

City of Detroit

# Transportation System Plan

July 2009

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Acronyms: ACOE-Army Corps of Engineers, CARTS-Chemeketa Area Regional Transit System, DLCD-Department of Land Conservation and Development, DSL-Department of State Lands, FLRCDL-Federal Lakes Recreation Committee/Detroit Lake, NSCEDC-North Santiam Canyon Economic Development Corporation, and ODOT-Oregon Department of Transportation, Idanha/Detroit RFPD-Idanha/Detroit Rural Fire Protection District

## CHAPTER 1: INTRODUCTION & EXECUTIVE SUMMARY

As applicable to the City of Detroit, the Oregon Transportation Planning Rule (TPR) requires local jurisdictions to develop a Transportation System Plan (TSP) to accommodate future travel demand resulting from adopted land uses. The plan must accommodate all travel modes in use within the City, be consistent with the Oregon Transportation Plan (OTP), and coordinated with federal, state, and local agencies and various transportation providers.

The City's Comprehensive Plan was initially prepared and accepted in 1978 with some partial updates adopted in the year 2002. As part of the City's preparation of its first Transportation System Plan (TSP), an amended Transportation Element was adopted in 2009. The amendment included information related to the City's transportation system and established goals/policies to implement the TSP. The TSP document is incorporated into the Plan to supplement and provide additional analysis to support the implementing standards and regulations of the City's Development Code.

In compliance with the TPR, the City's TSP assessed existing facilities for their adequacy and deficiencies, developed and evaluated system alternatives needed to accommodate land uses in the acknowledged comprehensive plan, and adopted local land use regulations to support implementation of the TSP.

The study area for the TSP consists of the entire Detroit UGB which is consistent with the existing city limits. Land developments and the supportive transportation system in the Detroit urban area have been heavily influenced by the location of State Highway 22 and Detroit Lake. Highway 22 generally runs northwest to southeast through the community and forms the backbone of much of the local transportation system. Highway 22 provides regional connectivity for Detroit, linking it to Salem in the Willamette Valley and Bend in Central Oregon, as well as other nearby communities.

Preparation of the Detroit TSP began with an inventory and assessment of the existing transportation system. Transportation system characteristics that were identified and reviewed focused on the existing street system including roadway features, intersection geometry, and bridge conditions. Analyses were made of existing transportation operations and crash histories at key intersections. Assessments of other transportation-related functions included an assessment of, and ideas for improvements to bicycle and pedestrian infrastructure, as well as public transportation, rail, and air systems.

The City of Detroit system inventory served as the basic framework for evaluation of existing needs and deficiencies and provided a foundation for assessment of future transportation facility needs.

Highways: A key element of the City's transportation system is Highway 22 (also referenced as OR 22, Highway #162 and North Santiam Highway), classified as a Statewide Highway. The Highway located within city limits between mileposts 49.73 and 51.16 is under the jurisdiction of the Oregon Department of Transportation (ODOT). According to the 1999 Oregon Highway Plan (OHP), the primary function of Statewide Highways is to "provide inter-urban and inter-regional mobility and provide connections to larger urban areas, ports, and major recreation areas that are not directly served by Interstate Highways. A secondary function is to provide connections for intra-urban and intra-regional trips. The management objective is to provide safe and efficient, high-speed, continuous-flow operation. In constrained and urban areas, interruptions to flow should be minimal. (Note: the reference to "high speed" is not applicable to the portions of the Statewide Highways located with city limits.) Highway 22 is a major route through the City and although Detroit has no direct control over the State Highway, adjacent

development and local traffic patterns are heavily influenced by the Highway. Oregon Department of Transportation standards govern State highways including improvement standards, geometrics, access spacing and permitting, and policies.

Additional designations are assigned to Highway 22. From its intersection with Breitenbush Road to the south city limits, Highway 22 is part of the West Cascades National Scenic Byway. The “Freight Moves the Oregon Economy” ODOT publication notes that the Highway is part of both the National and State Freight Systems.

A measure of roadway congestion (volume to capacity (v/c) ratio) is calculated by dividing the number of vehicles passing through a section of highway during the peak hour by capacity of the section. The 1999 OHP (reaffirmed in 2006) notes the minimum standards of acceptable operation/performance measure for Highway 22: v/c ratio as equal to or less than 0.70 (speeds at 45 or greater miles per hour) and .75 (speeds of over 35 miles per hour).

In regards to the Highway’s traffic volume and using the 2007 Transportation Volume Tables, the average daily trip (ADT) for Highway 22 is 4,200 and ODOT’s Future Volume Tables project ADTs of 4,800 for the year 2027. (In 2007 volumes ranged from 64 percent (December) to 156 percent of the Average Daily Traffic.) Marion County Rural Transportation System plan indicated in 2005 a range of between 3,000 and 3,900 average daily trips and projects to the year 2025 that the daily trips could increase to between 5,000 and 5,900.

Breitenbush Road, entering the City at the northeast corner and terminating at its intersection with Highway 22, is under the jurisdiction of the United States (US) Forest Service (FS). The Road is also known as FS 46 and Detroit Estacada Highway. This Highway is part of the West Cascades National Scenic ByWay. With the exception of Front Street N that parallels Highway 22, no city streets connect to FS 46.

Marion County Roadways. There are no public rights-of-way within the City of Detroit’s Urban Growth Boundary that are under the jurisdiction of Marion County.

Streets under the City’s jurisdiction. Identification of the roadway functions is the basis for planning roadway improvements and the appropriate standards (right-of-way, improvement width, and design speed) that the City applies to each roadway facility under the category of local streets. The Transportation System Plan identifies and defines several levels of street classifications: highways, urban collector streets, neighborhood collector streets, and local streets. A street classification map identifies roadways as assigned. See **Appendix A, Roadway Functional Classification** map. The City also has one right-of-way designated as alley and several private roads under the jurisdiction of the US Forest Service and others under private ownership.

Pedestrian/Bicycle Paths/Trails. None of the streets within city limits under the City’s jurisdiction have sidewalks. Establishing through the adoption of the City’s TSP street classifications and street profiles, rights-of-way widths, and the City’s Public Infrastructure Design Standards provide better guidance for when walkways and bike paths are provided and including the type and the mechanisms to fund the improvements. The planning process and changes to the implementing ordinances also require consideration of other paths/trails planned within the region. See **Appendix A, Bicycle/Pedestrian System map**, for the City’s planned network. Development of the non-vehicular routes requires coordination with federal, state, and other area agencies. Examples include connections to other communities in the North Santiam Canyon and between numerous communities (including the Canyon Journeys project) and Forest Service/State Park facilities (existing and planned). For more specific details

on the agencies and trail/path locations, see Area Coordination at the end of this chapter; and chapter 2, section 2.4.

Public Transportation (local/regional bus, school bus, railroad, and air travel options). Opportunities for public transportation within the City of Detroit are extremely limited. Lack of alternate modes of travel may be interpreted as an inconvenience to some residents of the community. However, the limited service creates a significant disadvantage for individuals who are underage to drive, physically unable to operate a motor vehicle, or cannot financially manage the ownership/operation of a dependable vehicle. Chemeketa Area Regional Transportation System (CARTS) operated by Salem Area Mass Transit District (also known as Cherriots) provides bus service to communities along the Highway 22 corridor (Santiam Region) three times per week-day with connections to routes inside and outside the Salem-Keizer area. The closest CARTS connection for Detroit residents is within the City of Gates, approximately 17 miles to the east. Schedule information is available on-line: [www.cherriots.org](http://www.cherriots.org) by checking the details for CARTS.

Cherriots contracts with Trip Link—a call center with a network of 20 to 25 transportation providers. Trip Link arranges throughout the State of Oregon rides to medical appointments for individuals who qualify for Medicaid. (Eligibility for Medicaid is determined by the person's case worker.)

One bus company headquartered in the City of Newberg provides an Oregon Coast to Bend route that makes a round trip once a day. An individual can arrange a ride based upon a 24-hour notification schedule. The closest passenger rail services are located in the City of Salem (Amtrak). For the closest air travel, passenger terminals are located in the City of Redmond and the City of Portland. The airport (McNary Field) located in Salem does offer freight services.

Elementary and high school students living in Detroit are transported to facilities located in the City of Gates (elementary education) and Mill City (secondary education). North Santiam Canyon School District 129-J contracts with a private company for transportation services. There are four locations where students gather. (See **Appendix A, Street Network/Assessed Functional Classifications map** that identifies the current points for student pick-up.) Only one location has a bus shelter (informal). Lack of adequate shelters and concerns for the safety of students crossing Highway 22 are noted in the City's TSP.

Sensitive Lands. Planning for transportation facilities in Detroit also need to include evaluation of environmental and wildlife habitat areas/designations within city limits. Other sections of the City's Comprehensive Plan identify the specific areas needing protection and/or preservation. The TSP process also generated additional information relative to potential slope hazard areas in the northwest and east sections of the City. Used during development review, the City's Development Code provides through current or newly adopted and applicable ordinances, standards/methods to lessen any potential impacts.

Funding. Resources for funding transportation facilities outside the development process are extremely limited. The City repeatedly discovers during the yearly budgeting process that expenditures to make improvements far exceed the revenue. Completing the TSP planning process explores options for a range of funding sources and recommendations for prioritizing projects. See Chapter 7, Funding and Financing for additional details.

Area coordination. The City of Detroit has the opportunity to coordinate and cooperate with other federal, state, county, regional, and non-profit organizations in creating trails and paths for both pedestrians and bicyclists. Examples of planning efforts are as follow:

West Cascades National Scenic Byway. Based upon a document prepared for the Willamette and Mt. Hood National Forests, Segment 2 (McKenzie-Santiam) of the West Cascades National Scenic ByWay (designated in the year 2000) incorporates Breitenbush Highway (FS 46). It continues south on Highway 22 through the City of Detroit. The mission of the ByWay is to provide “a scenic alternative to driving Interstate 5 . . . provides the visitor with exciting opportunities to experience breath-taking views of mountain landscapes, explore wilderness, fish wild and scenic rivers, camp and recreate among old growth timber stands, enjoy the rural charm of foothill communities and to participate in the many unique events and festivals available along the route.”

Canyon Journeys. A document prepared for the North Santiam Canyon Economic Development Corporation (NSCEDC) surveys the North Santiam Canyon beginning 30 miles east of the City of Salem (Lyons) and continues to Detroit and Idanha. “The concept of a canyon-wide trail system to provide a safer non-motorized travel alternative to State Highway 22 has been explored many times. . . As envisioned, the trail would connect the Canyon’s communities to each other and with the areas’ outstanding natural, recreational and cultural features.” The study continues indicating that “once fully developed, the Canyons Journeys Alternative Transportation Link trail system (Canyon Journeys) will consist of a system of biking, hiking and equestrian trails that connect communities in the Highway 22 corridor. . . The portion affecting the City of Detroit falls into the categories of the second and third groups to be completed: Mongold Park to Detroit (Forest Avenue) (2<sup>nd</sup> section) and Forest Avenue to Blowout Road (3<sup>rd</sup> section). Options may include connections on the north and/or south sides of Detroit Lake.” See **Appendix A, Canyon Journeys** maps.

A proposal in the study includes a “water taxi” for overall visitor circulation at Detroit Lake that could provide “connections between the visitor facilities and camping areas on the north and south side of Detroit Lake with the City of Detroit. An additional segment of the water taxi system could be added to connect the Hoover Campground and boat dock to the system. This addition to the water taxi system would provide a unique ‘trail’ experience that would link Detroit to the western end of the Idanha trail system.”

*(In conjunction with the Canyons Journeys project the Forest Service is also considering a trail with use of power line right-of-way from its facility west of the City of Detroit that would extend to the City. Crossing the Breitenbush River needs resolution in regard to either using the existing bridge, incorporating a crossing into a Highway 22 bridge replacement, or creating a separate river crossing. The Forest Service indicates the possibility of completing the trail within the next ten (10) years.)*

Review of Existing Plans, Policies, Standards and Laws. See **Appendix A, Review of Plans, Policies, Standards and Laws** for information on other applicable documents.

## ACRONYMNS

ACOE	Army Corps of Engineers
ADA	Americans with Disabilities Act
ADTs	Average Daily Trips
BEGEPA	Bald Eagle and Golden Eagle Protection Act
DEQ	Department of Environmental Quality (Oregon)
DSL	Department of State Lands (Oregon)
ECSI	Environmental Clean-up Site Information
EDU	Equivalent Dwelling Unit
ESA	Endangered Species Act
FAA	Federal Aeronautics Authority
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
HIGHWAY 22	also know as OR 22, North Santiam Highway, State Highway #162
LID	Local Improvement District
HV	(30) HV refers to 30 <sup>th</sup> highest hourly traffic volume
HWY	Highway
LOS	Level of Service
LUST	Leaking Underground Storage Tank
MPH	Miles per hour
MEV	Million Entering Vehicles
MVMT	Million Vehicle Miles Traveled
MWACT	Mid-Willamette Valley Area Commission on Transportation
MWVCOG	Mid-Willamette Valley Council of Governments
NBI	National Bridge Inventory
NHS	National Highway System
OAR	Oregon Administrative Rules
ODOT	Oregon Department of Transportation
OECDD	Oregon Department of Economic and Community Development
OHP	Oregon Highway Plan
OTIB	Oregon Transportation Infrastructure Band
PAC	Planning Advisory Committee
PDO	Property Damage Only
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act—A Legacy for Users
SCA	Special Small City Allotment
SDC	System Development Charge
SPIS	Safety Priority Index System
STIP	State Transportation Improvement Plan
SYNCHRO	HCM Compatible Traffic Analysis Software for Intersections (#7)
TAC	Technical Advisory Committee
TE	Transportation Enhancement Program
TPAU	Transportation Planning and Analysis Unit
TPR	Transportation Planning Rule
TSDC	Transportation System Development Charge
TSP	Transportation System Plan
UGB	Urban Growth Boundary
VC	Volume-to-Capacity (ratio)

## CHAPTER 2: INVENTORY OF EXISTING CONDITIONS

### 2.1 OVERVIEW

The study area consists of the entire Detroit UGB which is consistent with the existing city limits. Land development and the supportive transportation system in the Detroit urban area have been heavily influenced by the location of State Highway 22 and Detroit Lake. Highway 22 generally runs northwest-to-southeast through the community and forms the backbone of much of the local transportation system. Highway 22 also provides regional connectivity for Detroit, linking it to Salem in the Willamette Valley and Bend in Central Oregon, as well as other nearby communities.

Preparation of the Detroit TSP began with an inventory and assessment of the existing transportation system. Transportation system characteristics that were identified and reviewed focused on the existing street system including roadway features, intersection geometry, and bridge conditions. Analyses were made of existing traffic operations and crash histories at key intersections. Assessments of other transportation-related functions included an assessment of, and ideas for improvements to, bicycle and pedestrian infrastructure, as well as public transportation, rail, and air systems.

The City of Detroit system inventory documented in this Chapter serves as a basic framework for evaluation of existing needs and deficiencies and provides a foundation for the assessment of future transportation facilities needs.

### 2.2 EXISTING STREET SYSTEM

This section describes the physical characteristics of the street and state highway system in the Detroit UGB. The inventory includes assessment for functional classification, street width and right-of-way, number of travel lanes, presence of on-street parking, bicycle and/or pedestrian facilities, posted speeds, and general pavement conditions. A matrix listing the complete street inventory conditions for the City of Detroit is included in Appendix A. See **Appendix A, Street Inventory**.

