

# Murphy Road Corridor Study Plan and Policy Review

PREPARED FOR: Ken Gould, City of Bend  
PREPARED BY: Brandy Steffen, CH2M HILL  
CC: Dave Simmons, CH2M HILL  
Theresa Carr, CH2M HILL  
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## Introduction

This technical memorandum describes relevant regional and local plans and policies as they relate to the Murphy Road Corridor Study. This review assists the project team in identifying policy parameters that need to be addressed during the alternatives development task. Relevant policy goals may also be used as evaluation measures for various alternatives. Although each document reviewed contains many policies, only those policies considered most pertinent to Murphy Road are presented, to help focus the discussion.

## Documents Reviewed

The four adopted plans and policies reviewed as part of this memorandum are listed below.

- Bend Area General Plan (City of Bend) – adopted 1976, last updated 2002
- City of Bend Development Code (City of Bend) – July 2006
- Bend Urban Area Transportation System Plan (City of Bend) – 2000
- Bend 2030 Vision, Phase I (City of Bend) (including the Community Profile and Trends Report) – August 2005, Endorsed by City Council June 2006

In addition, several plans and studies were reviewed that were either recently completed (but not yet adopted), or are currently underway. These plans, listed below, were reviewed at a cursory level to provide the project team with an awareness of the project scopes, timelines, and recommendations. These plans are described in Appendix A.

- Murphy Crossing Refinement Plan (City of Bend)
- Reed Market Corridor Refinement Plan (City of Bend)
- South Bend Parkway Refinement Study (Oregon Department of Transportation)
- Metropolitan Transportation Plan (Bend Metropolitan Planning Organization)
- Residential Lands Study (City of Bend)

The remainder of this memorandum is organized by plan. Each plan is briefly described, focusing on those policies most relevant to the Murphy Road Corridor Study. Each section then details the project relevancy. Information on project relevancy is provided in *italics*.

## Bend Area General Plan (City of Bend) – 1981, updated 2002

The Bend Area General Plan is a long range (2020) comprehensive plan for the Bend metropolitan area. The following goals and policies relevant to the Murphy Road Corridor Study are listed below by relevant chapter:

### Chapter 2 - Natural Features and Open Space

#### Goals

- to preserve interesting and distinct geologic formations and areas of natural vegetation;
- to soften the appearance of street corridors with planter and median strips;

Policy 7: Major rock outcrops, stands of trees, or other prominent natural features identified in the General Plan shall be preserved as a means of retaining the visual character and quality of the community.

#### Project Relevance:

*There is a rock outcropping located directly to the east of the railroad tracks. This rock outcropping has been designated by the City as an area of special interest (ASI). The easterly extension of Murphy Road will need to avoid or minimize the impacts to the outcropping. Mitigation requirements are examined in the City of Bend Development Code.*

### Chapter 6 – The Economy and Lands for Economic Growth

#### Goal: Commercial Development

Policy 30: An area south of Murphy Road on the west side of Highway 97 has been marked for highway commercial with a flexible "sawtooth" boundary. This area shall be approved for development only when a system of frontage road and limited access control is created that will protect the capacity and safety of Highway 97 and South 3rd Street.

#### Project Relevance:

*While this area marked for highway commercial is to the west of the study area, this expected development is likely to increase traffic levels along Murphy Road.*

Policy 31: It is the intent of the Plan to allow commercial development adjacent to arterial streets and highways in areas designated for commercial development, provided that the developments access onto frontage roads or interior roads, and that access onto the highway or arterial will be limited. Points of access will be encouraged that provide for adequate and safe entrances and exits, and that favor right turns and merging over the use of traffic signals.

**Project Relevance:**

*Currently Murphy Road is classified as a major collector, however, a request could be made as part of this study to modify this classification. If Murphy Road were reclassified as an arterial, access will need to be limited; also right turns and merging will need to be favored over traffic signals.*

## Chapter 7 – Transportation Systems

**Goal: Transportation and Land Use**

- To promote land use patterns that support fewer vehicle trips and shorter trip lengths
- To ensure that future development, including re-development will not interfere with the completion of Bend’s transportation system

**Goal: Transportation System Management**

- Provide cost effective transportation improvements and implement strategies that will improve the efficiency and function of existing roadways

Policy 1: The City shall adopt land use regulations to limit the location and number of driveways and access points, and other access management strategies on all major collector and arterial streets.

**Project Relevance:**

*City policies regarding access management have been adopted and the details are explained in the next section (City of Bend Development Code), section 3.1.400 Vehicular Access Management.*

Policy 3: The City and State shall implement transportation system management measures to increase safety, reduce traffic congestion to improve the function of arterial and collector streets, and protect the function of all travel modes.

**Project Relevance:**

*Transportation System Management (TSM) measures need to be considered prior to recommending major capacity improvements. Access standards developed for principal arterials need to consider Oregon Department of Transportation (ODOT) access management policies along state highways, including the South Bend Parkway. However, specific TSM measures are not outlined in the General Plan.*

**Goal: Pedestrian and Bicycle Systems**

- To support and encourage increased levels of bicycling and walking as an alternative to the automobile
- To provide safe, accessible and convenient bicycling and walking facilities

Policy 4: The City shall develop safe and convenient bicycle and pedestrian circulation to major activity centers, including the downtown, schools, shopping areas and parks. East-

west access to the downtown area needs particular emphasis across major obstacles, such as 3<sup>rd</sup> Street, the Bend Parkway and the railroad.

**Project Relevance:**

*The City has identified 3<sup>rd</sup> Street, the Bend Parkway, and the railroad as major obstacles for bicycle and pedestrian crossing. The Murphy Road Corridor Study will address improvements to 3<sup>rd</sup> Street and will therefore need to coordinate with the City as necessary on improvements to allow for an accessible and easy bicycle and pedestrian crossing. The study area is located to the east of the Bend Parkway, but the Burlington Northern Santa Fe (BNSF) railroad intersects the potential expansion of Murphy Road between Brosterhous and 15<sup>th</sup> Avenue, requiring the study to coordinate with the City on that issue as well.*

**Policy 5:** The City shall facilitate easy and safe bicycle and pedestrian crossings of major collector and arterial streets. Intersections shall be designed to include pedestrian refuges or islands, curb extensions and other elements where needed for pedestrian safety. Also, bike lanes shall be extended to meet intersection crosswalks.

**Project Relevance:**

*Since Murphy Road is classified as a major collector, improvements to intersections recommended as part of the Murphy Road Corridor Study will need to include refuges/islands, curb extensions, and/or other elements to enhance pedestrian safety, as well as extending bike lanes into the intersection crosswalks for easy and safe bicycle and pedestrian crossing.*

**Policy 6:** Bike lanes shall be included on all new and reconstructed arterials and major collectors, except where bikeways are authorized by the Transportation System Plan (TSP). Bike lanes shall also be provided when practical on local streets within commercial and industrial areas. Bike lanes shall be added to existing arterial and major collector streets on a prioritized schedule. Specific effort shall be made to fill the gaps in the on-street bikeway system. An appropriate means of pedestrian and bicyclist signal actuation should be provided at all new or upgraded traffic signal installations.

