S		
1	90	On Poplar Dr	195' north of Progress Way		O/S		Amenities:
1	100	On Poplar Dr	59' north of driveway to Royal Oaks Ret		O/S		B = Bench
1	110	On Poplar Dr	292' south of Hilton Rd. (Poplar Square)	:42	O/S	S,B,T	BR = Bike Rack
1	120	On rear access road	50' south of sidewalk bet. Target & Mervyns		N/S		C = Cash Machine
1	130	At entrance	Movie 5		O/S	S,B,T	M = Mailbox
1	140	At entrance	J.C. Penney's		N/S		N = Newspaper
1,40	150	On Riverside Ave	167' south of Ohio St. (RV Mall)	:52	O/S	S,B,T	P = Phone
1	160	On Poplar Dr	326' south of Hilton Rd. (Fred Meyer)	:55	O/S		R = Restroom
1	170	On Poplar Dr	At Colonial Park Estates		O/S		S = Shelter
1	180	On Poplar Dr	200' north of Morrow Rd		O/S		T = Trash Can
1	190	On Poplar Dr	180' north of Progress Way		O/S		V = Vending Machine
1	200	On Progress Way	262' east of Biddle Rd. (Subway)		O/S		
1	210	On Biddle Rd.	251' south of McAndrews Rd (B.C. Plaza)		O/S		
1	220	On Biddle Rd.	40' north of Jackson St. (Medford Center)	:04	O/S		
1	230	On 4th St.	72' east of Bartlett St.		O/S		
1	00	Front Street Station		:09		B,BR,P,R,S,T,V,N	
2	00	Front Street Station		:00/:30		B,BR,P,R,S,T,V,N	
2	240	On 10th St	50' east of Holly		N/S		
2	250	On Oakdale	Just past 11th St at wide spot (25 mph sign)		N/S		
2	260	Oakdale	Just past Dakota	:03/:33	N/S		
2	270	Stewart Ave/Oakdale	West of Oakdale at 35 mph sign		O/S		
2	280	Stewart/Grant			O/S		
2	290	Stewart Ave/Peach	35 mph sign west of Peach		N/S		
2	300	Stewart/Hamilton			N/S		
2	310	Stewart/Columbus		:06/:36	O/S		
2	320	S. Columbus/Mt. Pitt	Southside of Mt. Pitt, near alley		O/S		
2	330	Dakota/Benson	At 25 mph sign		O/S		

Appendix B - RVTD Transit Stop Locations in City of Medford Continued

Route No.	Stop No.	Stop	Location	Time	Sign	Amenities	Key
2	340	Dakota/Hamilton			O/S		
2	350	Hamilton	Between 12th & 13th		N/S		
2	350	Hamilton/Safeway	Near no parking sign	:10/:40	N/S		Sign Status:
2	370	W. Main/Summit	1320 W. Main		O/S		N/S = Needs Sign
2	380	W. Main/Columbus	1530 W. Main at no parking sign		O/S		C/S = Current Sign
2,30	390	Blackbird			O/S		O/S = Old Sign
2,30	400	W. Main/Reager	Littrells		O/S		
2	410	Thunderbird	At shelter in parking lot		O/S	S,B,T	
2,30	420	W. Main/Wells Fargo	At 35 mph sign		N/S		
2,30	430	Blackbird			N/S		Amenities:
2	440	8th St.	100' east of Elm St. at 30 mph sign		N/S		B = Bench
2	450	W.8th/Lincoln			O/S		BR = Bike Rack
2	460	W. 8th/Cannon			O/S		C = Cash Machine
2	470	W. 8th/Newtown	200' east of Newtown		O/S		M = Mailbox
2	480	W. 8th/City Hall		:19/:49	O/S		N = Newspaper
2	490	W. 8th/Grape St.			O/S		P = Phone
2	00	Front Street Station		:22/:52		B,BR,P,R,S,T,V,N	R = Restroom
							S = Shelter
4	00	Front Street Station		:30		B,BR,P,R,S,T,V,N	T = Trash Can
4	810	E. 10th/Riverside	Bike sign just before bridge		B/S		V = Vending Machine
4	820	E. 10th/Siskiyou	On 10th 100' past Siskiyou		B/S		
4	830	E. 10th/Willamette	On 10th 20' west of stop sign	:33	B/S		
4	840	Willamette/11th	On Willamette 86' south of 11th		B/S		
4	850	Siskiyou/Eureka Circle			B/S		
4	860	Siskiyou/Bear Creek Park	101' west of driveway to park		B/S		
4	870	Siskiyou/Highland	94' west of fire station driveway		B/S		
4	880	Highland/Greenwood			B/S		
4	890	Highland/Barnett		:36	B/S		
4	900	Barnett Rd.	Just past State Farm Insurance		O/S		
4	910	Barnett Rd./Ellendale	100' east of Ellendale		B/S		
4	920	Barnett Rd.	20' west of Hillsdale		B/S		
4	930	Barnett Rd./Edgemont			B/S		
4	940	Medford Clinic		:40	B/S	S,B,T,M	
4	950	Medford Medical Center	ATM Machine		N/S	C	
4	960	Siskiyou Blvd.	100' east of Medical Center exit		B/S		
4	970	Siskiyou Blvd.	10' east of Murphy Rd.		B/S		

Appendix B - RVTD Transit Stop Locations in City of Medford Continued

Route No.	Stop No.	Stop	Location	Time	Sign	Amenities	Key
4	980	Murphy Rd. /Dr's Park			B/S		
4	990	Barnett Rd./Murphy		:42	N/S		
4	1000	Barnett Rd.	200' west of Black Oak at 35 mph sign		B/S		Sign Status:
4	1010	Barnett Rd./Crestbrook	100' west of Crestbrook		B/S		N/S = Needs Sign
4	1020	Barnett Rd./Ellendale	100' west of Ellendale		B/S		C/S = Current Sign
4	1030	Barnett Rd./ Highland Dr.	300' east of Highland		B/S		O/S = Old Sign
4	1040	Highland	Near first driveway into Highland Apts.		N/S		
4	1050	Siskiyou	Across from stop #860 at park		O/S		
4	1060	Siskiyou	Before Willamette at 1225 Siskiyou				
4	1070	10^{th}	No parking sign just before bridge	:49			Amenities:
4	00	Front Street Station		:53		B,BR,P,R,S,T,V,N	B = Bench
5,10	1140	Siskiyou	65' north of Bridge St. (SOU)		N/S		BR = Bike Rack
5,10	1150	Siskiyou	45' north of Palm Ave (SOU)	:45/:15	O/S		C = Cash Machine
5,10	1160	Siskiyou	26' south of Morse St (Ashland High School)		O/S		M = Mailbox
5,10	1170	Siskiyou	75' south of Morton		O/S		N = Newspaper
5,10	1180	Siskiyou	96' south of Sherman (safeway)		O/S	S,B,T,BR	P = Phone
5,10	1190	Lithia Way	94' west of Second St (Rocket Photo)		N/S	B,T	R = Restroom
5,10	1200	Lithia Way	257' north of Oak St (shelter)		O/S	S,B,T	S = Shelter
5,10	1210	Ashland Plaza	Ashland Plaza	:50/:20	N/S		T = Trash Can
5,10	1220	East Main	Varsity Theater (no parking zone)		N/S		V = Vending Machine
5,10	1230	East Main	55' south of Gresham St. (Library)		O/S		
5,10	1240	Siskiyou	123' south of Sherman St. (Safeway)		O/S		
5,10	1250	Siskiyou	41' north of Liberty St.		O/S		
5,10	1260	Siskiyou	78' south of Beach St. (Ashland High School)		O/S		
5,10	1270	Siskiyou	4' south of Palm Ave (SOU)	:55/:25	O/S		
5,10	1280	Siskiyou	69' south of Avery St. (SOU)		N/S		
5	1290	Siskiyou	385' south of Indiana St. (Omars)		O/S		
5	1300	Siskiyou	210' north of Harmony Ln. (Minute Mart)		O/S	B	
5	1310	Siskiyou	160' south of Hillview Dr.		O/S		
5	1320	Siskiyou	80' south of Terra Ave.		O/S	S,B,T	
5	1330	Siskiyou	80' south of Mary Jane Ave		O/S		
5	1340	Siskiyou	155' north of Bellview St.		N/S		
5	1350	Tolman Creek Rd	209' north of Siskiyou	:00/:30	O/S		
5	1360	Tolman Creek Rd	286' south of Barbara St. (Springhill St.)		O/S		
5	1370	Tolman Creek Rd	At Grizzley Dr.		O/S		

Appendix B - RVTD Transit Stop Locations in City of Medford Continued

Route No.	Stop No.	Stop	Location	Time	Sign	Amenities	Key
10	00	Front St. Station		:00/:30			
10	2010	Central Ave	50' south of 11th St.		O/S		
10	2020	Central Ave	21' north of 13th St.		O/S		Sign Status:
10	2030	Central Ave	469' north of Bank St. (Trophy club)		O/S		N/S = Needs Sign
10	2040	Barnett Rd	163' east of Riverside Ave. (McDonalds)		O/S		C/S = Current Sign
10	2050	Barnett Rd	326' west of Stewart Ave. (KFC's)		O/S		O/S = Old Sign
10	2060	Center Dr	Near South Gateway/Schucks Auto	:06/:36	O/S		
10	2070	Center Dr/RFCU Dr	At sidewalk just past RFCU sign		N/S		
10	2080	Highway 99	At Charlotte Anne Rd. (Kim's Restaurant)		N/S		
10	2090	Highway 99	130' north of Lowry/Bear Creek (shelter)	:09/:39	O/S	S,B,T	Amenities:
10	2100	Highway 99	153' north of Bear Creek Corp. Training Ctr.		O/S	S,B	B = Bench
10	2110	Highway 99	235' north of South Stage Rd		O/S		BR = Bike Rack
10	2120	Highway 99	395' north of Glenwood Rd. (Designer Fab.)		O/S		C = Cash Machine
10	2130	Highway 99	146' north of Motorcycle Ln. (A-1 Storage)		O/S		M = Mailbox
10	2140	Highway 99	212' south of Northridge Terrace		O/S		N = Newspaper
10	2150	Highway 99	114' south of Rose St. (Umpqua Bank)		O/S		P = Phone
10	2160	Highway 99	102' south of Fern Valley (shelter at Rays)	:12/:42	O/S	S,B,T	R = Restroom
10	2170	Highway 99	70' south of W. 4th St		N/S		S = Shelter
10	2180	Highway 99	245' south of W. 1st St (shelter)		O/S	S,B	T = Trash Can
10	2190	Highway 99	155' south of 4374 S. Pac. Hwy (Jack's Ski Haus)		O/S		V = Vending Machine
10	2200	Highway 99	27' south of 4624 S. Pac. Hwy (Rogue Valley South)		O/S		
10	2210	Highway 99	25' south of 4880 S. Pac. Hwy (Farmers Market)		O/S		
10	2220	Highway 99	590' south of 5122 S. Pac. Hwy (Rising Sun Farms)		O/S		
10	2230	Highway 99	60' south of 5480 S. Pac. Hwy (Harvey's TV)		O/S		
10	2240	Talent Ave	230' south of Colver Rd		O/S		
10	2250	Talent Ave/Main St	26' north of Lapree St (shelter)	:18/:48	O/S	S,B,T,BR	
10	2260	Talent Ave	40' north of Eva Way (shelter, Patio Village)		O/S	S,B,BR,T	
10	2270	Talent Ave	19' south of 232 Talent Ave (Pacific Mobile Village)		O/S		
10	2280	Talent Ave	250' north of Rapp Rd		O/S		
10	2290	Talent Ave	165' north of Amos St		O/S		
10	2300	Talent Ave	40' south of Lani Way		O/S		
10	2310	Talent Ave	11' north of Creel Rd		O/S		
10	2320	Talent Ave	20' north of Belmont Rd		O/S		
10	2330	Talent Ave	Flag stops as safety allows		N/S		
10	2340	Talent Ave	Talent Ave/Hwy 99 (stop sign)		N/S		
10	2350	Highway 99	Jackson Hot Springs	:26/:56	O/S		

Appendix B - RVTD Transit Stop Locations in City of Medford Continued

Route No.	Stop No.	Stop	Location	Time	Sign	Amenities	Key
10	2360	Highway 99	55' south of 1900 S. Pac. Hwy (El Tapatio)		O/S		
10	2370	Highway 99	Flag stop at Pacific Spine & Pain Center		N/S		
10	2380	N. Main St.	50' south of Ashland Mine Rd		N/S		Sign Status:
10	2390	N. Main St.	50' north of Grant St		O/S		N/S = Needs Sign
10	2400	N. Main St.	91' south of Maple St (Ashland Hospital)		O/S		C/S = Current Sign
10	2410	N. Main St.	154' south of Wimer St		O/S		O/S = Old Sign
10	2420	N. Main St.	110' south of Laurel St		O/S		
10,5	1210	N. Main St.	57' south of Granite St (Ashland Plaza)	:35/:05	O/S		
10,5	1220	E. Main St.	Varsity Theater (no parking zone)		N/S		
10,5	1230	E. Main St.	55' south of Gresham St (Library)		O/S	S,B,T,BR	Amenities:
10,5	1240	Siskiyou	123' south of Sherman St (Safeway)		O/S	S,B,T	B = Bench
10,5	1250	Siskiyou	52' north of Liberty St		O/S		BR = Bike Rack
10,5	1260	Siskiyou	78' south of Beach (Ashland High School)		O/S		C = Cash Machine
10,5	1270	Siskiyou	25' south of University Way (SOU)		O/S	T	M = Mailbox
10,5	1280	Siskiyou	69' south of Avery (SOU)		N/S		N = Newspaper
10	2430	Highway 66	750' east of Siskiyou Blvd (SOU)		O/S		P = Phone
10	2440	Highway 66	145' east of Walker Ave (Beanery)	:40/:10	O/S		R = Restroom
10	2450	Highway 66	75' east of Lithia Way across from Panda Garden		N/S		S = Shelter
10	2460	Highway 66	53' east of Park St		O/S		T = Trash Can
10	2470	Highway 66	278' west of Tolman Creek Rd (Pizza Hut)		O/S		V = Vending Machine
10	2480	Tolman Creek Rd	205' north of Highway 66 (Albertsons)	:50/:20	O/S		
10	2490	Tolman Creek Rd	Shelter @ Chatauqua Trace		N/S	S,B	
10	2500	E. Main Street	Flag stop at Highway 66 (stop sign)		N/S		
			Inbound Route 10		O/S		
10	2510	Ashland Hills Inn	2525 Ashland St	:55/:25	O/S	S,B,T	
10	2520	Highway 66	69' east of Washington St (Wild Goose Rest)		O/S		
10	2530	Tolman Creek Rd	230' south of Highway 66		O/S	T	
10	2540	Tolman Creek Rd	132' south of Grizzly Dr		O/S		
10	2550	Tolman Creek Rd	278' south of Barbard St		O/S		
10	2560	Tolman Creek Rd	261' south of Siskiyou Blvd		O/S		
10	2570	Siskiyou	200' north of Bellview St		O/S	S,B,T,N	
10	2580	Siskiyou	105' south of Glendale Ave		O/S		
10	2590	Siskiyou	65' north of Faith Ave		O/S	S,B,T	
10	2600	Siskiyou	135' south of Normal Ave		O/S		
10	2610	Siskiyou	165' north of Harmony Lane (Minute Mart)	:02/:32	O/S	B,T	
10	2620	Siskiyou	235' south of Highway 66 (across from Omars)		N/S		

Appendix B - RVTD Transit Stop Locations in City of Medford Continued

Route No.	Stop No.	Stop	Location	Time	Sign	Amenities	Key
10,5	1140	Siskiyou	65’ north of Bridge St (SOU/La Casa del Pueblo)		N/S		
10,5	1150	Siskiyou	45’ north of Palm Ave (SOU)	:05/:35	O/S		
10,5	1160	Siskiyou	26’ south of Morse St (Ashland High School)		O/S		Sign Status:
10,5	1170	Siskiyou	75’ south of Morton St		O/S		N/S = Needs Sign
10,5	1180	Siskiyou	96’ south of Sherman St (Safeway)		O/S	S,B,T	C/S = Current Sign
10,5	1190	Lithia Way	94’ north of 2nd St (Rocket Photo)		O/S	B,T	O/S = Old Sign
10,5	1200	Lithia Way	257’ north of Oak St		O/S	S,B,T	
10	2630	N. Main St	122’ north of Central St		O/S		
10	2640	N. Main St	276’ south of Glenn St (Al’s Diner)		O/S		
10	2650	N. Main St	150’ north of Maple St (Ashland Hospital)		O/S	B	Amenities:
10	2660	N. Main St	102’ north of Grant St (Breadboard)		O/S		B = Bench
10	2670	N. Main St	445’ south of Jackson Rd (S. near train tressel)		N/S		BR = Bike Rack
10	2680	Highway 99	243’ north of Jackson Rd (N. by Nauvoo Trlr Pk)		O/S		C = Cash Machine
10	2690	Highway 99	Jackson Hot Springs	:15/:45	O/S		M = Mailbox
10	2700	Talent Ave	56’ west of Highway 99		N/S		N = Newspaper
10	2710	Talent Ave	Flag stops as safety allows		N/S		P = Phone
10	2720	Talent Ave	20’ north of Belmont Rd		O/S		R = Restroom
10	2730	Talent Ave	65’ north of Creel Rd	:18/:48	O/S		S = Shelter
10	2740	Talent Ave	At Lani Way		O/S		T = Trash Can
10	2750	Talent Ave	45’ south of Amos St		O/S		V = Vending Machine
10	2760	Talent Ave	Flag stop 50’ south of Rapp Rd power pole		N/S		
10	2770	Talent Ave	350’ north of Rapp Rd (past houses)		N/S		
10	2780	Talent Ave	42’ south of Gangnes St		O/S	S,B	
10	2790	Talent Ave	40’ north of Eva Way		O/S		
10	2800	Talent Ave & Main St	172’ north of Main St	:22/:52	O/S	S,B,T,BR	
10	2810	Talent Ave	230’ south of Colver Rd (Gas 4 Less)		O/S		
10	2820	Highway 99	171’ north of Hartley Rd (Correction Facility)		O/S		
10	2830	Highway 99	152’ south of Pacific Northwest Bell Building		O/S	P	
10	2840	Highway 99	28’ north of Cabbage Lane (Farmers Market)		O/S		
10	2850	Highway 99	12’ south of 4601 Highway 99 (Creekside Estates)		O/S		
10	2860	Highway 99	140’ south of 4361 Highway 99 (Frontier Lodge)		O/S		
10	2870	Bear Creek Dr	141’ north of East 4th St		O/S	S,B,T	
10	2880	Highway 99	200’ south of Fern Valley Rd (Pharmacy)	:26/:56	O/S	S,B,T	
10	2890	Highway 99	295’ south of Rose St (Royal Oaks Mobile Park)		O/S	B	
10	2900	Highway 99	31’ south of Northridge Terrace		O/S		
10	2910	Highway 99	25’ north of Motorcycle Lane (La Clinica)		O/S	S,B	

Appendix B - RVTD Transit Stop Locations in City of Medford Continued

Route No.	Stop No.	Stop	Location	Time	Sign	Amenities	Key
10	2920	Highway 99	439' north of Glenwood Rd (Winners)		O/S		
10	2930	Highway 99	235' south of South Stage Rd (AM/PM Market)		O/S		
10	2940	Highway 99	75' north of Bear Creek Corp. (s. entrance)	:30/:00	N/S	T	Sign Status:
10	2950	Highway 99	Grange Co-op (temp flag stop)		N/S		N/S = Needs Sign
10	2960	Highway 99	58' south of 2375 Hwy 99 (Roxy Ann Lanes)		O/S		C/S = Current Sign
10	2970	Belknap Rd	135' south of Highway 99 (Les Schwab)		O/S		O/S = Old Sign
10	2980	Center Dr	90' west of south Gateway entrance	:33/:03	O/S	T	
10	2990	Barnett Rd	256' west of Stewart Ave (Jack in the Box)		O/S		
10	3000	Barnett Rd	238' east of riverside Ave (McDonalds)		N/S		
10	3010	Riverside Ave	404' north of Barnett Rd (Apple Annie's)		O/S		Amenities:
10	3020	Riverside Ave	123' south of Bank St		N/S		B = Bench
10	3030	Riverside Ave	12' south of 13th St (Guadalajara's Rest.)		O/S		BR = Bike Rack
10	00	Front St. Station		:43/:13		B,BR,P,R,S,T,V,	C = Cash Machine
							M = Mailbox
30	00	Front Street Station		X		B,BR,P,R,S,T,V,N	N = Newspaper
30	4010	On Front St./Habenero's	50' south of Habeneros at bench		N/S	B	P = Phone
30	4020	On Front St.	130' north of 2nd St. (Gospel Mission)	X	N/S		R = Restroom
30	4030	On Jackson St.	100' south of Fir St. (Goodwill) at no park sign		N/S		S = Shelter
30	4040	On Jackson St.	75' east of Oak St. at no parking sign		N/S		T = Trash Can
30	4050	On Jackson St.	45' east of E. let of Summit St. (Jackson Elem)		N/S		V = Vending Machine
30	4060	On Jackson St.	50' west of Priddy St. (Santos Center)		N/S		
30	4070	On Columbus Ave.	35' south of Humphrey St.		N/S		
30	4080	On Columbus Ave.	35' south of Sunset		N/S		
30	4090	On Columbus Ave.	120' north of W. Main St. (across from Bryant)	X	N/S		
30,2	390	On W. Main St.	100' west of Western Ave. (Blackbird)		O/S		
30,2	400	On W. Main St.	151' west of Reager St. (Littrells)		O/S		
30	4100	On W. Main St./Albertson's	Just past entrance/by gas station		N/S		
30	4110	On Highway 238	Across from Bi-Mart at Main St. Flowers		N/S		
30	4120	On Highway 238	127' west of Oak Grove Rd. (school)	X	N/S		
30	4310	On Highway 238	96' west of Oak Grove Rd. (school)	X	N/S		
30	4320	On Highway 238	Bi-Mart at shelter		O/S	B,S	
30	4330	On W. Main St.	227' wst of Losier Ln (T-Bird/W. Main Phcy.)		N/S		
30,2	420	On W. Main St.	7' west of Reager St. (Wells Fargo Bank)		N/S		
30,2	430	On W. Main St.	91' west of Jeanette Ave. (Blackbird)		N/S		
30	4340	Columbus/Bryant	50' north of Bryant	X	N/S		
30	4350	On Columbus Ave.	100' south of Palm (rock wall)		N/S		

Appendix B - RVTD Transit Stop Locations in City of Medford Continued

Route No.	Stop No.	Stop	Location	Time	Sign	Amenities	Key
30	4360	On Columbus Ave.	25’ south of Haven St.		N/S		
30	4370	On Jackson St.	35’ east of Priddy St. (Santos Center)	X	N/S		
30	4380	On Jackson St.	125’ east of w. leg of Summit St. (Jackson El)		N/S		Sign Status:
30	4390	On Jackson St.	50’ east of Oak St.		N/S		N/S = Needs Sign
30	4400	On Jackson St.	70’ east of Fir St. (Goodwill Center)	X	O/S		C/S = Current Sign
30	4410	On Front St.	130 north of 2nd St. (Gospel Mission)		N/S		O/S = Old Sign
30,40	4415	On Front St.	175’ south of 5th St. (past Depot Rest.)		N/S		
30	00	Front Street Station		X	N/S	B,BR,P,R,S,T,V,N	
40	00	Front Street Station		:00		B,BR,P,R,S,T,V,N	Amenities:
40,1	10	Riverside Ave.	North of 6th St. at 25 mph sign/Red Lion		N/S		B = Bench
40	5010	Riverside Ave.	North of Jackson St. at Cedar Lodge Motel		O/S		BR = Bike Rack
40	5020	Riverside Ave.	North of Liberty St. at JJ North’s Restaurant		O/S		C = Cash Machine
40	5030	Riverside Ave.	North of Manzanita St. at OK Market		O/S		M = Mailbox
40,1	150	Riverside Ave.	167’ south of Ohio St.	:05	O/S	S,B,T	N = Newspaper
40	5040	On W. Table Rock Rd.	35’ past entrance to Rays		N/S		P = Phone
40	5050	On Table Rock Rd.	10’ south of 2252 Table Rock Rd. (Housing Auth)		O/S		R = Restroom
40	5500	On Table Rock Rd.	151’ north of Berrydale Ave. (Housing Authority)		O/S		S = Shelter
40	5510	On Table Rock Rd.	285’ east of Hwy. 99 (Jack in the Box)		O/S		T = Trash Can
40	5520	Rogue Valley Mall	Shelter by Ohio St.	:32	O/S	S,B,T	V = Vending Machine
40	5530	Court St.	South of McAndrews Rd. (Dixon’s Auto)		O/S		
40	5540	Court St.	South of Manzanita St. (Modoc Tire)		O/S		
40	5550	Central Ave.	South of Edwards St. (Salvation Army)	:37	N/S		
40	5560	Central Ave.	50’ south of 2nd St. at car lot, no parking sign		N/S		
40,30	4415	Front St.	192’ south of 5th (past Depot)		N/S		
40	00	Front Street Station		:41		B,BR,P,R,S,T,V,N	
60	00	Front Street Station		:00		B,BR,P,R,S,T,V,N	
60	6010	On 8th St.	In traffic island under I-5		O/S		
60	6020	On East Main	124’ east of Almond St. (Minute Market)		O/S		
60	6030	On East Main	93’ west of Myrtle St.		N/S		
60	6040	On Crater Lake Ave.	255’ north of E. Main (JC Mental Health)		O/S		
60	6050	On Crater Lake Ave.	307’ north of Jackson St. (Campus Life)		O/S		
60	6060	On Crater Lake Ave.	223’ north of Saling (Safeway)		O/S		
60	6070	On Crater Lake Ave.	243’ north of Stevens (Shamrock Square)		O/S		
60	6080	On Crater Lake Ave.	278’ south of Spring St. (Cedar Mall)		O/S		

Appendix B - RVTD Transit Stop Locations in City of Medford Continued

Route No.	Stop No.	Stop	Location	Time	Sign	Amenities	Key
60	6090	On Crater Lake Ave.	85’ north of Woodrow Ln. (Mini Pet Mart)		O/S		Sign Status:
60	6100	On Crater Lake Ave.	86’ north of Covina Ave. (7-11)		O/S		N/S = Needs Sign
60	6110	On Crater Lake Ave.	64’ north of Grand Ave		N/S		C/S = Current Sign
60	6120	On Crater Lake Ave.	140’ north of Brookhurst	:10	O/S		O/S = Old Sign
60	6130	On Crater Lake Ave.	81’ north of Grandview Ave.		O/S		
60	6140	On Crater Lake Ave.	20’ north of Page St.		O/S		
60	6150	On Crater Lake Ave.	At Skypark		N/S		
60	6160	Delta Waters Rd.	50’ east of Crater Lake Ave. (at shelter)		O/S	S,B	Amenities:
60	6170	Delta Waters Rd.	At school crosswalk		O/S		B = Bench
60	6180	Delta Waters Rd.	47’ east of Springbrook Dr.		O/S		BR = Bike Rack
60	6190	Delta Waters Rd.	209’ east of Tahitian		O/S		C = Cash Machine
60	6200	Hawaiian	109’ east of St. Thomas		O/S		M = Mailbox
60	6210	Hawaiian	53’ south of Rosewood St.		O/S		N = Newspaper
60	6220	Hawaiian	118’ north of Cedar Links Rd.		O/S		P = Phone
60	6230	Cedar Links	78’ west of Tahitian Aven		O/S		R = Restroom
60	6240	Delta Waters	Near old W. Main Rental/Rocket Landscape		N/S		S = Shelter
60	6250	Nash Lane	215’ north of Hwy. 62 (Chevy’s Restaurant)		O/S		T = Trash Can
60	6260	Lear Way	157’ north of Wal-Mart access road	:21	O/S	S,B,T	V = Vending Machine
60	6270	Cardinal Ave.	45’ west of Costco front door entrance		N/S		
60	6620	On Cardinal Ave.	45’ west of 2067 Cardinal Ave. (Nat’l Floral)		N/S		
60	6630	On Lear Way	157’ north of Wal-Mart access road	:55	O/S		
60	6640	On Nash Lane	215’ north of Hwy. 62 (Chevy’s Restaurant)		O/S		
60	6650	On Delta Waters	At Bob Forrest Loans		N/S		
60			Route 60 Deviations				
60	6160	Delta Waters Rd.	50’ east of Crater Lake Ave. (at shelter)		O/S	S,B	
60	6170	Delta Waters Rd.	At school crosswalk		O/S		
60	6180	Delta Waters Rd.	47’ east of Springbrook Dr.		O/S		
60	6190	Delta Waters Rd.	209’ east of Tahitian		O/S		
60	6200	Hawaiian	109’ south of Rosewood St.		O/S		
60	6210	Hawaiian	53’ south of Rosewood St.		O/S		
60	6220	Hawaiian	118’ north of Cedar Links Rd.		O/S		
60	6230	Cedar Links	78’ west of Tahitian Ave.		N/S		
60			Inbound Route 60				
60	6660	On Crater Lake Ave.	At Skypark		N/S		
60	6670	Crater Lake Ave.	35’ north of Page		N/S		
60	6680	Crater Lake Ave.	20’ north of Grandview		N/S		