#### **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 on appropriate or desired vehicular street design characteristics. The functional classification of a street is typically 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 state highways, arterials, collectors, and local streets, each with increasingly less emphasis on mobility and more emphasis on land access.

**Appendix A, Street Network/Assessed Functional Classification** map indicates the Detroit street network as evaluated for a public streets functional classification system relative to roadways located within the Detroit UGB. Classifications used in this area included:

- State Highway (Highway 22),
- Highway (refers to Forest Service Road 46 or Breitenbush Road),

- Collector Roads,
- Local Streets,
- Alleys, and
- Private Roads.

Each of these classifications and their related roadways are discussed below.

**Functional Classification Definitions and Application**

The following definitions served as the general guide in assessing street classifications for all roadways within the City of Detroit, as they currently operate.

**Highways (ODOT and Forest Service).** The function of these facilities is primarily to accommodate inter-area, through-moving traffic that passes through the community. Highways also accommodate local trips entering and leaving the urban area, however, highways generally emphasize mobility over land access. Access to the highway is managed to protect the mobility function of the state and federal systems. Highway speed limits range from 40 to 45 miles per hour (Highway 22) and 25 to 40 mph (Breitenbush Road). The City of Detroit TSP has the following Highways within its UGB:

- Highway 22 (also known as State Highway #162 and North Santiam Highway), and
- Breitenbush Road (also known as Forest Service Road 46 and Detroit-Estacada Highway).

**Collectors.** Collectors provide links between an area or neighborhood and the highway system. Collectors supply abutting properties with the same degree of land service as a local street but are usually given priority over local streets in any traffic control installation. Collectors penetrate into different segments of the community, gathering traffic and channeling it to highways or other street connections. Speed limits on Collector streets in Detroit are 25 miles per hour. The following street connections were assessed as Collectors:

- Forest Avenue East to Butte Street North to Kinney Avenue East,
- Butte Street South to Scott Avenue South to Lake Court East to Meyer Street South to Hill Street South,
- Meyer Street South from Lake Street East to Highway 22,
- Hill Street South from Lake Street East to Highway 22,
- Detroit Avenue North from Highway 22 to Forest Avenue West,
- D Street from Detroit Avenue North to Patton Road North,
- Detroit Avenue South from Forest Avenue West to Santiam Avenue West,
- Guy Moore Drive from Highway 22 to Osprey Lane,
- Patton Road North from south of its intersection with D Street to Forest Avenue West,
- Patton Road South from Forest Avenue West to Santiam Avenue West, and
- Santiam Avenue West from Patton Road South to Highway 22.

**Local Access Streets.** At the time of the study for the TSP, all streets within the community not referenced as “highways” or “collectors” were assessed as Local Streets and are under the jurisdiction of the City of Detroit. The primary function of Local Streets is to provide access to abutting

properties. The majority of the local streets in Detroit provide access to single-family housing. Dwelling units within the community serve either year-around residents or those individuals/families with second homes used mainly during the summer months.

While connectivity is encouraged for all streets, through traffic movement is not the intended purpose of a Local Street. Speed limits on Local Streets in Detroit are 25 miles per hour. With the exception of the east end of 1st/2nd Streets (clarified later in this section) and Clifford Street (west of its intersection with Scotts Avenue South) all rights-of-way have at least some level of street improvement.

**Alleys.** Alleys are public thoroughfares of between 10 and 20 feet in width and are dedicated or deeded to the public to provide a means of a regulated secondary access and circulation. Within city limits, speed limits are restricted to a maximum of 10 miles per hour in alleys. There is one Alley indicated on Marion County Assessor’s maps that is 15 feet in width and located east of Butte Street North and west of Boulder Street North.

**Private Streets.** Four (4) other roadways located within the community are listed as private streets:

- French Creek Road, near the north city limit line (Forest Service road),
- Roadway on the south side of Detroit indicated as a Forest Service road that accesses a recreational area known as the Detroit Flats, and
- Two roadways maintained by private property owners (Small Lane and Sunro Lane), gated but with access to Highway 22 near the southeast end of Detroit.

## **Roadway Features**

This section summarizes the key features of the street and highway system in the Detroit Urban Area.

### **State Highway – Highway 22**

The salient features of Oregon Highway 22, the North Santiam Highway, are presented in the paragraphs below.

**Jurisdiction.** Detroit is served by one State Highway, referenced in this document as Highway 22. Highway 22 is under the jurisdiction of the Oregon Department of Transportation (ODOT). From its intersection with Breitenbush Road to the south city limits, Highway 22 is part of the West Cascades National Scenic Byway. Highway 22 serves as the major route through the city. Detroit has no direct control over the State Highway, however, adjacent development and local traffic patterns are heavily influenced by the Highway.

**Function.** The adopted 1999 Oregon Highway Plan (OHP) classifies the state highway system into five categories based on function: Interstate, Statewide, Regional, District, and Local Interest Roads. In addition to the highway classifications, there are four special purpose designations. These special designations include land use, statewide freight route, and scenic byway.

Highway 22 in Detroit is identified as a Statewide Highway. The current city limits are identified between mileposts 49.73 and 51.16 of Highway 22. According to the 1999 OHP, the primary function of Statewide Highways is to “provide inter-urban and inter-regional mobility and provide connections to larger urban areas, ports, and major recreation areas that are not directly served by Interstate Highways. A secondary function is to provide connections for intra-urban and intra-regional trips. The management objective is to provide safe and efficient, high-speed, and continuous-flow operation. In constrained and urban areas, interruptions to flow should be minimal.”

It should be noted that the “high-speed” component does not occur on the portions of highways within city limits.

**Freight Movement.** The “Freight Moves the Oregon Economy” (an ODOT publication) indicates that, “freight plays a major role in moving the Oregon economy.” According to the document’s exhibits, Highway 22 is a Statewide National Highway System (NHS) Freight Route. During the year 2007 (ODOT - 2007 Transportation Volume Tables), truck counts were conducted on Highway 22 east of Detroit. The counts indicated that trucks from four axles to “triple trailers” averaged 8.7 percent of the average daily Highway 22 trips, (Recorder: Detroit, 24-015). The count in August 2007 (the highest volume month) was approximately 571 trips per day and the count in December 2007 (the lowest volume month) was approximately 235 trips.

**Access Management.** Appendix C of the OHP indicates the Access Management Spacing Standards for Statewide Highways are 990 feet where speed limits range from between 40 to 45 mph. All other requirements for Statewide Highways as indicated by the OHP, the State’s Highway Design Manual, and the applicable Oregon Administrative rules, are evaluated by ODOT at the time development/redevelopment occurs upon accessing Highway 22.

**Lanes and Pavement.** Highway 22 is a two-lane roadway that enters the city from the northwest and transverses south and east through the community. A preservation project was completed on the Highway in 2001. The pavement is generally in fair to good condition. The roadway does not have any curbs or sidewalks. Wider shoulders allow for shared use bicycle travel on both sides of the highway for northwest and southeast bound travel.

**Speed Limit.** The speed limit on the Highway entering the City of Detroit at the north end of town is posted at 40 miles per hour (mph) and that limit continues until south of Highway 22’s intersection with Santiam Avenue West where it increases to 45 mph. Entering Detroit from the south, the speed limit is 45 miles per hour and decreases to 40 mph north of the Highway’s intersection with Santiam Avenue West.

**Pending Improvements.** According to the Final State Transportation Improvement Program (STIP) 2008-2011, a highway pavement preservation project will occur between mileposts 50.6 and 55.0 of Highway 22 in 2011. This includes the portion of Highway 22 in Detroit from approximately 739 feet south of Santiam Avenue to the southern city limits. No other projects within the Detroit city limits are identified in the 2008-2011 STIP or the draft 2010-2013 STIP.

#### **Forest Service Highway – Breitenbush Road**

The key features and characteristics of Breitenbush Road in the Detroit Urban Area are described in the following paragraphs.

**Jurisdiction.** Breitenbush Road enters the City of Detroit in its northeast corner and ends at its intersection with Highway 22. Breitenbush Road is under the jurisdiction of the United States Department of Agriculture Forest Service and is commonly known as Forest Service Road 46 (FS 46) or the Detroit-Estacada Highway. The highway is part of the West Cascades National Scenic Byway.

**Roadway Features.** With the exception of Front Street North that parallels Highway 22, no city streets connect to Breitenbush Road. The speed limit on the highway before entering the city is 40 miles per hour and reduces to 25 miles per hour at approximately the city limit line. The paved roadway condition is determined as good.

**Applicable Standards.** To establish a standard for improvements on Breitenbush Road, ODOT recommends classifying it as a District Highway. As defined by the OHP, such facilities are of “county-wide significance and function largely as county and city arterials and collectors . . . The management objective is to provide moderate to low-speed operation in urban and urbanizing areas and for pedestrian and bicycle movements.” When considering Breitenbush Road a District Highway, acceptable volume to capacity ratios range from .85 (for speed limit of 35 mph to 45 mph) to .80 (speeds of 45 mph or greater).

### **Local Roadways**

Identification of the roadway functions is the basis for planning roadway improvements and the appropriate standards (such as right-of-way, roadway width, and design speed) that the City applies to roadway facilities.

The collector street configuration on the east side of Highway 22 connects numerous residential areas to each other and provides access to Highway 22 at Forest Avenue East, Meyer Street South, and Hill Street South/Guy Moore Drive. By traveling across Highway 22, residents on the east side of the highway may access local businesses and services on the west side of the highway.

West of Highway 22, the southbound exit onto Detroit Avenue North inserts traffic immediately into the city’s commercial area. The street provides a southerly route that allows reconnections to Highway 22 at Forest Avenue West and Santiam Avenue West. By using D Street at the Detroit Avenue intersection, travelers have access to Patton Road North/Patton Road South, a roadway that provides connections to Highway 22 via Forest and Santiam Avenues West. Patton Road intersects with Clester Road that is a route to one of the City’s marinas and lake shore activities. The collector streets provide residential areas on the west side of town routes to the local businesses and Highway 22. Santiam Avenue West adds routes for the same purposes.

### **Intersections with Highway 22**

There are several intersections between Highway 22 and other streets (public rights-of-way) within the City of Detroit (listed from north to south):

- Breitenbush Road - east side only,
- Detroit Avenue North - west side only,
- Forest Avenue East/West - east and west,
- Santiam Avenue West - west side only,
- Meyer Street South - east side only, and
- Hill Street South/Guy Moore Drive - east side only.

Other rights-of-way under the City’s jurisdiction (1st Street and 2nd Street) connect to Highway 22 right-of-way. A physical extension of 1st Street cannot be constructed due to physical constraints. However, the City maintains control of the right-of-way for other potential uses. Second (2<sup>nd</sup>) Street right-of-way from Patton Road east could receive further evaluation as a pedestrian and bicycle route to Highway 22. Such a consideration would likely require reconfiguration of the Breitenbush Road intersection with the Highway.

Two private streets intersect with Highway 22 on the west side –Small Lane and Sunro Lane. Both are gated at the highway. In addition, a driveway at milepost 51.10 serves five homes on the west side of Highway 22. Physical addresses for properties within this vicinity are identified as North Santiam Highway.

On the east side of Highway 22, Front Street roadway and right-of-way parallel and abut Highway 22 right-of-way from approximately the Highway's intersection with Breitenbush Road south to Forest Avenue East and from Forest Avenue East to near the highway's intersection with Santiam Avenue West. However, the street is not physically designed for easy access to Highway 22. Front Street appears to function better as a right-turn-only lane for northbound traffic on Highway 22.

Marion County Assessor's maps indicate that Humbug Street right-of-way connects with Highway 22. However, the existing street physically ends without making that connection and it is not likely that Humbug Street will connect to Highway 22 in the future.

City residents have concerns with numerous local street and Highway 22 intersections including the limited number of identified and safety-adequate pedestrian crosswalks; safety concerns for exiting east off Highway 22 at Hill Street South/Guy Moore Drive (resulting in additional traffic at the Forest Avenue East and Meyer Street highway intersections because citizens consider the other intersection too dangerous); the downward slope of Forest Avenue, Meyer Street, and Hill Street South/Guy Moore Drive with an occasional inability to stop a vehicle prior to entering Highway 22 when the streets are covered with ice; and future impact on local street intersections based upon the potential for more residential development east of Highway 22.

## **Physical Elements of Detroit Roadway System**

### **Type of Pavement/Surface Conditions for Existing Facilities**

The matrix in **Appendix A, Street Inventory**, indicates the types of surfacing and conditions of the travel lanes. There are no sidewalks constructed on any of the public streets under the City's jurisdiction. Pedestrian travel occurs on either improved or unimproved edges of the public rights-of-way. The bridge that crosses the Breitenbush River is under the jurisdiction of ODOT and has raised sidewalks on both the east and west sides. Other than the elevation change, there is no physical barrier between individuals walking on the bridge sidewalks and the vehicles traveling north and south across the bridge.

### **Speed Limits**

Speed limits by street classifications are noted earlier in this Chapter. The City of Detroit filed an application in Fall 2008 requesting that ODOT conduct a speed study for the majority of Highway 22 located within city limits. In a letter dated September 11, 2008, a representative of ODOT's Traffic-Roadway Section acknowledged the receipt of the speed study application for the area between MP 49.78 (French Creek Road) to 100 feet west of Mackey Creek (MP 51.16). The study conducted by and according to ODOT did not indicate the need to change any speed zones within city limits on Highway 22. In March 2009, the City wrote a letter objecting to ODOT's findings. A letter issued by ODOT in May 2009 noted that the City is invited to attend the July 2009 Speed Zone Review Panel's meeting. (The Detroit TSP was completed in June 2009. Because the hearing was past the document's adoption date, resolution of the speed limit issue occurred after publication of the TSP.)

### **On-Street Parking**

On-street parking is not allowed on Highway 22 for the distance it transverses the City of Detroit.

Within the City of Detroit there is a variety of existing rights-of-way widths ranging from 24 feet to 60 feet. For rights-of-way less than 40 feet in width, on-street parking cannot physically occur without encroaching onto private property. When the right-of-way exists at 40 feet in width, there is sufficient area for two travel lanes and parking on one side of the street, although safe passing requires slow movements due to limited space and the frequent presence of larger vehicles.

The City does not have plans to post no-parking signs on either one or both sides of streets where rights-of-way are less than 40 feet. However, the City may post the higher traveled of these streets for no parking, in particular, during the summer months (such as Clester Road and Front Street). The City sometimes receives complaints from property owners regarding non-property owner vehicles illegally parked on their property. When the City receives these calls, it addresses these situations on a case-by-case basis. Accommodations for on-street parking varies based upon the physical improvements ranging from the impervious surfaces, to gravel shoulders, to shoulders without any level of improvement.

### **Turn Lanes/Passing Lanes**

The majority of streets within the City's UGB have two travel lanes. Several intersections have designated turn lanes. See the **Street Inventory** in **Appendix A** for specific locations.

South and east of the intersection of Highway 22 and Hill Street South/Guy Moore Drive the Highway has a passing lane for northbound traffic that ends prior to the intersection. It is the only passing lane located within city limits. The turn lane was added following a presentation by the City of Detroit to the Oregon Transportation Commission in 2003.

### **Driveway and Intersection Approaches**

The **Street Inventory** in **Appendix A** presents the details of area intersections and other Highway 22 access points. Of particular concern is that icy road conditions during winter months may occasionally make it difficult to stop a vehicle before it enters Highway 22 at Forest Avenue East, Meyer Street, and Hill Street South/Guy Moore Drive.