**Project Relevance:**

*This policy would be relevant for the easterly extension of Murphy Road and for improvements to the existing collector. As per this policy bicycle facilities will need to be part of the Murphy Road recommendations.*

**Policy 7:** Property-tight sidewalks shall be included on both sides of all new streets except where extreme slopes, severe topographical constraints, or special circumstances exist. Landscape strips shall separate curbs and sidewalks on new and reconstructed roads. Sidewalks shall be added to all existing arterial and collector streets to fill the gaps in the pedestrian system.

**Project Relevance:**

*Murphy Road does not have a continuous sidewalk system and is not restricted by topographical constraints, so improvements to the corridor should include filling the gaps in the pedestrian system with property-tight sidewalks, with landscaped strips between the curb and sidewalks, on both sides of Murphy Road. This policy will also apply to the easterly extension of Murphy Road. Specific size requirements for these features are examined in the City of Bend Development Code.*

**Goal: Street System**

- To provide a practical and convenient means of moving people and goods within the urban area that accommodates various transportation modes
- To provide a safe and efficient means to access all parts of the community
- To provide an attractive, tree-lined, pedestrian friendly streetscape sensitive to protecting the livability of the community

**Policy 1:** Streets shall be located, designed and constructed to meet their planned function and provide space for adequate planting strips, sidewalks, motor vehicle travel and bike lanes (where appropriate). Specific effort should be made to improve and enhance east-west circulation patterns for all modes of travel throughout the community.

**Project Relevance:**

*The City of Bend is currently underserved by east-west connections. Improvements to Murphy Road would assist in improving these east-west circulation patterns for all travel modes.*

**Policy 3:** Streets shall be classified and generally located according to the **Bend Urban Area - Roadway System Plan (Figure 7-7)**, the **Street Functional Classification (Table 7-1)**, and the **Street Grid System (Figure 7-5)**. Street right-of-ways and improvements standards shall be developed to meet the needs of the Transportation Plan and Functional Classification System.

**Project Relevance:**

*Murphy Road is listed as a major collector in the Bend Urban Area-Roadway System Plan, the Street Functional Classification, and the Street Grid System. Third Avenue (Business US 97) is classified as a Primary Arterial, Parrell, Country Club, and Brousterhous are all designated as major collectors, while 15<sup>th</sup> Avenue is classified as a minor arterial.*

*Collector roadways are intended to provide access and circulation to nearby arterial roadways in a multi-modal fashion. Bike lanes and sidewalks are typical characteristics on both sides of the street and street parking are typically not permitted. Trip lengths are generally half a mile in distance. Major Collectors are normally located at about every half mile (according to Table 7-1 of the General Plan). The typical volume of traffic on a major collector is 1,500 to 9,000 vehicles per day (Table 7-1).*

*The function of a Minor Arterial is to carry traffic from one part of town to another. The Minor Arterial street network interconnects and augments the Principal and Major Arterial street system. Trip lengths are normally of moderate distances. Minor Arterials often border and establish the edge of neighborhoods. Minor arterials often support local or neighborhood commercial areas. Minor*

*Arterials are normally located at about every half mile to one mile (according to Table 7-1 and Figure 29 of the TSP and Table 12 and Figure 7-5 of the General Plan). The nearest parallel east-west arterial to Murphy Road is Reed Market Road, more than one mile away to the north. The typical volume of traffic on a Minor Arterial is 5,000 to 18,000 vehicles per day (according to Table 7-1 of the TSP and Table 12 of the General Plan).*

*The year 2030 traffic forecast on Murphy Road from the City of Bend travel demand model is 2,900 vehicles per day (in the residential areas) to 8,900 vehicles per day (in the vicinity of the Bend Parkway and Business 97).*

**Policy 4:** In order to reduce vehicle speed, avoid construction of excessive pavement, and create livable neighborhoods, the City shall adopt standards that allow for narrower streets and lane standards, on-street parking, and other pedestrian friendly design elements.

**Project Relevance:**

*The design standards are described in detail in the City of Bend Development Code.*

**Policy 6:** Access control shall be part of the design standards for major collectors, arterials, principal arterials and expressways to ensure that adequate public safety and future traffic carrying capacity is maintained while at the same time preserving appropriate access to existing development and providing for appropriate access for future development.

**Project Relevance:**

*Any changes in the current policies will affect Murphy Road. Updated policies regarding access control on collectors and arterials, along with changes to raised median requirements will affect the study area.*

**Policy 8:** Traffic signals or roundabouts shall be constructed in accordance with the design, spacing and standards adopted by the City and State.

**Project Relevance:**

*These standards are examined in the City of Bend Development Code.*

**Policy 12:** Traffic calming devices may be considered anywhere traffic impacts are adverse to residential livability.

**Project Relevance:**

*Traffic calming measures may be appropriate at intersections of high pedestrian or bicycle usage or at areas of high crash rates.*

**Policy 21:** The City shall evaluate the effect of transportation demand management (TDM) and transportation system management (TSM) measures that would successfully eliminate or delay the need for minor arterial street widening beyond the existing travel lanes within the twenty-year design life of a proposed roadway project. The design analysis of roadway widening shall consider the impacts on all modes of travel, adjacent affected travel corridors

and the impact on properties immediately adjacent to the contemplated road widening. The most effective and appropriate TDM and TSM measures recommended by the evaluation, as selected by the City Council, shall be implemented either in conjunction with, or before, the road widening project. The City Council shall receive this evaluation report that makes the aforementioned analysis of TDM and TSM measures, and the evaluation of roadway widening design options, prior to considering authorization of proceeding with the road widening project.

**Project Relevance:**

*If the classification for Murphy Road is redesignated to an arterial the above information will apply to improvements or street widening. The project would need to provide an evaluation report that includes TDM and TSM measures before the City will authorize road widening.*

## Chapter 9 - Community Appearance

Policy 2: Community appearance shall continue to be a major concern and the subject of a major effort in the area. Major natural features, such as rock outcrops or stands of trees, should be preserved as a community asset as the area develops.

**Project Relevance:**

*There are rock outcroppings at the east end of the study area which have been designated by the City to be an area of special interest and all efforts should be made to preserve them. If impacts to the ASI are unavoidable, mitigation efforts are examined in the City of Bend Development Code.*

Policy 7: The city shall develop designs for arterial and collector streets that include landscaped planter strips and medians. Such designs shall include trees in the planter and median strips when practical and safe.

**Project Relevance:**

*As a major collector, Murphy Road should have landscaped planter strips and medians where practicable and safe. Design requirements are examined in the City of Bend Development Code.*

## City of Bend Development Code - July 2006

The City of Bend Development Code is a comprehensive land use and development code that governs all of the land within the incorporated city limits of Bend. The Chapters of the code are used together to review land use applications. Relevant sections of the code are described over the following pages.

### Chapter 1

**1.1.300 Consistency with Plan and Laws.** Each development and use application and other procedure initiated under this Code shall be consistent with the adopted comprehensive plan of the City of Bend as implemented by this Code, and with applicable state and federal

laws and regulations. All provisions of this Code shall be construed in conformity with the adopted Bend Area General Plan.

## Chapter 2 Land Use Districts

### Chapter 2.7.700 Upland Areas of Special Interest Overlay Zone

The upland features consist of scattered rock outcrops, stands of trees, and dominant ridges and faults that are typical of the Central Oregon landscape.