Appendix B - RVTD Transit Stop Locations in City of Medford Continued

Route No.	Stop No.	Stop	Location	Time	Sign	Amenities	Key
60	6690	Crater Lake Ave.	125' north of Brookhurst		N/S		C/S = Current Sign
60	6700	Crater Lake Ave.	15' north of Grand Ave.		N/S		O/S = Old Sign
60	6710	Crater Lake Ave.	At Covina		O/S		
60	6720	Crater Lake/Shelter	Providence		O/S	S,B,T	Amenities:
60	6730	Crater Lake/3 Fountains	South of 3 Fountains driveway power pole		N/S		B = Bench
60	6740	Crater Lake/Stevens	Western Bank		O/S		BR = Bike Rack
60	6750	Crater Lake/Saling	Safeway		O/S		N = Newspaper
60	6760	Crater Lake/Bennett	331 Crater Lake Ave.		O/S		P = Phone
60	6770	Crater Lake/E. Main	100' north of E. Main St.	:09	O/S		R = Restroom
60	6780	East Main	50' west of Myrtle		O/S		S = Shelter
60	6790	E. Main/Hawthorne Park			O/S		T = Trash Can
60	00	Front Street Station		:14		B,BR,P,R,S,T,V,N	V = Vending Machine

Source: RVTD, 2002

APPENDIX C

Existing Bike Paths and Shoulders

Appendix C
Existing Bike Paths and Shoulders

Street Segment	From	To	Bike Path / Shoulder
Highway 62	Vilas	1640	Bike Path
Highway 62	1640	Vilas	Bike Path
Highway 62	1640	Coker Butte	Bike Path
Highway 62	Coker Butte	1640	Bike Path
Highway 62	Coker Butte	2005	Bike Path
Highway 62	2005	Coker Butte	Bike Path
Highway 62	2005	Cardinal	Bike Path
Highway 62	Cardinal	2005	Bike Path
Highway 62	Cardinal	2170	Bike Path
Highway 62	2170	Cardinal	Bike Path
Highway 62	2170	5004	Bike Path
Highway 62	5003	2250	Bike Path
Highway 62	Delta Waters	2315	Bike Path
Highway 62	Delta Waters	5003	Bike Path
Highway 62	2315	Delta Waters	Bike Path
Highway 62	2315	Whittle	Bike Path
Highway 62	Whittle	2315	Bike Path
Highway 62	Whittle	2375	Bike Path
Highway 62	2375	Whittle	Bike Path
Highway 62	2375	Poplar	Bike Path
Highway 62	Poplar	2375	Bike Path
Highway 62	Poplar	Fred2	Bike Path
Highway 62	Fred2	Poplar	Bike Path
Highway 62	Fred2	Hilton	Bike Path
Highway 62	Fred Meyer	I-5N	Bike Path
Highway 62	Fred Meyer	Hilton	Bike Path
Highway 62	I-5N	Fred Meyer	Bike Path
Highway 62	I-5N	I-5	Bike Path
Highway 62	I-5	I-5N	Bike Path
Highway 62	I-5	Target	Bike Path
Highway 62	RV Mall	Target	Bike Path
Highway 62	RV Mall	99	Bike Path
Highway 62	Target	I-5	Bike Path
Highway 62	Target	RV Mall	Bike Path
Highway 62	99	RV Mall	Bike Path
Highway 62	Fred Meyer	Hilton	Bike Path
Highway 62	2250	5003	Bike Path
Highway 62	5003	Delta Waters	Bike Path
Highway 62	5004	2170	Bike Path

Appendix C Continued
Existing Bike Paths and Shoulders

Street Segment	From	To	Bike Path / Shoulder
Highway 62	2250	5004	Bike Path
8th	Elm	Hamilton	Bike Path
Barnett	Holly	Grape	Bike Path
Barnett	Grape	Holly	Bike Path
Barnett	Grape	Fir	Bike Path
Barnett	180	Stewart	Bike Path
Barnett	180	4171	Bike Path
Barnett	Fir	Grape	Bike Path
Barnett	Fir	Riverside	Bike Path
Barnett	Stewart	180	Bike Path
Barnett	Stewart	K-Mart E	Bike Path
Barnett	K-Mart E	Stewart	Bike Path
Barnett	K-Mart E	Riverside	Bike Path
Barnett	Riverside	Fir	Bike Path
Barnett	Riverside	K-Mart E	Bike Path
Barnett	I-5-Alba	4171	Bike Path
Barnett	4171	180	Bike Path
Barnett	4171	I-5-Alba	Bike Path
Beall	Hwy 99	Freeman	Shoulder
Biddle	0060 I-5 On/O	2560	Bike Path
Biddle	2560	0060 I-5 On/O	Bike Path
Biddle	2560	2625	Bike Path
Biddle	2625	2560	Bike Path
Biddle	2625	Morrow	Bike Path
Biddle	Morrow	2625	Bike Path
Biddle	Morrow	Progress	Bike Path
Biddle	Progress	Morrow	Bike Path
Biddle	Progress	McAndrews	Bike Path
Biddle	McAndrews	Progress	Bike Path
Biddle	McAndrews	Bear Creek Plz	Bike Path
Biddle	Bear Creek Plaza	McAndrews	Bike Path
Biddle	Bear Creek Plaza	Market	Bike Path
Biddle	Market	Bear Creek Plz	Bike Path
Biddle	Market	Stevens	Bike Path
Biddle	Stevens	Market	Bike Path
Biddle	Stevens	3165	Bike Path
Biddle	3165	Stevens	Bike Path
Biddle	3165	Jackson	Bike Path
Biddle	Jackson	3165	Bike Path

Appendix C Continued
Existing Bike Paths and Shoulders

Street Segment	From	To	Bike Path / Shoulder
Dakota	Hamilton	Newtown	Bike Path
Dakota	Newtown	Hamilton	Bike Path
Dakota	Newtown	King	Bike Path
Dakota	King	Newtown	Bike Path
Dakota	King	Oakdale	Bike Path
Dakota	Oakdale	King	Bike Path
Delta Waters	Hwy. 62	2280	Bike Path
Delta Waters	2280	Hwy. 62	Bike Path
Delta Waters	2280	Crater Lake	Bike Path
Delta Waters	Crater Lake	Springbrook	Bike Path
Delta Waters	Springbrook	Crater Lake	Bike Path
Delta Waters	Springbrook	Hawaiian	Bike Path
Delta Waters	Hawaiian	Springbrook	Bike Path
Elm	Main	8th	Bike Path
Garfield	Holly	Hwy. 99	Bike Lane
Holly	Monroe	Barnett	Bike Path
Holly	Barnett	Monroe	Bike Path
Holly	Barnett	O'Gara	Bike Path
Holly	O'Gara	Barnett	Bike Path
Holly	O'Gara	Stewart	Bike Path
Holly	Stewart	O'Gara	Bike Path
Holly	Stewart	Holmes	Bike Path
Holly	Holmes	Stewart	Bike Path
Highway 99	South Stage	84	Shoulder
Highway 99	84	South Stage	Shoulder
I-5 NB	T	To Pine	Shoulder
I-5 NB	Fr. Biddle	T	Shoulder
I-5 NB	Fr. Fern Valley	To Barnett	Shoulder
I-5 SB	Fr. Pine	T	Shoulder
I-5 SB	T	To Hwy 62	Shoulder
I-5 SB	To Hwy 62	Fr. Hwy 62	Shoulder
I-5 SB	Fr. Barnett	To Fern Valley	Shoulder
Jackson	Columbus	3196	Bike Path
Jackson	3196	Columbus	Bike Path
Jackson	3196	Summit	Bike Path
Jackson	Summit	Summit	Bike Path
Jackson	Summit	Woodstock	Bike Path
Jackson	Holly	Woodstock	Bike Path
Jackson	Holly	Fir	Bike Path

Appendix C Continued
Existing Bike Paths and Shoulders

Street Segment	From	To	Bike Path / Shoulder
Jackson	Woodstock	Summit	Bike Path
Jackson	Woodstock	Summit	Bike Path
Jackson	Fir	Summit	Bike Path
Jackson	Fir	Front	Bike Path
Jackson	Front	Fir	Bike Path
Jackson	Front	Central	Bike Path
Jackson	Central	Front	Bike Path
Jackson	Central	Bartlett	Bike Path
Jackson	Bartlett	Central	Bike Path
Jackson	Bartlett	Riverside	Bike Path
Jackson	Riverside	Bartlett	Bike Path
Lone Pine	Springbrook	Modoc	Bike Path
Lone Pine	Modoc	Springbrook	Bike Path
Lone Pine	Modoc	Inverness	Bike Path
Lone Pine	Inverness	Modoc	Bike Path
Main	Oak Grove	3705	Bike Path
Main	3705	Oak Grove	Bike Path
Main	3705	Lozier	Bike Path
Main	Lozier	3705	Bike Path
Main	Lozier	Reager	Bike Path
Main	Reager	Lozier	Bike Path
Main	Reager	Jeannette	Bike Path
Main	Jeannette	Reager	Bike Path
Main	Jeannette	Columbus	Bike Path
Main	Columbus	Jeannette	Bike Path
Main	Columbus	Elm	Bike Path
Main	Elm	Columbus	Bike Path
Main	Hamilton	Elm	Bike Path
McAndrews	Brookdale	Hillcrest	Bike Lane
Merriman	Table Rock	Beall	Bike Lane
N Phoenix	Coal Mine	4651	Shoulder
N Phoenix	102	4651	Shoulder
N Phoenix	102	4711	Shoulder
N Phoenix	4651	Coal Mine	Shoulder
N Phoenix	4651	102	Shoulder
N Phoenix	T	4711	Shoulder
N Phoenix	4711	102	Shoulder
N Phoenix	4711	T	Shoulder
N Phoenix	Hillcrest	Princeton	Shoulder

Appendix C Continued
Existing Bike Paths and Shoulders

Street Segment	From	To	Bike Path / Shoulder
N Phoenix	Princeton	Hillcrest	Shoulder
N Phoenix	Princeton	Cherry	Shoulder
N Phoenix	Cherry	Princeton	Shoulder
N Phoenix	Cherry	3986	Shoulder
N Phoenix	3985	3986	Shoulder
N Phoenix	3985	Barnett	Shoulder
N Phoenix	3986	Cherry	Shoulder
N Phoenix	3986	3985	Shoulder
N Phoenix	Barnett	3985	Shoulder
N Phoenix	Barnett	4451	Shoulder
N Phoenix	4450	4451	Shoulder
N Phoenix	4450	Coal Mine	Shoulder
N Phoenix	4451	Barnett	Shoulder
N Phoenix	4450	4451	Shoulder
N Phoenix	Coal Mine	4450	Shoulder
Rossanley	2810	2820	Shoulder
Rossanley	2820	2810	Shoulder
Rossanley	2820	Ross Lane	Shoulder
Rossanley	Ross Lane	2820	Shoulder
Rossanley	Ross Lane	Stowe	Shoulder
Rossanley	Stowe	Ross Lane	Shoulder
Rossanley	Stowe	Sage	Shoulder
Rossanley	Sage	Stowe	Shoulder
S Stage	Columbus	4655	Shoulder
S Stage	4640	4660	Shoulder
S Stage	4640	4675	Shoulder
S Stage	4655	Columbus	Shoulder
S Stage	4655	Kings Hwy	Shoulder
S Stage	4660	4640	Shoulder
S Stage	4660	Kings Hwy	Shoulder
S Stage	Hwy. 99	Voorhies	Shoulder
S Stage	Kings Hwy	4655	Shoulder
S Stage	Kings Hwy	4660	Shoulder
S Stage	4675	Voorhies	Shoulder
S Stage	Voorhies	Hwy. 99	Shoulder
S Stage	4675	Voorhies	Shoulder
S Stage	Columbus	Sunnyview	Shoulder
Springbrook	Bell	Cedar Links	Bike Path
Springbrook	Cedar Links	Bell	Bike Path

Appendix C Continued
Existing Bike Paths and Shoulders

Street Segment	From	To	Bike Path / Shoulder
Springbrook	Cedar Links	Roberts	Bike Path
Springbrook	Roberts	Cedar Links	Bike Path
Springbrook	Roberts	Brookside	Bike Path
Springbrook	Brookside	Roberts	Bike Path
Springbrook	Brookside	Lone Pine	Bike Path
Springbrook	Lone Pine	Brookside	Bike Path
Springbrook	Lone Pine	Ashwood	Bike Path
Springbrook	Ashwood	Lone Pine	Bike Path
Springbrook	Ashwood	McAndrews	Bike Path
Springbrook	McAndrews	Ashwood	Bike Path
Table Rock	Morningside	Midway	Bike Path
Table Rock	Midway	Morningside	Bike Path
Table Rock	Midway	Merriman	Bike Path
Table Rock	Merriman	Midway	Bike Path
Table Rock	Merriman	Berrydale	Bike Path
Table Rock	Berrydale	Merriman	Bike Path

APPENDIX D

Arterial and Collector Street Segments Lacking Sidewalks

Appendix D
Arterial and Collector Street Segments Lacking Sidewalks

Street Segment	From	To	Classification
Highway 62	Vilas	1640	State Hwy
Highway 62	1640	Vilas	State Hwy
Highway 62	1640	Coker Butte	State Hwy
Highway 62	Coker Butte	1640	State Hwy
Highway 62	Coker Butte	2005	State Hwy
Highway 62	2005	Coker Butte	State Hwy
Highway 62	2250	5003	State Hwy
Highway 62	5003	Delta Waters	State Hwy
Highway 62	5004	2170	State Hwy
Highway 62	2250	5004	State Hwy
Highway 99	Beall	2245	State Hwy
Highway 99	2245	Beall	State Hwy
Highway 99	2245	Mace	State Hwy
Highway 99	Mace	2245	State Hwy
Highway 99	Mace	2390	State Hwy
Highway 99	2390	Mace	State Hwy
Highway 99	2390	Ehrman	State Hwy
Highway 99	Ehrman	2390	State Hwy
Highway 99	Ehrman	Howard	State Hwy
Highway 99	Howard	Ehrman	State Hwy
Highway 99	Howard	2615	State Hwy
Highway 99	2615	Howard	State Hwy
Highway 99	W Table Rock	2615	State Hwy
Highway 99	2615	W Table Rock	State Hwy
Highway 99	W Table Rock	Table Rock	State Hwy
12^{th}	Cottage	Franquette	Collector
12^{th}	Franquette	Cottage	Collector
12^{th}	Franquette	Riverside	Collector
12^{th}	Riverside	Franquette	Collector
Barneburg	Main	Oakwood	Collector
Barneburg	Oakwood	Main	Collector
Barneburg	Oakwood	Woodlawn	Collector
Barneburg	Woodlawn	Oakwood	Collector
Barneburg	Woodlawn	Highland	Collector
Barneburg	Highland	Woodlawn	Collector
Beall	Hwy 99	Freeman	Collector
Beall	Freeman	Hwy 99	Collector
Beall	Freeman	Bursell	Collector
Beall	Bursell	Freeman	Collector

Appendix D
Arterial and Collector Street Segments Lacking Sidewalks

Street Segment	From	To	Classification
Beall	Bursell	151	Collector
Beall	151	Bursell	Collector
Beall	151	65	Collector
Beall	65	151	Collector
Beall	65	152	Collector
Beall	152	65	Collector
Beall	Merriman	152	Collector
Beall	152	Merriman	Collector
Biddle	Table Rock	Airport	Arterial
Biddle	Airport	Table Rock	Arterial
Biddle	Gilman	Fisher	Arterial
Biddle	Fisher	Hilton	Arterial
Black Oak	Hillcrest	Acron	Collector
Brookdale	Lone Pine	Ruby	Collector
Biddle	Airport	Gilman	Arterial
Black Oak	Hillcrest	Acorn	Collector
Black Oak	Acorn	Hillcrest	Collector
Cedar Links	Foothill	Wilkshire	Collector
Cedar Links	Wilkshire	Foothill	Collector
Cherry Lane	N Phoenix	Stanford	Collector
Cherry Lane	Stanford	N Phoenix	Collector
Cherry Lane	Stanford	Orchard View	Collector
Cherry Lane	Orchard View	Stanford	Collector
Cherry Lane	Orchard View	5005	Collector
Cherry Lane	5005	Orchard View	Collector
Cherry Lane	3295	5006	Collector
Cherry Lane	5006	3295	Collector
Cherry Lane	5005	5006	Collector
Cherry Lane	5006	5005	Collector
Coal Mine	N Phoenix	266	Collector
Coal Mine	266	N Phoenix	Collector
Coker Butte	Hwy. 62	Crater Lake	Arterial
Coker Butte	Crater Lake	Hwy. 62	Arterial
Coker Butte	Crater Lake	1941	Arterial
Coker Butte	1941	Crater Lake	Arterial
Coker Butte	1941	1950	Arterial
Coker Butte	1950	1941	Arterial
Columbus	Arlington	Stewart	Arterial
Columbus	Brentcrest	Stewart	Arterial

Appendix D
Arterial and Collector Street Segments Lacking Sidewalks Cont.

Street Segment	From	To	Classification
Columbus	Brentcrest	Cunningham	Arterial
Columbus	Cunningham	Brentcrest	Arterial
Columbus	Cunningham	Garfield	Arterial
Columbus	Garfield	Cunningham	Arterial
Columbus	Garfield	4620	Arterial
Columbus	4620	Garfield	Arterial
Columbus	4620	S Stage	Arterial
Columbus	S Stage	4620	Arterial
Columbus	4620	S Stage	Arterial
Crater Lake	Vilas	1635	Collector
Crater Lake	1635	Vilas	Collector
Crater Lake	1635	Coker Butte	Collector
Crater Lake	Coker Butte	1635	Collector
Crater Lake	Coker Butte	2080	Collector
Crater Lake	2080	Coker Butte	Collector
Crater Lake	2080	2165	Collector
Crater Lake	2165	2080	Collector
Crater Lake	2165	Delta Waters	Arterial
Cunningham	Orchard Home	Orchard Home	Arterial
Cunningham	Orchard Home	Orchard Home	Arterial
Cunningham	Orchard Home	Columbus	Arterial
Cunningham	Columbus	Orchard Home	Arterial
Delta Waters	Leonard	Foothill	Collector
Delta Waters	Foothill	Leonard	Collector
Foothill	Delta Waters	Cedar Links	Arterial
Foothill	Cedar Links	Delta Waters	Arterial
Foothill	Cedar Links	Normil	Arterial
Foothill	Normil	Cedar Links	Arterial
Foothill	Normil	Eucalyptus	Arterial
Foothill	Eucalyptus	Normil	Arterial
Foothill	Eucalyptus	Lone Pine	Arterial
Foothill	Lone Pine	Eucalyptus	Arterial
Foothill	Lone Pine	2895	Arterial
Foothill	2895	Lone Pine	Arterial
Foothill	2895	Hillcrest	Arterial
Foothill	Hillcrest	2895	Arterial
Garfield	Columbus	4500	Arterial
Garfield	4500	Columbus	Arterial
Garfield	4500	Peach	Arterial

Appendix D
Arterial and Collector Street Segments Lacking Sidewalks Cont.

Street Segment	From	To	Classification
Garfield	Peach	4500	Arterial
Highland	Main	Woodlawn	Collector
Highland	Woodlawn	Main	Collector
Highland	Woodlawn	Keene Way	Collector
Highland	Keene Way	Woodlawn	Collector
Highland	Keene Way	3966	Collector
Highland	3966	Keene Way	Collector
Highland	Siskiyou	3966	Collector
Highland	3966	Siskiyou	Collector
Highland	Siskiyou	Greenwood	Collector
Hillcrest	Mariposa	Highcrest	Collector
Hillcrest	Mariposa	Stanford	Collector
Hillcrest	Stanford	Mariposa	Collector
Hillcrest	Highcrest	Mariposa	Collector
Hillcrest	Highcrest	Cherry	Collector
Hillcrest	Cherry	Highcrest	Collector
Hillcrest	Stanford	N Phoenix	Collector
Hillcrest	Pierce	3405	Collector
Hillcrest	Foothill	N Phoenix	Collector
Hillcrest	N Phoenix	Stanford	Collector
Hillcrest	N Phoenix	Foothill	Collector
Hillcrest	Barneburg	Sunrise	Collector
Hillcrest	Sunrise	Barneburg	Collector
Hillcrest	Jackson	Valley View	Collector
Hillcrest	Valley View	Jackson	Collector
Holmes	Oakdale	Jasper	Collector
Holmes	Holly	Jasper	Collector
Highway 99	South Stage	84	State Hwy
Highway 99	84	South Stage	State Hwy
Jackson	Mary	3261	Collector
Jackson	3261	Oregon	Collector
Jackson	Oregon	Keene Way	Collector
Jackson	Keene Way	Berkeley	Collector
Jackson	Berkeley	Sunrise	Collector
Jackson	Berkeley	Keene Way	Collector
Jackson	Sunrise	Berkeley	Collector
Jackson	Sunrise	Hillcrest	Collector
Jackson	Hillcrest	Sunrise	Collector
Juanipero	Black Oak	La Loma	Collector

Appendix D
Arterial and Collector Street Segments Lacking Sidewalks Cont.

Street Segment	From	To	Classification
Juanipero	La Loma	Black Oak	Collector
Juanipero	La Loma	Murphy	Collector
Juanipero	Murphy	La Loma	Collector
Kings Hwy	Stewart	Queens	Arterial
Kings Hwy	Queens	Stewart	Arterial
Kings Hwy	Queens	4516	Arterial
Kings Hwy	Garfield	4516	Arterial
Kings Hwy	Garfield	4565	Arterial
Kings Hwy	4516	Queens	Arterial
Kings Hwy	4516	Garfield	Arterial
Kings Hwy	4565	Garfield	Arterial
Kings Hwy	4565	4615	Arterial
Kings Hwy	4515	4665	Arterial
Lear	Cardinal	2150	Collector
Lear	2145	2150	Collector
Lear	2260	2150	Collector
Lear	Hwy 62	2260	Arterial
Lear	2150	2260	Arterial
Lone Pine	Thraser	Foothill	Collector
Lozier	238	3950	Collector
Lozier	3950	238	Collector
Lozier	4110	3950	Collector
Lozier	4110	Stewart	Collector
Lozier	Stewart	4110	Collector
Main	Keeneway	Highland	Collector
Main	Berkeley	Highland	Collector
Main	Berkeley	Barneburg	Collector
Main	Highland	Keeneway	Collector
Main	Highland	Berkeley	Collector
Main	Barneburg	Berkeley	Collector
Main	Barneburg	Valley View	Collector
Main	Valley View	Barneburg	Collector
Main	Florence	Keeneway	Collector
Main	Oak Grove	3705	State Hwy
Main	3705	Oak Grove	State Hwy
Main	3705	Lozier	State Hwy
Main	Lozier	3705	3705
Main	Lozier	Reager	3705
Main	Reager	Lozier	3705

Appendix D
Arterial and Collector Street Segments Lacking Sidewalks Cont.

Street Segment	From	To	Classification
Main	Reager	Jeannette	Arterial
Main	Jeannette	Reager	Arterial
Main	Jeannette	Columbus	Arterial
Main	Columbus	Jeannette	Arterial
Manzanita	Court	Beatty	Collector
Manzanita	Betty	Court	Collector
Manzanita	Beatty	Riverside	Collector
Manzanita	Riverside	Beatty	Collector
McAndrews	Sweet	3425	State Hwy
McAndrews	3425	Sweet	State Hwy
McAndrews	3425	Ross Lane	State Hwy
McAndrews	Ross Lane	3425	State Hwy
McAndrews	Clark	Sweet	State Hwy
Morrow	Velia	Corona	Collector
N Phoenix	Coal Mine	4651	Collector
N Phoenix	102	4651	Collector
N Phoenix	102	4711	Collector
N Phoenix	4651	Coal Mine	Collector
N Phoenix	4651	102	Collector
N Phoenix	T	4711	Collector
N Phoenix	4711	102	Collector
N Phoenix	4711	T	Collector
N Phoenix	Hillcrest	Princeton	Arterial
N Phoenix	Princeton	Hillcrest	Arterial
N Phoenix	Princeton	Cherry	Arterial
N Phoenix	Cherry	Princeton	Arterial
N Phoenix	Cherry	3986	Arterial
N Phoenix	Barnett	4451	Arterial
N Phoenix	4450	4451	Arterial
N Phoenix	4450	Coal Mine	Arterial
N Phoenix	4451	Barnett	Arterial
N Phoenix	4450	4451	Arterial
N Phoenix	Coal Mine	4450	Arterial
Oak Grove	238	4066	Collector
Oak Grove	4066	238	Collector
Orchard Home	Cunningham	4550	Collector
Orchard Home	4550	Cunningham	Collector
Orchard Home	4550	Sunset	Collector
Orchard Home	Sunset	4550	Collector

Appendix D
Arterial and Collector Street Segments Lacking Sidewalks Cont.

Street Segment	From	To	Classification
Orchard Home	Sunset	4605	Collector
Orchard Home	4605	Sunset	Collector
Orchard Home	4605	S Stage	Collector
Orchard Home	S Stage	4605	Collector
Peach	Stewart	Janes	Collector
Peach	Janes	Stewart	Collector
Peach	Janes	Garfield	Collector
Peach	Garfield	Janes	Collector
Peach	Garfield	Agate	Collector
Peach	Agate	Garfield	Collector
Pierce	Quail Run	Spring	Collector
Pierce	Hillcrest	Quail Run	Collector
Riverside	Stewart	4355	State Hwy
Riverside	4355	Stewart	State Hwy
Riverside	4355	Belknap	State Hwy
Riverside	Lowry Lane	Belknap	State Hwy
Riverside	Lowry Lane	4666	State Hwy
Riverside	S Stage	4666	State Hwy
Riverside	4666	Lowry Lane	State Hwy
Riverside	4666	S Stage	State Hwy
Roberts	2550	N Keene Way	Collector
Roberts	N Keene Way	2550	Collector
Roberts	2550	Springbrook	Collector
Roberts	Springbrook	2550	Collector
Ross Lane	Rossanley	3035	Collector
Ross Lane	3035	3140	Collector
Ross Lane	3140	3035	Collector
Ross Lane	3140	3305	Collector
Ross Lane	3305	3140	Collector
Ross Lane	3305	McAndrews	Collector
Ross Lane	McAndrews	3305	Collector
Ross Lane	McAndrews	3670	Arterial
Ross Lane	3670	McAndrews	Arterial
Ross Lane	3670	238	Arterial
Ross Lane	238	3670	Arterial
Rossanley	2810	2820	Collector
Rossanley	2820	2810	Collector
Rossanley	2820	Ross Lane	Collector
Rossanley	Ross Lane	2820	Collector

Appendix D
Arterial and Collector Street Segments Lacking Sidewalks Cont.

Street Segment	From	To	Classification
Rossanley	Ross Lane	Stowe	Collector
Rossanley	Stowe	Ross Lane	Collector
Rossanley	Stowe	Sage	Collector
Rossanley	Sage	Stowe	Collector
S Stage	4600	Griffin S. 9	Arterial
S Stage	Sunset	Hull	Arterial
S Stage	Hull	Sunset	Arterial
S Stage	Sunset	4600	Arterial
S Stage	4600	Sunset	Arterial
S Stage	Griffin S. 9	4600	Arterial
S Stage	Griffin S. 9	4625	Arterial
S Stage	4625	Griffin S. 9	Arterial
S Stage	4625	Orchard Home	Arterial
S Stage	Orchard Home	4625	Arterial
S Stage	Columbus	4655	Arterial
S Stage	4640	4660	Arterial
S Stage	4640	4675	Arterial
S Stage	4655	Columbus	Arterial
S Stage	4655	Kings Hwy	Arterial
S Stage	4660	4640	Arterial
S Stage	4660	Kings Hwy	Arterial
S Stage	99	Voorhies	Arterial
S Stage	Kings Hwy	4655	Arterial
S Stage	Kings Hwy	4660	Arterial
S Stage	4675	Voorhies	Arterial
S Stage	Voorhies	99	Arterial
S Stage	4675	Voorhies	Arterial
S Stage	Columbus	Sunnyview	Arterial
S Stage	Sunnyview	Columbus	Arterial
S Stage	Sunnyview	4655	Arterial
S Stage	4655	Sunnyview	Arterial
Sage	Ehrman	2530	Arterial
Sage	2530	Ehrman	Arterial
Sage	2530	2570	Arterial
Sage	2570	2530	Arterial
Sage	2570	2780	Arterial
Sage	2780	2570	Arterial
Sage	2780	Rossanley	Arterial
Sage	Rossanley	2780	Arterial

Appendix D
Arterial and Collector Street Segments Lacking Sidewalks Cont.