### **Traffic Control Devices**

Traffic control devices most commonly include traffic signals, as well as stop and yield signs. There are no traffic signals or yield signs along major streets in the study area. The location of existing top signs is indicated in the **Street Inventory** included in **Appendix A**.

### **Crosswalks**

Several intersections in the study area have "marked" crosswalks. **Appendix A, Street Inventory**, lists specific locations.

### **Public Utilities/Irrigation Facilities**

In regards to utility facilities, such as electrical and natural gas, there do not appear to be any major hindrances to the local transportation system. The City does not have any landscaping within public rights-of-way that are maintained using an underground sprinkler system.

### **Bridges**

The only bridge (#07017) within city limits is located on Highway 22 near the north boundary. It crosses the Breitenbush River and is under the jurisdiction of ODOT. Improvements to the bridge completed in 1999 include a deck overlay and improved bridge rails. According to ODOT's Bridge Inspection Report, the sufficiency rating of the bridge is 49.5. It appears from the report that the bridge needs consideration toward funding for listed improvements and, eventually, a bridge replacement.

**Table 2-1. Bridge #07017 Conditions (2007)**

Appraisal			NBI Category*		
Appraisal	NBI #	Rating	Category	NBI #	Rating
Scour	113	3 SC – Unstable	Deck Condition	58	6 Satisfactory
Bridge Rail	36A	0 Substandard	Superstructure	59	6 Satisfactory
Transitions	36B	0 Substandard	Substructure	60	7 Good
Approach Rail	36C	0 Substandard	Channel	61	7 Minor Damage
Rail Ends	36D	0 Substandard	Culvert /Retaining Walls	62	N N/A (NBI)
Structural	67	6 Equal Min Criteria			
Deck	68	3 Intolerable – Correct			
Clearance	69	N Not applicable (NBI)			

Source: ODOT Bridge Inspection Report (8/20/07) \*(NBI – National Bridge Inventory)

### **Environmental, Social and Recreational Constraints/Issues**

A local wetland inventory conducted and adopted in 2002, indicates the location of wetlands along a portion of Detroit Lake shoreline area (within the more southerly half of the city). Other wetlands are listed in the Front/Humbug street area, including a scattered reach that extends from Humbug eastward to Scott Avenue South. On the west side of Highway 22, several potential wetland areas are indicated near Santiam Avenue West and on several lots south of the street. Several streams are located within the community with one extending from the Breitenbush River south and east, one within the northwest corner of the City (within a slope area), one in the Humbug Street area, one between Hill Street South and Guy Moore Drive, and Mackey Creek at the southeast end of Detroit. See **Appendix A, Wetlands** map.

Some areas adjacent to Detroit Lake are identified as being within a flood plain. A Flood Insurance Rate Map (FIRM) of the City is available by accessing the Federal Emergency Management Agency (FEMA) address: <http://msc/fema.gov>.

Slope areas are located within portions of the City’s northern and eastern boundaries. Slopes that need further study range from between 10 to 20 percent and 20 percent or greater. In 2009, the City addressed slope hazard areas, adopting a **Slope map (Appendix A)**, and adopting ordinances that require additional technical documents at the time of development. Also see section 2.6.

## **2.3 PUBLIC TRANSPORTATION**

This section describes existing public transportation services to/from and within the Detroit Urban Area. Included in the discussion are highlights of the service area population, and an inventory of services and facilities.

### **Detroit Service Population**

The TSP uses information from the 2000 census to identify the number of people in Detroit more likely to use, or be more reliant upon, non-auto transportation modes such as sidewalks, bikeways,

public transportation, or paratransit services. Public transportation services are generally targeted to serve the needs of two groups:

- Transit Disadvantaged. People who do not have, or cannot operate, an automobile to obtain medical, educational, social, or recreational services and employment; and
- People who presently use a car but would use other transportation alternatives to commute to work.

The City's 2007 PSU estimated population is 265. People living in Detroit characterized as transit disadvantaged in the 2000 census included:

- 15 people aged 12 to 16 years (5.7 percent of the total population),
- 68 people greater than 60 years old (26 percent of the total population),
- 9 non-institutionalized people with a go-outside-the-home disability over the ages of 16 (4.5 percent of civilian non-institutionalized population 16 years of age and older), and
- 10 individuals with low or moderate incomes who generally may have no personal auto access (8.6 percent of total population).

Census data showed that in 2000 the workforce in Detroit was 106 employed persons, or 40.5 percent of the population. Almost 80 percent of those employed reported that they drove alone to work. A few individuals walked to work (15 people/14.2 percent of the total population) while almost 5 percent (5 individuals) worked at home. Excluding the individuals who worked at home, approximately 65 percent of the workforce was at their place of employment within 29 minutes or less of travel time, almost 20 percent at less than one hour, and about 10 percent had travel times of an hour or more.

### **Inventory of Public Transportation Services and Facilities**

Three forms of public transportation are available within the City of Detroit, none of which provide convenient commuting services to the general public:

- The North Santiam Canyon School District provides school bus services within the city through a contract with a private service provider. There are no plans at this time to relocate any of the four bus stops available to elementary and high school students being transported from the City of Detroit to the cities of Gates and Mill City.
- Cherriots (a Salem-based provider) contracts with Trip Link, a call center with a network of 20 to 25 transportation providers. Trip Link arranges rides to medical appointments for individuals who qualify for Medicaid-Plus (eligibility for Medicaid is determined by the person's case worker).
- A bus service operating out of the City of Newberg and under the business name of "Valley Retriever" provides transportation between the Oregon Coast and the City of Bend. There is one round-trip per day. To arrange passenger service, individuals are advised to secure reservations a minimum of one (1) day prior to the travel, although early morning notification may allow for same day arrangements. Greyhound Bus Lines do not provide service to the City of Detroit.

Additional public transportation services within the region, but not available inside Detroit, include:

- Chemeketa Area Regional Transportation System (CARTS), operated by the Salem Area Mass Transit District, provides bus service to communities along the Highway 22 corridor (Santiam Region) in the form of three round-trips per weekday. CARTS allows connections

to other routes in and outside the Salem-Keizer area. The closest CARTS connection to Detroit is the City of Gates, approximately 17 miles to the west. CARTS schedule information is available on-line at: [www.cherriots.org](http://www.cherriots.org). Funding to operate CARTS is available from several different federal and state sources and through fares paid by individual riders. There are no current plans to extend CARTS services any further east on Highway 22.

- Two other ride services for individuals with disabilities, Wheels and Cherry Lift, do not operate outside the Salem-Keizer urban area.

There are currently no taxi companies based in Detroit.

## 2.4 BIKEWAY AND PEDESTRIAN SYSTEMS

To follow is an overview of the existing bicycle and pedestrian system in the Detroit Urban Area. Included is documentation of existing facilities, a listing of pedestrian/bicycle destinations and potential demand, identification of barriers to non-motorized travel, and suggested actions to address some of the existing barriers in the Detroit study area.

### Existing Bicycle and Pedestrian Facilities

#### Bikeway System

The Oregon Bicycle and Pedestrian Plan categorizes bicycle facilities into the following four (4) major classifications:

- Shared roadway: Bicycles and vehicles share the same roadway area under this classification. The shared roadway facility is best used where there is minimal vehicle traffic to conflict with bicycle traffic.
- Shoulder bikeways: This bicycle facility consists of roadways with paved shoulders to accommodate bicycle traffic.
- Bike lanes: Separate lanes adjacent to the vehicle travel lane for the exclusive use of bicyclists are considered bike lanes.
- Bike paths: These bicycle facilities are exclusive bicycle lanes separated from the roadway.

There are shoulder bikeways located along the east and west sides of Highway 22 within the City of Detroit. The only other bicycle infrastructure within the City of Detroit are shared roadways, which exist informally on all city streets. Given the rural nature of the community and the relatively low traffic counts on city streets, Detroit's shoulder bikeways and shared roadways, at this time, are sufficient bicycling facilities. **Appendix A, Street Inventory**, identifies the shoulder bikeways on Highway 22. Barriers to the system are noted later in this chapter.

#### Pedestrian System

The relatively small size of Detroit indicates that walking can be employed regularly for short trips to reach a variety of destinations. Typically, a short trip taken by a pedestrian is about one-half (1/2) mile. Encouraging pedestrian activities could decrease the use of personal automobiles and also provide benefits for retail businesses when both residents and tourists are customers. Where people find it safe, convenient, and pleasant to walk, they may linger and take notice of previously overlooked shops. Enhancing the pedestrian system is beneficial to all the local residents including children and senior citizens. More than 25 percent of the City's population (2007 estimate of 265) is over 60 years of age.

Currently, the City does not have any streets constructed with sidewalks. In some areas the street pavement is wider and allows for walking outside the travel lanes. A more common occurrence is pedestrians using shoulders that are narrow without any impervious surfacing. Barriers to the city's pedestrian system are noted later in this chapter.

### **Safe Routes to School**

Safe and convenient pedestrian and bicycle facilities are of special importance in the vicinity of schools. The purpose of Safe Routes to Schools program is to inventory pedestrian and bicycle facilities within the walk zone (one mile) of schools. The City of Detroit currently has no public school schools within its boundaries but it is part of North Santiam Canyon School District 129-J. The District provides transportation for students living within the Detroit area through a contract with an independent provider. An elementary school is located in the City of Gates and a high school in Mill City.

The four (4) bus stop locations for morning and afternoon routing are as follows:

- Breitenbush Road at its intersection with Highway 22,
- Detroit Avenue South at its intersection with Santiam Avenue West,
- Patton Road at its intersection with Forest Avenue West (former elementary school site), and
- Hill Street South/Guy Moore Drive at their intersection with Highway 22.

An “unofficial” bus shelter exists at the Highway 22 intersection with Hill Street South/Guy Moore Drive but no protection from the weather is present at any other locations. Additional shelters could be considered as a way to better ensure safer “waiting areas” outside roadway travel lanes.

The speeds and volumes of Highway 22 traffic is an obstacle for safe access of school bus stops. Some drivers ignore the school bus mounted “stop sign” and “run” the bus's flashing red lights. An additional safety factor noted by the transportation provider is the lack of street lighting at the Highway 22 intersection with Forest Avenue East/West. Students living on the east side of Highway 22 cross the Highway 22 to meet the bus at the Patton Road/Forest Avenue stop. Limited daylight hours in the fall/winter make it difficult to see students in the crosswalk. Approximately 75 percent of the students meet the bus at the Patton Road/Forest Avenue stop. Any changes to street lighting along Highway 22 must meet ODOT policy/guidelines.

### **Trails**

Several different studies and documents specific to the Detroit area within the North Santiam Canyon indicate the need for connections between State Parks and other recreational facilities. The potential exists to create trails connecting recreational facilities, Detroit Lake, and other communities east and west of the city. The City plans to participate as time and funds are available to support efforts toward completing those trails/paths benefiting both pedestrians and bicyclists.

### **Bicycle and Pedestrian Destinations and Route Choices**

It is important when planning a network of bicycle and pedestrian facilities that key destinations be identified and likely or desired travel routes be determined. **Table 2-2** presents a summary of bicycle and pedestrian trip attractors located in the Detroit area. These include destinations that could attract commute, utilitarian, transit access and/or recreational trips.

Retail, shopping, and restaurant locations are primarily located along Detroit Avenue. The recreational opportunities surrounding Detroit Lake draw a significant number of tourists to the community with the largest numbers visiting during the months of May through September.

**Table 2-2. Bicycle and Pedestrian Trip Attractors in the Detroit Area**

**Summary of Types of Trip Attractors**

---

School Bus Stops  
Detroit Lake and Marinas  
Parks, open spaces, and recreational facilities such as Detroit Flats, Upper Arm, and Mongold  
Campground  
Shopping areas and Restaurants  
City Hall & Post office  
Other public facilities and community meeting places  
Cultural, historical and tourist destinations such as Breitenbush hot springs and retreat center

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When options are available, pedestrians and cyclists generally choose a route that provides the best balance of the following desirable characteristics:

- Directness between the origin and destination points,
- Minimal gradients to be negotiated,
- A high quality and well-maintained surface,
- Lower volumes of motor vehicle traffic,
- Adequate space for allowing faster traffic to safely pass,
- Pleasant environmental surroundings, and
- Minimal number of stops or delays.

**Barriers to Pedestrian and Bicycle Travel**

To accommodate and increase the share of biking and walking trips in Detroit, bicycle and pedestrian infrastructure needs to form safe connections between destinations. Pedestrian and bicycling barriers include a wide variety of physical features that make it difficult or less safe for pedestrians and bicyclists to travel. Some of the barriers observed in Detroit are described below.

**Bicycling Barriers:**

- Poor maintenance of facilities,
- High volumes/speed of motor vehicle traffic,
- Lack of places to safely store bicycles at destinations (bike racks),
- Frequent driveway crossings,
- Discourteous or inattentive drivers,
- Lack of lighting and security along routes, and
- Lack of enforcement of traffic laws.

**Pedestrian Barriers:**

- Absence of a sidewalk system,
- Utility poles, signal control boxes, signs, and trees in walkways,
- Poor maintenance of facilities, poor drainage,
- Lack of designated crossings opportunities,

- Intersection crossing safety,
- Lack of lighting and security along routes,
- Discourteous or inattentive drivers, and
- Lack of enforcement of traffic laws, which can disadvantage pedestrians.

### **Opportunities to Improve Bicycle and Pedestrian Travel in Detroit**

Continuity of facilities and connections to desired destinations is essential to encourage both bicycle and pedestrian travel. There is a lack of clear connections between some of these destinations in Detroit. A bikeway and walkway system in Detroit should provide circulation to these key destinations. These critical route-connections include:

- Detroit commercial district south to a forest service road that accesses a recreational area known as the Detroit Flats,
- Detroit commercial district north to Breitenbush Road,
- Forest Avenue from Butte Street to Patton Road and Clester Road to the Marina, and
- North Santiam Canyon Trail system.

Roadway improvements on existing streets should provide for safer pedestrian and bicycle facilities and consider the requirements of the Americans with Disabilities Act (ADA). The primary focus of bicycle and pedestrian facility improvements in Detroit should rely on the existing street and highway system. Improvement efforts should attempt to address existing barriers and could include the following:

- Provide continuous sidewalks or a boardwalk in the core commercial area;
- Enhance crossing safety of Highway 22 and Breitenbush Road through the development of staged improvements;
- Formalize parking and intersections on Detroit Avenue to encourage safety, discourage improper parking, and minimize conflict with bicyclists and pedestrians;
- Provide way-finding or guide signage;
- Streetscape improvements, including amenities such as bike racks; and
- Install a median along Highway 22.

The identification of additional critical routes and treatment options is an important step in focusing further planning efforts on the bicycle and pedestrian system, prioritizing investment projects for improving or creating new bicycle and pedestrian facilities, and promoting a positive walking and bicycling environment. In addition to infrastructure improvements, a more comprehensive approach to improving walking and bicycling in the Detroit area may be needed to address identified barriers. These improvement options are covered in greater detail in the following Chapters.