#### B. Applicability:

1. **Affected Property.** The procedures and requirements of the Upland Areas of Special Interest Overlay Zone apply to any real property designated as having an ASI as mapped on the Bend Area General Plan map and the City Zoning Map. These standards shall be in addition to the standards of the underlying zone.
2. **Activities Subject to Review.** Unless specifically exempted from review as described in Section B(3) below, activities subject to review and which require a permit, shall include all development on properties including Site modifications including grading, excavation or fill, installation of new utilities, construction of roads, driveways, or paths.

#### C. ASI Review Process

For all activity subject to the Upland Area of Special Interest Overlay review, the following shall apply:

1. The ASI Review shall be processed as a "Land Use Permit" as defined in Chapter 4.1, Land Use and Review Procedures. When practicable, the ASI Review shall be processed concurrently with other land use permits.
2. The ASI Review application is subject to the provisions of this Chapter.
3. The ASI Review application shall be filed on a form provided by the City and shall be accompanied by a filing fee, drawings and information specified in this Chapter.

#### D. Development Standards

The ASI Boundary is delineated by the outside edge of the boundary line shown on the Bend Area General Plan map and the City Zoning Map. No development as defined in this Chapter shall occur within an Upland Area of Special Interest boundary unless expressly permitted by the provisions of this Chapter.

The Development Standards shall apply to structures, fences, impervious surfaces including streets and driveways except where provided for in this Section and landscaping as described in Section D(5) below.

**Streets and driveways.** Public or private streets and driveways may be placed within an Upland Area of Special Interest to access development activities if it is shown that no other practicable method of access exists. If allowed, the applicant shall demonstrate that:

- a. No other practicable access to the buildable area exists, or access from an off-site location through the use of easements is not possible;

- b. Roads and driveways are designed to be the minimum width necessary and the minimum intrusion into the Upland Area of Special Interest while also allowing safe passage of vehicles and/or pedestrians;
- c. The need for future extensions of shared access, access easements, or private streets to access potential new building sites have been considered at the time of this application in order to avoid subsequent encroachments into an Upland Area of Special Interest.

## F. Areas of Special Interest Mitigation Standards

The development activities listed in Section B and D may trigger a requirement for mitigation. When a proposed development impacts an Upland Area of Special Interest by grading, excavation, or fill, the placement of impervious surfaces, or by the removal of vegetation, a mitigation plan prepared by a qualified professional shall be submitted to the review authority. The mitigation plan shall include the following:

- The location of the impact, the existing conditions and area size of the resource prior to impact, the location and size of the proposed mitigation area, and a proposed mitigation plan that represents a 1:1 replacement value;
- Additional mitigation measures may be required based on the nature of the impact such as:
  - Site reclamation
  - Screening of structures, cuts or fills
  - Increased vegetative quantities and/or sizes

### Project Relevance:

*From the Upland Areas of Special Interest map, in this document, there is an ASI to the west of 15<sup>th</sup> Street, which has been identified as a rock outcropping. The study will try to avoid the area, but if any activity takes place in the ASI boundry, review and a permit is necessary to build a road in the area. Roads must be of the minimum size and needs to be planned for future development so that there isn't additional impact to the ASI.*

## Chapter 3 – Design Standards

### 3.1.100 Purpose

#### **B. Street Connectivity and Formation of Blocks Required.**

1. Block Length and Perimeter. The block lengths and perimeters shall not exceed the following standards as measured from centerline to centerline of through intersecting streets.
  - a. 660 feet block length and 2,000 feet block perimeter in all Residential zones;
  - b. 400 feet block length and 1,500 feet block perimeter in the Central Business District, Convenience Commercial, Mixed Use Riverfront and Professional Office Districts;

2. New street connections to arterials and collectors shall be governed by those requirements in Section 3.1.400; Vehicular Access Management.

**Project Relevance:**

*Since Murphy Road is adjacent to both residentially and commercially zoned land, the requirements in Section 3.1.400 are applicable, as well as the required block length for the commercial and residential zones.*

**3.1.300 Pedestrian Access and Circulation**

**C. Pedestrian Facility Development Standards.**

On-site pedestrian facilities shall conform to the following standards:

1. On-site pedestrian walkways shall have a minimum width of 5-feet.
2. Pedestrian walkways shall be lighted in conformance with Section 3.5.200; Outdoor Lighting Standards.
3. The City may require landscaping adjacent to a pedestrian walkway for screening and the privacy of adjoining properties. The specific landscaping requirements shall balance the neighbors' privacy with the public safety need for surveillance of users of the public walkway.
4. The Planning Director may determine, based upon facts in the application and other public records, that a walkway is impractical due to: physical or topographic conditions (e.g., freeways, railroads, extremely steep slopes, sensitive lands, and similar physical constraints).

**Project Relevance:**

*Improvements to Murphy Road sidewalks will need to be a minimum of 5-feet wide, with appropriate outdoor lighting, and screening landscaping between the sidewalk and private properties. The study will need to conclude whether walkways are practical near the railroad on the east end of the project area and determine proper efforts to maintain connectivity.*

**E. Other Design and Construction Considerations.**

Public pedestrian facilities shall conform to all of the standards in Subsections 1-4 listed below:

1. Vehicle/walkway Separation. Where walkways are parallel and adjacent to a driveway or street (public or private), they shall be raised six inches and curbed, or separated from the driveway/street by a five-foot minimum landscaped strip. Special designs may be permitted if this five-foot separation cannot be achieved.
2. Housing/walkway Separation. Pedestrian walkways shall be separated a minimum of five (5) feet from all residential living areas on the ground floor, except at building entrances. Separation is measured from the walkway edge to the closest dwelling unit. The separation area shall be landscaped in conformance with the provisions of Chapter 3.2 Landscaping, Street Trees, Fences & Walls. No walkway/building separation is required for commercial, industrial, public, or institutional uses.

3. Walkway Surface. Walkway surfaces shall be concrete, asphalt, brick/masonry pavers, or other durable surface that makes a smooth surface texture, and shall conform to ADA requirements. Multi-use paths (i.e., for bicycles and pedestrians) shall be the same materials.

**Project Relevance:**

*Sidewalk improvements or new sidewalks need to be separated from the street by five feet with a raised curb of six inches. There should also be a five foot separation from sidewalks and private properties. The walkway surface needs to be of appropriate material and conform to ADA requirements.*

**3.1.400 Vehicular Access Management**

**G. Access Spacing.**

Driveway access spacing onto roadways under the jurisdiction of the City shall be regulated by the following standards, unless otherwise approved by the City Engineer:

1. Driveway Spacing:
  - b. **Collector Streets** shall be three hundred feet (300') minimum spacing as measured from centerline of driveway to centerline of driveway.
  - c. **Arterial Streets** shall be three hundred feet (300') minimum spacing as measured from centerline of driveway to centerline of driveway.
  - d. Driveways onto arterials and collectors may have directional restrictions depending on the roadway's characteristics including number of lanes, queuing at nearby intersections/driveways, and locations of signals or roundabouts.
2. Spacing between Driveways and Intersections:
  - b. Three hundred feet (300') is the minimum distance between driveways onto collector/arterial roadways and intersections as measured from centerline of driveway to centerline of street. Driveways to arterials and collectors may have directional restrictions depending on the roadway's characteristics including number of lanes, queuing at nearby intersections/driveways, and locations of signals or roundabouts.
  - c. Three hundred feet (300') is the minimum distance between driveways onto local/collector/arterial roadways and intersections that are controlled with a traffic signal or roundabout as measured from centerline of driveway to centerline of controlled intersection. Driveways to locals/collectors/arterials located at least 300' from controlled intersections may still have directional restrictions depending on the roadway's characteristics including number of lanes, queuing at nearby intersections/driveways, and operations of signal or roundabout.
3. Access to Arterial and Collector Roadways. Access to arterials and collectors is permitted provided the intersection or driveway can be constructed to comply with the City of Bend Standards and Specifications, as well as all of the requirements of this Chapter of the Bend Development Code. Overall, full access intersections or driveways

are allowed every 900 feet on arterials and collectors, while limited access intersections or driveways on arterials and collectors are allowed every 300 feet.