Street Segment	From	To	Classification
Sage	Rossanley	2935	Arterial
Sage	2935	Rossanley	Arterial
Sage	2935	3040	Arterial
Sage	3040	2935	Arterial
Sage	3040	McAndrews	Arterial
Sage	McAndrews	3040	Arterial
Spring	Wabash	Crater Lake	Collector
Spring	Wabash	Keene Way	Collector
Spring	Keene Way	Wabash	Collector
Spring	Keene Way	Berkeley	Collector
Spring	Berkeley	Keene Way	Collector
Spring	Berkeley	Sunrise	Collector
Spring	Sunrise	Berkeley	Collector
Spring	Sunrise	Valley View	Collector
Spring	Valley View	Sunrise	Collector
Spring	Valley View	Modoc	Collector
Spring	Modoc	Brookdale	Collector
Spring	Brookdale	Pierce	Collector
Springbrook	Delta Waters	Bell	Collector
Springbrook	Bell	Delta Waters	Collector
Springbrook	Bell	Cedar Links	Collector
Springbrook	Cedar Links	Bell	Collector
Springbrook	Coker Butte	Hondeleau	Collector
Stevens	Crater Lake	3101	Collector
Stevens	3101	Crater Lake	Collector
Stevens	3101	Effie	Collector
Stevens	Effie	3101	Collector
Stevens	Effie	Wabash	Collector
Stevens	Wabash	Effie	Collector
Stewart	Dixie	4320	Arterial
Stewart	Oak Grove	Thomas	Arterial
Stewart	Thomas	Oak Grove	Arterial
Stewart	Thomas	Lozier	Arterial
Stewart	Lozier	Thomas	Arterial
Stewart	Lozier	Orchard Home	Arterial
Stewart	4320	Dixie	Arterial
Stewart	4320	Orchard Home	Arterial
Stewart	Orchard Home	Lozier	Arterial
Stewart	Orchard Home	4320	Arterial

Appendix D
Arterial and Collector Street Segments Lacking Sidewalks Cont.

Street Segment	From	To	Classification
Sunrise	Jackson	Hillcrest	Collector
Sunrise	Hillcrest	Jackson	Collector
Sunset	(90 Turns)	Thomas	Collector
Sunset	(90 Turns)	(90 Turns)	Collector
Sunset	Thomas	(90 Turns)	Collector
Sunset	Thomas	Orchard Home	Collector
Sunset	Orchard Home	Thomas	Collector
Sunset	S Stage	(90 Turns)	Collector
Sunset	(90 Turns)	(90 Turns)	Collector
Sunset	(90 Turns)	S Stage	Collector
Table Rock	Vilas	1630	Arterial
Table Rock	1630	Vilas	Arterial
Table Rock	1630	Biddle	Arterial
Table Rock	Biddle	1630	Arterial
Table Rock	Biddle	1900	Arterial
Table Rock	1900	Biddle	Arterial
Table Rock	1900	Airport	Arterial
Table Rock	Airport	1900	Arterial
Table Rock	Airport	2100	Arterial
Table Rock	2100	Airport	Arterial
Table Rock	2100	Morningside	Arterial
Table Rock	Morningside	2100	Arterial
Table Rock	Morningside	Midway	Arterial
Table Rock	Midway	Morningside	Arterial
Table Rock	Midway	Merriman	Arterial
Table Rock	Merriman	Midway	Arterial
Table Rock	Berrydale	Merriman	Arterial
Table Rock	Berrydale	W Table Rock	Arterial
Table Rock	W Table Rock	Berrydale	Arterial
Valley View	Hillcrest	Main	Collector
Valley View	Main	Hillcrest	Collector
Vilas	Table Rock	1545	Arterial
Vilas	1545	Table Rock	Arterial
Vilas	1545	1550	Arterial
Vilas	1550	1545	Arterial
Vilas	1550	Hwy. 62	Arterial
Vilas	Hwy. 62	1550	Arterial
Vilas	Hwy. 62	Crater Lake	Arterial
Vilas	Crater Lake	Hwy. 62	Arterial

APPENDIX E

Crash Records and Crash Rate Calculations

Appendix E
Crash Records and Crash Rate Calculations

City of Medford, OR 09/20/2002
01/01/1999 - 12/31/2001
Top intersections with at least 1 crash/year
Sorted by Crash Rate
1999-2001 Crashes

Variables	
Peak hour to ADT factor:	10
ADT to annual traffic factor:	261

Intersections with More Than 1 Crash/Year	3-year Crash Total	Volumes (ADT and PM Peak) NB	WB	SB	EB	TOTAL	3-year Crash Rate
CENTRAL AV N & 4TH ST E	45	0	572	1167	399	2138	2.69
RIVERSIDE AV N & JACKSON ST	44	1381	381	0	448	2210	2.54
CRATER LAKE AV & DELTA WATERS RD	39	732	397	644	603	2376	2.10
6TH ST W & HOLLY ST N	6	1700	1900	2100	1700	7400	2.07
CENTRAL AV N & JACKSON ST	31	0	350	1269	355	1974	2.01
HWY 62 & HWY 62 EB ON RAMP	21	525	0	0	995	1520	1.76
10TH ST W & COTTAGE ST	9	2400	2100	4800	5500	14800	1.55
10TH ST W & GRAPE ST S	13	1600	2400	9600	8600	22200	1.50
RIVERSIDE AV S & 8TH ST E	27	1559	0	0	795	2354	1.46
MCANDREWS RD E & BIDDLE RD	49	962	1049	973	1314	4298	1.46
BARNETT RD E & STEWART AV	41	940	1089	915	772	3716	1.41
10TH ST W & OAKDALE AV S	14	258	398	409	209	1274	1.40
MCANDREWS RD E & COURT ST	38	0	764	1834	986	3584	1.35
RIVERSIDE AV N & MAIN ST	26	1853	673	0	0	2526	1.31
TABLE ROCK RD & MORNINGSIDE ST	9	8900	8800	0	330	18030	1.28
CRATER LAKE AV & BROOKHURST	17	941	136	599	50	1726	1.26
CENTRAL AV N & 6TH ST E	14	0	95	1179	181	1455	1.23
CENTRAL AV S & 10TH ST E	20	0	338	1300	479	2117	1.21
CRATER LAKE AV & STEVENS ST	21	842	188	797	440	2267	1.18
HWY 62 & POPLAR DR/HILTON DR	39	602	1802	323	1574	4301	1.16
10TH ST W & HOLLY ST S	9	77	434	163	340	1014	1.13
BIDDLE RD & STEVENS ST	21	1003	605	772	0	2380	1.13
RIVERSIDE AV S & BARNETT RD E	25	671	737	1063	458	2929	1.09
BARNETT RD W & I-5 NB OFF/ALBA DR	27	508	1522	85	1129	3244	1.06
CENTRAL AV S & 8TH ST E	16	0	0	1126	816	1942	1.05
RIVERSIDE AV & MCANDREWS RD E	31	1629	1227	0	1048	3904	1.01
BARNETT RD E & MURPHY RD	13	313	420	329	602	1664	1.00
HWY 62 & DELTA WATERS RD	33	1849	585	1185	653	4272	0.99
4TH ST E & BARTLETT ST N	8	46	574	40	397	1057	0.97
MCANDREWS RD E & POPLAR DR	22	207	1200	344	1161	2912	0.96
6TH ST W & OAKDALE AV N	4	3600	3700	1700	1600	10600	0.96
BIDDLE RD & AIRPORT RD	14	14600	18200	2000	3300	38100	0.94
JACKSON ST & GENESEE ST	9	0	1800	10600	12800	25200	0.91
STEWART AV & OAKDALE AV S	13	78	940	233	587	1838	0.90
8TH ST E & FRONT ST S	7	69	0	91	830	990	0.90
HWY 62 & FRED MEYER ENT	24	235	1554	137	1520	3446	0.89
BIDDLE RD & MARKET ST	16	1208	280	843	0	2331	0.88
MCANDREWS RD E & ROYAL AV	20	509	977	94	1366	2946	0.87
CENTRAL AV S & 12TH ST E	11	15200	15300	2200	400	33100	0.85
STEWART AV & KINGS ST	13	241	1086	123	563	2013	0.82
CRATER LAKE AV & SPRING ST	13	795	233	842	148	2018	0.82
COLUMBUS AV N & JACKSON ST	9	486	225	469	225	1405	0.82
MCANDREWS RD E & CRATER LAKE AV	22	1087	502	701	1172	3462	0.81
8TH ST W & IVY ST S	5	101	0	160	539	800	0.80

RIVERSIDE AV N & OHIO ST	14	1963	168	0	112	2243	0.80
SPRING ST & BROOKDALE AV	4	3400	0	5400	4100	12900	0.79
RIVERSIDE AV N & 6TH ST E	12	1780	0	0	181	1961	0.78
MAIN ST E & BARNEBURG RD	5	2500	2900	5100	6000	16500	0.77
RIVERSIDE AV S & STEWART AV	18	864	709	660	740	2973	0.77
CENTRAL AV N & MAIN ST W	11	0	699	1158	0	1857	0.76
HWY 62 & CARDINAL AV	18	1260	0	1328	480	3068	0.75
COLUMBUS AV S & STEWART AV	11	246	754	505	389	1894	0.74
COLUMBUS AV N & 4TH ST W	8	12100	12100	3500	0	27700	0.74
POPLAR DR & MORROW RD	9	440	232	437	459	1568	0.73
MAIN ST E & HAWTHORNE ST	8	47	615	203	569	1434	0.71
BARNETT RD E & GOLF VIEW DR	6	0	1700	8500	11400	21600	0.71
STEWART AV & HOLLY ST S	11	171	1106	83	634	1994	0.70
MAIN ST W & HAMILTON ST (ROSE ST)	4	78	624	28	0	730	0.70
OAKDALE AV S & DAKOTA AV	4	168	115	354	99	736	0.69
MAIN ST W & HOLLY ST	5	103	719	118	0	940	0.68
4TH ST E & FRONT ST N	5	100	502	32	328	962	0.66
STEWART AV & PEACH ST	9	177	967	72	529	1745	0.66
RIVERSIDE AV N & 4TH ST E	14	1834	536	0	424	2794	0.64
COLUMBUS AV S & PRUNE ST	6	12100	11000	0	1600	24700	0.62
HWY 62 & TARGET ENTRANCE	14	1426	125	0	1341	2892	0.62
MAIN ST E & COTTAGE ST	7	0	2400	13500	13300	29200	0.61
MAIN ST E & HIGHLAND DR	5	0	5000	6000	10000	21000	0.61
CRATER LAKE AV & ROBERTS (N) RD	8	842	263	609	0	1714	0.60
MAIN ST W & OAKDALE AV	5	197	645	240	0	1082	0.59
JACKSON ST & HAWTHORNE ST	7	188	431	159	783	1561	0.57
BIDDLE RD & BEAR CREEK PLAZA	11	1450	269	761	0	2480	0.57
CRATER LAKE AV & GRAND AV	8	15800	19200	0	1400	36400	0.56
SISKIYOU BL & HIGHLAND DR	6	507	240	235	397	1379	0.56
RIVERSIDE AV S & 12TH ST E	7	1456	112	0	42	1610	0.56
8TH ST W & OAKDALE AV S	5	296	0	379	478	1153	0.55
SPRINGBROOK RD & ROBERTS RD	7	741	23	546	336	1646	0.54
RIVERSIDE AV S & 10TH ST E	9	1359	299	0	461	2119	0.54
COLUMBUS AV N & MAIN ST E	10	511	563	707	580	2361	0.54
HWY 62 & HILTON RD	18	1574	602	1802	323	4301	0.53
HILTON RD & POPLAR DR	6	14000	11500	3500	0	29000	0.53
BIDDLE RD & MP30 I-5 NB ON/OFF RAMP	11	974	160	723	873	2730	0.51
HILLCREST RD & VALLEY VIEW DR	5	1700	3000	11300	9200	25200	0.51
BARNETT RD E & HIGHLAND DR	12	0	1212	537	1347	3096	0.50
BIDDLE RD & JACKSON ST	10	873	595	714	444	2626	0.49
BARNETT RD & BLACK OAK DR	9	374	817	355	821	2367	0.49
STEWART AV & CENTER DR	9	492	1057	183	677	2409	0.48
CENTRAL AV S & 9TH ST E	5	0	66	1266	28	1360	0.47
RIVERSIDE AV N & MANZANITA ST	6	1521	22	0	104	1647	0.47
MCANDREWS RD E & ROGUE VALLEY MALL	10	0	1541	230	995	2766	0.46
HILLCREST RD & PIERCE RD	4	5500	0	8800	8300	22600	0.45
STEVENS ST & ROYAL AV	5	212	397	371	445	1425	0.45
HWY 62 & MP30 I-5 SB ON/OFF RAMP (01)(02)	13	0	1951	446	1422	3819	0.43
RIVERSIDE AV N & EDWARDS	6	16700	16200	0	2500	35400	0.43
TABLE ROCK RD & MERRIMAN RD	5	8800	15900	0	5800	30500	0.42
COURT ST & OHIO ST	7	19800	19700	3300	0	42800	0.42
CRATER LAKE AV & MAIN ST	6	0	541	640	662	1843	0.42
MCANDREWS RD & SPRINGBROOK RD	6	538	185	524	714	1961	0.39
HILLCREST RD & BLACK OAK DR	4	524	291	0	509	1324	0.39
CRATER LAKE AV & JACKSON ST	7	632	355	774	587	2348	0.38

STEWART AV & GRAPE ST	5	2400	0	18400	18900	39700	0.32
RIVERSIDE AV N/COURT & HWY 62	10	379	1594	1188	904	4065	0.31
TABLE ROCK RD & WEST TABLE ROCK RD	4	16600	8200	0	8800	33600	0.30
CRATER LAKE AV & GRANDVIEW AV	4	14600	16400	0	2700	33700	0.30
CRATER LAKE AV & ROBERTS RD	4	842	263	609	0	1714	0.30
MCANDREWS RD E & CRATER LAKE AV	8	1087	502	701	1172	3462	0.30
N. PACIFIC HW & WEST TABLE ROCK RD	6	8800	0	25400	19400	53600	0.29
BARNETT RD E & ELLENDALE DR	5	217	1049	85	914	2265	0.28
BIDDLE RD & HILTON RD	4	572	344	909	21	1846	0.28
HWY 62 & ROGUE VALLEY MALL	6	1243	411	1269	0	2923	0.26
BIDDLE RD & PROGRESS DR	4	1112	213	858	0	2183	0.23
HWY 62 & MP30 I-5 NB ON RAMP (04)	6	0	1946	0	1410	3356	0.23
BIDDLE RD & MORROW RD	4	1152	222	916	0	2290	0.22
HWY 62 & N. PACIFIC HW	7	379	1594	1188	904	4065	0.22
N. PACIFIC HW & SAGE RD	4	18900	19400	0	9900	48200	0.21
HWY 62 & WHITTLE AV	6	0	2200	38100	37800	78100	0.20
HWY 62 & MP30 I-5 SB ON RAMP (02)	5	0	1951	446	1422	3819	0.17
HWY 62 & COMMERCE DR	4	30800	29800	0	800	61400	0.17
BARTLETT ST & MAIN ST	4	1765	4818	1765	0	8348	0.06

Intersections Without Traffic Volumes for Rate Calculation (Sorted by Number of Crashes)

HWY 62 & VILAS RD	21	0	#DIV/0!
CRATER LAKE & VILAS RD	17	0	#DIV/0!
MAIN ST E & WILLAMETTE AV	15	0	#DIV/0!
10TH ST W & FIR ST S	13	0	#DIV/0!
MCANDREWS RD E & BEATTY ST	12	0	#DIV/0!
N. PACIFIC HW & TABLE ROCK RD	12	0	#DIV/0!
8TH ST W & FIR ST S	11	0	#DIV/0!
CENTRAL AV N & 3RD ST E	10	0	#DIV/0!
RIVERSIDE AV N & MADRONA ST	10	0	#DIV/0!
CENTRAL AV S & BANK ST	9	0	#DIV/0!
MAIN ST E & MYRTLE ST	9	0	#DIV/0!
RIVERSIDE AV S & BOYD ST	9	0	#DIV/0!
8TH ST E & BARTLETT ST	8	0	#DIV/0!
BARTLETT ST N & JACKSON ST	7	0	#DIV/0!
HWY 62 & ACCESS RD, RESTON MOTEL	7	0	#DIV/0!
4TH ST W & FIR ST N	6	0	#DIV/0!
6TH ST W & FIR ST N	6	0	#DIV/0!
MAIN ST E & ALMOND ST	6	0	#DIV/0!
RIVERSIDE AV N & 5TH ST E	5	0	#DIV/0!
10TH ST W & ORANGE ST	5	0	#DIV/0!
BARNETT RD W & FIR ST	5	0	#DIV/0!
BEATTY ST & EDWARDS ST	5	0	#DIV/0!
HWY 62 & WEBFOOT RD	5	0	#DIV/0!
MCANDREWS RD E & BOARDMAN ST	5	0	#DIV/0!
RIVERSIDE AV S & 9TH ST E	5	0	#DIV/0!
RIVERSIDE AV S & BANK ST	5	0	#DIV/0!
RIVERSIDE AV S & EARHART	5	0	#DIV/0!
CENTRAL AV N & 5TH ST E	4	0	#DIV/0!
CENTRAL AV S & 13TH ST	4	0	#DIV/0!
COLUMBUS AV N & LOCUST	4	0	#DIV/0!
CRATER LAKE AV & BENNETT AV	4	0	#DIV/0!
CRATER LAKE AV & PAGE ST	4	0	#DIV/0!
HILTON RD & BULLOCK RD	4	0	#DIV/0!

RIVERSIDE AV N & WALNUT ST	4	0	#DIV/0!

Intersections with Equal to or Less Than 1 Crash Per Year

4TH ST E & APPLE ST	3
4TH ST W & GRAPE ST N	3
4TH ST W & HOLLY ST N	3
6TH ST E & FRONT ST N	3
8TH ST W & HAMILTON ST	3
10TH ST W & COLUMBUS AV S	3
10TH ST W & IVY ST S	3
11TH ST E & FRONT ST S	3
11TH ST W & OAKDALE AV S	3
BARNETT RD E & GRAPE ST S	3
BARNETT RD E & MP27 I-5 SB OFF RAMP (05)	3
BARNETT RD E & MP27 I-5 SB ON LOOP (04)	3
BIDDLE RD & AUTOMATION WY	3
BIDDLE RD & HWY 62 EB ON RAMP	3
BIDDLE RD & HWY 62 WB ON RAMP	3
BLACK OAK DR & SISKIYOU BL	3
CENTRAL AV N & COURT ST/EDWARDS	3
CENTRAL AV S & RIVERSIDE S	3
COLUMBUS AV N & 2ND ST W	3
COLUMBUS AV S & DAKOTA AV	3
COURT ST & MANZANITA ST	3
CRATER LAKE AV & COVINA AV	3
CRATER LAKE AV & SALING	3
CRATER LAKE AV & SKYPARK DR	3
DAKOTA AV & NEWTOWN ST	3
DELTA WATERS RD & SPRINGBROOK	3
EDWARDS ST & NIANTIC ST	3
HOLLY ST S & MONROE AV	3
JACKSON ST & HILLCREST RD	3
JACKSON ST & PINE ST	3
JACKSON ST & SUMMIT AV	3
MAIN ST E & GENESEE ST	3
MAIN ST E & PORTLAND AV	3
MAIN ST E & TRIPP ST	3
MAIN ST W & ORANGE ST	3
MCANDREWS RD E & HILLCREST RD	3
MCANDREWS RD W & JACKSON ST	3
MCANDREWS RD W & SAGE RD	3
MCANDREWS RD W & SUMMIT AV	3
MCANDREWS RD W & WESTERN AV	3
N. PACIFIC HW & ELM AV	3
NORTH PHOENIX RD & HILLCREST	3
RIVERSIDE AV N & 6TH ST E	3
ROBERTS (N) RD & KEENE WAY DR	3
STEWART AV & GRANT AV	3
TABLE ROCK RD & BERRYDALE	3
TABLE ROCK RD & MACE RD	3
TABLE ROCK RD & SWING LN	3
3RD ST W & GRAPE ST N	2
8TH ST W & CHESTNUT AV	2
8TH ST W & ORANGE ST	2

10TH ST E & FRONT ST S	2
10TH ST W & LAUREL ST	2
12TH ST W & IVY ST S	2
BARNETT RD E & ALDER CREEK	2
BARNETT RD E & MEDICAL CENTER DR	2
BARNETT RD E & WINCO FOODS	2
BARNETT RD W & GRAPE ST S	2
BARNETT RD W & KENYON ST	2
BIDDLE RD & FISHER AV	2
BIDDLE RD & KNUTSON AV	2
BIDDLE RD & SUPERIOR CT	2
BLACK OAK DR & DELLWOOD AV	2
CEDAR LINKS CT & HAWAIIAN AV	2
CENTRAL AV N & BEATTY ST	2
CLARK ST & BROAD ST	2
COLUMBUS AV N & 2ND ST W	2
COLUMBUS AV N & HAVEN ST	2
COLUMBUS AV S & 10TH ST W	2
COLUMBUS AV S & ARLINGTON DR	2
COLUMBUS AV S & BRENTCREST DR	2
COLUMBUS AV S & CUNNINGHAM	2
COURT ST & KENNET ST	2
CRATER LAKE AV & COKER BUTTE RD	2
CRATER LAKE AV & WEBFOOT RD	2
CREEK VIEW DR & LARSON CREEK DR	2
DIXIE LN & AVALON DR	2
FOOTHILL RD & LONE PINE	2
HAPPY VALLEY DR & DIAMOND ST	2
HWY 62 & BULLOCK RD	2
HWY 62 & CRATER LAKE AV	2
HWY 62 & LEAR WY	2
HWY 62 & SKYPARK DR	2
HWY 62 EB ON RAMP & BIDDLE-NORTHBOUN	2
HWY 62 WB OFF RAMP & BIDDLE RD	2
JACKSON ST & 4TH ST	2
JACKSON ST & HOWARD AV	2
JACKSON ST & KEENE WAY DR	2
JACKSON ST & SUNRISE AV	2
KEENE WAY DR N & OREGON AV	2
KENYON ST & O'GARA ST	2
MACE RD & N. PACIFIC HW	2
MAIN ST E & LINDLEY ST	2
MAIN ST W & GRAPE ST	2
MANZANITA ST & BEATTY ST	2
MCANDREWS RD E & CORONA AV	2
MCANDREWS RD E & KEENE WAY DR	2
MCANDREWS RD E & NORTH KEENE WAY	2
MCANDREWS RD E & OLEANDER ST	2
MCANDREWS RD E & WABASH AV	2
MCANDREWS RD W & CLARK ST	2
MORROW RD & CORONA AV	2
N. PACIFIC HW & HOWARD AV	2
PROGRESS DR & POPLAR DR	2
RIVERSIDE AV N & ALICE ST	2
RIVERSIDE AV N & KENNET	2

SPRING ST & KEENE WAY DR	2
SPRING ST & WABASH AV	2
SPRINGBROOK RD & ASHWOOD CT	2
SPRINGBROOK RD & PINEBROOK CR	2
SPRINGBROOK RD & ROBERTS RD (N)	2
STEWART AV & DIXIE LN	2
STEWART AV & HAMILTON ST	2
STEWART AV & LOZIER LN	2
SUMMIT AV & PENNSYLVANIA AV	2
TAHITIAN AV & WOODBRIAR DR	2
2ND ST W & HOLLY ST N	1
2ND ST W & IVY ST N	1
3RD ST E & APPLE ST	1
4TH ST W & IVY ST N	1
4TH ST W & MYERS CT	1
4TH ST W & OAKDALE AV N	1
4TH ST W & PEACH ST N	1
4TH ST W & QUINCE ST	1
4TH ST W & ROSE AV	1
4TH ST W & SUMMIT AV	1
5TH ST E & GRAPE ST N	1
8TH ST E & ALMOND ST	1
8TH ST E & TRIPP ST	1
8TH ST W & HOLLY ST S	1
8TH ST W & IVY CR	1
8TH ST W & LINCOLN ST	1
8TH ST W & PEACH ST S	1
9TH ST E & TRIPP ST	1
10TH ST E & ASHLAND AV	1
10TH ST E & CENTURION CR	1
10TH ST E & PORTLAND AV	1
10TH ST E & TRIPP ST	1
10TH ST W & ELM ST	1
10TH ST W & MISTLETOE ST	1
10TH ST W & NEWTOWN ST	1
11TH ST W & GRAPE ST S	1
11TH ST W & HAMILTON ST	1
11TH ST W & HOLLY ST S	1
11TH ST W & IVY ST	1
11TH ST W & KING ST	1
11TH ST W & NEWTOWN ST	1
11TH ST W & PLUM ST	1
12TH ST W & FIR ST S	1
12TH ST W & GRAPE ST S	1
12TH ST W & OAKDALE AV S	1
13TH ST & HAMILTON ST	1
ARCHER DR & MILFORD DR	1
ARROWHEAD DR & HONDELEAU LN	1
BARNETT RD E & CRESTBROOK	1
BARNETT RD E & HILLDALE	1
BARNETT RD E & MAAIKE DR	1
BARNETT RD E & MP27 I-5 NB OFF	1
BARNETT RD E & MP27 I-5 NB ON RAMP (03)	1
BARNETT RD E & MP27 I-5 SB ON RAMP (06)	1
BARNETT RD E & NORTH PHOENIX RD	1

BARNETT RD E & STATE ST	1
BARNETT RD W & HOLLY ST	1
BEALL LN & CONNELL AV	1
BEATTY ST & CENTRAL AV	1
BEATTY ST & LIBERTY ST	1
BERKELEY WY & OREGON AV	1
BERKELEY WY & STRATFORD AV	1
BIDDLE RD & 4TH ST E	1
BIDDLE RD & BULLOCK RD	1
BIDDLE RD & CHEVY WY	1
BIDDLE RD & GILMAN RD	1
BIDDLE RD & HWY 62 EB OFF RAMP	1
BIDDLE RD & JACKSON ST	1
BIDDLE RD & LAWNSDALE RD	1
BIDDLE RD & TABLE ROCK RD	1
BLACK OAK DR & COUNTRY CLUB DR	1
BLACK OAK DR & RANDOLPH ST	1
BRENTWOOD DR & GIRARD CR	1
BROOKHURST ST & INNER CR	1
BROOKHURST ST & MELODY LN	1
CAMPUS DR & NORTH KEENE WAY DR	1
CARDLEY AV & SUPERIOR CT	1
CEDAR LINKS CT & SPRINGBROOK RD	1
CEDAR LINKS DR & GENE CAMERON WY	1
CEDAR LINKS DR & ROSEWOOD ST	1
CEDAR LINKS DR & STONEBROOK	1
CEDAR LINKS DR & TAHITIAN AV	1
CENTER DR & SOUTH GATEWAY	1
CENTRAL AV & EDWARDS ST	1
CENTRAL AV & MAPLE ST	1
CENTRAL AV N & 2ND ST E	1
CENTRAL AV N & MAPLE ST	1
CENTRAL AV S & 11TH ST E	1
CENTRAL AV S & BOYD ST	1
COLUMBUS AV N & DAKOTA AV	1
COLUMBUS AV N & HUMPHREY ST	1
COLUMBUS AV N & PENNSYLVANIA AV	1
COLUMBUS AV S & ASPEN ST	1
COLUMBUS AV S & FAIRMOUNT ST	1
COLUMBUS AV S & MT. PITT ST	1
COLUMBUS AV S & WINCHESTER	1
COTTAGE ST & TAYLOR ST	1
COUNTRY CLUB DR & WHITE OAK	1
CRATER LAKE AV & HUTCHINS CR	1
CRATER LAKE AV & LEAR WY	1
CRATER LAKE AV & PATRICK ST	1
CRATER LAKE AV & SUZANNA ST	1
CRATER LAKE AV & TEMPLE DR	1
CRATER LAKE AV & WOODROW LN	1
CUNNINGHAM AV & ORCHARD HOME DR	1
DAKOTA AV & HAMILTON ST	1
DAKOTA AV & MAIN ST W	1
DAKOTA AV & PEACH ST	1
DAKOTA AV & PLUM ST	1
DELTA WATERS & CODY ST	1

DELTA WATERS RD & DELTA WATERS RD	1
DELTA WATERS RD & TAHITIAN	1
DIAMOND ST & MCKENZIE DR	1
EDWARDS ST & BOARDMAN ST	1
ELLEN AV & BURSELL RD	1
FIR ST N & GRAPE ST N	1
FOOTHILL RD & CEDAR LINKS DR	1
FOOTHILL RD & DELTA WATERS RD	1
FOOTHILL RD & EUCALYPTUS DR	1
FOOTHILL RD & MCANDREWS RD E	1
FOOTHILL RD & VIEWPOINT DR	1
FRANQUETTE AV & ARCADIA ST	1
GARFIELD RD & KENYON ST	1
GENE CAMERON WY & SHERMAN	1
GRANT AV & BELMONT ST	1
HAVEN ST & OAK ST	1
HIGH OAK DR & STANFORD AV	1
HIGHCREST DR & HILLCREST	1
HIGHLAND DR & GREENWOOD ST	1
HIGHLAND DR & ROXY ANN PL	1
HILLCREST RD & CHERRY LN	1
HILLCREST RD & FAIRVIEW	1
HILLCREST RD & FOOTHILL	1
HILLCREST RD & MARIPOSA TR	1
HILLCREST RD & MODOC AV	1
HILTON RD & CORONA AV	1
HILTON RD & HYBISCUS ST	1
HOLLY ST N & HAVEN ST	1
HOLLYHOCK DR & ARROWHEAD DR	1
HONDELEAU LN & VIEWCREST DR	1
HOWARD AV & BERRYDALE AV	1
HWY 62 & BURLCREST DR	1
HWY 62 & COKER BUTTE RD	1
HWY 62 & MP30 I-5 NB OFF RAMP	1
HWY 62 EB OFF RAMP & DELTA WATERS RD	1
JACKSON ST & 3RD ST	1
JACKSON ST & ALDER ST	1
JACKSON ST & BERKELEY WY	1
JACKSON ST & BESSIE ST	1
JACKSON ST & FIR ST N	1
JACKSON ST & FRONT ST	1
JACKSON ST & HILLHOUSE AV	1
JACKSON ST & HOLLY ST N	1
JACKSON ST & HOWARD ST	1
JACKSON ST & OAK ST	1
JACKSON ST & OLWELL WY	1
JACKSON ST & PEARL ST	1
JACKSON ST & STARK ST	1
JACKSON ST & WELCH ST	1
JUANIPERO WY & MIRA MAR AV	1
KEENE WAY DR & TEMPLE DR	1
KEENE WAY DR N & HYBISCUS	1
KEENE WAY DR N & ROBERTS RD	1
KING ST & CATHERINE ST	1
KING ST & DAKOTA AV	1