### **Considerations in Further Refining Improvement Recommendations**

The “Four E’s” – Engineering, Education, Enforcement, and Encouragement – are tools that can be used to improve walking and bicycling in Detroit. Though the City of Detroit does not have direct control over implementing many of these tools, using the “Four E’s” to engineer, operate, and maintain quality bicycle and pedestrian facilities is a critical element in producing a comfortable and safe environment for all users. The *engineering* solutions to improve the quality of the pedestrian and bicycle network include:

- Traffic calming;
- Street crossing treatments;
- Designing for special pedestrian populations (ADA compliance);
- Roadway, bikeway and pedestrian facility design;
- Path, trail, and sidewalk design including landscaping and features;
- Traffic management; and
- Access and on-street parking management.

*Education* can be a powerful tool for changing behavior, perception, and improving safety. Pedestrians, bicyclists, and motorists alike can benefit from educational tools and messages that teach them the rules, rights, and responsibilities of various modes of travel.

*Enforcement* of traffic laws and regulating pedestrians, motorists, and other roadway users is a key element for ensuring a safe and healthy walking environment. Enforcement programs can be used to educate transportation facility users about the traffic laws that govern them, serve as periodic reminders to obey traffic rules, encourage safer behaviors, and monitor and protect public spaces.

*Encouragement* activities target individuals, organizations, or events to promote walking and bicycling, create awareness about bicycling and pedestrian issues, and inform others in the ways that bikeable and walkable places foster healthier, more livable communities. Employers, retailers, and schools may offer incentives to encourage bike and pedestrian travel as well as organizing fun events. In order to attract more users to bicycling and walking, the activity should also be enjoyable and fun. Opportunities to increase the enjoyment of these activities should be considered as we move forward with this plan.

## **2.5 OTHER REGIONAL TRANSPORTATION AND UTILITY SERVICES**

### **Rail Service**

The closest rail infrastructure to Detroit is the Union Pacific Railroad line for freight services and Amtrak passenger service. The Amtrak station is located in Salem on 12th Street over 50 miles to the west. Although Amtrak also operates a bus service (ThruWay) with connections to the City of Bend, none of the routes travel through the City of Detroit. The existing rail line extends north and south from Salem. There are approximately 20 to 25 train trips per day.

### **Air Service (Public and Private)**

For several years, passenger air service was available at McNary Field (City of Salem) but was discontinued during the fall of 2008. Regularly scheduled air passenger service is provided at the Portland International Airport (located approximately 100 miles north/northwest of the City of Detroit) and at the Redmond Municipal Airport (located approximately 80 miles southeast of the City of Detroit).

A 1998 Santiam corridor document prepared by the MWVCOG indicates the operation of the Davis Airport as a “private public-use airport located one-mile south of Gates in Linn County. The airport is primarily used for recreational purposes. This airport is protected by overlay zoning.” FAA classifies the operation as a General Aviation Airport. Information available September of 2008 indicates two “turf” run-ways.

## **Water**

There are no navigable waterways within the City of Detroit. Two dams (Detroit and Big Cliff) located west of the City of Detroit prevent any transportation methods utilizing and accessing lower portions of the North Santiam River.

A proposal in the North Santiam Canyon Alternative Transportation Link Feasibility Study (2004) includes a “water taxi” for overall visitor circulation at Detroit Lake that could provide “connections between the visitor facilities and camping areas on the north and south side of Detroit Lake with the City of Detroit. An additional segment of the water taxi system could be added to connect the Hoover Campground and boat dock to the system. This addition to the water taxi system would provide a unique ‘trail’ experience that would link Detroit to the western end of the Idanha trail system.”

On several occasions Detroit Lake has been utilized as a landing strip for small aircraft.

## **Pipelines**

Although not often considered as transportation facilities, pipelines carry liquids and gases very efficiently. The use of pipelines can greatly reduce the number of trucks and rail cars carrying fluids such as natural gas, oil, and gasoline.

The Oregon Office of Energy defines jurisdictional gas pipelines as those that are 16-inches or larger in diameter and 5-miles or longer in length. At this time, there are no lines meeting these criteria in the immediate area of the City of Detroit.

## **2.6 ENVIRONMENTAL CONSTRAINTS**

Preliminary research was conducted to determine the likely existence of threatened and endangered species, wetlands and waterbodies, steep slopes, hazardous materials, and/or historic and archeological resources within the City of Detroit (See **Appendix A, Existing Conditions and Future Projects** map). The purpose for gathering this information was to ensure that recommended transportation projects minimize or avoid potential negative impacts to these resources. As research relied upon information available from existing databases, the location and extent of the environmental resources identified within this section may be incorrect, and additional resources may exist. Prior to constructing any transportation project, extensive background research on environmental constraints should be conducted. In addition to the information included in this report, the City’s Comprehensive Plan discusses the presence of elk and osprey in and around the City of Detroit, as well as provides additional information on wetlands.

### **Threatened and Endangered Species**

In the Detroit area, several natural resources that are protected under state and federal laws and regulations may be present. At this time, the only species protected under the federal Endangered Species Act (ESA) that may occur in the area is the northern spotted owl. No fish, plant, or other wildlife species listed under the federal ESA is likely to occur in the area. Likewise, no species protected under the state ESA is likely to occur in the area.

In addition to ESA, other regulations relate directly to one species or a suite of species. One of these regulations is the Bald Eagle and Golden Eagle Protection Act (BEGEPA). Although bald eagles were taken off the federal and state ESA lists, they are still protected from "take" under BEGEPA. “Take” can include disturbance of eagles at a nest, and activities within one-half mile of a nest should be analyzed to determine whether they might create an impact. Native birds are also protected from take when actively nesting, under the Migratory Bird Treaty Act. This includes all songbirds, crows,

ravens, and other common birds (other than European starlings and rock doves) that may nest in urbanized areas. Destruction of an active nest and killing of a migratory bird is not allowed under this act.

Additional regulated resources include wetlands and waters below the ordinary high water mark. Both wetlands and waters are protected under state and federal laws. Examples of these resources would include Detroit Lake, the Breitenbush River, and their tributaries. These resources may provide habitat for protected species.

Prior to project design and construction, a review of the site by a natural resources specialist should occur. The specialist would identify potential habitat for protected species. The size of the reviewed area would depend on the activities under consideration, but would include a review of any stormwater runoff that may extend outside the immediate project area. In addition, searches of databases with species occurrence information and discussions with state fish and wildlife biologists should occur.

For those activities requiring a federal permit or using federal funds, the preparation of a biological assessment or a no-effect document may be needed to satisfy ESA concerns. The natural resources specialist may suggest that certain conservation or impact minimization measures be integrated into the project to avoid or minimize impacts. The specialist should also identify any natural resources permits necessary to comply with state and federal laws and regulations.

### **Wetlands and Waters**

Both wetlands and waters are protected under state and federal laws administered by the Oregon Department of State Lands (DSL) and the Army Corps of Engineers (ACOE). Examples of these resources would include Detroit Lake, the Breitenbush River, and their tributaries. **Appendix A, Existing Conditions and Future Projects** map, identifies these waterbodies, as well as the location of wetlands and possible wetlands, based on electronic data provided by Marion County. In addition to electronic data, the TSP's PAC committee identified a possible wetland to the south of the Guy Moore Drive/Howe Street intersection. (See **Appendix A, Existing Conditions and Future Projects** map.) Prior to any future project activities, a review of the project site by a natural resources specialist should occur. The natural resources specialist would determine if wetlands or regulated waters are present in the area and may suggest that certain conservation or impact minimization measures be integrated into the project to avoid or minimize impacts. The specialist would also identify any natural resources permits necessary to comply with state and federal laws and regulations.

### **Slopes**

Within Detroit, areas of steep slopes are primarily located within portions of the City's northern and eastern boundaries. **Appendix A, Slope Map**, depicts the slope conditions within Detroit, as mapped by the MWVCOG with data provided by Marion County. Areas of steep slope can affect the design, cost, and impacts of transportation projects.

### **Hazardous Materials**

A search was conducted on the Oregon Department of Environmental Quality's Environmental Cleanup Site Information (ECSI) electronic database to determine whether properties within the City of Detroit have known or suspected release(s) of hazardous substances. Because the ECSI database is a working database used by the Department of Environmental Quality (DEQ), inclusion or omission from the database does not mean that a site is or is not necessarily contaminated.

The search identified one ECSI site within the City of Detroit, and included the following status information:

**Site:** Kanes Marina, 530 Clester Road, and

**Status:** No further action (NFA) is required – cleaned up to DEQ standards.

As the site information from the database lists only the property's street address, the release of hazardous substances could have occurred anywhere within the tax lot identified on

**Appendix A, Existing Conditions and Future Projects** map. A search was also conducted on the Oregon Department of Environmental Quality's Leaking Underground Storage Tanks (LUST) electronic database, to determine if any known LUSTs were located within the City of Detroit. The following four sites were identified and are located on **Appendix A, Existing Conditions and Future Projects** map:

- Detroit Lake Marina, 115 Breitenbush Road;
- Kanes Marina, 530 Clester Road;
- Route 22 Gas, 105 Breitenbush; and
- No site name, 140 Detroit Avenue South.

The LUST database did not include any information on the status of clean up at these sites. As with the ECSI site, the location of the four LUST sites may be anywhere within the tax lots identified on **Appendix A, Existing Conditions and Future Projects** map.

If transportation projects require the acquisition of any of the properties identified above, due diligence would be required to determine the status and extent of contamination, if any, and to reduce the potential for liability for cleaning pollutants from the site(s). This due diligence is in addition to general mitigation strategies that should be established prior to constructing project within rights of way, in the event contaminants are discovered during the construction process.

### **Historic and Cultural Resources**

In 2002, an update of Detroit's Comprehensive Plan included an analysis of Statewide Planning Goal 5 resources. The Goal 5 analysis included research on historic and cultural resources. The analysis concluded that no significant historic resources exist within the city and that insufficient information is available to determine the existence of cultural resources.

In 2007, the City received funding to assist in the demolition of the Detroit Elementary School Gymnasium as the property was determined to be beyond the point of rehabilitation and created a safety and fire hazard to the city and residents. As part of the demolition, the City consulted with the Oregon State Historic Preservation Office (SHPO) who determined that the demolition of the Gymnasium would result in "Historic Properties Adversely Affected." To satisfactorily mitigate the effect of the undertaking on historic property, the City and SHPO entered into a Memorandum of Agreement (MOA) to outline mitigation measures for implementation. The MOA included the creation of an interpretive display of the Detroit Elementary School Gymnasium with photographs and a description of the history of the structure and the role it played in the community.

## CHAPTER 3. EXISTING (2008) TRAFFIC OPERATIONS

Chapter 3 addresses existing transportation system volumes and operations on Highway 22 and on local roadways within the Detroit UGB, including at the following key study area intersections:

- Highway 22 at French Creek Road (unsignalized),
- Highway 22 at Breitenbush Road (unsignalized),
- Highway 22 at Detroit Avenue (unsignalized),
- Highway 22 at Forest Avenue (unsignalized),
- Highway 22 at Santiam Avenue (unsignalized),
- Highway 22 at Hill Street/Guy Moore Drive (unsignalized),
- Detroit Avenue North at 'D' Street (unsignalized),
- Detroit Avenue North/South at Forest Avenue (unsignalized), and
- Clester Road West at Patton Road North (unsignalized).

Each of these unsignalized intersections is stop-sign controlled on the minor street approach, except that the Detroit Avenue/Forest Avenue intersection is an all-way stop. Existing lane configurations and traffic control for the study area intersections are shown in **Appendix A, Existing Lane Characteristics**, in regards to **Traffic Movement**.

### 3.1 INTERSECTION OPERATIONAL STANDARDS

Within the State of Oregon, traffic operations are evaluated based on two sets of criteria or standards. The operative standard used by ODOT for state highways is the volume-to-capacity (V/C) ratio, and is expressed in terms of a ratio between traffic volumes and the roadway or intersection's capacity. Though the City of Detroit does not currently have adopted operational standards, many local communities assess the quality of traffic performance in terms of intersection or roadway levels of service (LOS). These two operational standards are described below.

#### **Volume-to Capacity Standard**

ODOT uses V/C ratios to measure state highway performance rather than intersection or roadway levels of service. A V/C ratio expresses the relationship between traffic volumes and the roadway or intersection's theoretical capacity. For example, a V/C ratio of 0.70 means that 70 percent of the capacity of the roadway is utilized based on an established planning level capacity and measured traffic volume. Various V/C thresholds are applied to all state highways based on functional classification of these facilities. The *1999 OHP* defines the performance measure for Highway 22 as a V/C ratio equal to or less than 0.70 (speeds at 45 or greater miles per hour) and .75 (speeds of over 35 miles per hour). This V/C ratio is based upon Highway 22's status as a Statewide NHS Freight Route, Statewide Highway, within a UGB. These performance measures establish the minimum standard of acceptable operation.

#### **Intersection Levels of Service**

Another measure of intersection operating performance during peak travel periods is based on average control delay per vehicle entering the intersection. This delay 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. Various levels of delay are then expressed in terms of level of service (LOS) for either signalized or unsignalized intersections. The various LOS range from LOS A (free-flow conditions) through LOS F (operational breakdown). Between LOS A and LOS F, progressively higher LOS grades reflect increasingly worse intersection performance, with higher levels of control delay and increased congestion and traffic queues. Characteristics of each LOS are briefly described below in **Table 3-1**.

**Table 3-1. Level of Service Definitions**

Level of Service	Average Delay/Vehicle (sec.)		Description
	Signalized	Unsignalized	
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.

### 3.2 TRAFFIC VOLUMES

ODOT provided 16 hour turning movement counts for the study intersections, based on data that had been collected in August 2007. An adjustment to the count data was required to translate data from previous years so that they all represented 2008 volumes. Additionally, as traffic volumes vary with the seasons, further adjustments were required for counts taken outside of the peak season to ensure that they reflect “typical” conditions for use in assessing design and improvement options. The turning movement volumes represented in **Appendix A, Traffic Movement, 2008 (30<sup>th</sup> HV) Volumes**, reflects seasonally adjusted 2008 traffic volume or the 30 HV. The methodology for the adjustments is summarized in **Appendix A (Intersection Analysis, 2008 30<sup>th</sup> HV, Nos. 1. through 7., 10., and 15)**.

### 3.3 TRAFFIC OPERATIONS

Traffic operational analysis was prepared for both the key study area intersections identified in Chapter 2 and for roadway segments within the study area.

#### Roadway Segment Operations

To supplement the analysis of existing traffic operations at key intersections, an assessment was conducted of how well Highway 22 functions. Two-Lane Directional HCM analysis was used. The results of this analysis indicates that Highway 22 operates at 0.47 V/C in the northbound direction and

0.26 V/C in the southbound direction. Analysis worksheets are included in Appendix A (**HCS: Two-lane Highway Release 5.2, Hwy 22 North and Southbound**).

### Intersection Operations

The analysis of existing 30th HV traffic operations was conducted using a Synchro 7 traffic simulation model developed specifically for the study area intersections. This model includes field-verified geometrics and other relevant physical data for each intersection. Analysis procedures follow guidelines in the ODOT Transportation Planning and Analysis Unit (TPAU).

**Table 3-2** summarizes existing (2008) traffic operations for the 30<sup>th</sup> HV at the intersections in the study area. Data in these tables includes the overall intersection V/C ratios, average intersection delay, and intersection levels of service (LOS). Intersection analysis worksheets are included in **Appendix A, Intersection Analysis, 2008 30<sup>th</sup> HV**. Currently, the intersections generally experience minimal delays and operate within acceptable LOS standards.