#### **Project Relevance:**

*Access through smaller streets or private driveways may be restricted if the spacing is not in compliance with the standard distances for collector and arterial roadways. Spacing required between driveways is 300 feet on collector and arterial roads, however, there may be directional restrictions onto the roadway. Spacing between driveways and intersections on collectors and arterial roads, with or without traffic signal control, is a minimum of 300 feet. Again, directional restrictions may be required and are dependent upon the nature and travel use of the roadway. Full access intersections or driveways are allowed every 900 feet on arterials and collectors.*

#### **3.2.400 Street Trees.**

This section sets standards and requirements for planting trees along all streets for shading, comfort, safety and aesthetic purposes. Street trees shall be planted for all developments that are subject to Site Development Review. Street trees shall conform to the following standards and guidelines:

- A. City of Bend Approved Tree List. The City has developed a list of desirable trees for planting along streets in three size classes: low, medium and tall choices of trees shall be limited to the following list.
- D. Spacing and Location. Street trees shall be planted within existing and proposed planting strips, or in City approved sidewalk tree wells on streets without planting strips. Small stature trees shall be planted no closer to the curb or sidewalk than three (3) feet, medium trees - three (3) feet and large trees - four (4) feet. Root barriers may be required with street tree planting to protect the City's curb and sidewalk. Street tree spacing shall be based upon the type of tree(s) selected and the canopy size at maturity. Small canopy trees and columnar shaped trees shall be planted no further than thirty (30) feet apart; medium and large canopy trees shall be planted no further than forty (40) feet apart, except where planting a tree would conflict with existing trees, retaining walls, utilities and similar physical barriers.

#### **Project Relevance:**

*When planting trees in the sidewalk planting strip, tree selection must be from the City approved list of trees. Small and medium trees must be planted three feet from the curb and sidewalk and large trees must be planted four feet away. Spacing between trees will depend upon the canopy type, small trees can not be planted more than thirty feet apart, while medium to large trees can be planted no more than forty feet apart. Tree wells are required for all street trees planted within the sidewalk.*

### **Chapter 3.4 - Public Improvement Standards**

#### **3.4.200 Transportation Improvement Standards**

##### **A. Development Requirements.**

- 2. Development of new streets, and additional street width or improvements planned as a portion of an existing street, shall be improved in accordance with this Section,

and public streets shall be dedicated to the applicable City, county or state jurisdiction.

3. All new and/or existing streets and alleys shall be paved per the City of Bend Standards and Specifications document.

**E. Street Location, Width and Grade.** Except as noted below, the location, width and grade of all streets shall conform to the City of Bend Standard and Specifications document, the provisions of this Chapter and an approved street plan or subdivision plat. Street location, width and grade shall be determined in relation to existing and planned streets, topographic conditions, public convenience and safety, and in appropriate relation to the proposed use of the land to be served by such streets.

1. Street grades shall be designed and/or constructed as approved by the City Engineer in accordance with the design standards in the tables below.

**Table A: Improvement Standards for Dedicated Public Roadways in Residential Zones (UAR, RL, RS, RM-10, RM AND RH)**

Street Classification	Minimum Right of Way	Minimum Pavement Width	Minimum Planter Strip	Max Grade (3)	Sidewalks Both Sides	Bike Lanes
Principal Arterial (2)	100'	76'	5'	6%	Yes	Yes
Major Arterial	100'	76'	5'	6%	Yes	Yes
Minor Arterial	100'	56'	7'	6%	Yes	Yes
Major Collector	80'	56'	6'	8%	6'	Yes
Local Street RM or RH	60'	36'	6'	10%	6'	No
Local Street (1) UAR, RL, RS, RM-10	60'	24'/28'/32'	7'	10%	5'	No
Cul-de-sac all residential zones	60'	24'	7'	10%	5'	No
Alley	20'	20'	None	10%	None	No

Notes:

1. Local Streets:
  - a. 24 foot wide street – No parking allowed on either side of the street.
  - b. 28 foot wide street – Parking allowed on one side in alternating parking bays (Parking bays shall alternate from side to side of the street to provide parking from both directions, and shall be 8-feet wide and meet City of Bend Standards and Specifications)
  - c. 32 foot wide street – Parking allowed both sides in UAR, RL, RS, and RM-10 zones
  - d. 36 foot wide street – Parking allowed both sides in RM and RH zones
  - e. Special Street widths (see Section 3.4.200 (G) (3))
2. Expressways and Arterials that are Oregon Department of Transportation (ODOT) facilities shall meet ODOT design standards.
3. See Table “E” for grade exceptions in steep terrain areas.

**Table B: Improvement Standards for Dedicated Public Roadways in Commercial Zones  
 CB, CC, CL, CG, ME, MR and PO**

Street Classification	Minimum Right of Way	Minimum Pavement Width	Minimum Planter Strip Width	Minimum Turn Lane/Median Island Width (1)	Maximum Grade (2)	Direct Site Access	Sidewalks Both Sides
Principal Arterial (3)	100'	76'	5'	11'/16'	6%	No	6'
Major Arterial	100'	76'	5'	11'/16'	6%	No	6'
Minor Arterial	100'	56'	8'	11'/16'	6%	No	6'
Major Collector	80'	56'	6'	11'/16'	6%	Yes	6'
Local	60'	36'	7'	None	10%	Yes	5'
Alley (4)	20'	20'	None	None	10%	Yes	None

Notes:

1. The first dimension is the minimum required width of the turn lane while the second dimension applies to the raised median width constructed between intersections:
  - a) Intersection turn lane pocket width is 11-feet while the median end cap width is 5-feet in width.
2. See: Table "E" for grade exceptions in steep terrain areas.
3. Expressways and Arterials that are Oregon Department of Transportation (ODOT) facilities shall meet ODOT design standards.
4. Alleys: Not required in Commercial Zones.

**Project Relevance:**

*Any improvements to or an extension of Murphy Road needs to follow these standards. Since Murphy Road is a major collector, the improvement standards are an 80 foot minimum right of way, 56 foot minimum pavement width, a six foot minimum planter strip, Bike lanes, sidewalks on both sides of the street that are six feet wide, and an 6% maximum grad. In a commercial zone, direct site access is allowed and there is an 11 foot minimum turn lane, along with a 16 foot median island width.*

H. Medians. The use of landscaped medians improve community appearance, helps maintain system mobility and reduces the effects of wide street widths to all modes of travel. Medians will be landscaped with water efficient plant materials unless otherwise indicated below.

1. At intersections where left turn pockets are constructed, the 16-foot wide median will transition to an 11-foot wide left turn lane with a five-foot pedestrian refuge median separating the left turn lane from oncoming traffic. Intersections and access must comply with Chapter 3.1, Access, Circulation and Lot Design.
2. A lesser median standard may be approved by the City Engineer under the following conditions:
  - a. A 12-foot landscape median may be approved if pedestrian refuges are not required because adequately spaced offset intersections safely accommodate pedestrian crossings at the 12-foot median opposite a 12 foot turn pocket.