KINGS HW & MARSHALL AV	1
LA LOMA DR & HONOR DR	1
LEAR WY & AERO	1
LEONARD AV & STONEBROOK DR	1
LINDLEY ST & JACKSON ST	1
LINDLEY ST & REDDY AV	1
LONE PINE RD & BROOKDALE	1
LONE PINE RD & FILMORE DR	1
LONE PINE RD & INVERNESS DR	1
LONE PINE RD & MODOC AV	1
LONE PINE RD & THRASHER LN	1
MACE RD & HOWARD AV	1
MADISON PL & QUEEN ANNE AV	1
MAIN ST & WILLAMETTE AV	1
MAIN ST E & ACADEMY PL	1
MAIN ST E & ASHLAND AV	1
MAIN ST E & BERKELEY WY	1
MAIN ST E & FLORENCE AV	1
MAIN ST E & FRONT ST S	1
MAIN ST E & JEANETTE AV	1
MAIN ST E & VANCOUVER AV	1
MAIN ST E & WINDSOR AV	1
MAIN ST W & ELM AV	1
MAIN ST W & IVY ST	1
MAIN ST W & MYERS CT	1
MAIN ST W & PEACH ST	1
MAIN ST W & WESTERN AV	1
MANZANITA ST & BOARDMAN ST	1
MANZANITA ST & NIANTIC ST	1
MCANDREWS RD E & MODOC AV	1
MCANDREWS RD E & PAPAGO DR	1
MCANDREWS RD W & COLUMBUS AV N	1
MCANDREWS RD W & OAK ST	1
MORNINGSIDE ST & MERRIMAN RD	1
MURPHY RD & SECKEL CT	1
MURPHY RD & STATE ST	1
N. PACIFIC HW & ELK RD	1
N. PACIFIC HW & LYNN ST	1
NARREGAN ST & CLARK ST	1
NIANTIC ST & ALICE ST	1
NIANTIC ST & PUTNAM ST	1
NORTH KEENE WAY DR & TEMPLE DR	1
NORTH PHOENIX RD & CALLE VISTA DR	1
NORTH PHOENIX RD & CHERRY LN	1
NORTH PHOENIX RD & GREYSTONE CT	1
NORTH PHOENIX RD & JUANIPERO WY	1
NORTH PHOENIX RD & MICHAEL PARK	1
NORTH PHOENIX RD & SHAMROCK DR	1
OAKDALE AV S & BELMONT ST	1
OAKDALE AV S & MONROE AV	1
OBISPO DR & PERRI PL	1
ORCHARD HOME DR & AVALON DR	1
PANTHER DR & JASPER ST	1
PIERCE RD & OAKVIEW CR PVT	1
RIVERSIDE AV N & 3RD ST E	1

RIVERSIDE AV N & AUSTIN ST	1
RIVERSIDE AV N & EARHART ST	1
RIVERSIDE AV N & LIBERTY ST	1
RIVERSIDE AV N & MAPLE ST	1
ROBERTS (N) RD & NORTH KEENE WAY DR	1
ROBERTS (N) RD & TEMPLE DR	1
ROYAL AV & ROYAL CT	1
ROYAL CT & SPRING ST	1
S. PACIFIC HW & BELKNAP RD	1
SAGE RD & PARSONS DR	1
SALING AV & EFFIE ST	1
SALING AV & MAE ST	1
SALING AV & MARIE ST	1
SANDRA PL & AMY ST	1
SHELDON AV & GARFIELD	1
SISKIYOU BL & GROVELAND AV	1
SISKIYOU BL & WILLAMETTE AV	1
SMITH ST & WILLAMETTE	1
SPRING HILLS DR & WABASH AV	1
SPRING ST & GARDENDALE AV	1
SPRING ST & NORTH KEENE WAY DR	1
SPRING ST & ROYAL AV	1
SPRING ST & SPRINGBROOK RD	1
SPRINGBROOK RD & AMARYLLIS ST	1
SPRINGBROOK RD & CEDAR LINKS	1
SPRINGBROOK RD & GARDEN DR	1
SPRINGBROOK RD & LONE PINE RD	1
STEVENS ST & MAE ST	1
STEWART AV & ALTA ST	1
STEWART AV & CHERRY ST	1
STEWART AV & JASPER ST	1
STEWART AV & NEWTOWN ST	1
STEWART AV & PLUM ST	1
SUMMIT AV & CLARK ST	1
SUMMIT AV & MARY PL	1
SUNRISE AV & CAPITAL AV	1
SUNRISE AV & HAMILTON ST	1
SUNRISE AV & SPRING ST	1
TABLE ROCK RD & ADAMS LN PVT	1
TABLE ROCK RD & DE BARR AV	1
TABLE ROCK RD & VIRGINIA ST	1
VIEWPOINT DR & FAIRFAX ST	1
VILAS RD & INDUSTRY DR	1
VILAS RD & TABLE ROCK RD	1
WABASH AV & CARMEL CR	1
WABASH AV & STEVENS ST	1
WESTERN AV & HUMPHREY ST	1
WHITMAN AV & HOLMES AV	1
WHITTLE AV & GRANDVIEW AV	1
WILKSHIRE DR & ENGLESEA WY	1

APPENDIX F

Programmed/Planned Improvements from the Draft State Transportation Improvement Program (2004-2009) and Rogue Valley *Regional Transportation Plan* (2002)

Appendix F
Programmed/Planned Improvements
from the Draft State Transportation Improvement Program (2004-2009) and
Rogue Valley Regional Transportation Plan (2002)

This appendix documents programmed ("financially committed") and planned transportation improvements for the Medford UGB as identified in Draft State Transportation Improvement Program (2004-2009) and the RVCOG's *Regional Transportation Plan* (RTP). These improvements are incorporated into the regional travel demand model forecasts and are used to develop future traffic forecasts for the level of service study. A discussion of Medford-area OTIA (Oregon Transportation Investment Act) projects follows the STIP.

.

These planned and programmed improvements are described below.

State Improvement Programs

Statewide Transportation Improvement Program (STIP), 2004-2007

Oregon's Statewide Transportation Improvement Program is the state's transportation capital improvement program, which fulfills the requirements of the Transportation Equity Act for the 21st Century (TEA-21). The STIP lists the schedule of transportation projects for the four-year period from 2004 to 2007. It is a compilation of projects utilizing various federal and state funding programs, and includes projects on the state, county and city transportation systems as well as projects in the National Parks, National Forests, and Indian Reservations. Also included are projects fully funded by the metropolitan planning organizations (MPOs) that are of regional interest or significance.

The following table summarizes the improvement projects programmed in the 2004-2007 STIP for Medford.

Table F-1
Summary of Draft 2004-2007 STIP Programmed Improvements – City of Medford

Key No.	Route	Location	Fiscal Year	Const. Cost ($,000)	Work Type	Description
10838	Highway 62	Corridor Solutions (Unit 1) TEA 21 #52 (MP 0.00 – 0.57)	2004	$21,177	Modernization	Improvements to North Medford interchange between I-5 and Poplar Drive
11379	S. Holly Street	Garfield Road – Holmes Avenue	2005	$450	Modernization	Construct new 3 lane roadway w/bike lanes and sidewalks
12509	Columbus Avenue	McAndrews Road – Sage Road	2005	$450	Modernization	Realign and widen to 3 lanes w/bike lanes and sidewalks
12506	N. Phoenix Road	Cherry Lane – Hillcrest Road	2005	$1,218	Modernization	Construct new 5 lane roadway w/bike lanes and sidewalks
12507	Peach Street	Stewart Avenue – Garfield Road	2005	$735	Modernization	Widen to 2 lanes w/bike lanes and sidewalks
12508	Stevens Street	Crater Lake Avenue – Wabash Avenue	2005	$600	Modernization	Widen to 3 lanes with sidewalks

Table F-1 Continued
Summary of Draft 2004-2007 STIP Programmed Improvements – City of Medford

Key No.	Route	Location	Fiscal Year	Const. Cost ($,000)	Work Type	Description
10964	I-5	OTIA – South Medford Interchange (MP 27.20 – 8.30)	2006	$39,056	Modernization	Relocate and construct new interchange, partnering with City of Medford
12332	Merriman Rd. & Table Rock Rd.		2004	$305	Operations	Upgrade intersection
12333	4th & Oakdale		2004	$150	Operations	Install new traffic signal
12334	Sunrise Avenue & Jackson Street		2005	$150	Operations	Install new traffic signal
11784	Various Highways	RVTD	2005	$131	Operations	TDM Rideshare Projects
12531	Various Highways	RVTD	2006	$146	Operations	TDM Rideshare Projects
11532	Various Highways	RVTD	2007	$146	Operations	TDM Rideshare Projects
11715	OR 99	Stewart Avenue – 6th Street	2004	$2,056	Pavement Preservation	Grind and inlay/overlay pavement

Source: *Draft Statewide Transportation Improvement Program*, 2004-2009, ODOT

The STIP is not a planning document; it is a project prioritization and scheduling document developed through various planning processes involving local and regional governments, transportation agencies, and the interested public. Through the STIP, ODOT allocates resources to those projects that have been given the highest priority in these plans.

Oregon Transportation Investment Act (OTIA) Projects

In 2000, Oregon voters approved a $400 million bond measure for a set of specific state highway improvements. In Medford, the final OTIA project list includes a $14 million commitment toward relocating the South Medford Interchange on I-5 further south and constructing new arterial connections. The total project cost is $51.7 million. The I-5 North Medford Interchange is also on the State's list of planned improvements, and is in the predesign stage.

Regional Transportation Plan

Highway and Roadway Improvements

Tables F-2 through F-4 list combined City and County planned roadway improvements within the Medford Urban Growth Boundary. These improvements have been stratified by the expected time frame for implementation including: short-term (2001-2005) in Table F-2, medium-term (2006-2010) in Table F-3, and long-term (2011-2023) in Table F-4. The tables also include cost estimates for each project and identify the agencies with primary and secondary funding responsibility. Cost estimates are totaled for each implementation phase and compared with the total expected available revenue for that phase. Improvements listed in the tables are limited to those in the RVCOG Tier 1 system, which is the financially constrained network.

Table F-2
Planned Short-Range Roadway System Improvements
Medford UGB

Project Location	Project Description	Project Type	Funding Agency: Medford	Funding Agency: Other	Cost
Medford Tier 1 – Short-Range (2001-2005)					
Garfield, Peach to King	Widen to four lanes with curb, gutter, bike lanes and sidewalks	Capacity	◆		$1,775,000
Coker Butte Rd., Crater Lake Hwy to Lear Way	Construct new three lane road with bike lanes and sidewalks	Capacity	◆		$1,700,000
Jackson St, Berkeley Way to Valley View Dr	Widen to three lanes with curb, gutter, bike lanes and sidewalks	Capacity	◆		$1,200,000
Peach St, Stewart to Garfield	Widen to two lanes with curb, gutter, bike lanes and sidewalks	Capacity	◆		$735,000
Lear Way, Lear Way Plaza to Coker Butte Rd.	Construct new two lane road with bike lanes and sidewalks	Capacity	◆	◆	$970,000
S. Holly, Garfield Rd to Holmes	Construct new two lane road with bike lanes and sidewalks	Capacity	◆		$450,000
Columbus Ave., McAndrews to Sage	Realign & widen to three lanes with bike lanes and sidewalks	Capacity	◆		$450,000
Poplar, McAndrews to Progress	Widen to three lanes with curb, gutter, bike lanes and sidewalks	Capacity	◆		$400,000
Crater Lake and McAndrews	Intersection Improvements	Operations	◆		$725,000
Highland Ave and Siskiyou Blvd	Realign intersection, geom. Improvements	Operations	◆		$550,000
Riverside and Barnett	Add southbound through lane	Operations	◆		$350,000
Table Rock and Merriman	Intersection Improvements	Operations	◆		$305,000
Main and Hamilton	Signal upgrade	Operations	◆		$225,000
Sunrise Ave and Jackson St	Install new traffic signal	Operations	◆		$225,000
Columbus Ave and Prune	Install new signal	Operations	◆		$225,000
Columbus Ave and Jackson St	Install new signal	Operations	◆		$225,000
Columbus Ave and Fourth St	Install new signal	Operations	◆		$225,000
Springbrook Rd and Cedar Links Rd	Install new signal	Operations	◆		$225,000
4th Street and Oakdale	Install new signal	Operations	◆		$225,000
Crater Lake Ave and Roberts (West)	Install new signal	Operations	◆		$225,000
Springbrook and Spring	Install new signal	Operations	◆		$225,000
Biddle and Lawnsdale	Install new signal	Operations	◆		$225,000
Keene Way and McAndrews	Install new signal	Operations	◆		$225,000
Barnett and Golf View	Install new signal	Operations	◆		$225,000
10th and Columbus	Install new signal	Operations	◆		$225,000
8th and Hamilton	Signal upgrade	Operations	◆		$130,000
6th and Central	Signal upgrade	Operations	◆		$130,000
8th and Central	Signal upgrade	Operations	◆		$130,000
8th and Orange	Signal upgrade	Operations	◆		$125,000
Delta Waters Rd., Waterford to Bailey	Curb, gutter, storm drain improvements, north side	Operations	◆		$100,000
Main and Oakdale	Signal upgrade	Operations	◆		$100,000
12th and Riverside	Signal upgrade	Operations	◆		$100,000
		Medford Short Range Costs -			**$19,773,000**

Table F-2 Continued
Planned Short-Range Roadway System Improvements
Medford UGB

Project Location	Project Description	Project Type	Funding Agency: Medford	Funding Agency: Other	Cost
Jackson County Tier 1 – Short-Range (2001-2005)					
Table Rock Rd, Pine St, Biddle to Wilson Rd	Widen to five lanes with bike lanes and sidewalks	Capacity	◆	◆	$4,160,000
Vilas Rd, Table Rock Rd to Hwy 62	Widen to three lanes with bike lanes and sidewalks	Capacity	◆	◆	$3,343,000
Sage Rd, Posse to Ehrman Way	Widen to three lanes with bike lanes and sidewalks	Capacity	◆	◆	$1,760,000
Oak Grove Rd, Medford UGB to Hwy 238	Widen to two & three lanes with bike lanes and sidewalks	Capacity	◆	◆	$390,000
	Jackson County Short Range Costs -				**$9,653,000**
ODOT Tier 1 – Short-Range (2001-2005)					
Hwy 62/N. Medford Interchange Corridor Solutions	Construct five lane overpasses, widen bridge, re-configure interchange – ODOT+Federal Shares)	Capacity		◆	$35,000,000
S. Medford Interchange	Construct new interchange – ODOT share	Capacity		◆	$35,700,000
S. Medford Interchange	Construct new interchange – Medford/Developer/MURA share	Capacity	◆		$15,000,000
	ODOT Short Range Costs -				$54,039,000

Source: Regional Transportation Plan, RVCOG, 2002 (updated to account for projects completed in 2002/2003).

Together the City of Medford and Jackson County have over $29 million in short-range roadway system improvements programmed for implementation within the City's UGB. The City's short-range improvements include capacity and operations projects, while Jackson County's short-range improvements are all capacity improvements. All City and County capacity improvements regardless of timeframe include sidewalks and bicycle lanes.

Table F-3 summarizes over $16 million in medium-range improvements slated for the 2006-2010 period. As with the short-range improvements, the City has identified both capacity and operational projects, with County projects focusing on capacity improvements.

Table F-3
Planned Medium-Range Roadway System Improvements
Medford UGB

Project Location	Project Description	Project Type	Funding Agency: Medford	Funding Agency: Other	Cost
Medford Tier 1 – Medium-Range (2006-2010)					
N. Front St., Jackson to Edwards	Construct new three lane road with bike lanes and sidewalks	Capacity	◆		$5,000,000
Cherry Ln, N. Phoenix Rd to Hillcrest Rd	Widen to three lanes with bike lanes and sidewalks	Capacity	◆		$4,000,000
Springbrook, Cedar Links Rd to Delta Waters Rd	Widen to three lanes with curb, gutter, bike lanes and sidewalks	Capacity	◆		$1,250,000

Table F-3 Continued
Planned Medium-Range Roadway System Improvements
Medford UGB

Project Location	Project Description	Project Type	Funding Agency: Medford	Funding Agency: Other	Cost
Medford Tier 1 – Medium-Range (2006-2010)					
Table Rock Rd, Merriman Rd to I-5	Widen to three lanes with curb, gutter, bike lanes and sidewalks	Capacity	◆		$1,000,000
Delta Waters Rd, Provincial to Foothill	Widen to three lanes with curb, gutter, bike lanes and sidewalks	Capacity	◆		$500,000
Black Oak and Barnett Road	Intersection Improvements	Operations	◆		$540,000
Valley View Dr / Main St. and Hillcrest Rd	Geometric Improvements	Operations	◆		$500,000
Sunrise/Barneburg	Geometric Improvements	Operations	◆		$300,000
Highland Ave and Main St	Install new traffic signal	Operations	◆		$225,000
Phoenix Rd and Cherry Ln	Install new traffic signal	Operations	◆		$225,000
Springbrook Rd and Delta Waters Rd	Install new traffic signal	Operations	◆		$225,000
		Medford Medium Range Costs -			**$13,765,000**
Jackson County Tier 1 – Medium-Range (2006-2010)					
Lozier Lane, Stewart to Hwy 238	Widen to three lanes with bike lanes and sidewalks	Capacity	◆	◆	$1,280,000
North Ross Lane, McAndrews Rd to Rossanley Rd	Widen to three lanes with bike lanes and sidewalks	Capacity	◆	◆	$1,170,000
		Jackson County Medium Range Costs -			**$2,450,000**
ODOT Tier 1 – Medium-Range (2006-2010)					
Hwy 238 Unit 2 – Hanley Road and Rossanley Drive	Widen to two lanes with bike lanes and sidewalks (on Rossanley)		Capacity	◆	$9,800,000
		ODOT Medium Range Costs -			**$9,800,000**

Source: Regional Transportation Plan, RVCOG, 2002 (updated to account for projects completed in 2002/2003).

Table F-4 summarizes nearly $24 million in long-range improvements slated for the 2011-2023 period. As with the other short- and medium range improvements identified in Tables F-2 and F-3, the City has identified both capacity and operational projects, while the County projects focus on capacity enhancements.

Table F-4
Planned Long-Range Roadway System Improvements
Medford UGB

Project Location	Project Description	Project Type	Funding Agency: Medford	Funding Agency: Other	Cost
Medford Tier 1 – Long-Range (2011-2023)					
Columbus Ave, South Stage Rd to Stewart Ave	Widen to three lanes with bike lanes and sidewalks	Capacity	◆		$2,080,000
Spring, Crater Lake Ave to Sunrise	Widen to five lanes with curb, gutter, bike lanes and sidewalks	Capacity	◆		$1,920,000

Table F-4 Continued
Planned Long-Range Roadway System Improvements
Medford UGB

Project Location	Project Description	Project Type	Funding Agency Medford	 Other	Cost
Medford Tier 1 – Long-Range (2011-2023)					
Lear Way, Coker Butte to Vilas	Construct new two lane road with bike lanes and sidewalks	Capacity	◆		$1,600,000
Spring, Sunrise to Pierce Rd	Widen to three lanes with curb, gutter, bike lanes and sidewalks	Capacity	◆		$1,280,000
Foothill Rd, Hillcrest Rd to McAndrews Rd	Widen to three lanes with bike lanes and sidewalks	Capacity	◆	⬩	$1,120,000
Hillcrest Rd, Highcrest to Cherry Ln	Widen to three lanes with bike lanes and sidewalks	Capacity	◆		$1,120,000
Spring, Pierce to Foothill	Construct new three lane road with bike lanes and sidewalks	Capacity	◆		$1,100,000
Cedar Links Rd, Foothill Rd to 1000' East of Wilkshire Rd	Widen to three lanes with bike lanes and sidewalks	Capacity	◆	⬩	$640,000
Crater Lake Ave, Delta Waters to Elliot Rd	Widen to three lanes with bike lanes and sidewalks	Capacity	◆	⬩	$640,000
Holmes, Oakdale to Kenyon	Widen to three lanes with bike lanes and sidewalks	Capacity	◆		$160,000
Coker Butte Rd, Crater Lake Hwy to east of Crater Lake Ave	Move Coker Butte Rd north and realign Crater Lake Ave	Operations	◆	⬩	$2,050,000
Elliot Rd, Hwy 62 to east of Crater Lake Ave	Realign Crater Lake Ave to provide separation from Crater Lake Hwy	Operations	◆	⬩	$2,050,000
Pierce Rd and Hillcrest Rd	Install new traffic signal	Operations	◆		$225,000
		Medford Long Range Costs -			**$15,985,000**
Jackson County Tier 1 – Long-Range (2011-2023)					
Foothill Rd, McAndrews to Delta Waters Rd	Widen to three lanes with bike lanes and sidewalks	Capacity	⬩	◆	$2,240,000
Kings Hwy, South Stage Rd to Stewart Ave	Widen to three lanes with bike lanes and sidewalks	Capacity	⬩	◆	$2,240,000
Vilas Rd, Haul Rd to Crater Lake Ave	Widen to five lanes with bike lanes and sidewalks	Capacity	⬩	◆	$1,600,000
Table Rock Rd, Bear Creek to Pine St / Biddle Rd	Widen to three lanes with bike lanes and sidewalks	Capacity	⬩	◆	$1,120,000
Beall Lane, Front St. (Hwy 99) to Merriman Rd	Widen to three lanes with bike lanes and sidewalks	Capacity	⬩	◆	$1,120,000
Stewart Ave, Hull Rd to Lozier Lane	Widen to three lanes with bike lanes and sidewalks	Capacity	⬩	◆	$960,000
		Jackson County Long Range Costs -			**$7,780,000**
ODOT Tier 1 – Long-Range (2011-2023)					
Coker Butte Road, Hwy 62 and Crater Lake Avenue	**Install new signals**	Operations		◆	$375,000
Elliot (Webfoot), Crater Lake Highway and Crater Lake Avenue	**Install new signals**	Operations		◆	$375,000
		ODOT Long Range Costs -			**$750,000**

Source: Regional Transportation Plan, RVCOG, 2002 (updated to account for projects completed in 2002/2003).

Planned Non-Vehicular Improvements

Planned bicycle and pedestrian improvements as shown in the RTP are listed in Table F-5. As with the planned roadway improvements, Table F-5 separates non-vehicular planned improvements into short-range, medium-range and long-range corresponding to the same timeframe as in Tables F-2, F-3 and F-4. Over $7 million in improvements are planned over the coming 20 years. Planned and programmed bicycle facility improvements are depicted in Figure F-1.

Table F-5
Planned Bicycle/Pedestrian Improvements
Medford UGB

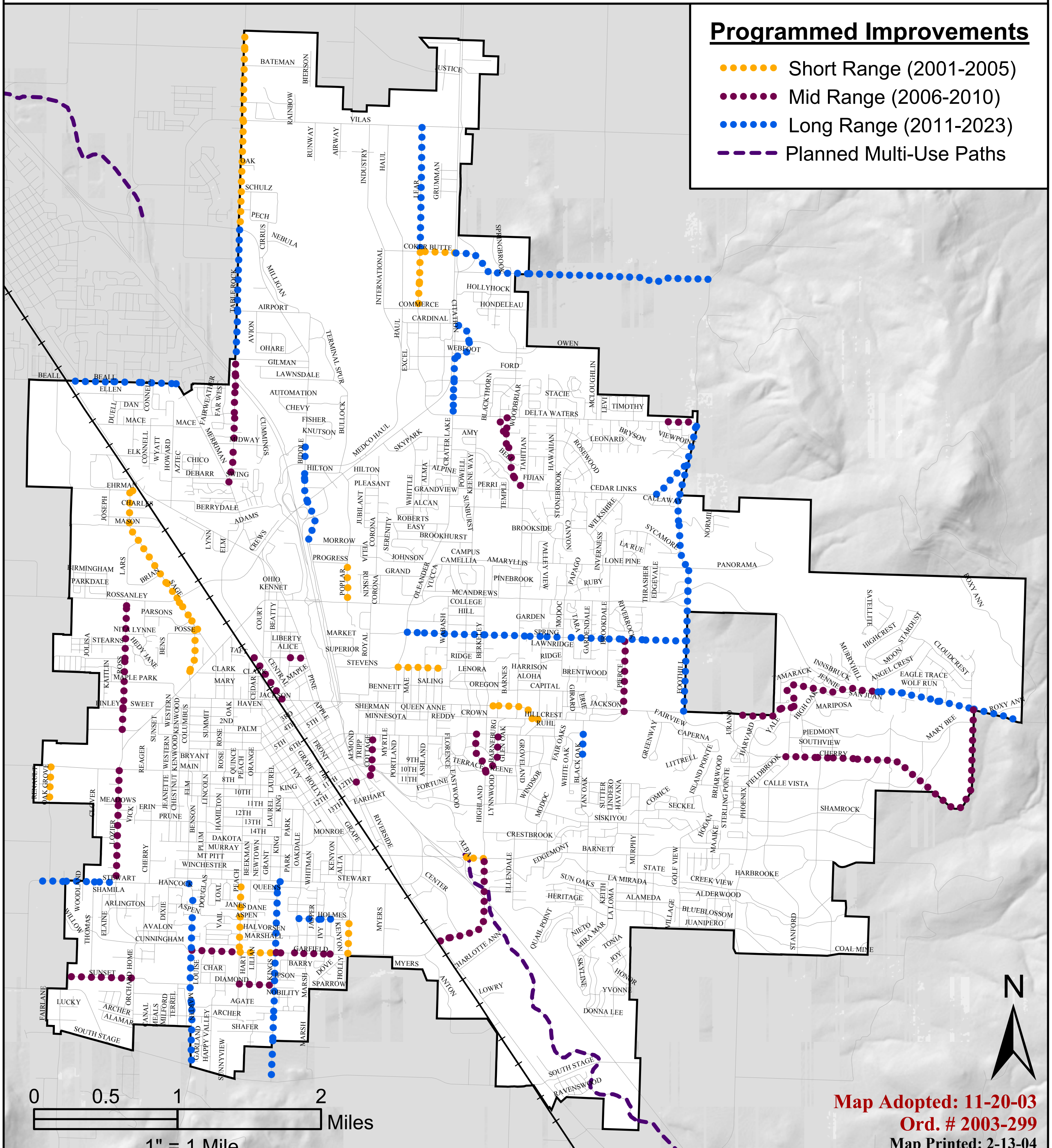
		Funding Agency		
Project Location	**Project Description**	**Medford**	**Other**	**Project Cost**
Medford Tier 1 – Short-Range (2001-2005)				
Miscellaneous locations	City-wide sidewalk improvements	◆		$1,000,000
Black Oak, Hillcrest to Acorn	Widen to two lanes with curb, gutter and sidewalks	◆		$325,000
Hillcrest Rd, Valley View Dr to Black Oak Rd	Add sidewalks and re-stripe with bike lanes	⬩	◆	$165,000
	Medford Short Range Costs -			**$1,490,000**
Jackson County Tier 1 – Short-Range (2001-2005)				
Oak Grove Rd, Stewart Ave to Medford UGB Limits	Widen to rural two-lane cross-section with shoulder bikeway	⬩	◆	$250,000
	Jackson County Short Range Costs -			**$250,000**
Medford Tier 1 – Medium-Range (2006-2010)				
Garfield, Columbus to Kenyon	Widen to provide curb, gutter, bike lanes and sidewalks	◆		$1,000,000
Sunset, South Stage Rd to Orchard Home Dr	Widen to provide curb, gutter, bike lanes and sidewalks	◆		$780,000
Pierce Rd, Hillcrest Rd to Spring	Widen to provide curb, gutter, bike lanes and sidewalks	◆		$650,000
Diamond, Peach to Kings Hwy	Widen to provide curb, gutter, bike lanes and sidewalks	◆		$520,000
Highland, Keene Way to Main St	Widen to provide curb, gutter, bike lanes and sidewalks	◆		$390,000
12th St, Central Ave (Hwy 99) to Cottage	Widen to provide curb, gutter, bike lanes and sidewalks	◆		$390,000
Barneburg Rd, Keene Drive to Main St	Widen to provide curb, gutter, bike lanes and sidewalks	◆		$390,000
Edwards, Niantic to Riverside	Widen to provide curb, gutter, bike lanes and sidewalks	◆		$130,000
Hillcrest Rd, Phoenix to Highcrest	Add sidewalks	◆		$120,000
Cottage, 12th St to Main	Remove parking, re-stripe with bike lanes	◆		$5,000
	Medford Medium Range Costs -			**$4,372,000**
Medford Tier 1 – Long-Range (2011-2023)				
Coker Butte Rd, Crater Lake Hwy to Foothill	Realign and widen to rural two-lane with shoulder bikeway	◆		$1,500,000
	Medford Long Range Costs -			**$1,500,000**

Table F-5 Continued
Planned Bicycle/Pedestrian Improvements
Medford UGB

Project Location	Project Description	Funding Agency Medford	Funding Agency Other	Project Cost
Jackson County Tier 1 – Long-Range (2011-2023)				
Hillcrest Rd, Cherry Lane to MPO Limits	Widen to rural two-lane with shoulder bikeway		◆	$150,000
	Jackson County Long Range Costs -			**$150,000**

Source: Regional Transportation Plan, RVCOG, 2002 (updated to account for projects completed in 2002/2003).