**Table 3-2. 2008 Traffic Operations**

<b>Unsignalized Intersection Critical Movement</b>	<b>V/C Ratio</b>	<b>Critical Delay (sec/vehicle)</b>	<b>Critical LOS</b>
Hwy 22 at French Creek Road <i>Southbound</i>	0.02	15.5	C
Hwy 22 at Breitenbush Road <i>Westbound Right</i>	0.28	18.8	C
<i>Northbound</i>	0.53	0.0	A
Hwy 22 at Hill Street/Guy Moore Drive <i>Westbound</i>	0.49	0.0	A
<i>Southbound</i>	0.02	14.9	B
Hwy 22 at Detroit Avenue <i>Northbound Thru</i>	0.46	0.0	A
<i>Eastbound</i>	0.27	17.9	C
Detroit Avenue at 'D' Street <i>Eastbound Left</i>	0.05	10.0	A
Clester Road at Patton Street <i>Eastbound</i>	0.01	8.3	A
Detroit Avenue at Forest Avenue <i>Southbound</i>	0.10	7.6	A
Hwy 22 at Forest Avenue <i>Eastbound</i>	0.19	16.6	C
<i>Northbound Thru</i>	0.45	0.0	A
Hwy 22 at Santiam Avenue <i>Northbound Thru</i>	0.49	0.0	A
<i>Eastbound</i>	0.02	11.0	B

Note 1: V/C ratio is a ratio between traffic volumes and the roadway or intersection's capacity.

Note 2: LOS means intersection level of service.

Note 3: "Critical Delay" and "Critical LOS" refers to the delay or LOS experienced for the specific intersection traffic movement listed.

### 3.4 CRASH HISTORY

Crash data for the study area intersections were provided by ODOT and Marion County for the 5-year period from 2003 through 2007. Analysis of this data was conducted for roadway segments through the study area and the key intersections.

#### Roadway Segment Crash Analysis

Roadway segment crash data is analyzed on the basis of accidents per million vehicle miles of travel (MVMT), which considers both the number of crashes and the level of exposure to crashes expressed in terms of the total traffic volume carried along the roadway segment.

**Table 3-3** identifies crash data for an approximately 1.43 mile segment of Highway 22 in the Detroit city limits. Using 5-year crash data, analysis indicates that none of the segments experience crash rates greater than 1.0/MVMT. Additionally, the segment did not experience crash rates that exceed the average crash rate of 0.71 for all rural principal arterial highways in Oregon for the period from 2003 through 2007 (according to the ODOT Crash Rate Table II). A review of the data for Highway 22 through the study area indicates that the collisions are at access points without left turn lanes.

**Table 3.3 2003-2007 Detroit Study Area Crash History**

Intersections	Crash Type					Crash Severity			Total		DATA SOURCE
	Rear-end	Turn	Angle	Side-swipe	Other	PDO	Injury	Fatal	Reported Crashes	Crash Rate/MVMT	
Hwy 22 & French Creek	0	0	0	0	0	0	0	0	0	0.00	ODOT
Hwy 22 & Breitenbush/Detroit	0	1	0	0	0	1	0	0	1	0.09	ODOT
Detroit Ave & D Street	0	0	0	0	0	0	0	0	0	0.00	ODOT/County
Patton & Clester	0	0	0	0	0	0	0	0	0	0.00	ODOT/County
Detroit Ave & Forest Ave	1	0	2	0	0	3	0	0	3	0.87	County
Hwy 22 & Forest	1	0	2	0	0	3	0	0	3	0.31	ODOT
Hwy 22 & Santiam Ave	0	0	0	0	0	0	0	0	0	0.00	ODOT
Hwy 22 & Guy Moore Dr	1	0	0	0	0	1	0	0	1	0.11	County
Hwy 22 Segment Non-Intx	2	1	0	0	1	2	2	0	4	0.07	ODOT
Hwy 22 Segment Total	4	2	2	0	1	7	2	0	9	0.56	County/ODOT

Source: ODOT and County, 2008.

Note 1: PDO means Property Damage Only. "Other" crashes include backing, pedestrian collisions, and hitting fixed objects.

Note 2: MVMT means million vehicle miles of travel.

The ODOT Project Safety Management System tracks crash data by district for segments and specific sites. The Safety Investment Program Segment Ratings rate the number of fatal/injury crashes per 5 mile segments, from Category 1 with zero crashes to Category 5 with more than 10 crashes. Using 2003-2007 data, Highway 22 in the study area is rated a Category 2 (1-2 fatal/injury crashes per 5 mile segment). According to the Safety Priority Index System (SPIS) there are no crash sites in the study area that require monitoring or mitigation.

#### Intersection Crash Analysis

The number of crashes per million entering vehicles (MEV) is used to calculate an intersection's "crash rate." The rate is then compared to crash rates on similar type of facilities throughout Oregon. A rate greater than other similar facilities is commonly used as a threshold to identify locations that warrant further analysis, potentially leading to implementation of measures to improve safety. Table 3-4 identifies crash rates and types and severity at study area intersections. None of the study intersections exceed 1.0/MEV.

The City provided crash related information that they have collected indicating there were five (5) crashes that occurred at the study intersections between 2002 and 2007, including two accidents at Highway 22 and Guy Moore, two accidents at Highway 22 and Forest, and one accident at Highway 22 and Meyer Road. It is unclear whether these accidents are all in addition to, or were partially included in, the numbers reported in Table 3-3 above.

**See Appendix A (Crash Records and ODOT Crash Listing).**

## CHAPTER 4. FUTURE (2030) NO-BUILD TRAFFIC OPERATIONS

This chapter presents a discussion of future growth and development expectations within the Detroit UGB and relates this development to expected future (2030) traffic volumes and operational conditions at key intersections in the study area.

### 4.1 TRAFFIC VOLUMES

The 2008 traffic volumes identified and discussed in Chapter 3 formed the basis for estimating 2030 future year traffic volumes in the study area. Based on the procedures outlined in ODOT's Analysis Procedures Manual, annualized traffic volume growth trends were developed and applied to the 2008 volumes to derive estimated design hour 2030 volumes along Highway 22. Additionally, local traffic growth was estimated and applied to the minor street approaches in Detroit based on potential land development. The 2030 traffic volume data is summarized in **Appendix A, Traffic Movement, 2030 No Build**. The methodology for the adjustments is summarized in **Appendix A, Methodology**.

### 4.2 TRAFFIC OPERATIONS

As with the 2008 traffic operations analysis, evaluation of 2030 traffic conditions focused on both key study area intersections and roadway segments.

#### Roadway Segment Operations

To supplement the analysis of 2030 No Build traffic operations at key intersections, an assessment was conducted of the highway segment to determine how well Highway 22 would function. The results of this analysis indicate that it will operate at 0.58 V/C in the northbound direction and 0.32 V/C in the southbound direction in 2030. Analysis worksheets are included in **Appendix A, HCS: Two-lane Highway Release 5.2, Hwy 22, North and Southbound**.

#### Intersection Operations

A Synchro traffic simulation model developed specifically for the study area intersections was also used to assess traffic operations with forecasted 2030 (30 HV) volume. (See **Appendix A, Intersection Analysis 2030 No Build**). This assessment assumes that no improvements would be made to the existing street system, thus incorporating the street network characteristics illustrated in **Appendix A Traffic Movement, Existing Lane Characteristics**. Intersection analysis worksheets are included in **Appendix A (Intersection Analysis, 2030 No Build, No.s 1. through 7., 10. and 15)**.

**Table 4-1** summarizes the results of 2030 traffic operational analysis for the 30 HV at the study area intersections. Data in this table includes the overall intersection V/C ratios, average intersection delay, and intersection LOS. V/C ratios above 1.0 are useful indicators of potential concerns such as sub-optimal signal timing, inadequate turn lane storage, or overall intersection saturation. As shown in **Table 4-1**, no intersections are expected to have V/C ratios above 1.0 in 2030.

The unsignalized intersections with Highway 22 were evaluated for preliminary signalization using the minimum vehicular traffic and interruption of continuous flow warrants. The analysis indicates that none of the intersections would meet both preliminary warrants, although Highway 22 at Detroit would meet signal warrants for Case B, and for a southbound right turn lane. Worksheets are included in **Appendix A (Detroit, Crash Records and ODOT, Crash Listing)**.

**Table 4-1. 2030 No-Build Traffic Operations Table**

<b>Unsignalized Intersection Critical Movement</b>	<b>V/C Ratio</b>	<b>Critical Delay (sec/vehicle)</b>	<b>Critical LOS</b>
Hwy 22 at French Creek Road <i>Southbound</i>	0.08	31.6	D
Hwy 22 at Breitenbush Road <i>Westbound Right</i>	0.42	25.9	D
<i>Northbound</i>	0.62	0.0	A
Hwy 22 at Guy Moore Drive <i>Westbound</i>	0.60	0.0	A
<i>Southbound</i>	0.08	24.9	C
Hwy 22 at Detroit Avenue <i>Northbound Thru</i>	0.56	0.0	A
<i>Eastbound</i>	0.44	25.4	D
Detroit Avenue at 'D' Street <i>Eastbound Left</i>	0.08	10.6	B
Clester Road at Patton Street <i>Eastbound</i>	0.01	8.5	A
Detroit Avenue at Forest Avenue <i>Southbound</i>	0.13	8.0	A
Hwy 22 at Forest Avenue <i>Eastbound</i>	0.34	23.3	C
<i>Northbound Thru</i>	0.55	0.0	A
Hwy 22 at Santiam Avenue <i>Northbound Thru</i>	0.59	0.0	A
<i>Eastbound</i>	0.04	13.5	B

Note 1: V/C ratio is a ratio between traffic volumes and the roadway or intersection's capacity.

Note 2: LOS means intersection level of service.

Note 3: "Critical Delay" and "Critical LOS" refers to the delay or LOS experienced for the specific intersection traffic movement listed.

#### **4.3 FUTURE (2030) MITIGATED TRAFFIC OPERATIONS**

For an analysis of future traffic operations at key intersections in the planning horizon year of 2030, a Synchro traffic simulation model was developed specifically for the study area intersections and included field-verified geometrics and other relevant physical data for each intersection. Analysis procedures followed guidelines in the ODOT Transportation Planning and Analysis Unit (TPAU). The results of the analysis indicated that all of the intersections would meet the minimum standard of acceptable operation through 2030 (the minimum standard is 0.75 V/C for Highway 22 intersections).

Even though no traffic operational deficiencies were identified under existing or future conditions, the intersections of Highway 22 with Breitenbush Road and Detroit Avenue have been evaluated to address a number of other concerns. These intersections are separated by less than 300 feet along Highway 22, and therefore do not meet ODOT spacing standards. Detroit Avenue is one of the City's most important streets in that it leads directly to the main commercial core area, and it provides connections to residences and the Detroit Lake marina. Breitenbush Road is a scenic route with a market and connects Highway 22 with the Breitenbush River marina. The two intersections experience the highest volumes of turning movement traffic in Detroit. There is desire to better connect the two intersections to make operations safer and more efficient for pedestrians, bicyclists,

and motorists consistent with the posted speeds. With the number of recreational opportunities in the area, there is a need to increase the clarity of travel routes in Detroit for visitors and to better accommodate recreational vehicles such as trucks with boat trailers.

One design concept provides a southbound right turn lane (deceleration lane) on Highway 22 at Detroit Avenue and eliminates the existing right turn movement from Detroit Avenue so that it becomes left turn only. The lane configuration is shown in **Appendix A, Conceptual Intersection Improvement (Highway 22, Breitenbush Road, and Detroit Avenue)**. The acute angle of Detroit Avenue's intersection with Highway 22 makes the right turn movement challenging given the speed at which vehicles are traveling on Highway 22. Although the sight distance is adequate, it is not comfortable for the right turn maneuver. Few vehicles currently make this right turn movement, and Forest Avenue provides a better location to access Highway 22 in the southbound direction. Today, motorists making a left turn from Detroit Avenue experience the greatest delay, trying to gauge highway traffic to determine when they have an acceptable gap. A southbound right turn lane on Highway 22 would allow vehicles exiting downtown Detroit to better predict gaps in the southbound vehicles movements, reducing delay and increasing safety. The right turn lane on Highway 22 (deceleration lane) would also provide an area for vehicles on the highway to slow before entering Detroit Avenue. Slowing vehicles will increase safety for motorists, bicyclists, and pedestrians in the commercial area. Design considerations for the above listed conceptual intersection improvement include the need for northbound trucks on Highway 22 to successfully turn onto Detroit Avenue without blocking the highway for extensive periods of time.

The roadway and crosswalk location and design are conceptual. Approval for a concept is contingent on final design, including location and required safety elements, and must be obtained from the State Traffic Engineer prior to construction. Contact the Region 2 Traffic Engineer for more information.

Another concept proposes a channelized southbound left turn lane at Guy Moore Drive. See **Appendix A, Conceptual Intersection Improvement (Highway 22, Meyer Street and Guy Moore Drive/Hill Street)**. Part of the proposed improvement would include reconfiguring Hill Street to 'T' into Guy Moore Drive. Meyer Street would also be closed, except to emergency traffic, with traffic rerouted to the Guy Moore Drive/Highway 22 intersection. A recent speed zone investigation by ODOT determined that the 85 percent speed on Highway 22 in the area of Guy Moore Drive was 56 miles per hour (mph). Though only one reported collision has occurred at the intersection, two were noted by the City that may not have reported to the State by emergency responders. See Chapter 3 for more discussion on accident history. The location is also a bus stop for school children and no overhead lighting is present. The southbound left turn lane is recommended to improve safety for turning and through traffic at the intersection.

See **Appendix A (Intersection Analysis, 2030 Mitigated)**.

**Table 4-2** summarizes future (2030) traffic operations with and without the proposed improvement options. Intersection analysis worksheets are included in Appendix A. As shown in **Table 4-2**, the intersections would continue to operate within acceptable V/C standards with or without the proposed improvement options.

**Table 4-2. Traffic Operations Summary**

<b>Unsignalized Intersection</b>	
<i>Critical Movement</i>	<b>V/C Ratio</b>
<b>2030 No Build</b>	
Highway 22 at Breitenbush Road	
<i>Westbound Right</i>	0.42
<i>Northbound</i>	0.62
Highway 22 at Detroit Avenue	
<i>Eastbound</i>	0.44
<i>Northbound</i>	0.56
Highway 22 at Guy Moore Drive	
<i>Westbound</i>	0.60
<i>Southbound</i>	0.08
<b>2030 with Improvement Concept A</b>	
Highway 22 at Breitenbush Road/Detroit Avenue	
<i>Eastbound Left</i>	0.46
<i>Westbound Left-Through</i>	0.38
<b>2030 with Improvement Concept B</b>	
Highway 22 at Detroit Avenue	
<i>Eastbound Left</i>	0.30
<i>Northbound Thru-Right</i>	0.56
<b>2030 with Improvement Concept C</b>	
Highway 22 at Guy Moore Drive	
<i>Westbound</i>	0.60
<i>Southbound</i>	0.02

Note: V/C ratio is a ratio between traffic volumes and the roadway or intersection's capacity. For unsignalized intersections, the V/C reported is for the specific intersection traffic movement listed, which corresponds to the highest V/C of all movements at the specified intersection

## CHAPTER 5. KEY TRANSPORTATION ELEMENTS

The Detroit’s Transportation System Plan includes transportation elements that document the needs and deficiencies, policies, and improvements for each of the transportation modes relevant to the City of Detroit. Because they are the most common means of moving people and goods within and through Detroit, the TSP’s pedestrian, bicycle, and roadway systems comprise the bulk of the improvement recommendations identified and evaluated in the TSP. The needs and deficiencies of these three elements were discussed in Chapters 3 and 4. Recommended transportation improvements for each mode and the key policies that will affect them are discussed in this chapter.