- b. A 6-foot landscaped median may be approved where the 20-year projected average daily traffic (ADT) volumes are less than 5000 and where pedestrian refuge is required.
  - c. Collector streets with no medians may be approved if 20-year projected ADT volumes are less than 5000 and no pedestrian crossing safety issues are identified.
3. In Commercial and Industrial zones, medians may be approved as painted islands or two-way left turn lanes when all of the following conditions exist.
- a. Pavement width is 56-feet or less.
  - b. Significant truck turning activity is anticipated and demonstrated.
  - c. No alternate access route for trucks is available.
  - d. Public safety will not be compromised.

**Project Relevance:**

*Medians are recommended in the Bend General Plan to soften the visual appearance of the street, as well as increasing safety and directing traffic. Water efficient and native plants should be used when appropriate. When used at an intersection the median should transition from 16-feet to 11-feet wide to serve as a left turn lane. A five-foot pedestrian refuge should separate the left turn lane from oncoming traffic. There may be other situations that alter the size of the median. The study must check the Bend General Plan to see if new street policies have been adopted, through policy 6 from the Street Systems goal, to require the cost of installation and maintenance of raised medians before there are approved or required.*

**I. Future Street Plan and Extension of Streets.**

1. When a street plan has been developed and adopted by City Council along with an area plan, such as a Refinement Plan, that street plan shall guide the location and spacing of future streets pursuant to City of Bend Standards and Specifications.

**Project Relevance:**

*There is a proposed extension for Murphy Road to SE 15th Street in the Bend General Plan, Roadway System Plan.*

**K. Sidewalks, Planter Strips, Bicycle Lanes.** Sidewalks, planter strips, and bicycle lanes shall be installed in conformance with the applicable provisions of the Bend Urban Area Transportation System Plan; the General Plan, City of Bend Standards and Specifications and the following standards:

1. The planter strip distance is measured from the face of the curb to the inside edge of the sidewalk.
2. Sidewalks shall be separated from the street by a planter strip and placed at the property line, where practicable, or as otherwise directed by the City Engineer.

4. Bicycle lanes shall be constructed on all collector and arterial streets unless otherwise designated.
6. In no instance shall the planter strip be wider than 7-feet at the intersection. This may require the sidewalk to taper from the property line alignment to within 7-feet of the curb.
7. Where practical, sidewalks shall be allowed to meander around existing trees in conformance with the requirements of the Americans with Disabilities Act.

**Project Relevance:**

*Planter strips are required between the sidewalk and the street. The strip should not be wider than seven feet at an intersection, this may require that the sidewalk be located closer to the street than the property line. When possible, sidewalks should meander around existing street trees, as long as ADA requirements are met. Bike lanes should be on Murphy Road, since it is a collector.*

**L. Intersection Angles.** Streets shall be laid out so as to intersect at an angle as near to a right angle as practicable, except where topography requires a lesser angle. In no case shall the centerline angle be less than 80°. In addition, the following standards shall apply:

1. Street design shall provide a minimum of 50 feet of centerline tangent past the intersecting right-of-way unless a lesser distance is approved by the City Engineer.
2. Intersections that are not at right angles shall have a minimum corner radius of 20 feet along the right-of-way lines of the acute angle.
3. Right-of-way lines at intersections with arterial streets shall have a corner radius of not less than 30 feet.

**Project Relevance:**

*The location of the ASI east of the BNSF railroad tracks may require alteration of the street to intersect 15<sup>th</sup> Avenue lesser than a right angle. If that is the case, the centerline angle can not be less than 80°, there must be a minim of 50 feet of centerline tangent past the intersecting right-of-way, and there must be a minimum corner radius of 30 feet along the right-of-way lines of the acute angle.*

**Q. Street Adjacent to Railroad Right-of-Way.** Wherever the proposed development contains or is adjacent to a railroad right-of-way, a street approximately parallel to and on each side of such right-of-way at a distance suitable for the appropriate use of the land shall be created. New railroad crossings and modifications to existing crossings are subject to review and approval by the Oregon Department of Transportation and the rail service provider.

**Project Relevance:**

*Murphy Road extension will cross the Burlington Northern Santa Fe Railroad line.*

## Chapter 4 – Application and Review Procedures

### Chapter 4.7 Transportation Analysis

#### 4.7.100 Purpose and Authority.

**A. Purpose.** The City will review land use actions and major roadway projects for potential impacts and to ensure that new development contributes to the orderly development of the Bend Urban Area Transportation System Plan network of roads, bikeways, and pedestrian facilities by:

- Establishing policies and procedures for evaluation of land use actions and major roadway projects to protect existing and future operations of roadways;
- Establishing service level standards (operations standards) for transportation facilities identified in the Bend Urban Area Transportation System Plan;
- Ensuring consistency with the functions, capacities, and service level standards of facilities identified in local and regional transportation system plans and the City of Bend Development Code;
- Extending transportation facilities to and through development property;
- Ensuring conditions are applied to mitigate the full extent of impacts and protect transportation facilities so that all land use proposals contribute their fair share towards the transportation system plan.

**C. Applicability.** Land use actions will be reviewed for impacts and potential mitigation through a Transportation Impact Study.

**2. Roadway Projects Initiated by a Public Agency.** A Transportation Impact Study shall be performed to determine geometric requirements when a major roadway infrastructure project involves one or more of the following:

- a. The project is inconsistent with the regional or local Bend Urban Area TSP; or
- b. The project considers removal of an existing traffic signal or roundabout; or
- c. The project considers installation of a traffic signal or roundabout at an intersection other than a ramp terminal, arterial-arterial intersection, arterial-collector intersection or a collector-collector intersection.

#### **B. Required Information**

1. **Sight Distance Measurements.** For all driveways, study area intersections, and new intersections created by the development (with the exception of single family residential driveways), an intersection sight distance measurement shall be provided that shows compliance with City of Bend Standards and Specifications for the posted or 85th percentile speed (whichever is greater). Field measurements shall be used wherever possible, and plan measurements from civil drawings provided for planned intersections or driveways.
2. **Adjacent and nearby driveways and street connecting points.** For arterial and collector roadways, the applicant's Transportation Impact Study shall document the location of

all existing driveways and street connecting points near the frontage of the property. This shall be used in evaluating compliance with access management standards as provided in Chapter 3.1; Access, Circulation and Lot Design. In all instances, the documentation shall provide sufficient detail to address the requirements of Chapter 3.1; Access, Circulation and Lot Design.