Figure F-1: Programmed Bicycle/ Pedestrian Improvements (From RTP)



Other Streets

Railroad

UGB

CITY OF MEDFORD OREGON

The Geographic Information Systems (GIS) data made available on this map are developed and maintained by the City of Medford and Jackson County. GIS data is not the official representation of any of the information included. The maps and data are made available to the public solely for informational purposes.

THERE MAY BE ERRORS IN THE MAPS OR DATA. THE MAPS OR DATA MAY BE OUTDATED, INACCURATE, AND MAY OMIT IMPORTANT INFORMATION. THE MAPS OR DATA MAY NOT BE SUITABLE FOR YOUR PARTICULAR USE. THIS INFORMATION IS BEING PROVIDED "AS IS" OR "WITH ALL FAULTS". THE ENTIRE RISK AS TO THE QUALITY OR PERFORMANCE IS WITH THE BUYER AND IF INFORMATION IS DEFECTIVE, THE BUYER ASSUMES THE ENTIRE COST OF ANY NECESSARY CORRECTIONS OR SERVICING.

APPENDIX G

Level of Service Study Methodology and Results

Appendix G
Level of Service Study Methodology and Results

Introduction

This Appendix documents the City of Medford's Level of Service Study that was conducted during 2002-2003 to study alternative level of service standards for the city. In addition, this study also provides significant input for the TSP in identifying existing and likely future (2023) street capacity problems and potential mitigation strategies. Included in this appendix is a discussion of the analysis methodology, the level of service results for signalized intersections, an evaluation of three level of service alternatives including mitigation requirements, and a level of service results for unsignalized intersections that also included identification of potential mitigation.

Overview of Level of Service Study

Principal elements of the Level of Service Study included:

- Assessment of the operation of all major intersections in the City of Medford given existing (2002) and projected (2023) traffic volumes (existing LOS results are presented in Chapter 3 of the TSP while 2023 analysis results are presented in detail in this appendix and summarized in Chapter 5).

- A list of projects required to meet various potential auto traffic mobility standards for the City of Medford.

- Cost estimates for the projects identified for each mobility standard.

- A written summary of the "Level of Service Study" results for use by the Medford City Council to aid in making policy decisions regarding tolerable levels of auto traffic congestion on City of Medford transportation facilities throughout the planning horizon.

- Instructions for maintaining the "existing conditions" traffic analysis model.

For purposes of this analysis, "major intersections" were defined as roadway intersections in which both intersecting streets are classified as either "Arterial" roadways or "Collector" roadway (based on the street classification system that existed prior to adoption of the Medford *Transportation System Plan*). These two roadway classifications represented the highest classifications in the City of Medford. In addition, all signalized intersections were analyzed regardless of the classification of the intersecting roadways.

The future-year analysis was based on the horizon year for the *Transportation System Plan*, 2023. Future-year traffic projections were determined by applying growth rates to present-day traffic volumes. The growth rates used in the prediction were determined from the Regional Transportation Model, a traffic forecasting tool developed jointly by the Rogue Valley Council of Governments (RVCOG) and the Oregon Department of Transportation's (ODOT's) Transportation Planning and Analysis Unit (TPAU).

Two principal measures of effectiveness were used to assess the operation of at-grade intersections: delay and volume-to-capacity (v/c) ratio. The "delay" is simply the average amount of time a vehicle must wait at an intersection because of the intersection control (either a signal or a stop sign in most cases). "Level of Service" ("LOS") is a grade given to various ranges of delay, with a grade of 'A' representing ideal operation with minimal auto delay and 'F' representing unacceptable operation with high auto delay. The secondary measure (v/c ratio) provides an indication of capacity sufficiency at an intersection. When the v/c ratio exceeds 1.0, the amount of auto demand at the facility exceeds the capacity of the facility to serve that demand. Poor levels of service are often experienced when the v/c ratio exceeds 1.0.

The City Council established a LOS policy for the City of Medford as part of the *Transportation System Plan* based partly on the results of this study, but also on other factors such as street connectivity, economic development impacts, neighborhood livability, potential air quality impacts, etc. The analysis in this Appendix focuses on three potential LOS standards: Peak Hour LOS D, Peak Hour LOS E, and Multi-hour LOS D. The first two standards require that a LOS D or E, respectively, be met during the hour of maximum traffic volume during a typical weekday (generally during the PM peak hour, which generally occurs between 4:00 and 6:00 PM). The second standard would allow intersections to operate at LOS E or LOS F during the peak hour, as long as the LOS does not exceed D during the second-highest volume hour.

The following sections include an assessment of each potential LOS standard as described above, as well as a secondary standard of v/c ratio less than 1.0. Projects required to meet each of the standards were provided based on 2023 forecast traffic volumes. Cost estimates were also prepared as part of the LOS Study for the identified projects under each LOS standard. These cost estimates are reflected in the recommended street improvement project lists described in Chapter 13.

Analysis Methodology

Traffic Operations Analysis Methodology

<u>Development of Traffic Operations Model</u>

Traffic operations at intersections throughout the City of Medford were analyzed using SYNCHRO, a traffic analysis software tool. SYNCHRO automates the analysis procedures outlined in the *Highway Capacity Manual* (HCM) for signalized and stop-controlled intersections. The HCM provides a nationally accepted, standardized analysis procedure the determining average vehicle delay, level of service (LOS), and volume-to-capacity (v/c) ratios at signalized and stop-c0ntrolled intersections. SYNCHRO explicitly calculates the platoon factor used in the HCM method to account for the effect of signal progression. The program provides output data in the form of average intersection delay (in seconds per vehicle) and corresponding LOS, intersection v/c ratios, 95th-percentile queue lengths and signal phase lengths (for signalized intersections). SYNCHRO also optimizes phase splits, cycle lengths, and intersection offsets to minimize intersection and network delay.

Version 5.0 of SYNCHRO was used to evaluate signalized and unsignalized intersection performance. In order to obtain intersection v/c ratios, an “HCM Signalized” report was obtained from SYNCHRO. The “HCM Signalized” report provides slightly different average vehicle delay values than the standard SYNCHRO output. The main differences result from the fact that SYNCHRO uses a percentile delay method, which assumes that the traffic demand will fluctuate over the course of the analysis period. The HCM method assumes that the demand will be constant over the analysis period. SYNCHRO will often assign a very low amount of signal time to low volume movements based on the premise that the particular signal phase servicing that movement would not be “called up” during every phase. Using these calculated phase lengths in the HCM analysis often results in long average delays because the SYNCHRO determined signal phase length is not sufficient for servicing vehicles during every signal cycle. As described later in this report, this problem was rectified by setting low-volume movements with “minimum recall” which ensures that the minimum signal phase time is provided for the given movement during every signal cycle.

The program SIMTRAFFIC was also used to analyze traffic operations throughout the City of Medford. SIMTRAFFIC uses the SYNCHRO model as input and provides a graphical representation of the traffic system operation. The graphical display shows all roadways contained in the SYNCHRO model (including the roadway geometric features) and individual vehicles traveling through the network. The SIMTRAFFIC simulation was used to determine locations where the HCM report might indicate an acceptable level of service for an intersection as a whole but some particular movements might not be serviced adequately thus causing queues to spill back from the intersection, effecting the operation at adjacent intersections.

The City of Medford provided a base-year SYNCHRO model and 2002 traffic counts for all signalized intersections throughout the City. The base-year SYNCHRO model was reviewed for consistency with existing signal timing, roadway geometry and other input factors. The SYNCHRO model contains a series of nodes and links that represent intersections and roadways throughout the City of Medford. The base model received from the city was revised to more closely represent actual roadway alignments and intersection geometric features. In addition, arterial/arterial, collector/collector, and arterial/collector intersections that were not included in the base model were added. The review was based on information contained in an AutoCAD file provided by the City showing roadway striping, on aerial photographs provided by the City, traffic studies performed in the areas, and through field visits. The City of Medford also provided existing signal timing data sheets for all signalized intersections within the City. The signal timing data contained in the base SYNCHRO model were reviewed and modified as needed to remain consistent with actual timing in the field.

While reviewing the base model from the city, it was learned that more recent traffic counts were available (from 2002). The 2000 counts contained in the base model from the City were replaced with the more current 2002 counts. The traffic counts at each intersection were reviewed and modified as needed to maintain a reasonable balance between inflow and outflow volumes on each roadway segment throughout the network. Traffic count data was available for all signalized intersections analyzed; however, count data was not available for all unsignalized intersections included in the analysis. A listing of intersections with missing count data is provided in Appendix A of the LOS Study Final Report.

Traffic volumes within the vicinity of the Highway 238 Project area should be recounted and re-evaluated since the 2002 counts were taken shortly after opening of the new Highway 238 bypass and may have been influenced by traffic volume shifts associated with the Medford Viaduct Project. In some cases the counted volumes were significantly different than the predicted volumes contained in the Environmental Assessment for the Highway 238 Project. It is anticipated that many motorists may not have become completely familiarized with the new roadway connections by the time the traffic counts were taken.

The base-year model includes all signalized intersections as well as all arterial/ arterial, arterial/ collector, and collector/ collector intersections regardless of the type of intersection control provided (i.e., unsignalized intersections meeting these criteria were also included in the model). The base-year model was then used to predict the level of operation of each intersection throughout the city given 2023 traffic volumes. The base-year model was revised to include committed roadway projects and to reflect 2023 traffic volumes, as described later in this section.

Level of Service (LOS) and Volume-to-Capacity (V/C) Ratio Mobility Measures

LOS quantifies the degree of comfort (including such elements as travel time, number of stops, total amount of stopped delay and impediments caused by other vehicles) afforded to drivers as they travel through an intersection or along a roadway section. It was developed to quantify the quality of service of transportation facilities. In general, level of service is based on total delay. This parameter is defined as the total elapsed time from when a vehicle stops at the end of a queue until the vehicle departs from the stop line. LOS ranges from A to F, with A indicating the most desirable condition and F indicating an unsatisfactory condition. The HCM LOS designations for signalized and stop-controlled intersections are provided in Tables G-1 and G-2 respectively.

Table G-1
HCM Level of Service Designations for Signalized Intersections

Level of Service	Traffic Flow	Comments	Delay Range
A (Desirable)	Free	Traffic flows freely with minimal or no delay. Drivers can maneuver easily and find freedom in operation.	≤ 10
B (Desirable)	Stable	Traffic still flows smoothly with few delays. Some drivers feel somewhat restricted within groups of vehicles.	> 10 and ≤ 20
C (Desirable)	Stable	Traffic generally flows smoothly but occasionally vehicles may be delayed through one signal cycle. Desired urban area design level. Backups may develop behind turning vehicles. Most drivers feel somewhat restricted.	> 20 and ≤ 35
D (Acceptable)	Approaching Unstable	Traffic delays may be more than one signal cycle during peak hours but excessive back-ups do not occur. Considered acceptable urban area design level.	> 35 and ≤ 55
E (Unsatisfactory)	Unstable	Delay may be great and up to several signal cycles. Short periods of this level may be tolerated during peak hours if improvement is costly and disruptive. There are typically long queues of vehicles waiting upstream of the intersections.	> 55 and ≤ 80
F (Unsatisfactory)	Forced	Excessive delay causes reduced capacity. Always considered unsatisfactory. May be tolerated in recreational areas where occurrence is rare. Traffic is backed up from other locations and may restrict or prevent movement of vehicles at the intersection.	≥ 80

Delay Range relates to the range of average vehicle delay (in seconds per vehicle) that falls within the associated level of service.

Table G-2
HCM Level of Service Designations for Unsignalized Intersections

Level of Service	Delay Range
A (Desirable)	≤ 10
B (Desirable)	> 10 and ≤ 15
C (Desirable)	> 15 and ≤ 25
D (Acceptable)	> 25 and ≤ 35
E (Undesirable)	> 35 and ≤ 50
F (Unsatisfactory)	≥ 50

Delay Range relates to the range of average vehicle delay (in seconds per vehicle) that falls within the associated level of service.

Intersection v/c ratio provides an indication of capacity sufficiency at an intersection. When the v/c ratio exceeds 1.0, the amount of auto demand at the facility exceeds the capacity of the facility to serve that demand. Poor levels of service are often experienced when the v/c ratio exceeds 1.0.

An intersection's v/c ratio and LOS are not directly proportional. A reasonably good LOS can accompany a high v/c ratio provided that there is optimal signal progression for the higher-volume movements at the intersection and relatively low minor-street volume. In this situation the major-street traffic would experience minimal delay at the expense of the delay for the minor-street traffic. The average delay for all motorists would be relatively low because of the low delay for the major-street traffic. Conversely, a poor LOS may be experienced at an intersection with a v/c ratio less than 1.0 if the signal timing is not optimal. In these cases, some of the intersection capacity is not used effectively or at all. Intersection v/c ratio does serve as a valuable indicator of potential problems at intersections. Once the v/c ratio extends slightly beyond 1.0, LOS generally approaches F because vehicles must wait through multiple signal cycles in order to pass through the intersection.

In general, traffic facilities are analyzed for the worst fifteen-minute period of the annual 30th-highest hour intersection volume. The peak fifteen-minute volume is determined by dividing the 30th-highest hour traffic volumes by an applicable peak-hour factor. The peak-hour factor is defined as the 30th-highest hour volume divided by four times the maximum 15-minute volume during that hour. The peak-hour factor is always less than or equal to 1.00. Therefore, dividing the peak-hour volume by the peak-hour factor results in an increase in design volume. For future year analyses, a peak hour factor of 0.90 was assumed for all movements, which is consistent with the City of Medford's current requirement for traffic impact analyses.

Heavy vehicle percentages have a slight effect on intersection level of service and volume-to-capacity ratios. For purposes of this analysis, the PM Peak Hour heavy vehicle percentages were set at the SYNCHRO default value of 2 percent.

Multi-hour LOS Assessment Methodology

The principal purpose of the LOS study is to determine the list of projects that would be required over the planning horizon to meet various LOS thresholds. For purposes of this analysis, three thresholds were considered – PM Peak Hour LOS D, PM Peak Hour LOS E, and two-hour PM Peak Hour LOS D. The first two thresholds were analyzed using direct level of service output from the 2023 PM Peak Hour SYNCHRO model that was developed for the project. The two-hour PM Peak Hour LOS D standard required some further modification to the 2023 SYNCHRO model in order to assess the projects that would be necessary to accommodate such a standard over the planning horizon.

The two-hour PM Peak Hour LOS D standard basically allows intersections to operate at unacceptable levels during one hour of the day provided that a LOS D target is achieved during the second highest hour of the day. For purposes of this analysis, the two-hour window of peak traffic was assumed to occur from 4:00 to 6:00 PM. The peak one-hour period could occur during any part of this two-hour window. The second highest hour volume was assumed to be the total two-hour volume between 4:00 and 6:00 PM, less the volume during the peak one-hour period. Therefore, the second-highest hour volume does not always represent a consecutive one-hour period, but is rather the "shoulders" of the two-hour volume not encompassed by the true peak-hour volume.

In order to evaluate the operation during the second-highest hour, the 2002 counts were used to develop a volume reduction factor that could be applied to the 2023 PM Peak Hour SYNCHRO model versus developing a new set of traffic volumes for the entire city. 2002 counts were provided from the City for the period from 4:00 to 6:00 PM. The counts were copied to a spreadsheet and the peak-hour volumes were subtracted from the two-hour volume for each movement at each intersection. The total intersection volume for the second-highest hour at the intersection was then divided by the peak-hour volume at the intersection to obtain the volume reduction factor. This factor was then applied to each movement at the intersection in the 2023 PM Peak Hour SYNCHRO model. The factor serves to reduce the PM peak hour traffic volumes thus providing an estimate of the level of operation during the second-highest hour. Spreadsheet tables showing the volume reduction factors for each intersection are included in Appendix C of the LOS Study report.

Future-year Volume Prediction Methods

The Metropolitan Planning Organization (MPO) Transportation Model (EMME/2) provided by the Rogue Valley Council of Governments (RVCOG) and the Oregon Department of Transportation's Transportation Planning and Analysis Unit was used to determine traffic growth rates on roadways throughout the City of Medford. The EMME/2 model estimates traffic volumes on major roadways based on estimated population and employment figures, among other factors. In the EMME/2 model, the boundary of the MPO is split into large transportation analysis zones (TAZs). All regionally significant roadways within the MPO are included in the EMME/2 model. The EMME/2 traffic assignment links trips between TAZs via the modeled roadway network.

For purposes of this analysis, 2000 and 2023 EMME/2 traffic assignments were obtained. It should be noted that the 2000 model is not based on actual land-use in the 2000. Rather, the land-use intensities contained in the 1995 EMME/2 model were increased across the board by five percent. In addition, the 2020 land-use data was increased by five percent to estimate 2023 land-use data. Applicable traffic growth rates throughout the analysis area were determined by comparing 2000 and 2023 EMME/2 model forecasts. The resulting growth rates were applied to the balanced 2002 approach inflow and outflow volumes to arrive at future year volumes. In some cases the actual difference in model volumes between 2000 and 2023 were used instead of applying growth rates. This method is generally used when the existing traffic volumes are low or the base-year EMME/2 assigned volumes are significantly different than the base-year counted traffic volumes. In some situations the assigned EMME/2 volumes were reallocated from one roadway to another when actual or planned street connectivity would warrant such a reallocation.

Future-year turning-movement volumes were derived from approach inflow and outflow volumes. An iterative process is used to obtain a set of intersection turning movement volumes that match the post-processed approach inflow and outflow volumes. The method used to predict turning movement volumes from approach inflow and outflow volumes is described in National Cooperative Research Project Report 255.

In order to predict turning movement, the program first starts with a "seed" – basically an estimate of what the resulting turning movement split for each approach should be. The turning movement seed is generally the same as the existing turning movement volumes at a particular intersection. The program starts with the seed and adjusts individual turning movement volumes up or down until the post-processed approach inflow and outflow volumes are satisfied.

For facilities contained in the South Medford Interchange Project area, data from the traffic study produced for the Environmental Impact Statement (EIS) was used. The EIS traffic study analyzed traffic operations for a "No-Build" scenario and three build scenarios for 2010, 2020 and 2030. For purposes of this analysis, the "Highland Alternative" was assumed to be the preferred alternative. This alternative eliminates the existing interchange at Barnett Road and replaces it with a new interchange at a new roadway connecting Highland Drive (to the east of I-5) to Garfield Street (to the west of I-5). 2023 volumes were developed by interpolating between the 2020 and 2030 volumes contained in the EIS.

All EMME/2 data, hand adjustments and future-year volume forecasts are provided in Appendix D of the LOS Study report.

Roadway Projects Assumed in 2023 LOS Analysis

There are a number of planned roadway projects that were assumed in the 2023 SYNCHRO model. These projects either already have identified funding sources, are currently under construction, or are planned for construction in the near future (most of the projects are from the "17-project List", a list of high-priority projects that the City will be undertaking the coming years or has already constructed). The assumed projects are listed below:

- *Ehrman Way at Highway 99* - Although not included in the LOS assessment, this intersection was included in the SYNCHRO model for purposes of testing the effects of this signalized intersection on downstream intersection operations. The Highway 238 Environmental, Assessment included a discussion of a planned ODOT improvement at this location. The assumed improvement relocates the intersection to improve the alignment of the east and west approaches, and adds additional intersection capacity.

- *Highway 62 Unit 1 Project* - The approved Unit 1 design for the Highway 62 Project was assumed in the 2023 SYNCHRO model. The project adds capacity on Highway 62 and relocates the northbound I-5 on- and off-ramps to connect directly to Highway 62.

- *South Medford Interchange Highland Alternative* - This project will relocate the existing I-5 interchange at Barnett Road to a new roadway spanning I-5 and connecting from Garfield Street at Highway 99 to Highland Drive at Barnett Road.

- *B*arnett Road at Riverside Avenue – The city of Medford is finalizing plans for capacity improvements at this intersection. The project will add an additional lane on the southbound approach to this intersection to allow for two exclusive left turn lanes. The widening will allow the elimination of the inefficient split phasing for the northbound and southbound approaches.

- *North Phoenix Road Realignment* – This project includes realignment of North Phoenix Road to connect to Hillcrest Road across from Foothill Road. Access restrictions and a signal at the realigned Cherry Lane/North Phoenix Road intersection are also planned.

- *Extend Columbus Avenue to Sage Road* – A traffic signal is assumed at the Columbus Avenue/Sage Road intersection.

- *Crater Lake Avenue at McAndrews Road* - This project will add a right-turn lane eastbound on McAndrews Road and a second left turn lane northbound on Crater Lake Avenue.

- *Siskiyou Boulevard at Highland Drive* - Install a traffic signal or roundabout (the 2023 SYNCHRO model includes a signal at this location and the existing intersection geometry).

- *Poplar Drive at McAndrews Road* - Install a right-turn lane on westbound McAndrews Road.

- *South Peach Street from Stewart Avenue to Garfield Street* - Install left-turn lanes along Peach Street.

- *Jackson Street from Berkeley to Valley View Drive* – Realign Jackson Street to improve operating speed and upgrade to a three-lane section.
- *Holly Street from Holmes Avenue to Garfield Street* – Extend Holly Street south as a three-lane section (this project is contained in Medford's 17-project list but was not considered in the 2023 analysis).

- *Lozier Lane from Cunningham Lane to Stewart Avenue* – Extend Lozier Lane from Cunningham Lane to Stewart Avenue and signalize the Lozier Lane/Stewart Avenue intersection. This improvement was also included in the existing conditions SYNCHRO model.

- *Table Rock Road at Merriman Road* – Install traffic signal or roundabout.

- *Garfield Street from Peach Street to King's Highway* - Widen the existing dirt road to a five-lane paved section.

- *Delta Waters Road from Crater Lake Avenue to Foothill Road* - Widen existing two-lane sections to three lanes.

- *Juanipero Way from Golf View to Olympic* - Extend Juanipero Way through as a three-lane section.

- *Front Street from Jackson Street to Court/Central/Edwards* – Front Street through as a 3-lane collector section (this project is contained in Medford's 17-project list but was not considered in the 2023 analysis).

Regional Transportation Plan Projects Versus Transportation System Plan Projects

The Regional Transportation Plan (RTP) contains lists of projects for all communities within the planning boundaries of the RVCOG. The RTP "identifies improvements needed on the arterial and collector street system to serve long-range needs for mobility and accessibility based upon anticipated development through 2023". As such, the projects listed in the RTP focus on regional traffic needs versus local traffic needs. Projects of local importance are included in each community's Transportation System Plan (TSP). All RTP projects are included in the applicable local jurisdiction's TSP, however not all TSP projects are included in the RTP.

The projects included in the RTP were determined largely based on direct output from the regional EMME/2 model and/or perceived problems with the existing transportation system. Some projects in the RTP serve to improve connectivity, reduce vehicle miles of travel, or address other policies contained in the RTP and State Planning Rules. The projects in the RTP are separated into Tier 1 and Tier 2 lists. All projects expected to be funded through the planning horizon are included in the Tier 1 list. All other projects are listed as Tier 2 projects. The Tier 2 list represents projects that are likely needed through the planning horizon but are not as high-priority as the financially-constrained Tier 1 projects.

The LOS analysis for the TSP provides a higher level of detail than the analysis performed to determine candidate RTP projects. While the RTP looks at more general capacity issues along major traffic facilities, the TSP analysis looks at potential operational issues at each intersection throughout the collector and arterial roadway network. In this way, an actual improvement project can be identified for each location, with each project bringing the LOS up to acceptable levels.

The determination of candidate projects under both the RTP and TSP relies on estimates of future-year traffic volumes using the regional EMME/2 model, as described previously. It is impossible to know for certain how development will proceed in the future in terms of location of development, intensity of development, etc. The need for particular projects identified in the RTP and TSP may be accelerated or put off based on actual development trends.

This analysis offers a “best guess” of potential improvement needs through the planning horizon. Through the years, the RTP and TSP will be revised to remove projects that have already been constructed, reassess planned improvements, and determine other candidate projects that were not included in the previously adopted RTP or TSP. Prior to inclusion in the Capital Improvement Program, additional study will be performed to determine the specific requirements and need for the project. Further study is performed during the engineering stage when final plans are developed for the actual improvement project.

2023 Level of Service Analysis Results for Signalized Intersections

This section includes a more detailed discussion of the level of service analysis results than is presented in the body of the TSP, including:

- Results of the analysis on the one-hour level of service strategies including a summary of the levels of PM peak hour delay expected at each study area intersection by 2023; and

- Results of the analysis of the multi-hour level of service strategy.

Single Hour Level of Service Strategy Analysis

In order to assess candidate projects for each level of service standard (or v/c ratio) scenario, the level of operation of each intersection in the 2023 PM peak hour SYNCHRO model was determined. Tables G-3 through G-6 summarize the results of the 2023 SYNCHRO analysis and include data that is organized by geographic area within the City. State highway intersections are listed in a separate table. Values provided in **bold** type in Tables G-3 through G-6 represent facilities that either exceed LOS D or are predicted to have volumes that approach or exceed the capacity of the facility. As shown in the Existing Conditions chapter of the TSP, ODOT applies a separate threshold for determining congested traffic conditions to State highway intersections that is based on intersection volume-to-capacity (v/c) ratios. The following mobility standards apply to the three ODOT facilities within the City of Medford (other than Interstate 5, which was not analyzed as part of this study). The City’s LOS threshold would not apply to these intersections.

- Highway 62 - volume-to-capacity ratio less than or equal to 0.80 (0.85 for non-Expressway sections)

- Highway 99 - volume-to-capacity ratio less than or equal to 0.90

- Highway 238 - volume-to-capacity ratio less than or equal to 0.90

2023 PM peak hour SYNCHRO output is provided in Appendix E of the LOS Study report. Existing and 2023 future year street system deficiencies (including intersections operating or expected to operate at LOS E or LOS F and those that exceed the state’s v/c standards) are depicted in Figure 5-1.

In some cases the delay and v/c ratio for 2023 conditions is shown as better than under existing conditions (see Chapter 3). In the Existing Conditions SYNCHRO run signal phase lengths were set such that signal “force-off” times were not exceeded, unless the pedestrian signal timing for that phase exceeded the force-off point. In the 2023 model, minimum green times were set such that pedestrian signal timing was accommodated, however the existing force-offs were not retained. Rather, optimized signal timing plans were developed irrespective of existing force-off times.

2023 PM Peak Hour Results – Downtown Medford

As shown in Table G-3 below, all downtown intersections are projected to operate at LOS D or better with 2023 PM peak hour traffic volumes and existing geometrics, with the exception of the intersection of 4th Street at Riverside Avenue which is expected to operate at LOS F. Currently a very short right-turn lane exists on the Riverside Avenue approach to 4th Street because of the way the right-turn movement is channelized (a free right-turn lane onto 4th Street). Because the right-turn "lane" is so short, for purposes of this analysis the outside lane was assumed to be a shared through and right-turn lane. Although the right-turn from Riverside Avenue onto 4th Street is a free movement (there is a dedicated receiving lane on 4th Street to the east of the intersection), right-turn vehicles cannot progress onto 4th Street if more than two or three through vehicles are queued in the outside lane.

Table G-3
2023 PM Peak Hour Levels of Service: Downtown Medford

Intersection	2023 PM Peak Hour		
	LOS	Avg. Delay (seconds)	Volume/ Capacity
10th Street & Oakdale Avenue	A	8.1	0.51
10th Street & Holly Street	B	10.3	0.36
10th Street & Front Street	A	4.9	0.33
10th Street & Central Avenue	C	24.9	0.99
10th Street & Riverside Avenue	B	16.2	0.84
9th Street & Central Avenue	A	6.9	0.78
8th Street & Oakdale Avenue	A	9.7	0.33
8th Street & Ivy Street	B	11.1	0.37
8th Street & Holly Street	A	9.5	0.40
8th Street & Grape Street	A	9.9	0.38
8th Street & Front Street	B	13.4	0.44
8th Street & Central Avenue	B	14.6	0.89
8th Street & Riverside Avenue	A	6.3	0.66
Main Street & Oakdale Avenue	A	9.1	0.43
Main Street & Holly Street	A	5.4	0.32
Main Street & Grape Street	A	4.2	0.30
Main Street & Fir Street	A	9.5	0.30
Main Street & Front Street	A	9.4	0.35
Main Street & Central Avenue	B	10.4	0.67
Main Street & Bartlett Avenue	B	13.9	0.25
Main Street & Riverside Avenue	B	10.2	0.72
6th Street & Front Street	A	7.5	0.24
6th Street & Central Avenue	A	9.3	0.50
6th Street & Riverside Avenue	A	5.7	0.66
4th Street & Front Street	C	25.6	0.42
4th Street & Central Avenue	A	8.4	0.82
4th Street & Bartlett Street	A	3.5	0.40
4th Street & Riverside Avenue	**F**	**114.6**	**1.22**
Jackson Street & Central Avenue	B	13.8	0.68
Jackson Street & Riverside Avenue	B	12.6	0.89
Jackson Street & 4th Avenue/Biddle Road	D	40.1	0.93

Note: LOS means level of service and average delay is expressed as seconds per vehicle.
Source: LOS Study, JRH Transportation Engineering, 2003

The intersection of 10th Street at Central Avenue is projected to operate at a v/c ratio of almost 1.00 given Year 2023 traffic volumes. Improvements may be needed at this location in the future to ensure that vehicle queues on the side street (i.e. 10th Street) do not extend into adjacent intersections.