### 5.1 Key Pedestrian and Bicycle Policy Recommendations

The Oregon Transportation Planning Rule (TPR) requires that planning for a network of bicycle and pedestrian routes throughout the study area be included as a part of the TSP. The TPR also requires that, when developing the bicycle and pedestrian circulation plans, local governments shall identify improvements to facilitate bicycle and pedestrian trips to meet local travel needs in developed areas.

As discussed in Chapters 3 and 4, significant pedestrian and bicycle needs and deficiencies exist within the City of Detroit. For pedestrians, the biggest obstacles are the lack of sidewalks and pathways along city streets and the lack of crossing opportunities along Highway 22 to assist those seeking to travel by foot. Bicycle infrastructure consists of shoulder bikeways along the east and west sides of Highway 22 in the study area and shared roadways which exist informally on all city streets. The biggest obstacles to bicycle travel is the lack of crossing opportunities along Highway 22 and the difficulty visitors face in identifying the most convenient routes to local destinations.

Because pedestrians and bicyclists travel to the same destinations within the City of Detroit, a single recommended bicycle/pedestrian route system was proposed (See **Appendix A, Bicycle/Pedestrian System** map. The primary purposes of this route system is to provide for improved south/north non-motorized travel on city streets on both sides of Highway 22, safer connections across Highway 22, and routes to the key trip attractors identified in Chapter 2 (**Table 2-2**). Attractors include such things as school bus stops, the marinas, recreation areas including “Detroit Flats,” local shopping areas and restaurants, City Hall, and the post office. (A portion of the trail that parallels the lake is under the jurisdiction of the USDA Forest Service. It should be noted that the property owners adjacent Detroit Lake (with Santiam Avenue addresses) do not support construction of this segment of the trail system. See coded section indicated on the Bicycle/Pedestrian System map.)

In addition, the bicycle/pedestrian route system includes recommended on- and off-street facilities that allow for convenient non-motorized access along Detroit Lake as well as connections to the future Canyon Journeys trail system (also identified as a part of the adopted bicycle/pedestrian route system in Appendix A). The Canyon Journeys trail system would be a significant pedestrian and bicycling amenity that would connect communities in the Highway 22 corridor with each other and with the area’s recreational opportunities. See **Appendix A, Canyon Journeys maps**. It is anticipated that this system would travel through the City of Detroit. Though the route for this trail system has not been finalized and funding has not been identified, the Detroit bicycle and pedestrian route system, as proposed, may provide much of the infrastructure needed to link with the potential future trail system. Based on available information, it is envisioned that the Canyon Journeys trail system would:

- Enter the City of Detroit on French Creek Road,

- Cross over the Breitenbush River along the east side of the bridge,
- Cross into west Detroit at the intersection of Breitenbush Road and Highway 22,
- Enter downtown Detroit along a new sidewalk on the west side of Detroit Avenue,
- Travel back to east Detroit at the intersection of Forest Avenue and Highway 22,
- Travel south on Butte Street and Scott Avenue,
- Travel east on Clifford Avenue,
- Travel south across a new trail connection to Hill Street,
- Travel Mackey Lane, including travel across a new bicyclist and pedestrian bridge, and
- Travel down Guy Moore Drive further south to exit the city limits eastward.

In conjunction with the Canyons Journeys project, the Forest Service is also considering a trail along power line right-of-way on the east side of Highway 22. This trail would start at the Forest Service facility on Highway 22 and would ultimately extend into the city. The Forest Service has yet to determine whether the trail should cross the Breitenbush River using the existing Highway 22 bridge, incorporate a crossing into a Highway 22 bridge replacement, or create a separate river crossing further upstream. The Forest Service indicates the possibility of completing the trail within the next 10 years. Depending on where this trail entered the city, it could either connect to the Detroit bicycle/pedestrian route system on Breitenbush Road or at the northern terminus of Detroit Avenue. A trail system was adopted as part of the City’s Downtown Plan (ODDA document, 2000). See **Appendix A, Conceptual Community Plan** map).

Three mechanisms contribute to the development of the proposed bicycle/pedestrian route system. The first is a revision to the **Street Network/Assessed Roadway Functional Classification System (Appendix A)** with road standards that include specific pedestrian and bicycling infrastructure requirements. The second is a list of transportation capital improvement projects (Chapter 6) which would be constructed consistent with the recommended roadway functional classification system. The third are additional transportation capital improvement projects needed to provide convenient non-motorized access along Detroit Lake as well as connections to the future Canyon Journeys trail system. As these additional improvements are built primarily on Forest Service land, it is recommended that the City of Detroit work with the Forest Service to develop a funding strategy for their implementation.

## 5.2 Key Roadway System Policy Recommendations

### Street Standards

As described in Chapter 2 and shown in **Appendix A: Street Network/Assessed Functional Classification Map**, the City of Detroit currently interprets the following four functional classifications for public streets:

- Highway,
- Collector,
- Local Access, and
- Alley.

Reflecting the predominance of residential uses within the city, most streets are classified as Local Access. Collector Streets exist east and west of Highway 22, linking neighborhoods to the highway for trips within and out of the city.

Developing a revised functional classification system for the City of Detroit takes into account existing and future anticipated land uses, the current prevalence of unimproved streets, steeply sloping terrain, the difficulty of safely accommodating the towing of boat trailers on narrow streets, and the lack of an adequate storm drainage system. Given the complexity of and challenges to building an improved road network, the City of Detroit adopted a greater number of more specifically tailored functional classifications and revised their functional classification map to illustrate the added classifications. The adopted functional classification map (**Appendix A, Roadway Functional Classifications** map) and a functional classification cross sections standards (**Appendix A, Cross Sections**).

The City of Detroit currently has no Stormwater Master Plan. It is recommended that all construction projects that increase the amount of impervious surface area within the public right of way conduct a stormwater impact analysis. Stormwater impact analysis addresses water quality treatment, water quantity conveyance and control, and erosion. The analysis must show that the projects will not result in adverse stormwater impacts to other properties, roadways, or environmental resources.

### **Highway**

Highway 22, an Oregon state highway, plays an important role in both local and through traffic circulation within the City of Detroit. On a local level, the highway links the eastern and western portions of the city, and it provides a connection between Detroit's homes, businesses, and recreational opportunities and destinations outside the city. The highway also serves as a through route connecting destinations in the Willamette Valley (such as Salem) with destinations in Central Oregon (such as Redmond and Bend). Two cross-sections are recommended for Highway 22, one with a central median and the other with a turn lane (**Appendix A, Cross Sections**). As Highway 22 is not a part of the recommended primary bicycle and pedestrian route system for the City, shoulders are recommended to serve those using these modes.

### **Urban Collector**

Collectors in Detroit link residential and business areas with each other and to Highway 22. However, the east and west sides of Detroit have very different terrain and land uses that require consideration of different street standards. The west side of Detroit contains its most intense urban uses, including existing business located primarily along Detroit Avenue, and offers the possibility of higher density housing on a former school site along Patton Street. Because of its urban character and the flat terrain of the area, the streets adjacent to these existing and future uses are recommended for Urban Collector designation. The recommended Urban Collector cross-section (**Appendix A, Cross Sections**) includes parking and sidewalks for residents and visitors. The relatively low volume and traffic speed of these streets allows bicyclists to safely share the travel lane. Because of the intensity of activity surrounding the Breitenbush River marina, the portion of Breitenbush Road within Detroit's UGB is also proposed for Urban Collector classification.

### **Neighborhood Collector**

Significant slopes exist east of Highway 22 and south of Breitenbush Road, making it difficult to cost-effectively construct sidewalks and manage the stormwater that would be concentrated as a result of sidewalk construction. This portion of Detroit is primarily in residential use, with areas of commercial zoning adjacent to portions of Highway 22. Despite the commercial zoning, it is unclear whether commercial development on a large scale is likely to occur east of Highway 22. Accordingly, based on the existing land uses served and topographical constraints, a Neighborhood Collector

classification is recommended for existing collector streets east of Highway 22. As illustrated in **Appendix A, Cross Sections**, this classification includes shoulders on both sides which can adequately serve pedestrians. Given the low volumes of vehicular traffic, bicycles can safely share the travel lanes with vehicles. To reserve the shoulder for pedestrian traffic, parking would not be allowed on Neighborhood Collector streets. In addition to the existing Collector Streets east of Highway 22, the southern portion of Butte Street and Guy Moore Drive are also recommended for Neighborhood Collector designation, as these street segments also connect Local Access streets to Highway 22.

#### **Local Street with Walkway**

Four road segments are recommended for designation as Local Street with Walkway: Patton Road from 2nd Street to Clester Road; Clester Road from Patton Road to the Marina; Santiam Avenue adjacent to the former school site; and Front Street from Breitenbush Road to Forest Avenue. As indicated in **Appendix A, Cross Sections**, this designation has a cross-section with two concrete walkways, each separated from its adjacent travel lane by a 2.5-foot gutter. The recommended designations for Patton Road and Clester Road are based on the fact that, although the land uses along these roads are primarily detached single-family homes, these roads are an important part of the recommended primary bicycle and pedestrian route which carry significant amounts of pedestrian and auto traffic in the summer. Santiam Avenue is recommended as a Local Street with Walkway in anticipation of significant redevelopment of the adjacent former school site. This designation is recommended for Front Street because Front Street is the only street connection linking eastern Detroit with the Breitenbush River marina. Parking lanes should be provided on Residential Street with Walkway designated roads, if deemed necessary by the City.

#### **Local Street with Shoulder**

All other streets within the City of Detroit are recommended for the Local Street with Shoulder designation. See **Appendix A, Cross Sections**. The recommended cross-section for these streets includes two shoulders and two travel lanes, and the streets may be gravel or paved as required by the City. The road segments recommended for this designation have relatively little auto traffic. For street segments where the City allows parking, pedestrians would use both the shoulders and travel lanes. Where parking is prohibited, the street and shoulders could be narrower. Bicyclists on these road segments would share the travel lanes with vehicular traffic.

#### **5.2.1 Nonconforming Development.**

According to the City's current Land Use and Development Code, where a structure exists at the effective date of adoption or amendment of this title that could not be built under the terms of this title by reason of restrictions on lot area, lot coverage, height, yard, equipment, its location on the lot or other requirements concerning the structure; and the structure was lawful when constructed, the structure may remain on the site so long as it remains otherwise lawful, subject to the following provision:

- A. No such nonconforming structure may be enlarged or altered in a way which increases its nonconformity, but any structure or portion thereof may be enlarged or altered in a way that satisfies the current requirements of the Development Code or will decrease its nonconformity;
- B. Destruction of Non-Conforming Structures. In case any nonconforming structure is damaged or destroyed by fire, explosion, an act of God or an act by any other cause to the extent that the total deterioration exceeds 60 percent of the cost of replacement of the building using new materials, the land and the building shall be subject to all the regulations specified by this Code for the zone where such land and building are located.

C. Should such structure be moved for any reason and by any distance, it shall thereafter conform to the regulations of the Development Code.

**5.2.2 Pre-existing Lots and Parcels.**

Currently, nothing in the City’s Development Code is construed as prohibiting development of non-conforming lots existing at the time the Code was adopted. Any changes to this status requires adoption under a public process.

A 2009 amendment to the City’s development regulations indicates that construction of a single-family dwelling on property within residential zone districts may occur on legal lots of record based upon approval of a septic system by Marion County Public Works Department. With such an approval, properties are not deemed non-conforming development.

## CHAPTER 6. TRANSPORTATION IMPROVEMENTS

### 6.1 PROJECT DEVELOPMENT PROCESS

Chapter 6 describes the process used to develop and evaluate 29 recommended transportation projects (Section 6.6) that respond to the goals of the City’s Transportation Element, eliminate operational deficiencies, address identified transportation needs and issues, and improve consistency with the TPR. The process used to develop these alternatives involved several steps:

- Step 1:** Project staff gathered local transportation issues, concerns, and project ideas from the TSP TAC and PAC, as well as from past planning documents.
- Step 2:** Project staff developed a list of transportation deficiencies by analyzing the existing and future operations of six key intersections throughout the city, as well as the overall existing transportation system.
- Step 3:** Project staff developed project ideas to resolve identified transportation issues.
- Step 4:** Project staff developed criteria and used them to evaluate transportation projects.
- Step 5:** Project staff revised the project ideas based on input from the TAC and PAC.

### 6.2 EVALUATION CRITERIA

The Transportation Element of the Detroit Comprehensive Plan updated in 2009 includes twelve goals to be “... used to monitor future transportation strategies and improvements.” The goals are:

#### *Quality of Life*

Enhance the City’s quality of life by providing adequate access to residences, employment, services, and social/recreational opportunities.

#### *Land Use Planning*

Integrate land use and transportation planning.

#### *Congestion*

Operate transportation facilities at a (LOS) that is cost-effective and appropriate to the area served.

#### *Connectivity*

Create an interconnected transportation system to support existing and proposed land uses.

#### *Access*

Meet the access needs of land development while protecting public safety needs, transportation operations, and mobility of all transportation modes and cooperate with the Oregon Department of Transportation where applicable. Include any requirements for Highway 22 specific to its classification within the National and State Freight System and Highway 22/Breitenbush Road being within a National Scenic Byway.

#### *Transportation Balance*

Provide a balanced transportation system that includes options for meeting the travel needs of all modes of transportation.

***Energy***

Minimize transportation-related energy consumption by using energy-efficient and appropriate modes of transportation for movement of people, goods, and services.

***Economic***

Promote economic health and diversity through the efficient and effective movement of goods, services, and people.

***Environmental***

Minimize environmental impacts on natural resources when constructing transportation facilities and encourage non-polluting transportation alternatives.

***Pollution Control***

Minimize pollution including air, water, and noise pollution.

***Parking***

Provide adequate parking without conflicting with other transportation goals.

***Coordination***

Collaborate and coordinate with state, county, regional, and other agencies during long-range planning efforts, development review, design and construction of transportation projects, and any other land use or transportation programs/policies development.

In order to establish project priorities, the goals were adapted to be used as evaluation criteria, and are:

- Criteria A:** Does the project provide adequate, safe access to residences, employment, services, and social/recreational opportunities for goods, services, and people?
- Criteria B:** Is the project cost-effective?
- Criteria C:** Does the approach ensure the efficient operations of transportation facilities while protecting the needs of those who live, work, and recreate nearby?
- Criteria D:** Does the project support an interconnected transportation system to support existing and proposed land uses?
- Criteria E:** Does the project meet the access needs of land development while protecting public safety needs, transportation operations, and mobility of all transportation modes, and cooperate with the Oregon Department of Transportation, where applicable.
- Criteria F:** Does the project help provide a balanced transportation system that provides for all modes of transportation?
- Criteria G:** Is the project protective of the environment, including minimizing air, water and noise pollution?

The consistency of each project with the above Evaluation Criteria is described in Table 6-1 in Section 6.6 of this Chapter.

### **6.3 PREFERRED ALTERNATIVE AND EVALUATION**

Chapter 6 identifies and evaluates potential transportation improvements designed to meet existing and future transportation needs for those who live, work, recreate, and travel through the City of Detroit. Transportation improvements in the Preferred Alternative were identified as high priority by the TSP review groups (TAC and PAC) and are projects that are likely to be funded in part by public revenues. The project evaluation process includes the identification of potential environmental constraints within the City of Detroit which might affect the design and feasibility of the projects.