3. **Pedestrian and Bicycle System.** The applicant's Transportation Impact Study shall document the location of all existing and planned sidewalk and trail system elements within the study area of the proposed project for use in evaluating compliance with the Bend Urban Area Transportation System Plan, City of Bend Standards and Specifications, and the City of Bend Development Code.
4. **Crash Histories.** Crash histories and a calculated crash rate shall be reported for all study area intersections or those locations required by the City Engineer or designee. Crash histories shall provide a three (3) year history of ODOT and Bend Police Department reported crashes.
5. **Access Management Standards.** Land use applications that take access or seek to take access directly onto a collector or arterial facility or access within 300 feet of an interchange, ramp terminal, arterial-arterial intersection, arterial-collector intersection or collector-collector intersection will need to demonstrate compliance with the Access Management Standards provided in Chapter 3.1; Access, Circulation and Lot Design. Access to a state facility or within jurisdictional coverage of a state facility shall comply with ODOT requirements.
6. Individual scopes of work for Transportation Impact Studies for major roadway infrastructure will vary depending on the project, but shall be established by the City Engineer or designee for non-ODOT projects. The scope of the study for ODOT projects shall be coordinated with the City and agreed upon by the City Engineer or designee. The purpose of this requirement is to promote cooperative planning efforts and to help assure that the impacts of major transportation projects consider system-wide impacts. Scopes for major roadway projects, in addition to the items previously listed in this Chapter of the Bend Development Code, shall include at a minimum:
  - Determination and identification of existing system status (access management, queuing/storage, crash rates, sight distance, volumes, operations, etc.);
  - Projection of future demands (volumes, queuing/storage, etc.);
  - Development of alternatives that will mitigate existing system deficiencies and operate within the operations standards of the facility as defined in this Code;
  - Assess compliance with the Oregon Administrative Rule, 660 Division 12, Transportation Planning, the Bend Urban Area Transportation System Plan, and the City of Bend Development Code.

**C. Transportation Planning Rule Compliance.** This section implements the City's Bend Urban Area Transportation System Plan with regard to level of service and operation standards. The Transportation Impact Study provided for a zone change and/or Bend Urban Area General Plan map amendment shall comply with and provide information on

the requirements of the Oregon Administrative Rule section 660-012-060 (known as the Transportation Planning Rule [TPR]) and demonstrate that the proposed land uses are consistent with the identified function, capacity, and performance standards (level of service, volume to capacity ratio and widths) of the facility as defined in the adopted Bend Urban Area Transportation System Plan and the City of Bend Development Code. The operations standards in the City of Bend Development Code implement the policies of the Bend Urban Area Transportation System Plan.

**Project Relevance:**

*The Murphy Road Corridor Study will analyze a potential extension to 27<sup>th</sup> Street, which is not included in the Bend TSP. In addition, traffic signals or roundabouts could be part of the recommended set of improvements. The background analysis that will be conducted as part of the Corridor Study will include an analysis of sight distance issues, roadway approaches, bicycle/pedestrian elements, crash histories, and access management.*

## **Bend Urban Area Transportation System Plan (City of Bend) - Adopted October 2000**

The purpose of the Bend Urban Area TSP is to help guide the development of a transportation system that will meet the forecast needs of the Bend community. This plan provides policy and a plan framework that will enable Bend to design a balanced transportation system for the near-term and the next twenty years. Strategies for planning and implementing a wide range of transportation components are addressed in the TSP including automobile, public transportation, bicycle and pedestrian travel.

The TSP has been specifically designed to meet requirements of the TPR, which is an administrative rule enacted by the Land Conservation and Development Commission (LCDC), to better fulfill the state of Oregon's Land Use Goal on Transportation (State Land Use Goal #12).

### **Chapter 2 – Existing Transportation System Plans, Policies & Standards**

#### **2.1.4 City of Bend - Street Policies**

In Resource Document A.1, Bend Urban Area Street Inventory table, Murphy Road is listed as a major collector from Highway 97 to Brosterhouse. Totaling 1.17 miles, pavement width 36 feet between inside face of curb, number of lanes varies between 2 and 3, roadway conditions are very good as of 1996, and curbs and bike lanes exist throughout this road, however sidewalks are not connected or are partially constructed. In 2000, the pavement width had changed to varies between 36 to 46 feet and sidewalks were present on the entire street length.

**Project Relevance:**

*Information on Murphy's existing condition will be helpful in determining existing deficiencies that need to be addressed by project alternatives.*

## Chapter 3 – Current Transportation Conditions

**3.5.1.1 Freight Rail Service:** The Burlington Northern-Santa Fe Railroad provides freight rail service to Bend. The rail line runs generally north/south through the center of town. The rail activity is primarily freight that is being hauled through the area.

### Project Relevance:

*The Murphy Road study will explore an easterly extension over the BNSF railroad tracks. Knowledge of current rail activity is critical for identifying construction constraints.*

## Chapter 4 – Transportation Needs Analysis

### 4.2.1.1 Modernization and Capacity Improvements

**Modernization Improvements:** Traditionally, roadways have been “modernized” through improvements that include adding sidewalks, bike lanes, bus turn-outs, turn lanes and other measures that help aid alternate mode travel and improve the efficiency of a roadway. This is quite common within developing areas as many of the old “farm-to-market” roads typically, over time, face increasing urbanization pressures. In fact, many of these roadways do get improved as the area around them intensifies. In this fashion, new developments take on the financial responsibility to make these improvements, thus helping to offset the increased demand that these new person-trips place on the transportation system. In other situations, city, county and state government financial resources are utilized to reconstruct or “modernize” these roadways.

**Capacity Improvements:** Capacity improvements, or in most cases the widening of roadways, are the most common means of compensating for the eventual loss in roadway level of service or performance. Roadways that are most likely to need additional widening are discussed, in Chapter 5, under the discussion of alternatives. For many of Bend’s older arterial streets, this typically means widening of the road to accommodate a center turn lane (otherwise known as creating a 3-lane roadway). In some cases, another alternative to the road widening may be as simple as re-striping the roadway to skinnier lane widths (e.g., taking a 40-foot wide, 2-lane roadway with parking, and converting it into 3 vehicle lanes, 2 bike lanes and no parking). Where traffic speeds, volumes or parking demands are low enough it may permit this kind of street retrofitting. In other cases, typically along the principal and major arterial street system, traffic demands are much greater and 4 to 5-lane wide roadways may be necessary to address system capacity problems.

**Timing of Future Roadway Improvements:** Many of the collector and arterial streets in the Bend urban area will be modernized or widened during the twenty-year planning period. Therefore, it is assumed (in the planning effort) that either one of these two roadway improvement mechanisms (modernization or capacity improvements) will be used to make these types of improvement to the roadway.

### Project Relevance:

*Improvements to Murphy Road will fall into one of the two categories described above.*

## Chapter 5 – Alternatives Analysis

### 5.5.2 – Public Transportation

The City engineering standards and specifications shall also be modified, as appropriate, to accommodate and provide details concerning transit service on roadways. The design of all arterial and collector streets shall incorporate appropriate elements such as augmented street sections (e.g., wider lane widths, increased sub grade sections), transit pull-outs and waiting areas, etc., that will encourage or better accommodate transit vehicle activity and/or patronage.

**Project Relevance:**

*Any design options for the Murphy Road Corridor Study needs to incorporate elements, such as transit pull-outs, waiting areas for transit, and other options that will encourage transit vehicle activity and patronage.*

**5.5.5 – Street System**

Completion of the roadway system will also fulfill the need (and Plan goals) to access land, address safety issues, and provide the community with street connectivity that will minimize out-of-direction travel and maximize travel choices and route options.