Although the intersection of 4th Street at Central Avenue shows excellent operation given 2023 traffic volumes, the SIMTRAFFIC simulation showed that the left-turn movement from the westbound approach will be problematic. Currently the left-turn movement from this approach is "permitted", that is the movement must yield to oncoming traffic. The simulation indicated problems with this movement due to inefficient gaps in the opposing traffic stream. This situation resulted in vehicle queues extending clear back to the intersection of Jackson Street at 4th Avenue/Biddle Road. As a result, an exclusive left-turn lane should be considered on the westbound approach at this intersection

2023 PM Peak Hour Results – State Highways

The levels of operation of intersections under the jurisdiction of the Oregon Department of Transportation are provided in Table G-4. As shown in the table, a number of locations are expected to operate worse than LOS D or have v/c ratios that exceed adopted standards for each facility.

Table G-4
2023 PM Peak Hour Levels of Service: State Highway Intersections

Intersection	2023 PM Peak Hour LOS	Avg. Delay (seconds)	Volume/ Capacity
Highway 99 & South Stage Road	**E**	**63.7**	**1.11 (1)**
Highway 99 & Garfield Road	C	33.8	**0.92 (1)**
Highway 99/Riverside Avenue & Stewart Avenue	D	46.3	**1.00 (1)**
Highway 99 & West Table Rock Road	D	37.7	0.89
Highway 62/Highway 99/Highway 238	**E**	**55.9**	**0.98 (1)**
Highway 62 & Rogue Valley Mall Access	B	14.7	0.60
Highway 62 & Poplar Drive/Bullock Road	**E**	**63.3**	**1.02 (1)**
Highway 62 & Delta Waters Road	**F**	**138.1**	**1.37 (1)**
Highway 62 & Cardinal Avenue	C	29.4	**0.95 (1)**
Highway 62 & East Vilas Road	**E**	**63.9**	**1.04 (1)**
Highway 62 Ramp Terminal & North Biddle	C	26.2	0.71
Highway 62 Ramp Terminal & South Biddle	B	12.0	0.79
Hwy 238/Rossanley Drive & Central Avenue	C	23.6	0.73
Hwy 238/Rossanley Drive & Sage Road	**F**	**116.8**	**1.09 (1)**
I-5 & Garfield/Highland Extension	B	17.5	0.63
I-5 NB Off/On-Ramp & Highway 62	B	10.0	0.69
I-5 SB Off/On-Ramp & Highway 62	B	11.7	0.72

Note: LOS means level of service and average delay is expressed as seconds per vehicle.
Source: LOS Study, JRH Transportation Engineering, 2003.
(1) Exceeds ODOT volume-capacity ratio standard.

The intersections of Highway 62 at Poplar Drive and Highway 62 at Delta Waters Road are both predicted to operate with v/c ratios in excess of 1.00. Such conditions lead to long vehicle queues on the intersection approaches since the capacity is not sufficient for serving the demand on each approach. The level of operation at the intersection of Poplar Drive at Highway 62 takes into consideration capacity improvements included as part of the Highway 62 Unit 1 Project. In the future, either additional capacity will have to be added to the highway at this location or grade separation will have to be provided. If grade separation were to be provided, a full or even partial interchange would probably not be reasonable given the built-up nature of the adjacent land and the proximity to the Interstate 5 at Highway 62 interchange.

The intersection of Delta Waters Road and Highway 62 operates poorly due to the heavy level of through traffic on the highway coupled with the high level of traffic accessing the commercial development along Lear Way (the northern leg of the intersection is Lear Way and the eastern leg of the intersection is Delta Waters Road). Some capacity enhancements could be provided to improve the operation of this intersection in the near term, however ultimately another solution will have to be provided to reduce traffic demand at this location. The Highway 62 Unit 2 Project aims to provide a new highway alignment to the west of the existing alignment to serve regional traffic. When the new alignment is developed, the existing section of Highway 62 would be converted to a boulevard. The intersections of Highway 62 at Cardinal Avenue and Highway 62 at Vilas Road would also operate much more efficiently with the proposed bypass due to the reduced throughput on the existing highway section.

Additional capacity will likely need to be provided on the South Stage Road approaches to Highway 99 to improve the operation of this intersection. A southbound right-turn lane and/or dual northbound left-turn lanes would also improve the efficiency of this intersection.

The intersection of Highway 99, Highway 62 and Highway 238 (known as the “Big X”) operates at a v/c ratio approaching 1.00 given 2023 traffic volumes. The Environmental Assessment for the Highway 238 Project identified the probable need for additional capacity improvements at this intersection in the future. The EA suggested the possible need for a flyover from Highway 62 to Court Street. The EA considered a rather high level of traffic making this movement in the Year 2000. The Year 2002 counts obtained from the City of Medford indicate that the use of this movement by motorists is considerably lower than was predicted in the EA. Instead, many motorists appear to rely more on the new Highway 238 alignment than Court Street. The poor level of service and v/c ratio for the intersection of Highway 238 (Rossanley Drive) and Sage Road can also be attributed to travel patterns being different than what was predicted in the Highway 238 EA.

The intersection of Highway 99 and Stewart Avenue will be improved as part of the South Medford Interchange Project to include dual northbound left-turn lanes. The proposed improvement is not intended to bring the intersection into compliance with the ODOT mobility standard for the facility, but rather will improve the level of operation over what would be achieved under a “No-Build” scenario.

2023 PM Peak Hour Results – South of Jackson Street

Table G-5 provides analysis results for all city intersections to the south of Jackson Street. Of the 35 intersections listed in Table G-5, seven are expected to operate at LOS E or worse given 2023 PM peak hour traffic volumes. Of these seven intersections, five are expected to operate at LOS F.

The intersection of Main Street and Ross Lane is expected to operate at a very high v/c ratio given 2023 PM peak hour traffic volumes. Main Street only has one through lane in each direction at this intersection. Additional capacity (either for turning traffic or through traffic on Main Street) will be needed in the future to improve the operation of this facility.

Table G-5
2023 PM Peak Hour Levels of Service: South of Jackson Street

Intersection	2023 PM Peak Hour LOS	Avg. Delay (seconds)	Volume/ Capacity
8th Street & Hamilton Street	A	8.2	0.28
8th Street & Orange Street	A	5.1	0.23
12th Street & Riverside Avenue	B	12.2	0.60
Barnett Road & Winco Access	B	14.6	0.64
Barnett Road & Riverside Avenue	D	44.8	0.99
Barnett Road & Highland Drive	D	48.0	0.96
Barnett Road & Ellendale Drive	C	23.4	0.76
Barnett Road & Black Oak Drive	**E**	**66.2**	**1.03**
Barnett Road & Murphy Road	C	23.5	0.71
Barnett Road & North Phoenix Road	**E**	**66.5**	**1.05**
Center Drive & Garfield/Highland Extension	C	20.2	0.63
Highland Drive & Siskiyou Boulevard	**F**	**82.6**	**1.16**
Hillcrest Road & Black Oak Drive	D	43.5	0.97
Hillcrest Road & Foothill Road/North Phoenix Road	**F**	**124.8**	**1.24**
Jackson Street & Academy Place	B	16.4	0.53
Jackson Street & Crater Lake Avenue	**F**	**149.7**	**1.24**
Jackson Street & Hawthorne St./Medford Center	C	22.2	0.57
Main Street & Columbus Avenue	**F**	**95.6**	**1.11**
Main Street & Hamilton/ Rose Avenue	A	3.6	0.42
Main Street & Orange Street	A	6.6	0.34
Main Street & Crater Lake Avenue	D	36.3	0.92
Main Street & Hawthorne Street	B	12.1	0.50
Main Street & Lindley Street	A	6.8	0.56
Main Street & Ross Lane	**F**	**85.9**	**1.34**
North Phoenix Road & Cherry Lane	B	13.6	0.63
North Phoenix Road & Larson Creek Access	A	9.7	0.57
Siskiyou Boulevard & Black Oak Drive	C	33.1	0.79
Stewart Avenue & Barnett Road	C	24.9	0.85
Stewart Avenue & Lozier Lane	C	26.8	0.84
Stewart Avenue & Columbus Avenue	C	24.6	0.71
Stewart Avenue & Peach Street	A	8.8	0.48
Stewart Avenue & Kings Highway	B	14.4	0.66
Stewart Avenue & Oakdale Avenue	B	13.7	0.71
Stewart Avenue & Holly Street	B	11.8	0.56
Stewart Avenue & Center Drive	C	20.3	0.56

Note: LOS means level of service and average delay is expressed as seconds per vehicle.
Source: LOS Study, JRH Transportation Engineering, 2003.

The intersection of Barnett and Riverside currently has split phasing for the northbound and southbound approaches due to the shared through and left-turn lane on the southbound approach. The City of Medford will soon improve this intersection to provide two exclusive left-turn lanes on the southbound approach, thus allowing the inefficient split phasing to be eliminated. With this improvement in place, the intersection is expected to operate at LOS D given Year 2023 PM peak hour traffic volumes. The v/c ratio for this intersection, however, approaches 1.00. In the future, additional through movement capacity may be required on the northbound approach to improve the level of service for this intersection.

The Southeast Medford area is expected to experience considerable growth over the planning horizon. As discussed previously, North Phoenix Road is currently being realigned to connect to Hillcrest Road directly across from Foothill Road. The resulting intersection will be signalized. The current improvement project at this intersection does not include an exclusive right-turn lane on the eastbound approach. Year 2023 forecasts indicate a heavy right-turn volume on this approach; the poor level of service in Year 2023 can be rectified through the inclusion of an exclusive right-turn lane for eastbound to southbound traffic. Overlap signal phasing could be used for this movement to improve the operation (a right-turn "overlap" allows the right-turn movement to be served concurrently with non-conflicting left-turn phases). The intersection of Barnett Road and North Phoenix Road will also require improvements to accommodate the planned growth in the Southeast Medford area.

The intersection of Jackson Street and Crater Lake Avenue currently has split phasing for every intersection approach due to the shared through and left-turn lanes. Split phasing requires that each approach be served consecutively; concurrent through or left-turn movements therefore cannot be served simultaneously. This type of operation is generally needed when the left-turn volume is high but exclusive lanes are not provided at the intersection for these movements; however the operation is very inefficient. In order to improve the operation of this intersection, left-turn lanes will be required.

The intersection of Main Street and Columbus Avenue also has split phasing for the northbound and southbound approaches. These approaches will have to be widened to include exclusive left-turn lanes in order to improve the operation of the intersection. In addition, the future-year analysis considers that the lanes on the westbound approach will be more or less equally utilized. In reality Main Street diminishes to one lane a short distance west of this intersection. As a result, the outside through lane is seldom used because of the minimal merging distance provided downstream. In order to operate efficiently, the second through lane should be extended to provide an adequate merging distance for vehicles in the outside lane. An exclusive southbound right-turn lane would further improve the intersection operation.

The intersection of Highland Drive and Siskiyou Boulevard was considered to have a signal in the future-year SYNCHRO model. Given the existing geometry and Year 2023 volumes, the intersection would still operate at LOS F with a signal. Additional capacity will be needed at this intersection in order to improve the level of service. Capacity improvements are also needed at the intersection of Barnett Road at Black Oak Drive in order to improve the projected LOS E at this location.

2023 PM Peak Hour Results – North of Jackson Street

Of the 31 intersections listed in Table G-6, only two operate at LOS E or worse. The intersection of Biddle Road and McAndrews Road is expected to operate at LOS E (the average vehicle delay for this intersection is approaching the LOS F threshold). Short of providing additional capacity for through traffic at this intersection, the eastbound approach could be widened to accommodate an exclusive right-turn lane. Such widening would require modification to the I-5 overpass abutment (a retaining wall would be needed in order to cut back the abutment to provide the extra width needed).

The intersection of Crater Lake Avenue and Delta Waters Road is expected to operate at LOS F given Year 2023 traffic volumes. This intersection has split phasing for the eastbound and westbound approaches. In order to improve the operation of this intersection, exclusive left-turn lanes will be needed on the eastbound and westbound approaches. It should be noted that the amount of growth on Crater Lake Avenue is large due to capacity constraints on Highway 62 between I-5 and Delta Waters Road. As a result of the capacity constraint, the regional model assigns some traffic to Crater Lake Avenue that might have otherwise used Highway 62. Instead of using the highway, traffic continues north on Crater Lake Avenue to either Elliot Road, Coker Butte Road or Vilas Road to connect with Highway 62. Similar use of Crater Lake Avenue occurs for traffic traveling southbound. The proposed Highway 62 Unit 2 project would likely alleviate traffic congestion not only on Highway 62, but also on Crater Lake Avenue.

Table G-6
2023 PM Peak Hour Levels of Service: North of Jackson Street

	2023 PM Peak Hour		
Intersection	**LOS**	**Avg. Delay (seconds)**	**Volume/ Capacity**
Biddle Road & Stevens Street	C	32.7	0.97
Biddle Road & Market Street	A	7.1	0.63
Biddle Road & Bear Creek Shopping Center	A	8.9	0.67
Biddle Road & McAndrews Road	**E**	**76.0**	**1.05**
Biddle Road & Progress Drive	B	13.1	0.63
Biddle Road & Morrow Street	B	10.9	0.67
Biddle Road & Lawnsdale Road	B	19.2	0.79
Court Street & Central Avenue/Edwards Street	C	21.0	0.68
Court Street & Ohio Street	A	6.9	0.55
Crater Lake Avenue & Brookhurst Street	A	9.8	0.69
Crater Lake Avenue & Delta Waters Road	**F**	**130.1**	**1.25**
Crater Lake Avenue & Roberts Road	A	8.3	0.61
Crater Lake Avenue & Spring Street	C	23.3	0.83
Crater Lake Avenue & Stevens Street	C	28.6	0.92
McAndrews Road & Columbus Avenue	D	53.6	0.90
McAndrews Road & Sage Road	C	25.4	0.60
McAndrews Road & Court Street	C	22.0	0.78
McAndrews Road & Riverside Avenue	C	35.0	1.00
McAndrews Road & Rogue Valley Mall	B	11.3	0.74
McAndrews Road & Poplar Drive	C	29.4	0.87
McAndrews Road & Royal Avenue	D	44.4	1.09
McAndrews Road & Crater Lake Avenue	D	47.6	0.97
McAndrews Road & Springbrook Road	D	37.7	0.98
McAndrews Road & Brookdale Avenue	B	15.7	0.29
Poplar Drive & Morrow Road	C	25.7	0.67
Riverside Avenue & Manzanita Street	A	7.7	0.74
Riverside Avenue & Ohio Street	A	6.7	0.59
Sage Road & Columbus Avenue	B	10.9	0.69
Springbrook Road & Roberts Road	C	28.3	0.78
Stevens Street & Royal Avenue	B	18.3	0.58
Table Rock Road & Berrydale Avenue	A	8.1	0.48

Note: LOS means level of service and average delay is expressed as seconds per vehicle.
Source: LOS Study, JRH Transportation Engineering, 2003.

Five other intersections operate with v/c ratios of 0.95 or greater. All of these intersections operate at LOS D, except the intersections of Biddle Road at Stevens Street and McAndrews Road at Riverside Avenue, which operate at LOS C.

Multi-Hour Level of Service Strategy Analysis

Tables G-7 through G-10 show the LOS, average vehicle delay and intersection v/c ratios for the second-highest-hour 2023 volumes. As described previously, the second-highest-hour volumes represent the remaining volume between 4:00 and 6:00 PM obtained after subtracting out the peak one-hour volumes during this period. As indicated in the tables, some of the intersections that exceeded LOS D during the peak hour operate at LOS D or better during the second-highest hour. 2023 second-highest hour SYNCHRO output is provided in Appendix E of the LOS Study report.

2023 Second PM Peak Hour Results – Downtown Medford

As indicated in Table G-7, there is no appreciable difference between the one-hour strategy and the multi-hour strategy for downtown intersections. All downtown signalized intersections are projected to operate at LOS D or better with 2023 second highest PM peak hour traffic volumes.

Table G-7
2023 2nd Highest Hour Levels of Service: Downtown Medford

Intersection	2023 2nd Highest Hour LOS	Avg. Delay (seconds)	Volume/ Capacity
10th Street & Oakdale Avenue	A	6.9	0.43
10th Street & Holly Street	A	9.7	0.32
10th Street & Front Street	A	5.8	0.28
10th Street & Central Avenue	B	14.1	0.86
10th Street & Riverside Avenue	B	12.6	0.71
9th Street & Central Avenue	A	5.3	0.60
8th Street & Oakdale Avenue	A	9.2	0.28
8th Street & Ivy Street	B	10.1	0.32
8th Street & Holly Street	A	8.7	0.29
8th Street & Grape Street	A	8.9	0.28
8th Street & Front Street	A	10.1	0.34
8th Street & Central Avenue	A	8.8	0.74
8th Street & Riverside Avenue	A	7.0	0.60
Main Street & Oakdale Avenue	A	8.7	0.36
Main Street & Holly Street	A	5.2	0.28
Main Street & Grape Street	A	6.0	0.23
Main Street & Fir Street	A	8.1	0.24
Main Street & Front Street	A	9.4	0.29
Main Street & Central Avenue	A	9.4	0.56
Main Street & Bartlett Avenue	B	13.1	0.23
Main Street & Riverside Avenue	A	8.4	0.62
6th Street & Front Street	A	7.4	0.17
6th Street & Central Avenue	A	9.0	0.45
6th Street & Riverside Avenue	A	5.5	0.57
4th Street & Front Street	C	26.7	0.39
4th Street & Central Avenue	A	5.9	0.73
4th Street & Bartlett Street	A	3.0	0.35
4th Street & Riverside Avenue	**E**	**57.9**	**1.06**
Jackson Street & Central Avenue	B	13.8	0.61

Table G-7 Continued
2023 2nd Highest Hour Levels of Service: Downtown Medford

Intersection	2023 2nd Highest Hour LOS	Avg. Delay (seconds)	Volume/ Capacity
Jackson Street & Riverside Avenue	A	9.6	0.75
Jackson Street & 4th Avenue/Biddle Road	C	34.8	0.82

Note: LOS means level of service and average delay is expressed as seconds per vehicle.
Source: LOS Study, JRH Transportation Engineering, 2003.

2023 Second PM Peak Hour Results – State Highways

Table G-8 lists 2023 PM peak hour conditions at state highway intersections for the second highest hour LOS strategy. As expected, there are fewer intersections below the threshold when the second highest hour is measured: two intersections operating at LOS F and one at LOS E, compared to three at LOS F and two at LOS E during the single highest p.m. peak hour.

Table G-8
2023 2nd Highest Hour Levels of Service: State Highway Intersections

Intersection	2023 2nd Highest Hour LOS	Avg. Delay (seconds)	Volume/ Capacity
Highway 99 & South Stage Road	C	32.1	**0.93 (1)**
Highway 99 & Garfield Road	C	29.2	0.78
Highway 99/Riverside Avenue & Stewart Avenue	D	37.6	**0.93 (1)**
Highway 99 & West Table Rock Road	D	47.1	0.70
Highway 62/Highway 99/Highway 238	D	50.8	0.82 (1)
Highway 62 & Rogue Valley Mall Access	B	15.9	0.58
Highway 62 & Poplar Drive/Bullock	D	43.9	**0.96 (1)**
Highway 62 & Delta Waters Road	**F**	**101.9**	**1.23 (1)**
Highway 62 & Cardinal Avenue	C	24.8	**0.84 (1)**
Highway 62 & East Vilas Road	D	40.7	**0.84 (1)**
Highway 62 Ramp Terminal & North Biddle	C	22.7	0.67
Highway 62 Ramp Terminal & South Biddle	B	10.5	0.68
Hwy 238/Rossanley Drive & Central Avenue	C	34.4	0.76
Hwy 238/Rossanley Drive & Sage Road	**E**	**76.5**	**0.94 (1)**
I-5 & Garfield/Highland Extension	B	16.8	0.60
I-5 NB Off/On-Ramp & Highway 62	A	9.9	0.62
I-5 SB Off/On-Ramp & Highway 62	B	11.4	0.67

Note: LOS means level of service and average delay is expressed as seconds per vehicle.
Source: LOS Study, JRH Transportation Engineering, 2003.
(1) Exceeds ODOT volume/capacity ratio standard.

2023 Second PM Peak Hour Results – South of Jackson Street

With the second-highest hour LOS strategy, the number of intersections south of Jackson Street operating at LOS E or F with 2023 p.m. peak period traffic drops to six (three at LOS F and three at LOS E), compared to seven with the 2023 peak hour traffic volumes (five at LOS F and two at LOS E). Second-highest hour results south of Jackson Street are summarized in Table G-9 below.

Table G-9
2023 2nd Highest Hour Levels of Service: South of Jackson Street

Intersection	2023 2nd Highest Hour LOS	Avg. Delay (seconds)	Volume/ Capacity
8th Street & Hamilton Street	A	8.1	0.26
8th Street & Orange Street	A	4.9	0.20
12th Street & Riverside Avenue	B	12.3	0.50
Barnett Road & Winco Access	B	11.0	0.56
Barnett Road & Riverside Avenue	D	37.9	0.88
Barnett Road & Highland Drive	D	38.5	0.84
Barnett Road & Ellendale Drive	B	16.4	0.63
Barnett Road & Black Oak Drive	D	53.9	0.97
Barnett Road & Murphy Road	C	24.3	0.63
Barnett Road & North Phoenix Road	D	52.1	0.96
Center Drive & Garfield/Highland Extension	B	18.7	0.55
Highland Drive & Siskiyou Boulevard	**E**	**62.5**	**1.08**
Hillcrest Road & Black Oak Drive	C	28.1	0.88
Hillcrest Road & Foothill Road/North Phoenix Road	**F**	**84.2**	**1.08**
Jackson Street & Academy Place	B	17.5	0.48
Jackson Street & Crater Lake Avenue	**F**	**106.3**	**1.13**
Jackson Street & Hawthorne St./Medford Center	C	21.0	0.50
Main Street & Columbus Avenue	**E**	**74.2**	**1.03**
Main Street & Hamilton/Rose Avenue	A	2.8	0.33
Main Street & Orange Street	A	6.6	0.29
Main Street & Crater Lake Avenue	C	31.8	0.70
Main Street & Hawthorne Street	B	10.7	0.41
Main Street & Lindley Street	A	6.0	0.49
Main Street & Ross Lane	**E**	**72.2**	**1.19**
North Phoenix Road & Cherry Lane	B	13.3	0.55
North Phoenix Road & Larson Creek Access	A	9.0	0.50
Siskiyou Boulevard & Black Oak Drive	C	26.1	0.73
Stewart Avenue & Barnett Road	C	23.5	0.77
Stewart Avenue & Lozier Lane	C	21.9	0.70
Stewart Avenue & Columbus Avenue	C	21.4	0.58
Stewart Avenue & Peach Street	A	9.1	0.42
Stewart Avenue & Kings Highway	B	12.7	0.57
Stewart Avenue & Oakdale Avenue	B	13.1	0.67
Stewart Avenue & Holly Street	B	10.2	0.47
Stewart Avenue & Center Drive	C	21.5	0.51

Note: LOS means level of service and average delay is expressed as seconds per vehicle.
Source: LOS Study, JRH Transportation Engineering, 2003.

2023 Second PM Peak Hour Results – North of Jackson Street

North of Jackson Street, the second-highest hour LOS strategy yields one intersection at LOS F: Crater Lake Avenue/Delta Waters Road. With the peak hour LOS strategy there is one more intersection at LOS E, but Crater Lake Avenue/Delta Waters Road is still the only intersection at LOS F. Analysis results are illustrated in Table G-10.

Table G-10
2023 2nd Highest Hour Levels of Service: North of Jackson Street

Intersection	2023 2nd Highest Hour LOS	Avg. Delay (seconds)	Volume/ Capacity
Biddle Road & Stevens Street	C	25.5	0.85
Biddle Road & Market Street	A	6.4	0.52
Biddle Road & Bear Creek Shopping Center	A	8.6	0.62
Biddle Road & McAndrews Road	**E**	**55.8**	**0.96**
Biddle Road & Progress Drive	B	11.9	0.56
Biddle Road & Morrow Street	B	11.2	0.58
Biddle Road & Lawnsdale Road	B	13.6	0.67
Court Street & Central Avenue/Edwards Street	B	18.1	0.59
Court Street & Ohio Street	A	5.8	0.42
Crater Lake Avenue & Brookhurst Street	A	8.9	0.64
Crater Lake Avenue & Delta Waters Road	**F**	**100.0**	**1.10**
Crater Lake Avenue & Roberts Road	A	8.5	0.57
Crater Lake Avenue & Spring Street	C	20.1	0.70
Crater Lake Avenue & Stevens Street	C	21.8	0.77
McAndrews Road & Columbus Avenue	D	44.7	0.86
McAndrews Road & Sage Road	C	24.5	0.53
McAndrews Road & Court Street	C	20.4	0.68
McAndrews Road & Riverside Avenue	C	21.5	0.83
McAndrews Road & Rogue Valley Mall	B	10.5	0.67
McAndrews Road & Poplar Drive	C	23.4	0.77
McAndrews Road & Royal Avenue	C	21.7	0.94
McAndrews Road & Crater Lake Avenue	D	46.1	0.98
McAndrews Road & Springbrook Road	B	20.1	0.78
McAndrews Road & Brookdale Avenue	B	20.1	0.19
Poplar Drive & Morrow Road	C	23.7	0.59
Riverside Avenue & Manzanita Street	A	7.3	0.62
Riverside Avenue & Ohio Street	A	6.2	0.52
Sage Road & Columbus Avenue	B	10.1	0.64
Springbrook Road & Roberts Road	C	26.6	0.73
Stevens Street & Royal Avenue	B	16.1	0.51
Table Rock Road & Berrydale Avenue	A	7.9	0.44

Note: LOS means level of service and average delay is expressed as seconds per vehicle.
Source: LOS Study, JRH Transportation Engineering, 2003.

2023 PM Peak Hour(s) Operations Summary

Table G-11 provides a summary of the signalized intersections requiring mitigation under each LOS strategy. Based on the information provided in Table G-11, improvements would be required within the planning horizon at 17 locations with the current single PM peak hour LOS D standard, at 11 locations with the single hour LOS E standard, and at 11 locations with the second hour LOS D standard.

Table G-11
Signalized Intersections Requiring Mitigation with Each LOS Strategy

Location	Needs Mitigation with 1 Hour Standard			Needs Mitigation with 2nd Hour Standard	
	LOS	LOS D	LOS E	LOS	LOS D
<u>Number of Congested Intersections (1)</u>					
Downtown Medford					
4th at Central (1)	A	Yes	Yes	A	Yes
4th at Riverside	F	Yes	Yes	E	Yes
State Highway Intersections					
Highway 99 at South Stage	E	Yes	No (3)	C	No (3)
Highway 62 at Poplar/Bullock	F	Yes	Yes	D	Yes
Highway 62 at Hwy 99/Hwy 238	E	Yes	No (3)	D	No (3)
Highway 62 at Delta Waters	F	Yes	Yes	F	Yes
Highway 62 at Vilas	E	Yes	No (3)	D	No (3)
Highway 238 at Sage	F	Yes	Yes	E	Yes
South of Jackson Street					
Barnett at Black Oak	E	Yes	No	D	No
Barnett at N. Phoenix	E	Yes	No	D	No
Highland at Siskiyou	F	Yes	Yes	E	Yes
Hillcrest at N. Phoenix	F	Yes	Yes	F	Yes
Jackson at Crater Lake	F	Yes	Yes	F	Yes
Main at Columbus	F	Yes	Yes	E	Yes
Main at Ross	F	Yes	Yes	E	Yes
North of Jackson Street					
Biddle at McAndrews	E	Yes	No	E	Yes
Crater Lake at Delta Waters	F	Yes	Yes	F	Yes
Congested intersections (2)		17	17		17
Intersections that would be fixed to meet alternative LOS standard		17	11		11
Intersections that would be degraded from today's 1-hour LOS D standard that would not be fixed		None	6		5

Note: LOS means level of service. Analysis results are based on the identified alternative LOS standard. PM peak hour (1 hour) LOS D column represents the existing standard.

(1) Simulation shows that the permitted left-turn phase on the westbound approach is not adequately served thus causing extended queues that block upstream intersections. It is assumed that an exclusive left-turn lane would be provided on this approach under all LOS standards considered.

(2) Based on today's LOS D standard that reflects the public's current expectations about acceptable levels of delay.