The project costs in the Preferred Alternative exceed the future anticipated public transportation revenues required to build them. Section 6.8 (Priority Alternative) includes a subset of projects from Section 6.6 list (Preferred Alternative) that the City of Detroit will seek to have constructed by 2015. The costs of the Priority Alternative also exceed anticipated revenues. Sections 6.8 and 6.9 (Other and Additional Projects) identifies projects that, though important, were not ranked as high priority by the TAC and PAC and/or are not likely recipients of public transportation revenues.

### **6.4 ENVIRONMENTAL CONSTRAINTS**

Preliminary research was conducted to determine the likely existence of threatened and endangered species, wetlands and waterbodies, steep slopes, hazardous materials, and/or historic and archeological resources within the City of Detroit. These environmental resources, where identified, are included in **Appendix A, Existing Conditions & Future Projects** map, along with the Preferred Alternative's list of transportation improvements. The purpose for mapping this information was to ensure that recommended transportation projects in the Preferred Forecast Alternatives would minimize or avoid potential negative impacts to these resources.

As noted in Chapter 2, no "fatal environmental flaws" were identified with any of the projects in the Preferred Alternative. Though no "fatal flaws" were found, project design needs to accommodate environmental constraints and comply with all local, State and Federal laws. Also, as research relied upon information available from existing databases, the location and extent of the environmental resources identified within this section may be incorrect, and additional resources may exist. Prior to designing or constructing any transportation project, extensive background research on environmental constraints should be conducted.

### **6.5 PROPOSED AND PREFERRED ALTERNATIVE IMPROVEMENTS**

Table 6-1 in this section includes improvements for travel by a variety of modes, including auto and truck, bicycle, walking, and transit, which:

- Respond to the transportation goals of the TSP,
- Eliminate existing and future deficiencies,
- Address identified needs and issues, and
- Assist the City of Detroit in complying with the requirements of the State of Oregon's TPR.

Summary project descriptions, cost estimates, and evaluation information for these transportation improvements are included in Table 6-1 and identified in **Appendix A, Itemized Project Costs**. The Itemized Project Cost information provides breakdowns of the project cost estimates. Cost estimates include contingencies, but do not evaluate the cost impacts of geotechnical work or the purchase of right-of-way.

**Table 6-1. Detroit Transportation System Plan, Summary of Proposed Projects**

<b>Map Key</b>	<b>Project Location</b>	<b>Project Description and Cost*</b>	<b>Purpose</b>	<b>Analysis</b>
1	Hwy 22 @ Forest Ave	Provide crosswalk with pedestrian activated illumination and construct sidewalk to Front St  ≈\$166,000	Enhanced crosswalk to facilitate safe access across highway, connecting eastside residents to downtown and school bus stop.	<ul style="list-style-type: none"> <li>• Project subject to discretionary approval by ODOT.</li> <li>• This project is a key link in the proposed bicycle/pedestrian system. Though consistent with all evaluation criteria, the project is highly consistent with the access and alternative transportation aspects of evaluation criteria A, D, and F.</li> <li>• No significant environmental impacts or mitigation is expected to be associated with this project.</li> </ul>
2	Hwy 22 @ Breitenbush Rd	Provide crosswalk with pedestrian activated illumination and median island  ≈\$256,000	Designate a crosswalk to facilitate safe access across highway, connecting residents and visitors to downtown and the Breitenbush River marina.	<ul style="list-style-type: none"> <li>• Project subject to discretionary approval by ODOT.</li> <li>• This project is a key link in the proposed bicycle/pedestrian system. Though consistent with all evaluation criteria, the project is highly consistent with the access and alternative transportation aspects of evaluation criteria A, D, and F.</li> <li>• A Leaking Underground Storage Tanks (LUST) site has been reported on the northwest corner of this intersection, which may or may not have impacts on this project. No other significant environmental impacts or mitigation is expected to be associated with this project.</li> </ul>
3	Kinney Avenue (Scott Ave to North End)	Pave Roadway to Local St with Shoulder standard  ≈\$140,000	Kinney St is a local street , connecting to Scott Avenue, a Neighborhood Collector. It is currently a gravel street. This project would pave Kinney St to a Local Street with Shoulder standard, providing easier travel for bicyclists and shoulders for pedestrians and/or parking.	<ul style="list-style-type: none"> <li>• This project would provide residential properties with access to the broader proposed bicycle/pedestrian system. Though consistent with all evaluation criteria, the project is especially consistent with the access and alternative transportation aspects of evaluation criteria A, D, and F.</li> <li>• An intermittent stream has been identified as crossing Kinney St. Further analysis is needed to determine the nature and extent of the resource and may suggest that certain conservation or impact minimization measures be integrated into the project to avoid or minimize impacts.</li> </ul>

Map Key	Project Location	Project Description and Cost*	Purpose	Analysis
4	Hwy 22/Detroit Ave Intersection	Build sidewalk connection between Detroit Ave and the Hwy 22/Brietenbush Rd intersection. Revise turn movements from Detroit Ave to Hwy 22 to left turn only, provide right turn deceleration lane on Hwy 22  ≈\$324,000	Provides sidewalk facility where none currently exists. Reduces the number of potential conflict points and facilitates more efficient traffic flow for the heaviest traffic movements. Deceleration lane slows vehicles before accessing Detroit Ave and increase available gaps for vehicles enter Hwy 22, by separating thru traffic from right turning traffic.	<ul style="list-style-type: none"> <li>• Project subject to discretionary approval by ODOT.</li> <li>• Though consistent with all evaluation criteria, this project is highly consistent with the efficient operations aspect of evaluation criteria C, and the access and safety aspects of criteria A and D.</li> <li>• A LUST site has been reported on the northwest corner of this intersection, which may or may not have impacts on this project.</li> <li>• No other significant environmental impacts or mitigation is expected to be associated with this project.</li> </ul>
5	Hwy 22 @ Meyer St Hwy 22 @Guy Moore Drive	Construct southbound left turn lane on Hwy 22  ≈\$325,000	Provide a place for southbound left turning traffic to be out of the way of high speed, thru traffic on Hwy 22. The turn lane would be channelized with a concrete median. The median would extend to Meyer Street restricting access to right in/right out. This restriction would encourage use of the left turn lane and improvements at Guy Moore Dr/Hill St.	<ul style="list-style-type: none"> <li>• Project subject to discretionary approval by ODOT.</li> <li>• Though consistent with all evaluation criteria, this project is highly consistent with the efficient operations aspect of evaluation criteria C, and the safety aspects of criteria A and D.</li> <li>• No significant environmental impacts or mitigation is expected to be associated with this project.</li> </ul>
6	Guy Moore Dr @ Hill St Hwy 22 @ Guy Moore Drive	Guy Moore Drive Approach improvements: realign Hill/Guy Moore intersection, provide bus stop pad, illumination, sight distance improvements  ≈\$70,000	Improve safety at the intersection through several measures. Clarify current ‘Y’ intersection at Hill St and Guy Moore Dr by creating a ‘T’ intersection, improving sight distance as well. Provide a safe and well lit place for students to wait for bus.	<ul style="list-style-type: none"> <li>• Project subject to discretionary approval by ODOT.</li> <li>• Though consistent with all evaluation criteria, this project is highly consistent with the efficient operations aspect of evaluation criteria C, and the access and alternative transportation aspects of evaluation criteria A and F.</li> <li>• No significant environmental impacts or mitigation is expected to be associated with this project.</li> </ul>

<b>Map Key</b>	<b>Project Location</b>	<b>Project Description and Cost*</b>	<b>Purpose</b>	<b>Analysis</b>
7	Detroit Ave (Hwy 22 to Forest Ave)	Add sidewalks consistent with urban collector standard as well as curbs, parking, and streetscape amenities  ≈\$374,000	Reconstruct roadway to provide a consistent and typical urban cross section. The improvement would provide curbs and sidewalks to define right of way and provide a safe and clear space for pedestrians. Street section formalizes and designates on-street parking, better utilizing available space to increase parking available to serve commercial property. Streetscape amenities at key locations would create a unique identity for Detroit and increase enjoyment, appreciation and recreation in the area. Better definition of the right-of-way, driveways, parking, and sidewalks would reduce conflicts between users and enforce proper behavior and courtesy. With most of the commercial businesses and public services, Detroit Ave serves as the ‘Main Street’ of the city.	<ul style="list-style-type: none"> <li>• This project is a key link in the proposed bicycle/pedestrian system and improves the redevelopment potential for downtown Detroit. Though consistent with all evaluation criteria, the project is highly consistent with the access, safety and alternative transportation aspects of evaluation criteria A, D, E and F.</li> <li>• No significant environmental impacts or mitigation is expected to be associated with this project.</li> </ul>

Map Key	Project Location	Project Description and Cost*	Purpose	Analysis
8	Detroit Ave (Forest to Santiam Ave)	Add sidewalks consistent with urban collector standard as well as curbs, parking, and streetscape amenities  ≈\$444,000	Reconstruct roadway to provide a consistent and typical urban cross section. The improvement would provide curbs and sidewalks to define right of way and provide a safe and clear space for pedestrians. Street section formalizes and designates on-street parking, better utilizing available space to increase parking available to serve commercial property. Streetscape amenities at key locations would create a unique identity for Detroit and increase enjoyment, appreciation and recreation in the area. Better definition of the right-of-way, driveways, parking, and sidewalks would reduce conflicts between users and enforce proper behavior and courtesy. This section of Detroit Ave is currently more residential in character; however, the east side is zoned for commercial uses. Street improvements would visually tie the street segment to the more commercial area to the north and could encourage redevelopment, in effect, extending the ‘Main Street’ of Detroit.	<ul style="list-style-type: none"> <li>• This project is a key link in the proposed bicycle/pedestrian system and improves the redevelopment potential for downtown Detroit. Though consistent with all evaluation criteria, the project is highly consistent with the access, safety and alternative transportation aspects of evaluation criteria A, D, E and F.</li> <li>• No significant environmental impacts or mitigation is expected to be associated with this project.</li> </ul>
9	Detroit Ave @ D Street	Construct sidewalks and define right of way and review traffic control  ≈\$152,000	Provides sidewalk facility where none currently exists. D Street currently joins Detroit Ave with a stop sign in an area with wide pavement and only pavement markings to define travel way. Improvement would clarify right of way and traffic movements at intersection to increase safety and compliance with traffic control devices. Offers opportunity to reclaim right of way and revise the use of the space, including reducing pavement to add landscaping and streetscape elements. Design should be integrated with improvements at Detroit Ave/Breitenbush Rd/Hwy 22 (projects #2 and #4).	<ul style="list-style-type: none"> <li>• This project is a key link in the proposed bicycle/pedestrian system. Though consistent with all evaluation criteria, the project is highly consistent with the access, safety and alternative transportation aspects of evaluation criteria A, D, and F and the efficient operations aspect of criteria C.</li> <li>• No significant environmental impacts or mitigation is expected to be associated with this project.</li> </ul>

<b>Map Key</b>	<b>Project Location</b>	<b>Project Description and Cost*</b>	<b>Purpose</b>	<b>Analysis</b>
10	Detroit Rd @ Detroit Ave	Realign Detroit Rd to create a 'T' intersection at Detroit Ave  ≈\$187,000	Detroit Rd currently joins Detroit Ave at a sharp angle in an area with wide pavement. Improvement would clarify right of way and traffic movements at intersection to increase safety and compliance with traffic control devices.	<ul style="list-style-type: none"> <li>This project is a key link in the proposed bicycle/pedestrian system. Though consistent with all evaluation criteria, the project is highly consistent with the access, safety and alternative transportation aspects of evaluation criteria A, D, and F and the efficient operations aspect of criteria C.</li> <li>No significant environmental impacts or mitigation is expected to be associated with this project.</li> </ul>
11	Detroit Rd @ Santiam Ave/Flats Access	Modify intersection for traffic circle  ≈\$86,000	Roadways currently join in offset intersection. Installation of traffic circle would clarify right of way and traffic movements at intersection to increase safety and compliance with traffic control devices. Traffic circle would serve as a traffic calming measure and a streetscape feature.	<ul style="list-style-type: none"> <li>Though consistent with all evaluation criteria, the project is highly consistent with the access, safety and alternative transportation aspects of evaluation criteria A, D, and F and the efficient operations aspect of criteria C.</li> <li>No significant environmental impacts or mitigation is expected to be associated with this project.</li> </ul>
12	Detroit Rd (Detroit Ave to Santiam Ave)	Add sidewalks consistent with urban collector standard as well as curbs, parking, and streetscape amenities  ≈\$292,000	Reconstruct roadway to provide a consistent and typical urban cross section. The improvement would provide curbs and sidewalks to define right of way and provide a safe and clear space for pedestrians. Street section formalizes and designates on street parking, better utilizing available space to increase parking available to serve commercial property. Streetscape amenities at key locations would create a unique identity for Detroit and increase enjoyment, appreciation and recreation in the area. Better definition of the right-of-way, driveways, parking, and sidewalks would reduce conflicts between users and enforce proper behavior and courtesy. Route also connects to Detroit Flats recreation area with pedestrian facilities.	<ul style="list-style-type: none"> <li>This project is a key link in the proposed bicycle/pedestrian system and improves the redevelopment potential for downtown Detroit. Though consistent with all evaluation criteria, the project is highly consistent with the access, safety and alternative transportation aspects of evaluation criteria A, D, E and F. No significant environmental impacts or mitigation is expected to be associated with this project.</li> </ul>

Map Key	Project Location	Project Description and Cost*	Purpose	Analysis
13	D Street (Detroit to Patton)	Add sidewalks consistent with urban collector standard as well as curbs, parking, and streetscape amenities  ≈\$151,000	Reconstruct roadway to provide a consistent and typical urban cross section. The improvement would provide curbs and sidewalks to define right of way and provide a safe and clear space for pedestrians. Street section formalizes and designates on-street parking, better utilizing available space to increase parking available to serve commercial property. Streetscape amenities at key locations would create a unique identity for Detroit and increase enjoyment, appreciation and recreation in the area. Better definition of the right-of-way, driveways, parking, and sidewalks would reduce conflicts between users and enforce proper behavior and courtesy.	<ul style="list-style-type: none"> <li>This project is a key link in the proposed bicycle/pedestrian system and improves the redevelopment potential for downtown Detroit. Though consistent with all evaluation criteria, the project is highly consistent with the access, safety and alternative transportation aspects of evaluation criteria A, D, E and F.</li> <li>No significant environmental impacts or mitigation is expected to be associated with this project.</li> </ul>
14	Forest Ave (Patton Rd to Hwy 22)	Add sidewalks consistent with urban collector standard as well as curbs, parking, and streetscape amenities  ≈ \$178,000	Reconstruct roadway to provide a consistent and typical urban cross section. The improvement would provide curbs and sidewalks to define right of way and provide a safe and clear space for pedestrians. Street section formalizes and designates on street parking, better utilizing available space to increase parking available to serve commercial property. Streetscape amenities at key locations would create a unique identity for Detroit and increase enjoyment, appreciation and recreation in the area. Better definition of the right-of-way, driveways, parking, and sidewalks would reduce conflicts between users and enforce proper behavior and courtesy. Route serves as an important east-west connection in the city, leading to an improved crossing of Hwy 22 (project #1).	<ul style="list-style-type: none"> <li>This project is a key link in the proposed bicycle/pedestrian system and improves the redevelopment potential for downtown Detroit. Though consistent with all evaluation criteria, the project is highly consistent with the access, safety and alternative transportation aspects of evaluation criteria A, D, E and F.</li> <li>No significant environmental impacts or mitigation is expected to be associated with this project.</li> </ul>