**Project Relevance:**

*While Murphy Road is not listed in this document as a high priority for street connectivity, extending Murphy road to 15<sup>th</sup> Avenue will increase east-west travel for South Bend and maximizing travel choices and route options for all modes of travel. It is also listed for sidewalk improvements in Figure 16b Sidewalk System Improvement Priorities of this document.*

**Chapter 6 – Transportation System Plan**

**6.5.1.1 – Roadway Classifications, Expressways**

*Highway 97 - south of the Parkway.* According to the TSP, ODOT has suggested evaluating alternatives that would extend Murphy Road to a point west of the Parkway (including grade separation) to meet a future frontage road (on the west side of the Parkway). Once this system is in place, the Parkway traffic signals at Pinebrook Blvd. and the south Highway 97 intersection should be removed. As a part of these system changes, the former street intersections should also be disconnected from the Parkway. Also, a grade separation of China Hat at Highway 97 may eventually be warranted.

**6.5.2.9 Railroad Grade Crossings**

Historically, train delays at road/railroad crossings have not been a major traffic problem in Bend. However since the merger of the Burlington Northern and Santa Fe railroads, it is anticipated that train crossing caused traffic interruptions may increase over time. One future crossing, proposed in the TSP, is an eastward extension of Murphy Road to 15<sup>th</sup> Street. This new road/railroad crossing should be grade separated.

**Project Relevance:**

*The Bend TSP includes the extension of Murphy Road both to the west (over the Parkway) and to the east (to SE 15<sup>th</sup> Street, over the BNSF railroad tracks).*

## Chapter 7 – Transportation System Implementation

### 7.3 – Project Prioritization

*Transportation System Priorities:* Transportation system priorities for the community are separated into three categories; *near*, *intermediate* and *far term*. *Near term* priorities are projects that have been identified in the 5-year CIP process. *Intermediate* priorities are the list of other projects shown in the CIP that are beyond the funding capabilities of the current CIP, but none-the-less other important transportation needs. *Far term* priorities represent basically everything else needed to complete the entire transportation system.

#### Project Relevance:

*The extension of Murphy Road to SE 15<sup>th</sup> Street is included in the Appendix as a future major collector, and is listed as a far term priority, meaning that it is one of the many projects needed to complete the entire transportation system.*

## Bend 2030 Vision, Phase I (City of Bend) – August 2005, Endorsed by City Council June 2006

The Bend 2030 Vision is not meant to replace ongoing city planning and decision-making, but it is intended to make these activities better informed, more strategic, and more effective. Several features are highlighted in the 2030 Vision that relate to the Murphy Road corridor.

#### Land Use, Growth, and Development - Key Issues

- Finding innovative ways to manage transportation challenges presented by residents, visitors and growth.
- Heighten land use efficiency – create appropriate in-fill neighborhoods, allow for more compact growth/density, promote mixed use developments, encourage “island” commercial developments so people can drive shorter distances to basic services/needs, improve grid system efficiency for drivers and pedestrians.

At the top of City lists are the following current activities for the coming year:

- Updating key elements of the General Plan (transportation, public facilities, housing and residential lands, economic lands and community appearance).
- Updating and refining the Development Code.
- Planning for re-development of sections of Third Street.

#### Project Relevance:

*The Murphy Road Corridor Study will consider the general goals of the City of Bend to find innovative transportation solutions and increase land use efficiency. The study will need to coordinate with the city to ensure that the General Plan updates are considered in the study, as well as any changes to the Development Code. Any re-development efforts already started for Third Street should be coordinated with the Murphy Road Corridor Study.*

## Transportation

Key road and highway projects planned for Bend in the short- and mid-term include:

Improvements to Murphy Road from Brookwood to 15<sup>th</sup> Street (includes new overpass at the Parkway and an extension to 15th Street); numerous bicycle and pedestrian improvements; upgrades to many existing arterial and collector roadways; construction of new arterial and collector roadways (example: Skyline Ranch Road).

The City is working to increase traffic system safety, particularly at key intersections along Highway 97 (Third Street), where the greatest number of traffic accidents occur annually. The City has a 20-year plan to modernize and/or widen many of its collector and arterial streets. Cost to complete all projects is pegged at \$185 million in Year 2000 dollars. The City is also working to in-fill gaps in the sidewalk system and to retrofit intersections in older sections of the city with ramps to accommodate the disabled. The City also has plans to continue to improve bike lanes recognizing that some arterial and collector streets may have to be widened in order to accommodate standard bike lanes.

The Bend Metropolitan Planning Organization is beginning development of the regional transportation plan in 2005–2006. The plan will evaluate the needs for all transportation modes through the year 2030.

### Project Relevance:

*The Murphy Road Corridor Study will coordinate with the City to increase traffic safety at the intersection of Murphy Road and Third Street; to in-fill gaps in the sidewalk system and make them ADA compliant; and to improve bike lanes, even if it requires widening the street to accommodate standard bike lane-widths. The study will also need to examine the Bend Metropolitan Planning Organization's (MPO's) regional transportation plan to see if there is any relevance to the study.*

# Appendix A: Plans and Studies in Process

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## Murphy Crossing Refinement Plan (City of Bend)

This plan proposes a Refinement Plan Overlay District in the area to the west and south of the Murphy Road Corridor Study. The proposal will also seek to alter the location of the Murphy Road over crossing alignment and to fix the location of the north/south Frontage Road alignment along the west side of the Bend Parkway. The Murphy Crossing Refinement plan will address the conditions outlined in the South Bend Parkway Refinement Study, H-1 Modified design plan.

As the Parkway was being constructed a decision was made to lower a length of the parkway road grades between Pinebrook Boulevard and the terminus of Third Street. This would enable the future extension of Murphy Road over the parkway to serve the Southwest area of Bend. It was always assumed that at some time the City's TSP would be amended to include a fixed alignment for Murphy Road. The Murphy Crossing Refinement Plan has provided that opportunity to fix that alignment in the context of a greater land use plan.

The proposal includes realigning Murphy Road slightly to the south and reclassifying it from a Major Collector to a Minor Arterial between Business 97 and Parrell Road. The TSP Map will also be amended by adding Murphy Road as a new Minor Arterial between Business 97 and Brookwood Boulevard. Murphy Road will cross over the Bend Parkway with no direct access to the highway. The existing TSP Map does not include a Minor Arterial in this area. As a Minor Arterial, Murphy Road will have sidewalks and bicycle lanes; therefore, it will improve and enhance east-west circulation patterns in the area for all modes of travel.

From Parrell Road west to the new frontage road west of the Parkway, Murphy Road will have a three lane cross section with raised center medians and center turn lanes within a 100-foot right-of-way. The wide right-of-way is needed to accommodate auxiliary turn lanes at the intersection of Business 97. This new section of Murphy Road between Brookwood Boulevard and Parrell Road will have bicycle lanes and sidewalks on both sides of the roadway.

### Project Relevance

*This plan, which has not yet been adopted, will set the required street alignments slightly to the south of the existing Murphy Road. If this is the case, the Murphy Road Corridor Study will need to coordinate efforts to ensure that the streets align. The Refinement plan would reclassify Murphy Road from a major collector to a minor arterial between Business 97 and Parrell Road (the first section of the Murphy Road Corridor Study). As a Minor Arterial, Murphy Road would be required to have sidewalks and bicycle lanes to improve and enhance east-west circulation patterns in the area for all modes of travel. The Refinement Plan recommends improving the intersection operations at the intersection of Murphy Road and Parrell Road to meet City of Bend performance standards by using all-way stop control, construct a southbound left turn pocket and westbound right turn pocket, add a*

*traffic signal with south- and northbound left turn pockets, or to construct a single lane roundabout. The Murphy Road Corridor Study will track the adoption of the Refinement Plan and take into consideration the TSP reclassification of Murphy Road, along with the recommendations set down by the Refinement Plan.*

## South Bend Parkway Refinement Study (Oregon Department of Transportation)

The City of Bend has partnered with the Oregon Department of Transportation on the South Parkway Refinement Plan, looking specifically at the safety and function of the Bend Parkway south of Powers Road. The Oregon Transportation Commission and the City of Bend agreed on a design alternative called HModified, Option 1. This alternative came with several conditions that need to be accomplished prior to the implementing of the H-Modified Design. The refinement plan is now working in coordination with ODOT on an Interchange Area Management Plan (IAMP). The IAMP includes only the proposed South Bend Parkway/Murphy Interchange and does not include modifications to the Powers Road Interchange.