(3) Mitigation conclusions in this table are based strictly on LOS. Based on ODOT's v/c standards for state highways these intersections would require mitigation.

The City of Medford asked that all intersections that are predicted to exceed a v/c ratio of 1.00 be considered for improvement even if the level of service is shown to be D or better. The analysis software used to predict level of service only considers operation over two signal cycles. When the v/c ratio exceeds 1.00, generally queues will continue to grow for more than two cycles. Table G-12 shows locations where the 2023 v/c ratio is expected to exceed 1.00 for both the peak and second-highest-hour volumes. It should be noted that generally a level of service worse than D will not be achieved unless the v/c ratio exceeds 1.00. For this reason, based on the v/c ratio criteria, the project list for the LOS D and LOS E standard are the same. The project list for the second-highest-hour standard includes fewer projects since the intersection volumes are lower.

Table G-12
2023 PM Peak Hour Signalized Intersections
with Volume-to-Capacity Ratio Equal to or Exceeding 1.00

	PM Peak Hour Standard			2nd Hour Standard	
		Needs Mitigation with			Needs Mitigation with
Location	V/C Ratio	LOS D Standard	LOS E Standard	V/C Ratio	LOS D Standard
<u>**City Intersections**</u>					
Downtown Medford					
4th at Central (1)	0.82	Yes	Yes	0.73	Yes
4th at Riverside	1.22	Yes	Yes	1.06	Yes
South of Jackson Street					
Barnett at Black Oak	1.03	Yes	Yes	0.97	No
Barnett at North Phoenix	1.05	Yes	Yes	0.96	No
Highland at Siskiyou	1.16	Yes	Yes	1.08	Yes
Hillcrest at North Phoenix	1.24	Yes	Yes	1.08	Yes
Jackson at Crater Lake	1.24	Yes	Yes	1.13	Yes
Main at Columbus	1.11	Yes	Yes	1.03	Yes
Main at Ross	1.34	Yes	Yes	1.19	Yes
North of Jackson Street					
Biddle at McAndrews	1.05	Yes	Yes	0.99	No
Crater Lake at Delta Waters	1.25	Yes	Yes	1.10	Yes
McAndrews at Riverside	1.00	Yes	Yes	0.83	No
McAndrews at Royal	1.09	Yes	Yes	0.94	No
<u>**State Highway Intersections**</u>					
Highway 99 at South Stage	1.11	Yes	Yes	0.93	No (2)
Highway 99 at Garfield	0.92	No (2)	No (2)	0.78	No (2)
Highway 99 at Stewart	1.00	Yes	Yes	0.93	No (2)
Hwy 62 at Hwy 99/Hwy 238	0.98	No (2)	No (2)	0.82	No
Highway 62 at Poplar/Bullock	1.02	Yes	Yes	0.96	No (2)
Highway 62 at Delta Waters	1.37	Yes	Yes	1.23	Yes
Highway 62 at Cardinal	0.95	No (2)	No (2)	0.84	No (2)
Highway 62 at Vilas	1.04	Yes	Yes	0.84	No (2)
Highway 238 at Sage	1.09	Yes	Yes	0.94	No (2)
Intersections exceeding a v/c ratio of 1.00		20	20		9
Intersections exceeding ODOT's standard		23 (2)	23 (2)		15 (2)

Source: LOS Study, JRH Transportation Engineering, 2003.

(1) Simulation shows that the permitted left-turn phase on the westbound approach is not adequately served causing extended queues that block upstream intersections. It is assumed that an exclusive left-turn lane would be provided on this approach under all LOS standards considered.

(2) The v/c ratios at these intersections are less than 1.00 but exceed the Oregon Highway Plan's v/c-based standard and would require mitigation by ODOT.

There are also a number of intersections that are predicted to operate at v/c ratios approaching 1.00. These locations meet all of the proposed level of service criteria, but could potentially exceed a v/c ratio of 1.00 given small increases in volume over those predicted for 2023. Locations with predicted v/c ratios between 0.95 and 1.00 are listed in Table G-13. Since these locations have the potential for exceeding either LOS D or a v/c ratio of 1.00, improvement projects are considered for these locations as outlined later in this report.

Table G-13
Signalized Intersections with 2023 v/c Ratios between 0.95 and 1.00
(not on State Highways)

	V/C Ratio	
Location	**PM Peak Hour**	**2nd Hour**
10th & Central	0.99	0.86
Barnett & Riverside	0.99	0.88
Barnett & Highland	0.96	0.84
Hillcrest & Black Oak	0.97	0.88
Biddle & Stevens	0.97	0.85
Biddle & McAndrews	See Table G-12	0.99
McAndrews & Crater Lake Avenue	0.97	0.98
McAndrews & Springbrook	0.98	0.78
Intersections with V/C ratios between 0.95 and 1.00	7	2

Source: LOS Study, JRH Transportation Engineering, 2003.

Traffic Operations and Capacity Deficiencies at Unsignalized Intersections

Table G-14 provides the LOS results for the unsignalized intersections where existing count data were available. As shown in the table, of the 37 intersection listed, 27 have at least one approach or movement that operate at LOS E or worse. Intersections with approaches or movements exceeding LOS D are candidates for signalization or all-way-stop-control. Some intersections have very low minor-street volumes with relatively high major-street volumes. Such intersections would likely not meet signal warrant criteria given the low traffic levels on the stop-controlled approach(es). Intersections that are expected to meet signal warrants are included in the project lists described in the following section.

It should be noted that several of these projects have already been identified as improvement needs and included in the *Regional Transportation Plan* and/or the City's 17-project list. Others would be incorporated into larger projects, particularly along Highway 62 at Coker Butte Road and Elliott Road (which would become Owen Drive). New signalized intersections of these streets with Highway 62 are planned and street alignment changes will be made to provide adequate vehicle storage distance between Highway 62 and Crater Lake Avenue.

Table G-14
2023 PM Peak Hour Level of Service at
Unsignalized Intersections in Medford UGB

	2023 PM Peak Hour	
Intersection	**Approach or Movement**	**LOS**
4th Street at Oakdale Avenue	**Northbound**	**F**
Barneburg Road at Highland Drive	**Westbound**	**F**
Barnett Road at Golf View Drive	**Northbound**	**F**
Columbus Avenue at Cunningham Lane	Eastbound	C

Table G-14 Continued
2023 PM Peak Hour Level of Service at
Unsignalized Intersections in Medford UGB

Intersection	2023 PM Peak Hour Approach or Movement	LOS
4th Street at Oakdale Avenue	**Northbound**	**F**
Barneburg Road at Highland Drive	**Westbound**	**F**
Barnett Road at Golf View Drive	**Northbound**	**F**
Columbus Avenue at Cunningham Lane	Eastbound	C
Columbus Avenue at Diamond Street	Westbound	D
Crater Lake Avenue at East Vilas Road	**Northbound, southbound**	**F**
Crater Lake Avenue at Coker Butte Road	**Southbound**	**F**
Cunningham Lane at Orchard Home Drive	Westbound	B
DeBarr Avenue at Merriman Road	**Westbound**	**E**
Delta Waters Road at Foothill Road	**Eastbound, westbound**	**F**
Delta Waters Road at Springbrook Road	**Northbound**	**F**
Foothill Road at Cedar Links Drive	**Eastbound**	**F**
Foothill Road at Lone Pine Road	**Eastbound, westbound**	**E**
Garfield Street at Columbus Avenue	Westbound	C
Highway 62 at Coker Butte	**Westbound**	**F**
Highway 62 at Elliot Road/Costco	**Westbound right**	**E**
Highway 62 EB ramp from Biddle Road	**Northbound**	**F**
Highway 62 at Target Access	Southbound, left	D
Highway 238/Rossanley Drive at Ross Lane	**Northbound**	**F**
Hillcrest Road at Pierce Street	**Southbound**	**F**
Hillcrest Road at Valley View Drive	**Eastbound, westbound**	**E**
Jackson Street at Columbus Avenue	**Northbound, southbound**	**F**
Jackson Street at Sunrise Avenue	**Southbound, eastbound, westbound**	**F**
Main Street at Barneburg Road	**Northbound, southbound**	**F**
Main Street at Willamette Avenue	**Eastbound, westbound**	**F**
McAndrews Road eastbound at Foothill Road	**Eastbound**	**F**
McAndrews Road westbound at Foothill Road	**Eastbound**	**E**
McAndrews Road at Hillcrest Road	**Southbound**	**F**
McAndrews Road at Jackson Street	**Westbound**	**F**
McAndrews Road at Ross Lane	**Westbound**	**F**
Oakdale Avenue at Dakota Avenue	Northbound, southbound, eastbound, westbound	B
Riverside Avenue at Edwards Street	**Eastbound, westbound**	**F**
Siskiyou Boulevard at Murphy Road	Westbound, southbound	B
Siskiyou Boulevard at Willamette Avenue	Eastbound, southbound	C
South Stage Road at King's Highway	Southbound	C
Spring Street at Springbrook Road	**Eastbound, westbound**	**F**
Table Rock Road at DeBarr Avenue	Eastbound	D
Table Rock Road at Merriman Road	**Northbound, southbound**	**F**

Source: LOS Study, JRH Transportation Engineering, 2003.
Note: LOS means level of service

APPENDIX H

Analysis of Functional Classification System Changes

Appendix H
Analysis of Functional Classification System Changes

Recommended Functional Classification System

This appendix documents a review and assessment of the existing street functional classification system within the Medford Urban Growth Boundary (UGB), and presents recommendations for changes to that system. Included is a discussion about the nature of street functional classification; the local and regional policy context for developing and maintaining the classification system; and recommendations for changes to the system that are focused primarily on adding minor arterial and minor collector categories.

Information contained in this memo was obtained largely from the City's existing Land Development Code; draft documents and technical memoranda from the City's Transit-Oriented Development (TOD) planning efforts including the SE Medford Plan; the Rogue Valley Council of Governments' 2002 Regional Transportation Plan; the Transportation Planning Rule and ODOT's Transportation Planning Rule Guidelines. Also reviewed were Transportation System Plans and street standards from other jurisdictions including Jackson County and the City of Central Point.

What is Functional Classification?

Functional classification provides a systematic basis for determining future right-of-way and improvement needs, and can also be used to assign street design characteristics. A street's functional classification is based on the relative priority of traffic mobility and access functions that are served by the street. At one end of the spectrum of mobility and access are freeways, which emphasize moving high volumes of traffic, allowing only highly controlled access points. At the other end of the spectrum are residential cul-de-sac streets, which provide access only to parcels with direct frontage and allow no through traffic.

These two roadway types form the ends of a spectrum relating access and traffic flow. Between the ends of this spectrum are local streets, collectors and arterials, each with an increasingly greater emphasis on mobility. Classifications can be further stratified into major and minor arterials and collectors. Some jurisdictions use other terms in their functional classification system, such as neighborhood street, throughway, and boulevards.

Presently the City of Medford includes eight classes of publicly-maintained streets in its functional classification system, four of which are described in Table H-1 – arterial, collector, standard residential and minor residential. In addition there are commercial and industrial classifications, which have cross-sections identical to standard residential streets. The applicable classification depends on adjacent zoning and is determined at the time of development review. The two remaining classifications are residential lane and minimum access. A residential lane is a facility that serves a maximum of eight (8) dwelling units. A residential lane is short (a maximum of 450 feet in length) with parking on one side and a single travel lane. A minimum access street is a private residential street serving a maximum of three (3) dwelling units. Typically, a minimum access street is a short cul-de-sac.

Table H-1 also shows a typical design range of average daily traffic volumes for each of the four most common street classifications. Existing or forecast year ADT volumes exceeding these ranges can indicate a need to amend selected functional classifications, provide new streets or additional connections to better distribute traffic volumes, or reconsider planned land uses and density.

Table H-1
Existing Functional Classification Standards

Feature	Arterial Streets	Collector Streets	Standard Residential (1)	Minor Residential
Right-of-way width	96 feet	74 feet	62 feet	55 feet
Curb-to-curb width	66 feet	44 feet	36 feet	28 feet
Travel Lanes	4	2	2	2
Turn Lanes	1 (2)	1 (3)	No	No
Bike Lanes	2 @ 5' (4)	2 @ 5' (4)	No	No
On-Street Parking Lane	No	No	Both sides	Both sides
Planter Strip	10 feet	10 feet	8 feet	8 feet
Sidewalks	2 @ 5' (5)	2 @ 5' (5)	2 @ 5'	2 @ 5'
Typical Range of Daily Traffic Volumes	15,000 - 50,000 ADT	3,000 - 15,000 ADT	1,500 - 3,000 ADT	1,500 ADT max

Source: City of Medford, 2002 (except for range of daily traffic volumes)
(1) Features of commercial, industrial and standard residential are all the same. The classification depends on adjacent zoning with a specific designation being made at the time of development review.
(2) At all intersections where turns are allowed.
(3) Where required at or between intersections.
(4) Bicycle lanes will be provided on all new collector and arterial street construction (ODC Chapter 10, Table IV-1).
(5) Unless located in downtown or where adjacent to the curb and on an arterial or collector street where the sidewalk should be 7 feet wide.

Non-vehicular modes also need to be considered in functional classification designations. The Transportation Planning Rule (TPR) requires that bicycle facilities (typically bicycle lanes) and pedestrian facilities (typically sidewalks) be provided on arterial and major collector streets. The City's existing cross-sections for all publicly-maintained arterial and collector roadways include bicycle and pedestrian facilities on both sides with one exception. On streets with a 10-foot shared bikeway on one side, only a sidewalk is required on the side of the street opposite the bikeway. Existing standard and minor residential street cross-sections require sidewalks on both sides but bicycle lanes are not required. Residential lanes and minimum access streets are not required to have bicycle lanes, but sidewalks are required along one side of residential lanes.

Policy Context

The *Regional Transportation Plan (RTP),* prepared for the greater Medford urban area by the Rogue Valley Council of Governments and adopted in 2002, establishes policy direction for creating and updating a street classification system within the Medford UGB. The RTP recognizes the need to "*Create an integrated and linked network of arterial and collector streets that serves the mobility and multimodal travel needs of the region …"* (Policy 3-1.3)

The City's existing *Comprehensive Plan* also contains goals, policies and implementation strategies that address street classification. Specifically, the *Comprehensive Plan* provides that *"Streets shall be designated as arterial streets, and officially identified as such in the Arterial Streets Plan. All other streets shall function as collectors or residential streets"* (Goal 2, Policy 1). The Comprehensive Plan further establishes as policy the intent that *"Streets shall be designated as arterial streets in advance of actual function, thereby allowing for the application of the proper planning criteria necessary to integrate the street function into the adjacent land use pattern with minimum impact to neighborhood* *livability"* (Goal 2, Policy 2). Other policies and implementation strategies related to arterial street classifications identify design criteria; a level of service standard; provision of space for alternative transportation modes such as transit, bicycling and walking; and minimization of adverse environmental impacts. The existing Comprehensive Plan also identifies specific street segments that are classified as arterials.

As there are many roads located within the Medford UGB that are under the jurisdiction of Jackson County and other roads that cross jurisdictional boundaries at the edge of the UGB (including both streets in the unincorporated area around the City and streets in the city of Central Point, the street classifications of these jurisdictions should also be considered.

Evaluation of Changes to Functional Classification System

As part of the TSP analysis, the City's primary street classifications were expanded to include proposed major and minor designations for arterials and collectors. Additional cross-sections were developed for each new classification. In developing these proposed changes, existing City street and access standards were reviewed and contrasted with the requirements of the Transportation Planning Rule (for inclusion of bicycle and pedestrian facilities), and ODOT access management guidelines. Also reviewed were standards from other jurisdictions including the Cities of Grants Pass, Salem, Milwaukie, Vancouver (Washington), Ashland, and Central Point; along with Jackson and Josephine Counties and RVCOG's cross-section templates that were included as an appendix to the 2002 *Regional Transportation Plan*.

Adding functional classifications and cross-sections provides several advantages for the City. The primary advantage is to enable the City to better tailor the roadway system to meet future travel needs by varying the standard cross-section for an arterial street from a three-lane cross-section (appropriate for the minor arterial classification) to a full five-lane cross-section (appropriate for the major arterial classification). Allowing some variation from the existing arterial and collector street standards through the introduction of minor street classifications, both time and money can be saved on street improvement projects. In addition, by adding increased flexibility within the functional classification system, constraints that exist in the built and/or natural environment can be evaluated and incorporated into roadway planning and design without necessarily having to vary from adopted standards.

A number of factors were considered in expanding the functional classification system and determining potential reclassifications of existing roadways including:

- Forecast year daily traffic volume (estimated from the forecast year peak hour volumes that were developed as part of the City's LOS Study).
- Spacing of each designated type of facility throughout the City.
- Compatibility with adjacent land uses, particularly residential neighborhoods.
- Allowance for direct land access.
- Presence of/need for on-street parking.
- Need for access management.
- Desired spacing between intersections.
- Existing and ultimate cross-section.

Based on these factors, the evaluation matrix shown in Table H-2 was developed and used to refine the City's functional classification system. Forecast year (2023) p.m. peak hour traffic volumes and facility

Table H-2
Functional Classification Evaluation Factors

Classification	Functions	Forecast Year Average Daily Traffic (ADT)	Desired Spacing (miles)	Land Access Function	Minimum Intersection Spacing	Speed Limit (mph)	On-Street Parking
Major Arterial	Primary: regional and sub-regional traffic movement Secondary: land access	15,000 or more	1-2 miles	Limited to major generators	½ mile	35-45	Prohibited
Minor Arterial	Primary: sub-regional traffic movement Secondary: land access	10,000 to 15,000	½ to 1 mile	Some movements restricted; driveway spacing controlled	¼ mile	30-40	Prohibited
Major Collector	Primary: traffic collection/distribution between local and arterial streets Secondary: land access	5,000 to 10,000	½ mile	Limited regulation; subject to safety controls	300 feet	25-35	Limited
Minor Collector	Primary: Inter-neighborhood traffic and direct land access	2,500 to 5,000	¼ mile	Subject to safety controls only	300 feet	25-30	Allowed

Sources: *Transportation and Land Development,* Institute of Transportation Engineers; The Traffic Institute, Northwestern University; Parametrix.

Table H-3
Recommended Major Street Cross-Sections and Dimensions

Functional Classification	Features/Dimensions (Each Direction) Travel Lanes	Bike Lane	On-Street Parking	Sidewalk	Planter Strip *	Left or Center Turn Lane/ Median **	Total Paved Width	Total Right-of-Way Width
Major Arterial	11’ 11’	**6’**	None	5’	10’	**14’**	**70’**	**100’**
Minor Arterial	**12’**	**5’**	**None**	**5’**	**10’**	**14’**	**48’**	**78’**
Major Collector	11’	5’	None	5’	10’	12’	44’	74’
Alternative	**11’**	**5’**	**7’**	**5’**	**10’**	**None**	**46’**	**76’**
Minor Collector	**11’**	**5’**	**7’**	**5’**	**8’**	**None**	**46’**	**72’**
Commercial Street	11’	None	7’	5’	8’	None	36’	63’
Industrial Street	**12’**	None	**8’**	5’	8’	**14’**	**54’**	**80’**
Standard Residential	11’	None	7’	5’	8’	None	36’	63’
Minor Residential	11’	None	7’	5’	8’	None	28’ +	55’

Bold font indicates changes from existing city street standards.

Note 1: These street standards would only apply to new or reconstructed streets owned and maintained by the City of Medford. Jackson County and ODOT have their own street design standards that are applicable to facilities owned and maintained by these agencies.

Note 2: See Downtown 2050 Plan and other adopted specific or Neighborhood Circulation Plans for exceptions to these standards. Adopted downtown standards are also illustrated in Table H-4.

* Need to provide a pedestrian pad at all bus stops to ensure ADA compliance. Planter strip could be paved in areas with greater pedestrian activity (such as Downtown or in transit-oriented districts) thus providing up to 13 feet of waling areas (including a “furniture zone” for utilities, benches, trees and other streetscape elements.

** Raised median shall always be installed with turn bays as necessary. Traffic analysis shall be conducted to determine need for turn bays and required vehicle storage length.

\+ Street width numbers are not additive. When cars are parked on both sides of the street, travel lane width is effectively reduced to accommodate only a single car at any one time.

Table H-4
Downtown Medford Street Standards

Street Classification	Function	On-Street Parking	Sidewalks and Planter Strips
Type 1 – Primary Commercial Street	Serves high volumes of vehicular and pedestrian traffic. Links downtown with other parts of the city. Strives to balance pedestrian and vehicular movement.	Permitted, parallel to curb	14 feet – both sides
Type 2 – Secondary Commercial Street	Serves moderate volume of vehicular traffic and high volume of pedestrian traffic in a commercial area.	Permitted, parallel to curb	10 feet – both sides
Type 3 – Special Design Streets	Unique commercial streets with low volume of vehicular traffic and high volume of pedestrian traffic. Requires individual design approval by City Council.	May include angle parking if approved by City Council	Subject to design approval
Type 4 – Standard Commercial/ Residential Streets	Local streets with moderate to low volumes of vehicular and pedestrian traffic. Classification based on underlying zoning.	Permitted, parallel to curb	Res – 5' sidewal/5' planter Comm. – 10 ' sidewalk

spacing were the primary factors used to evaluate street classifications, tempered by the constraints of existing development patterns.

Recommended Street Functional Classification System and Street Standards

Figure 5-2 in the body of the TSP illustrates the recommended functional classification system within the Medford UGB. Also included in this section are proposed standard cross-sections the new minor arterial and minor collector street classifications, as well as industrial streets and commercial streets (see Table H-3). For reference purposes, the recently adopted street designations and streetscape standards for the downtown core are of Medford are also included in this Appendix in Table H-4.

Major Arterial

Major arterial streets carry heavy traffic volumes, most of it being traffic traveling through the urban area. Typically, they are equivalent to the Oregon Department of Transportation (ODOT) classification of principal arterial. For purposes of this TSP, it is assumed that all existing designated arterial streets within the Medford UGB are major arterials with the exceptions discussed below under the "Minor Arterial" heading. Examples of major arterial streets under City jurisdiction include Biddle Road, Crater Lake Avenue south of Delta Waters Road, and McAndrews Road west of Crater Lake Avenue.

Street design standards proposed for major arterials are outlined in Table H-3 and include a 70-foot paved width with four 11-foot travel lanes (two in each direction), a 14-foot raised center median (with left turn channelization where appropriate), and two 6-foot shoulder bikeways (one in each direction). Five-foot sidewalks with a 10-foot planter strip would be required, consistent with existing City code for arterial designations. No on-street parking would be permitted or provided along a major arterial street. Total required right-of-way (ROW) would be 100 feet.

Table H-5 summarizes all proposed changes to the City's existing functional classification system. As indicated in this table, the alignment of Highway 238 has been redesignated from McAndrews Road to a newly constructed highway segment between Highway 99 and Sage Road, and then westerly along Rossanley Road to the western edge of the UGB. While designated as a state highway, this street should function as a major arterial within the Medford UGB. In addition, the proposed new ramp system between Biddle Road and Highway 62 that are part of the North Medford Interchange project should also be designated as major arterials.

Other changes to major arterial status include designation of the newly constructed connection between Highway 99 and Central Avenue (constructed as part of the Big "X" project), Center Avenue from Stewart Avenue to a point just south of Garfield Avenue, and Delta Waters Road from Highway 62 to Crater Lake Avenue. Center Avenue in this segment currently serves as a major access route into the South Gate shopping center and will eventually connect with Garfield Avenue and is expected to serve major traffic volumes around the new South Medford interchange. Delta Waters Road has a widened cross-section approaching Highway 62 to accommodate turning movements and through traffic heading for the commercial development on the west side of Highway 62.

Minor Arterial

Minor arterial streets also carry heavy traffic volumes, most of it traveling within the urban area, and they often connect two major arterials. Minor arterials would differ from major arterials in that they are proposed to have a three-lane cross-section with a 48-foot paved width and a total ROW of 78 feet. These dimensions would accommodate two 12-foot travel lanes, a 14-foot center left turn lane or median, two 5-foot bicycle lanes, two 5-foot sidewalks, and two 10-foot planter strips. No on-street parking would be permitted along a minor arterial street.

Table H-5
Summary of Changes in Existing Medford Functional Classification System

Street	From	To
Classified to Higher Order Street		
New State Highways		
New Road Segment		
Highway 238	Sage Road	Highway 99
North Medford I-5 Interchange Ramps	Highway 62	Biddle Road
Collector to State Highway		
Rossanley Road	Sage Road	West UGB Boundary
New Major Arterials		
Undesignated Streets		
Central Avenue (Big X)	Highway 99	McAndrews Road
Center Avenue	Stewart Avenue	South of Garfield Avenue
Collector to Major Arterial		
Delta Waters Avenue	Highway 62	Crater Lake Avenue
New Minor Arterials		
Collector to Minor Arterial		
Beall Lane	West UGB Boundary	Highway 99
Standard Residential to Minor Arterial		
Barnett Road	Holly Street	Highway 99
New Major Collectors		
Local to Major Collector		
Bullock Road	Biddle Road	Highway 62 (new intersection)
North/south partially new road west of and/or including Medco Haul Road	Vilas Road	Approx. Cardinal Avenue
New Minor Collectors		
Local to Minor Collector		
Pearl Street	Stevens Street	Oregon Avenue
Oregon Avenue	Pearl Street	Sunrise Avenue
Cardinal Road	Medco Haul Road	Highway 62
Barneburg/Sunrise	Main Street	Jackson Street
Classified to Lower Order Street		
New Minor Arterials		
Arterial to Minor Arterial		
Table Rock Road	Biddle Road	DeBarr Road
Owens Road	Crater Lake Avenue	Springbrook
Stevens Road	Biddle Road	Crater Lake Avenue
Jackson Street	Welch Street	Central Avenue
Jacksonville Highway/West Main Street	West UGB Boundary	Central Avenue
8^{th} Avenue	Columbus Avenue	Central Avenue
Garfield Street	West UGB Boundary	Holly Street

Table H-5 Continued
Summary of Changes in Existing Medford Functional Classification System

Street	From	To
Classified to Lower Order Street		
New Minor Arterials		
Arterial to Minor Arterial		
Kings Highway	Stewart Avenue	South UGB Boundary
4th Street	Oakdale Avenue	Central Avenue
East Main Street	Crater Lake	Willamette Avenue
South Stage Road (within UGB)	West UGB Boundary	East UGB Boundary
New Major Collectors		
Arterial to Major Collector		
10th Street	Oakdale Avenue	Riverside Avenue
Local Street to Major Collector		
Stanford Street	South of Barnett Road	
New Minor Collectors		
Collector to Minor Collector		
Stevens Street	Crater Lake Avenue	Wabash Avenue
Willamette Street	Main Street	Siskiyou Boulevard
Edwards Street	Court Street	Riverside Avenue
Oakdale Avenue	Holly Avenue	Garfield Street
Holly Avenue	Jackson Street	Garfield Street
Holmes Avenue	Oakdale Avenue	Holly Street
Other Changes		
Collector to Local		
Manzanita Street	Court Street	Riverside Avenue
Standard Residential to Local		
Barnett Road	Holly Street	Westerly to end

An alternative cross-section for the minor arterial would provide on-street parking in lieu of the center median or left turn lane. This could be accommodated within the same right-of-way as previously described. Curb-to-curb dimensions for this alternative would include two 12-foot travel lanes, two 7-foot parking aisles and two 5-foot bicycle lanes for a paved street width of 48 feet. The addition of two 5-foot sidewalks and two 10-foot planter strips would require a total ROW width of 78 feet. This cross-section should only be used where there is a clear need for on-street parking to support adjacent development such as in the downtown core area or a Transit-Oriented District.

Table H-5 also illustrates changes from arterial to a minor arterial classification along 10 street segments within the Medford UGB. These changes typically reflect the lower traffic volumes and lower through traffic-moving function of these facilities in comparison with those that were identified for major arterial classification. Additionally, in some instances, roadways proposed for minor arterial classification currently have only a 2 to 3 lane cross-section and it would be difficult to justify a street widening to meet the City's existing arterial street design standards (which require four travel lanes with left turn channelization).

Rationale for Reclassification
The following streets are proposed to be reclassified from lower classifications – generally collectors – to minor arterials. As reclassifying existing roadways to higher or lower designations should not be proposed without justification, a brief explanation is included for each street.

- Beall Road west of Highway 99 (collector to minor arterial): The City of Central Point abuts the north side of this street segment and classifies it as a minor arterial. Designation by the City of Medford as a minor arterial would provide consistency between the two cities, particularly since the remaining westerly extension of Beall Lane is entirely within the City of Central Point.

- Barnett Road from Highway 99 to Holly Street (standard residential to minor arterial): This street currently has a four-lane cross-section and is used to access the industrial property paralleling Highway 99 to the west along Grape Street and to access the southern end of downtown along Holly Street.

Major Collector
Major collectors link arterial and local streets, serving both direct land access and traffic mobility functions. For purposes of the TSP, it is assumed that all streets currently designated as collectors are major collectors with exception of the street segments identified in Table H-5 under the heading of "Minor Collectors". Examples of existing major collector streets include Lozier Lane, Hillcrest Road, Black Oak Drive, Sunrise Avenue, and Springbrook Road. There are about two dozen major collector roadways within the UGB.