### Project Relevance

*Many of the requirements that the Oregon Transportation Commission (OTC) laid out for the City are addressed in the Murphy Crossing Refinement Plan. Adoption of the Refinement Plan would establish define adjacent land uses and fulfill the OTC requirements. Adoption of either plan will alter zoning in the study area. Connections between SE 3<sup>rd</sup> Street and Murphy Road to the west of the Parkway will be determined by both the South Parkway Refinement Study and the Murphy Crossing Refinement Plan.*

## Reed Market Corridor Refinement Plan (City of Bend)

The Reed Market Road corridor from the Bend Parkway to SE 27<sup>th</sup> Street is one of only three designated “Major Arterial” Roadways included in the City of Bend Transportation System Plan. The City’s rapid growth and shifting transportation trends have resulted in significant traffic pressure on Reed Market Road. The roadway cross section varies along the corridor from two lanes of pavement with gravel shoulders to four lanes with bike lanes and sidewalks.

Relevant recommendations from the Reed Market Corridor Refinement Plan include:

1. It is suggested that the TSP Update address the need to create a backbone transportation system of arterial and collector roads in the developing southeastern portion of the city to serve development as it occurs. This backbone system should emphasize:
  - Appropriate spacing of facilities serving major arterial, minor arterial and major collector functions.
  - Connectivity into, through and out of this section of the city to provide a link between local streets and the regional system.

2. Provision of an appropriately spaced and interconnected system of roads will significantly benefit travel on Reed Market Road and other major existing streets by disbursing trips over a wider network. The pending Murphy Road extension to 15th Street and/or possibly 27th Street could help to reduce future traffic growth on Reed Market Road by providing an alternative route for new and existing development in its vicinity. An assessment of traffic diversion from Reed Market Road to the extended Murphy Road should be conducted using the regional travel model.

It is also recommended that the City also consider revising its Transportation Policy 6 to ensure that new developments that impact major arterials such as Reed Market Road contribute an appropriate amount to failing intersections.

### Project Relevance

*The Murphy Road Corridor Study will use the regional travel demand model to assess travel patterns on Murphy Road when extended to SE 15<sup>th</sup> Street and SE 27<sup>th</sup> Street. It is anticipated that extending Murphy Road could assuage some of the demand on Reed Market Road.*

*The provision of appropriately spaced and interconnected system of collectors and arterials will also be addressed by the Murphy Road Corridor Study. One of the elements to be addressed is whether Murphy Road should retain its current classification of Major Collector, or whether the road should be reclassified upon extension to the east and/or the west as a Minor Arterial.*

## Metropolitan Transportation Plan (Bend Metropolitan Planning Organization)

The Metropolitan Transportation Plan (MTP) is designed to serve as the Bend metropolitan area's long term transportation plan. It addresses all travel modes, including pedestrians, bicycles, public transit, motor vehicles, freight, water, air, and pipelines, in an effort to address the region's long term projected transportation needs associated with future population growth. Projects identified in the MTP must be within projected levels of available financial resources and must also meet federal and state planning requirements. The primary objective of the plan is to identify both short-term and long-term actions in order to maintain the efficient movement of people and goods.

### Project Relevance

*The MTP listed Murphy Road east of the Bend Parkway as having sidewalk deficiencies. Parrell, Third Street, and 15<sup>th</sup> Avenue were also listed as having sidewalk deficiencies in the study area. Pedestrian crashes were examined and enhanced pedestrian crossings were suggested both at intersections and mid-block locations if the crash data supports their placement. There was one pedestrian crash on Murphy Road east of Parrell Road and west of Country Club Road, between 1995 and 2004. Murphy Road is listed as having adequate bike lanes and a proposed bike lane at the possible extension along Murphy Road to 15<sup>th</sup> Avenue.*

*The collector roadways are intended to provide access and circulation to nearby arterial roadways in a multi-modal fashion. Murphy Road is classified as a major collector, but the Murphy Crossing Refinement Plan suggested reclassifying it as an arterial. Third Avenue is classified as a Primary Arterial, Parrell, Country Club, and Brousterhous are all designated as major collectors, while SE*

15<sup>th</sup> Street is classified as a minor arterial. Minor arterials have a general speed limit of 25-45 mph and collector roadways have posted speeds ranging from 20-40 mph. Murphy Road has a posted speed of 35 mph and has two lanes.

The existing traffic signal at SE 3<sup>rd</sup> Street and Murphy Road had a level of service rating of C, a 25.2 second delay per vehicle and a .32 volume/capacity. In 2005, BNSF was operating approximately 12-15 trains per 24 hours through the study area, while UP was operating one train daily in each direction. Additionally, BNSF operates a switch engine which transports freight to and from local businesses within the study area. BNSF runs through the proposed extension area of Murphy Road.

## Residential Lands Study (City of Bend)

This study, prepared by the City of Bend Long Range Planning Community Development Department, will update Chapter 5 of the Bend Area General Plan (Housing and Residential Land) with respect to housing and residential lands to meet Statewide Planning Goal 10, Housing.

In September 2005, the County adopted a coordinated population forecast for the county and all three cities. By the year 2025, this forecast estimates 240,811 people living in Deschutes County. Bend's UGB population forecast for the year 2025 is 109,389 people. This forecast represents an increase of 57,360 people, or 110 percent, since the 2000 Census. The 1998 General Plan estimated Bend would need approximately 14,000 new housing units to meet its housing needs by the year 2020. Bend planning staff has developed a preliminary estimate of 20,000 needed housing units by the year 2025, based on this new population forecast.

State law first requires cities to examine their inventory of buildable lands and determine if land can be used more efficiently inside the UGB. If so, the city will need to decide how to do so, and this decision-making process may involve changes to the allowed density and mix of housing currently allowed inside the UGB.

### Project Relevance

The coordinated population forecast for the regional area estimated large amounts of growth in the 20-year period. Population growth influences traffic volumes and travel patterns, which in turn influence the roadway improvements needed to serve additional jobs and households. The Murphy Road Corridor Study is using the regional travel demand model for traffic forecasts and analysis. Development of this model has been coordinated with the residential lands study, and reflects current growth projections. In addition, an alternate land use scenario will be tested for the Murphy Road preferred alternative to ensure that the improvements will be effective for both expected and potential expedited growth along the corridor.

One of the key requirements of Goal 10 is to accommodate future housing needs inside the existing UGB before expanding it. The easterly extension of Murphy Road to SE 15<sup>th</sup> Street would be consistent with this requirement. Future housing in-fill would require additional roadway connections, such as the Murphy Road extension, as well as improvements along the existing section to accommodate the increased travel capacity.