The proposed cross-section for a major collector street is consistent with the 74-foot ROW required for collectors under the City's existing Development Code. A 44-foot paved width is proposed to accommodate 11-foot travel lanes in each direction, a 12-foot center median or left turn lane, and five-foot bicycle lanes in each direction. Five-foot sidewalks and 10-foot planter strips form the remaining 30 feet of ROW. As an alternative, 7-foot sidewalks could be provided on both sides without planter strips. No on-street parking would be permitted along a major collector street.

Rationale for Reclassification
The following are proposed for reclassification as major collector roadway segments that are not currently classified as collectors:

- Bullock Road north of Highway 62: This street provides access to the industrial area on the south side of the Rogue Valley International-Medford Airport and will be realigned with the Highway 62 Unit 1 improvements to directly access the highway at the Poplar Drive intersection. Accordingly, its functional classification should be upgraded.

- North-South Road west of Medco Haul Road: This street will also provide collector level access and circulation to the industrial area east of the airport and should be designated accordingly.

- 10th Street from Oakdale Avenue to Riverside Avenue: This street is proposed for downgrading from arterial to major collector for consistency with the existing collector and proposed major collector classification of this street outside of the downtown core area.

In addition to the foregoing upgraded classifications, it is recommended that Manzanita Street between Court Street and Riverside Avenue be downgraded to a local street connection as it does not serve a collector street function.

Minor Collector

Minor collectors run through neighborhoods, linking residential traffic local on local streets with higher classification collector and arterial roadways. In contrast to major collectors, which provide a greater degree of mobility compared to land access, minor collector streets place a greater emphasis on direct land access compared to through traffic movement.

The proposed minor collector street cross-section has one 11-foot travel lane, one 5-foot bicycle lane, and one 7-foot parking lane in each direction. This street classification would also a 5-foot sidewalk in each direction with 8-foot planter strips on both sides, or 7-foot sidewalks on both sides without planter strips. Total paved width between the curbs is 46 feet within a 72-foot ROW.

Rationale for Reclassification

Streets proposed to be reclassified from collector to minor collector include:

- Stevens Street from Crater Lake to Wabash Avenue
- Edwards Street from Court Street to Riverside Avenue
- Oakdale Avenue from Stewart Avenue to Garfield Street
- Holmes Avenue from Oakdale Avenue to Holly Street

Three local streets are proposed for reclassification as minor collectors:

- Pearl Street from Stevens Street to Oregon Street and Oregon/Inverness Street from Stevens Street to Sunrise Avenue: Reclassification of these two streets would provide a continuous collector street route from the current collector street terminus on Stevens Street at Pearl Street to the intersection of Inverness Street with Sunrise Avenue (which is also currently classified as a collector street). This reclassification completes a missing connectivity link in the collector street system.

- Barneburg Street from Main Street to Jackson Street: Classification of this street as a minor collector acknowledges its current functional use and fills a system gap between the major collector that ends on the south side of the Barneburg Road/Main Street intersection and the major collector that begins on the north side of the Jackson Street/Sunrise Avenue intersection. Current and projected traffic volumes along this street are consistent with this classification.

Standard Residential

Standard residential streets provide access to adjacent residential land and also connect collectors with minor residential streets. No changes are proposed to the City's existing Standard Residential street design standards that are illustrated in Table H-3. Because the designation of standard residential streets is adequately set forth in the City's Land Development Code (and is dependent upon the number of dwelling units proposed in a land development application that will be served by the street), illustration of proposed standard residential streets in the TSP is not appropriate. Accordingly, these streets are not reflected in Figure 5-2. Existing standard residential streets are illustrated in Figure 3-1.

APPENDIX I

Proposed Tracking Mechanism for Mixed Use Development

Appendix I
Proposed Tracking Mechanism for Mixed Use Development

The value of measures to track progress meeting the policy objective of building a more balanced land use and transportation system is only as good as monitoring, assessment, and periodic update. The region has set ambitious targets for changing land use patterns and directing growth to specific areas potentially served by transit. However, many mixed-use and TOD development practices are not yet codified in Medford plans. Therefore, a mechanism must be developed for Medford and the rest of the MPO area to track and report on the success in developing mixed-use developments, including theTOD areas. A proposed mechanism is included in this Appendix.

The overall intent of tracking is to promote development of mixed-use, pedestrian and transit-supportive centers. Until city plans and codes fully implement TOD development principles, the following general attributes will guide the city's tracking of new mixed-use development –

- Mixed-use development will include medium to higher density residential development (e.g., 10 or 12 units per acre) and at least one of the following land uses: retail commercial, service commercial or light industrial. To be counted, residential and employment uses must be within ¼ mile of each other (via a reasonably direct pedestrian route) and within ¼ mile of a transit stop. Residential and other land uses may be located vertically in relation to each other. Other land uses such as parks or plazas, and/or civic, community and cultural uses are also appropriate in mixed use development areas.

- All development within the site is connected by internal sidewalks or other pedestrian pathways..

- The local street network includes a frequency of streets and street crossings that make it attractive and convenient to walk within the area and to the surrounding areas. Streetscape elements should include human-scaled design features that encourage safety and convenience of pedestrians, bicyclists, and transit users. On-street parking is allowed. Transit stops are incorporated into the design and function of the area.

- Primary building entrances are located on the street and are not separated from the street by off-street parking or maneuvering areas.

- Low-intensity, land extensive uses, and automobile-oriented uses are prohibited from the area.

The following steps are recommended to the City of Medford for determining which mixed use development to count and how to track that development in a manner that will show compliance with the RTP Alternative Measures. This system will need to be monitored and adjusted, probably on a yearly basis to ensure that it is accurately capturing the necessary development.

Step 1. Determine the location of the development being proposed.

1. If development is within the Downtown TOD boundaries and is not an auto-oriented land use such as a gas station, car wash, storage facility, or drive-through commercial business, the development qualifies go to Step 7, otherwise question #2.
2. If development is within the SE Medford TOD, the West Medford TOD, or the Delta Waters TOD, go to Step 2, otherwise question #3. In the absence of adopted plans and/or implementing ordinances for these TODs, development meeting the definition of mixed use provided in OAR 660-012-0060 (7) will qualify for tracking.
3. If development is outside of a TOD area, but is adjacent to an existing neighborhood activity center as identified in Figure 5-1 and is vertically mixed use (a single structure with the above

floors used for residential or office use and a portion of the ground floor for retail/commercial or service uses), go to Step 6[1].

4. If development is outside of a TOD area, but is adjacent to an existing neighborhood activity center as identified in Figure 5-1 and is a horizontally mixed use as defined by the City of Medford LDC[2], go to Step 6.[3]
5. If development is not within one of the TOD areas and is not mixed use, it does not qualify.

Step 2. Determine the type of development

1. Is the project residential? If yes go to Step 3.
2. Is the project retail commercial (generally Community Commercial or Regional Commercial)? If yes go to Step 4.
3. Is the project office (Service Commercial or Professional Office)? If yes go to Step 5.
4. Is the project light industrial (Light Industrial)? If yes go to Step 5.
5. Is the project a land use not covered in questions 1 through 4 above, it does not qualify.

Step 3. Determine whether the residential development counts towards meeting the benchmarks (if the project qualifies go to Step 7).

1. Is the project SFR 10 or greater density project?[4] If yes go to next question, if no does not qualify.

2. Is the project within ¼ mile [measured as actual walking distance from the nearest edge of the project and following the most direct pedestrian (existing or proposed as part of the project) walkway] of an existing major transit stop (as defined by the TPR)? If yes the project qualifies, if no go to next question.

3. Is the residential development within ¼ mile [measured as actual walking distance from the nearest edge of the project and following the most direct pedestrian (existing or proposed as part of the project) walkway] a significant retail center (more than 20,000 square feet[5])? If yes go to next question, if no the project does not qualify.

4. Is there a completed pedestrian walkway connection to that retail center and no significant (more than 120 feet) out of direction travel required for the pedestrian? A completed pedestrian walkway is defined as a facility that is: identified in the Medford LDC for public sidewalks along streets; an off-street multi-use path meeting city design standards; or a pathway that replicates a sidewalk in a parking lots including physical separation from automobiles and sidewalk-like features. Where street crossings are included as a part of the pedestrian route to connect with the retail center, these crossings should not involve unprotected crossings of streets carrying significant traffic volumes or where vehicles travel at speeds exceeding 30 MPH. If there is a completed pedestrian walkway connection, the project qualifies. If no, the project does not qualify.

Step 4. Determine whether the retail commercial development counts towards meeting the benchmarks (if the project qualifies go to Step 7).

---

[1] Note – a building or project size could be assigned to this criteria.
[2] This would require incorporation of criteria for a mixed use zone in the City of Medford LDC.
[3] Note – a building or project size could be assigned to this criteria.
[4] The RVMPO Transit Oriented Design and Transit Corridor Development Strategies Project indicates that 8 units an acre or more is a characteristic of a TOD.
[5] 20,000 square feet of commercial retail square footage generally represents a community commercial node, this number may be adjusted up or down to better represent current development trends in Medford.

1. Does the project front the street (no parking between street and building) and have a main entrance from that street? If yes, go to next question. If no the project does not qualify.

2. Does the project include a vertical mix of uses (A single structure with the above floors used for residential or office use and a portion of the ground floor for retail/commercial or service uses[6])? If yes the project qualifies, if no go to next question.

3. Is the project located within ¼ mile of higher density residential development (SFR 10 or greater) measured as actual walking distance from the nearest edge of the project and following the most direct pedestrian (existing or proposed as part of the project) walkway? If yes, go to the next question. If no the project does not qualify.

4. Is there a complete (or proposed as part of the project) pedestrian walkway between the project and the residential development referred to above? If yes the project qualifies, if no the project does not qualify.

Step 5. Determine whether the office or light industrial project counts towards meeting the benchmarks (if the project qualifies go to Step 7).

1. Does the building front the street (no parking between building and street) and have a main entrance from that street? If yes go to the next question, if no the project does not qualify.

2. Does the project include a vertical mix of uses (A single structure with the above floors used for residential or office use and a portion of the ground floor for retail/commercial or service uses)? If yes the project qualifies, if no go to next question.

3. Is the project located within ¼ mile of higher density residential development (SFR 10 or greater) measured as actual walking distance from the nearest edge of the project and following the most direct pedestrian (existing or proposed as part of the project) walkway? If yes, go to the next question. If no the project does not qualify.

4. Is there a complete (or proposed as part of the project) pedestrian walkway between the project and the residential development referred to above? If yes the project qualifies, if no the project does not qualify.

Step 6. Determine whether the mixed-use project outside of a TOD area qualifies (if the project qualifies go to Step 7).

1. Does the project front the street (no parking between street and building) and have a main entrance from that street? If yes, go to next question. If no the project does not qualify.

2. Is the project within ¼ mile [measured as actual walking distance from the nearest edge of the project and following the most direct pedestrian (existing or proposed as part of the project) walkway] of an existing major transit stop (as defined by the TPR). If yes the project qualifies, if no go to next question.

Step 7 Determine number of units or jobs.

- Single family residential – after approval of site plan and architectural review each unit is counted and tallied.
- Multi-family residential – after approval of site plan and architectural review each unit is counted and tallied.

---

[6] No current definition of mixed use exists in the Medford code.

- Commercial – After approval of site plan and architectural review, determine the total number of square feet in the development and divide by 600 square feet to arrive at an estimate of the number of employees.[7]
- Office - After approval of site plan and architectural review, determine the total number of square feet in the development and divide by 500 square feet to arrive at an estimate of the number of employees.[8]
- Light Industrial - After approval of site plan and architectural review, determine the total number of square feet in the development and divide by 1000 square feet to arrive at an estimate of the number of employees.[9]

Step 8 Record new units and jobs in database.

The city should create its own database to track dwelling units and jobs throughout the year by TOD. This database should be structured for easy transmittal and incorporation into the RVMPO tracking database for regional compliance with LCDC Measures 5 and 6.

Step 9 Corroborate recorded jobs with state and city data.

Once a year the number of jobs recorded that meet the definitions described above should be corroborated with the state's covered employment numbers and the city's business license data. These three numbers will not likely match, but should be reviewed to provide an idea of whether the factors used to estimate jobs are accurate or need modification. At the beginning of each year the city should query the state's covered employment for each TOD and record this number in the database. At the end of each year the same query should be made to compare the change in covered employment in the area. This comparison should be used to confirm the number of jobs created each year by the TOD areas.

---

[7] From "Methods for Evaluating Commercial and Industrial Land Sufficiency: A Recommendation for Oregon Communities." The Advisory Committee on Commercial and Industrial Development, Draft Final Report.
[8] Ibid.
[9] Ibid.

APPENDIX J

Overview of Compliance with Transportation Planning Rule (State Planning Goal 12)

Appendix J
Overview of Compliance with Transportation Planning Rule
(State Planning Goal 12)

This appendix describes the requirements of Oregon's Transportation Planning Rule (TPR), specifically Section 660-12-045—*Implementation of the Transportation System Plan* (TSP). It also describes Medford's existing policies, standards and plans that are designed to meet the TPR requirements, and it identifies policy inconsistencies or changes needed to address the TPR. This memo also reviews the City's existing Comprehensive Plan policies for needed changes to implement the TSP.

Transportation Planning Rule

A major goal of the TPR is reducing reliance on the automobile and encouraging pedestrian, bicycle, and transit facilities as part of a multi-modal transportation system. For MPO areas, the TPR establishes three objectives for reducing automobile vehicle miles traveled (VMT) per capita:

1. No increase within 10 years
2. A 10 percent reduction in 20 years
3. A 20 percent reduction in 30 years.

These objectives are to be achieved by increasing the share of non-automobile trips (pedestrian, bicycle or transit), reducing the number of single occupant vehicle trips, increasing average vehicle occupancy, or reducing the number of trips and/or length of trips required through more intensive land use and/or a better mix of land uses.

Table 1 cross-references TPR requirements and Medford's code provisions and other applicable regulations and plan language. Each section is described below.

Table J-1
TRP Implementation Measures

Issue	TPR Citation	Medford Comprehensive Plan and Land Development Code
Land Use Approvals for Transportation Projects	045 (1)	10.314 and 10.337 – Not adequate
Access Control	045 (2) (a)	Article IV – Adequate
Protecting Future Operations	045 (2) (b)	10.453 – Needs revision
Airports	045 (2) (c)	10.349-10.355 – Adequate for TPR, need OAR revisions
Coordinated Review	045 (2) (d)	10.146 - Adequate
Conditions of Approval	045 (2) (e)	10.460-10.466 - Adequate
Notification	045 (2) (f)	10.146 - Adequate
Consistency with TSP	045 (2) (g)	Comprehensive Plan and 10.227 – Adequate
Bicycle Parking	045 (3) (a)	10.747-10.751 - Adequate
Pedestrian and Bicycle Facilities	045 (3) (b)	10.464–10.466 - Adequate

Table J-1 Continued
TRP Implementation Measures

Issue	TPR Citation	Medford Comprehensive Plan and Land Development Code
Off-site Improvements	045 (3) (c)	10.291 – Could be improved
Internal Pedestrian Circulation	045 (3) (e)	10.772-10.776 - Adequate
Design Support for Transit Routes and Transit Access	045 (4) (a) and (5) (d)	10.806-10.808 - Adequate
Preferential Carpool Parking	045 (4) (d)	10.809 - Adequate
Transit Oriented Development	045 (4) (g) and (5) (a)	10.235 and 10.270 – Could be improved
Demand Management Program	045 (5) (b)	RVTD Program – City could take action to improve compliance
Parking Plan	045 (5) (c)	10.741-10.746 – Not Adequate
Pedestrian and Bicycle Plan for Developed Areas	045 (6)	Included in TSP - Adequate
Street Standards	045 (7)	Included in TSP - Adequate

Land Use Approvals for Transportation Projects

The TPR [660-12-045(1)] requires that local governments amend their land use regulations to implement their adopted TSP and to clarify the land use approval process for transportation-related projects.

Medford does not specifically identify transportation projects as permitted or conditional uses in its zoning. Each zone should allow transportation improvements listed in the TSP as an allowed use. The residential use table does permit pedestrian, transit and bicycle facilities as an allowed use. Additional provisions for transportation projects not in the TSP could be made with the development of corresponding criteria. The LDC does include a provision in 10.205 that indicates that "land use issues decided at the time of approval of the TSP do not have to be reexamined at the time of project development." This section does not appear to meet the full intent of this TPR requirement.

Suggested Code Language

Add a section to both the residential and commercial use tables that permits the following use:

- "Transportation projects that comply with the Transportation System Plan."

Protecting The Existing and Future Operation of Facilities

Access Control
The TPR [660-12-045(2)(a)] requires local governments to adopt access control measures, such as driveway and public road spacing, median control, and signal spacing standards that are consistent with the functional classification of roads.

The Medford Land Division Code currently addresses these issues in Article IV – Public Improvement Standards and Criteria. This section appears to meet the intent of this TPR requirement. These standards will be updated as part of the adoption of the TSP.

Protecting Future Operations
The TPR [660-12-045(2)(b)] requires local governments to adopt standards to protect future operation of roads, transit ways and major transit corridors.

The City of Medford currently requires that all development comply with an adopted neighborhood circulation plan [10.453] and with the Street Classification Map [10.431]. Section 10.453 should be expanded to include transit ways and major transit corridors. The section should amended to refer to future road and transit developments specified in the TSP.

Suggested Code Language
Add the following language to 10.453 (shown as underlined):

- All development shall comply with an adopted neighborhood circulation plan, including transit and pedestrian facilities in that plan, when such a plan is available for the project area.

Add the following language to 10.454:

- Such conceptual neighborhood circulation plans shall identify the function of proposed streets, transit ways, major transit ways, pedestrian circulation and bicycle routes, and design criteria shall be applied as per this chapter.

Airports
The TPR [660-12-045(2)(c)] requires local governments to adopt measures to control land uses within airport noise corridors and imaginary surfaces. The Medford LDC adequately addresses these requirements in sections 10.349 to 10.355.

In addition to the TPR requirements there are OAR requirements [660-013] that pertain to airport planning. OAR 660-013-0040 requires that local jurisdictions adopt a map showing the airport boundary, location of runways and other features and future areas of expansion.

Neither the LDC nor the Comprehensive Plan references the maps and figures required by OAR 660-013-0040. The City could choose to adopt the Airport Master Plan, or portions of the Master Plan to meet the requirements of the OAR.

Process for Coordinated Review of Land Use Decisions

Coordinated Review
The TPR [660-12-045(2)(d)] requires local governments to create a process for coordinated review of future land use decisions affecting transportation facilities, corridors or sites.

The LDC includes a section on referral to other agencies for review [10.146] including RVTD and ODOT. This language appears adequate to meet this section of the TPR.

<u>Conditions of Approval</u>
The TPR [660-12-045(2)(e)] requires local governments to adopt land use regulations that create a process for applying conditions to development proposals to minimize impacts and protect transportation facilities, corridors, or sites.

The LDC requires applicants to complete a Traffic Impact Analysis (TIA) and to maintain a level of service D [10.460-10.466]. These requirements appear adequate to meet this section of the TPR.

<u>Notification</u>
The TPR [660-12-045(2)(f)] requires regulations calling for notification of the following to public agencies providing transportation facilities and services, MPOs and the Oregon Department of Transportation (ODOT):

- Land use applications that require public hearings
- Subdivision and partition applications
- Other applications that affect private access to roads
- Other applications within airport noise corridors and imaginary surfaces that affect airport operations.

The LDC includes a section on referral to other agencies for review [10.146] including RVTD and ODOT. This language appears adequate to meet this section of the TPR.

<u>Consistency with TSP</u>
The TPR [660-12-045(2)(g)] requires regulations assuring that amendments to land use designations, densities, and design standards are consistent with the functions, capacities and levels of service of facilities identified in the TSP. The purpose of this requirement is to ensure that a comprehensive plan amendment, zoning ordinance amendment or zone change considers the impact on traffic and is consistent with the TSP.

Medford's Comprehensive Plan requires that any changes to the Comprehensive Plan be judged on "compatibility of the proposed change with other elements of the *Comprehensive Plan*" [Review and Amendment Procedures] The LDC requires that zone changes be "consistent with the Oregon Transportation Planning Rule (OAR 660) and the General Land Use Plan Map designation." [10.227]. This language appears adequate to meet this section of the TPR.

Safe and Convenient Pedestrian and Bicycle Circulation

<u>Bicycle Parking</u>
The TPR [660-12-045(3)(a)] requires bicycle parking facilities as part of the multi-family residential units of four units or more, new retail, office or institutional developments, and all transit transfer stations and park and ride lots. Bicycle parking is thoroughly addressed in LDC sections 10.747 through 10.751.

<u>Pedestrian and Bicycle Facilities</u>
The TPR [660-12-045(3)(b)] requires on-site facilities that accommodate safe and convenient pedestrian and bicycle access from within new subdivisions, multi-family developments, planned developments, shopping centers, and commercial districts to adjacent residential areas and transit stops, and to neighborhood activity centers within a half mile of the development. The TPR also provides that single-

family residential developments shall generally include streets and access ways; and that pedestrian circulation through parking lots should generally be provided in the form of accessways.

"Safe and convenient" means that the bicycle and pedestrian routes, facilities and improvements have all the following characteristics:

- They are reasonably free from hazards, particularly types or levels of automobile traffic that would interfere with or discourage pedestrian or cycle travel for short trips.
- They provide a reasonably direct route of travel between destinations, such as between a transit stop and a store.
- They meet the travel needs of cyclists and pedestrians considering destination and length of trip; and considering that the optimum trip length of pedestrians is generally a quarter to half mile. [660-12-045(3)(d)]

The language found in sections 10.464 through 10.466 meet these TPR requirements.

<u>Off-site Improvements</u>
The TPR [660-12-045(3)(c)] requires that off-site improvements that are required as a condition of approval include pedestrian and bicycle improvements, including bicycle ways along arterials and major collectors.

Section 10.421, General Development Design Standards and Criteria indicates that all developer improvements must be consistent with the Comprehensive Plan and other adopted plans (including presumably the TSP). In addition, section 10.291 lists the conditions of approval for site plan and architectural review and includes "requiring the installation of appropriate public facilities…" but does not specifically mention pedestrian and bicycle improvements. Both sections could be improved to include language referring to pedestrian and bicycle off-site dedications.

Suggested Code Language
Include the following language in Section 10.291:

- (2) Requiring the installation of appropriate public facilities and services, <u>including bicycle and pedestrian facilities</u>, and dedication of land to accommodate public facilities when needed.

Include the following language in Section 10.421:

- The developer shall design and improve all streets, <u>bicycle and pedestrian facilities</u>, storm drains, sewers, waterlines, accessways and other public easements which are part of the development, and those off-site public improvement necessary to serve the development consistent with the Comprehensive Plan, <u>Transportation System Plan</u> or any specific plan thereof….

<u>Internal Pedestrian Circulation</u>
The TPR [660-12-045(3)(e)] requires internal pedestrian circulation within new office parks and commercial developments to be provided through clustering of buildings, construction of accessways, walkways and similar techniques.

LDC sections 10.772 through 10.776 meet this TPR requirement.

Transit Access and Facilities

For urban areas where the area is already served by a public transit system, the TPR [660-12-045(4)] requires support of transit by requiring land use regulations for the following:

- Transit routes and facilities shall be supported through appropriate measures such as bus stops, pullouts, optimum road geometrics, or parking restrictions.
- New retail, office and institutional developments should include transit routes and facilities and convenient pedestrian access to transit through walkways and connections.
- Designate pedestrian districts for areas planned for a mix of uses likely to support a relatively high level of pedestrian activity.
- Allow existing developments to redevelop portions of parking areas for transit oriented uses where appropriate.
- Ensure that new roads can be adequately served by transit.
- Designate transit supportive land uses along existing or planned transit routes.

The LDC currently has a number of code sections that do a good job of meeting this TPR requirement. Those sections are 10.806 through 10.808.

Other TPR Provisions

<u>Preferential Carpool Parking</u>
The TPR [660-12-045(4)(d)] requires that designated employee parking areas in new developments shall provide preferential parking for carpools and vanpools.

Section 10.809 meets this TPR requirement.

<u>Transit Oriented Development</u>
The TPR [660-12045(5)(a)] requires local governments to adopt land use and subdivision regulations that allow transit-oriented development on lands along transit routes. "Transit oriented development" is defined as a mix of residential, retail and office uses and a supporting network of roads, bicycle and pedestrian facilities focused on a major transit stop. A key component is high-density residential development close to a transit stop with supporting neighborhood commercial uses.

Medford's PUD code allows developers to build higher density developments anywhere in the City if they meet certain criteria. The PUD also allows some mixing of uses. The City is currently working on establishing four TOD districts within the City that will substantially fulfill the intent of this requirement by focusing higher density, mixed-use development along transit corridors and around major transit stops. However, there is nothing within the current PUD, land division code or non-PUD development that mentions transit oriented development or gives preference to transit oriented development.

Suggested Code Language
Add the following language to 10.230 A:

- <u>9. To promote the development of Transit Oriented Design along designated transit corridors and within designated TOD areas.</u>

Add the following language to the use table [10.314] for residential uses:

- Allow up to 20 percent commercial development in the MFR 20 and 30 zones when the zone is adjacent to a designated or planned transit route.

Demand Management Program

The TPR [660-12-045(5)(b)] requires local governments to implement a demand management program to meet the VMT reduction standards. Demand management programs are designed to change travel behavior in order to improve the performance of transportation facilities and reduce the need for additional road capacity. Possible actions include, but are not limited to, promoting the use of alternative modes, ride-sharing and vanpool programs, and trip-reduction ordinances.

Within the Medford UGB, the leader in developing and implementing TDM strategies is the Rogue Valley Transportation District (RVTD). RVTD currently promotes a full range of several TDM strategies including: education programs, trip reduction incentives, the “bikes on buses” program, carpools, vanpools, telework, park-and-ride service, employer outreach and other strategies. In addition, RVTD is actively engaged in developing a Transportation Management Association (or TMA) within the Medford area to assist large employers with implementation of various demand management strategies. The following TSP recommendations would help meet this TPR requirement:

- The City should promote the use of alternative commute options to reduce motor vehicle travel generated by employment sites and schools by serving as a role model for the community by joining the Medford area Transportation Management Association (TMA) and actively supporting its mission.
- The City should support the use of transit among major employers in the Medford area by encouraging purchase of individual or subsidized group transit passes, or other actions to meet requirements for employee commute trip reductions.
- The City should encourage the development of discount transit fare programs and shuttle services by offering to share start-up costs with employers, schools and special event sponsors.
- The City should participate in public outreach to raise awareness about the use of TDM strategies and should actively market groups having the greatest potential for reducing single occupancy vehicle trips such as large employment sites and commuting students.

Parking Plan

The TPR [660-12-045(5)(c)] requires local governments to implement a parking plan that does all of the following:

- Achieves a 10 percent reduction in the number of parking spaces per capita in the Metropolitan Planning Organization area
- Aids in meeting the VMT reduction standards
- Sets minimum and maximum parking requirements.

The reduction in parking spaces may be accomplished through a combination of restrictions on new developments and requirements to redevelop existing spaces into other uses.

The City’s current parking requirements [10.741-10.746] do not meet this TPR requirement. The current parking requirements list only minimum parking standards and do not allow for shared parking agreements to reduce the total number of parking spaces required for two separate uses. Parking spaces can be reduced by 10 percent if the development is within 400 feet of a transit route [10.810].

The following actions should be considered to bring the code into compliance with the TPR:

- Conduct a study to determine if the current parking minimums are requiring too much parking for particular uses. A good place to start for the minimum parking requirement is the amount required by financial institutions for construction or improvement loans. This is only a starting point and often further reductions are warranted.

- Include code language that establishes a maximum number of parking spaces for each use. This can be as simple as applying a standard that limits parking to no more than 10 percent than the minimum for all uses.

- Create a code section that allows a shared parking agreement between two or more businesses and that allows a 50 percent or more reduction in required parking when the requirements of the code section are met.

- Develop code language that allows mixed-use projects to reduce the amount of parking by 50 percent of the total required for each separate use. Establish appropriate conditions for this reduction.

<u>Pedestrian and Bicycle Plan for Developed Areas</u>
The TPR [660-045(6)] requires local governments to identify appropriate pedestrian and bicycle improvements in developed areas to provide for more direct, convenient and safer travel within and between residential areas and neighborhood activity centers (schools, parks, shopping areas).

A pedestrian and bicycle plan was developed for the TSP.

<u>Street Standards</u>
The TPR [660-12-045(7)] requires local governments to establish street standards that minimize pavement width and total right-of-way, consistent with the operational needs of the facility. The intent of this standard is to encourage local government to consider and reduce excessive standards in order to reduce construction costs, provide for more efficient use of urban land, provide emergency vehicle access while discouraging inappropriate traffic volumes and speeds, and accommodate convenient bicycle and pedestrian circulation.

Street standards were updated as part of the TSP. These standards will replace the current street standards found in the LDC.

Comprehensive Plan

The City of Medford Comprehensive Plan includes broad Goal statements, followed by more specific Policy statements that are further defined by Implementation strategies. The Transportation Goals, Policies and Implementation strategies are currently found in the Public Facilities portion of the Comprehensive Plan. These Goals, Policies and Implementations strategies will be replaced through the adoption of the TSP. The TSP includes updated Goals provide a sound basis for implementing the necessary code changes needed to meet the TPR and implementation of TOD areas.