<b>Map Key</b>	<b>Project Location</b>	<b>Project Description and Cost*</b>	<b>Purpose</b>	<b>Analysis</b>
15	Patton Street (D Street to Forest Ave)	Improve street to Local Street with Walkway section ≈\$265,000	Improving roadway to Local Street with Walkway section would provide a space for pedestrians out of the travel way and contribute important connections to the pedestrian network in Detroit. Improvements would formalize parking reducing conflicts with pedestrians and impeding through traffic. Serves as a north-south connection to the redevelopable former school site and abuts commercial and multi-family residential zoned land.	<ul style="list-style-type: none"> <li>This project is a key link in the proposed bicycle/pedestrian system and improves the redevelopment potential for downtown Detroit. Though consistent with all evaluation criteria, the project is highly consistent with the access, safety and alternative transportation aspects of evaluation criteria A, D, E and F.</li> <li>No significant environmental impacts or mitigation is expected to be associated with this project.</li> </ul>
16	Clester Rd	Improve street to Local Street with Walkway section ≈\$400,000	Improving roadway to Local Street with Walkway standard would provide a space for pedestrians out of the travel way and contributing important connections to the pedestrian network in Detroit. Improvements would formalize parking, reducing conflicts with pedestrians and impeding through traffic. Route serves as connection from marina to downtown.	<ul style="list-style-type: none"> <li>This project is a key link in the proposed bicycle/pedestrian system and improves the redevelopment potential for the area west of downtown Detroit. Though consistent with all evaluation criteria, the project is highly consistent with the access, safety and alternative transportation aspects of evaluation criteria A, D, E and F.</li> <li>A LUST site has been reported on the northwest corner of this intersection, which may or may not have impacts on this project. No other significant environmental impacts or mitigation is expected to be associated with this project.</li> </ul>
17	Front Street (Forest Ave to Breitenbush Rd)	Provide walkway per Local Street with Walkway standard and explore making Front Street one-way ≈\$441,000	Front Street is a narrow roadway that is often used for parking by visitors accessing the marina on Breitenbush Rd, many with boat trailers. Revising traffic flow to one-way would allow space for the addition of a parallel parking lane on one shoulder of the roadway and reduce conflicts between vehicles. The other shoulder would be improved per standard and provide a space for pedestrians out of the travel way – connecting Forest Ave and Breitenbush Rd. Making Front Street a one-way facility southbound or northbound could create congestion and traffic conflicts on local roads and Highway 22, and would require detailed analysis before implementing.	<ul style="list-style-type: none"> <li>This project is a key link in the proposed bicycle/pedestrian system. Though consistent with all evaluation criteria, the project is highly consistent with the access, safety and alternative transportation aspects of evaluation criteria A, D, and F and the efficient operations aspect of criteria C.</li> <li>No significant environmental impacts or mitigation is expected to be associated with this project.</li> </ul>

<b>Map Key</b>	<b>Project Location</b>	<b>Project Description and Cost*</b>	<b>Purpose</b>	<b>Analysis</b>
18	Tumble St (Kinney to North End)	Pave Roadway to Local St with Shoulder standard  ≈\$135,000	Tumble St is a part of the recommended bicycle/pedestrian system, connecting the Kinney Ave Neighborhood Collector with the proposed new multiuse trail to Breitenbush Rd. Tumble St is currently a gravel street. This project would pave Tumble St to a Local Street with Shoulder standard, providing easier travel for bicyclists and shoulders for pedestrians and/or parking.	<ul style="list-style-type: none"> <li>• This project is a key link in the proposed bicycle/pedestrian system. Though consistent with all evaluation criteria, the project is highly consistent with the access and alternative transportation aspects of evaluation criteria A, D, and F.</li> <li>• An intermittent stream has been identified as crossing Tumble St. Further analysis needed to determine the nature and extent of the resource and may suggest that certain conservation or impact minimization measures be integrated into the project to avoid or minimize impacts.</li> </ul>
19	Scott Ave (Butte to Kinney)	Add pedestrian dedicated shoulder and pave street consistent with neighborhood collector standard  ≈\$320,000	Scott Ave is a part of the recommended bicycle/pedestrian system, and will carry additional traffic when additional development occurs to the east. Scott Ave is currently a gravel street. This project would pave Scott Ave to a Neighborhood Collector standard, providing easier travel within the travel lane for bicyclists and shoulders reserved for pedestrians.	<ul style="list-style-type: none"> <li>• This project is a key link in the proposed bicycle/pedestrian system and improves the redevelopment potential for the residentially zoned area to the east. Though consistent with all evaluation criteria, the project is highly consistent with the access, safety and alternative transportation aspects of evaluation criteria A, D, E and F.</li> <li>• The presence of 10-20 percent slopes and a stream crossing have been identified on Scott Ave. The slope is not anticipated to result in significant environmental impacts or mitigation. Further analysis is needed to determine the nature and extent of the stream resource and may suggest that certain conservation or impact minimization measures be integrated into the project to avoid or minimize impacts.</li> </ul>
20	Clifford Ave (Scott Ave to East)	Pave Roadway  ≈\$182,000	As proposed, Clifford Ave will connect homes in the far southwest corner of Detroit to the larger bicycle/pedestrian system (project #23) and will carry additional traffic of all modes when additional development occurs to the north. Clifford Ave is currently a gravel street. This project would pave Clifford Ave to a Local Street with Shoulder standard, providing easier travel for bicyclists and shoulders for pedestrians and/or parking.	<ul style="list-style-type: none"> <li>• This project is a key link in the proposed bicycle/pedestrian system and improves the redevelopment potential for the residentially zoned area to the north. Though consistent with all evaluation criteria, the project is highly consistent with the access, safety and alternative transportation aspects of evaluation criteria A, D, E and F.</li> <li>• The presence of 10-30 percent slopes have been identified on Clifford Ave. The slope is not anticipated to result in significant environmental impacts or mitigation.</li> </ul>

<b>Map Key</b>	<b>Project Location</b>	<b>Project Description and Cost*</b>	<b>Purpose</b>	<b>Analysis</b>
21	2nd St - Hwy 22 to D St	Path/Trail Connection ≈\$80,000	Pedestrian and bicycle connection that would direct users to designated crossing location on Hwy 22 (Project #2). Path would provide connection with reduced potential conflict with vehicle traffic movements.	<ul style="list-style-type: none"> <li>This project is a key link in the proposed bicycle/pedestrian system. Though consistent with all evaluation criteria, the project is highly consistent with the access and alternative transportation aspects of evaluation criteria A, D, and F.</li> <li>No significant environmental impacts or mitigation is expected to be associated with this project.</li> </ul>
22	Hill St to Clifford Ave	Path/Trail Connection ≈\$22,000	This project is a part of the recommended bicycle/pedestrian system. Path would provide pedestrians and bicyclists convenient access, reducing the out of direction travel required to reach destinations. Enhances circulation options and pedestrian/bicycle network.	<ul style="list-style-type: none"> <li>This project is a key link in the proposed bicycle/pedestrian system. Though consistent with all evaluation criteria, the project is highly consistent with the access and alternative transportation aspects of evaluation criteria A, D, and F.</li> <li>The presence of 20-30 percent slopes have been identified on this path segment. The slope is not anticipated to result in significant environmental impacts or mitigation.</li> </ul>
23	Mackey Lane	Path/Trail Connection with bridge over ravine ≈\$357,000	This project is a part of the recommended bicycle/pedestrian system. Path would provide pedestrians and bicyclists convenient access, reducing the out of direction travel required to reach destinations. Enhances circulation options and pedestrian/bicycle network. Path offers opportunity for recreational enjoyment of interesting natural feature.	<ul style="list-style-type: none"> <li>This project is a key link in the proposed bicycle/pedestrian system. Though consistent with all evaluation criteria, the project is highly consistent with the access and alternative transportation aspects of evaluation criteria A, D, and F.</li> <li>The presence of 20-30 percent slopes and an intermittent stream have been identified on this path segment. The slope is not anticipated to result in significant environmental impacts or mitigation. Further analysis is needed to determine the nature and extent of the stream resource and may suggest that certain conservation or impact minimization measures be integrated into the project to avoid or minimize impacts.</li> </ul>

<b>Map Key</b>	<b>Project Location</b>	<b>Project Description and Cost*</b>	<b>Purpose</b>	<b>Analysis</b>
24	Tumble to Breitenbush Rd	Path/Trail Connection ≈\$73,000	This project is a part of the recommended bicycle/pedestrian system. Path would provide pedestrians and bicyclists convenient access, reducing the out of direction travel required to reach destinations. Enhances circulation options and pedestrian/bicycle network.	<ul style="list-style-type: none"> <li>This project is a key link in the proposed bicycle/pedestrian system. Though consistent with all evaluation criteria, the project is highly consistent with the access and alternative transportation aspects of evaluation criteria A, D, and F.</li> <li>The presence of 10-20 percent slopes have been identified on along this proposed path. The slope is not anticipated to result in significant environmental impacts or mitigation.</li> </ul>
25	Breitenbush Rd (Tumble Trail Connection to Hwy 22)	Roadway reconstruction, sidewalks, curbs, parking, and streetscape improvements consistent with Urban Collector standard ≈\$497,000	This project is a part of the recommended bicycle/pedestrian system. Breitenbush Rd is often used for parking by visitors accessing the marina, many with boat trailers. Improvements would formalize parking while providing a space for pedestrians out of the travel way. Sidewalk would also provide a link to proposed path connection (project #24), enhancing bicycle and pedestrian access and circulation. The improvements would provide a visual cue to motorists that they are entering a city and accordingly need to adjust their speed.	<ul style="list-style-type: none"> <li>This project is a key link in the proposed bicycle/pedestrian system. Though consistent with all evaluation criteria, the project is highly consistent with the access and alternative transportation aspects of evaluation criteria A, D, and F.</li> <li>The presence of 10-20 percent slopes and a stream have been identified on along this proposed path. The slope is not anticipated to result in significant environmental impacts or mitigation. Further analysis is needed to determine the nature and extent of the stream resource and may suggest that certain conservation or impact minimization measures be integrated into the project to avoid or minimize impacts.</li> </ul>
26 <sup>1</sup>	Gateway Treatment	Create Gateway Treatments ≈\$10,000 to \$50,000	Create gateway treatments at key locations in Detroit to welcome visitors, and create a distinctive identity for city. The improvements would provide a visual cue to motorists that they are entering a city and accordingly need to adjust their speed.	<ul style="list-style-type: none"> <li>Not applicable.</li> </ul>

<sup>1</sup> Cost estimates for Project #26, #27 and #29 are rough, non-technical estimates and are not detailed in Appendix B

<b>Map Key</b>	<b>Project Location</b>	<b>Project Description and Cost*</b>	<b>Purpose</b>	<b>Analysis</b>
27 <sup>1</sup>	Bike Route Signage	Mark bike route with sharrows/signing  ≈\$5,000 to \$15,000	Designation of bike route with sharrows/signing could increase users' comfort, safety, and accessibility to destinations. Signs also can visually cue motorists that they are driving along a bicycle route and should correspondingly use caution.	<ul style="list-style-type: none"> <li>Though consistent with all evaluation criteria, as a low-cost safety improvement for bicyclists, sharrows are highly consistent with the safety and access aspects of criteria A, D, and F, and criteria B.</li> </ul>
28	Public Parking Lot	Construct public parking lot with illumination and signage  ≈\$182,000	Construct public parking lot to accommodate increased parking demand during events and peak season. A designated location could reduce impact on private property owners from improper parking. Focuses parking where there are connecting pedestrian facilities so that persons can walk between destinations rather than drive. Provides a location for vehicles that may not be easily accommodated with on street parallel and angle parking such as recreation vehicles.	<ul style="list-style-type: none"> <li>Not applicable.</li> </ul>
29 <sup>2</sup>	Guide-Wayfinding Signage	Develop unique identity-guide signage  ≈\$10,000 to \$50,000	Providing clear guide or wayfinding signage throughout the area at key locations would direct visitors to destinations and regional connections. Signage style could be distinctive or relate to existing design theme/identity.	<ul style="list-style-type: none"> <li>Though consistent with all evaluation criteria, low-cost wayfinding signage is highly consistent with criteria B and C.</li> </ul>

\* See Appendix A – Itemized Project Costs

<sup>2</sup> Cost estimates for Project #26, #27 and #29 are rough, non-technical estimates and are not detailed in Appendix B



## 6.8 PRIORITY ALTERNATIVE

The Priority Alternative includes improvements to optimize transportation system operations in the short-term, between 2009 and 2015. Projects recommended for inclusion in the Priority Alternative are included in Table 6-1 below.

**Table 6-2** includes two crossing improvements of Highway 22, significant streetscape improvements in downtown Detroit, and pedestrian/bicyclist pathways that are a part of Detroit’s pedestrian/bicyclist route system. Signage and wayfinding projects have also been included, as they are the most affordable means of a) keeping cars with boat trailers from going down dead-end streets and b) encouraging bicyclists and pedestrians to use the safest/most direct means of reaching desired destinations. **Table 6-2**, however, includes projects that have costs in excess of anticipated revenues. Also, **Table 6-2** does not include many projects from the Preferred Plan and the “other projects” section of this report that are necessary to create a walkable and pleasant streetscape in the majority of Detroit. Accomplishing the TAC and PAC vision for Detroit will require additional funding strategies that are discussed in Chapter 7: Funding and Financing.

**Table 6-2. Priority Alternative Projects (2009 – 2015)**

<b>Map Key</b>	<b>Project Location</b>	<b>Project Description and Cost</b>	<b>Project Cost</b>
1	Hwy 22 @ Forest Ave	Provide demand illumination and construct sidewalk to Front St	\$166,000
2	Hwy 22 @ Breitenbush Rd	Provide crosswalk with on demand illumination and/or medians	\$256,000
4	Hwy 22/Detroit Ave Intersection	Revise turn movements from Detroit Ave to Hwy 22 to left turn only, provide right turn deceleration lane on Hwy 22	\$324,000
5	Hwy 22 @ Meyer St & Guy Moore Dr	Construct southbound Hwy 22 left turn lane	\$325,000
7	Detroit Ave (Hwy 22 to Forest Ave)	Roadway reconstruction, add sidewalks, curbs, parking, streetscape amenities	\$374,000
9	Detroit Ave @ D Street	Define right of way and review traffic control	\$152,000
13	D Street (Detroit to Patton)	Add sidewalks consistent with urban collector standard	\$151,000
16	Clester Rd	Improve street to Local Street with Walkway section	\$400,000
21	2nd St, Hwy 22 to D St	Path/Trail Connection	\$80,000
23	Mackey Lane	Path/Trail Connection with bridge over ravine	\$357,000
24	Tumble to Breitenbush Rd	Path/Trail Connection	\$73,000
26	Gateway Treatment	Create Gateway Treatments	\$25,000
27	Bike Route Signage	Mark bike route with sharrows/signing	\$10,000
28	Public Parking Lot	Construct public parking lot with illumination and signage	\$182,000
29	Guide-Wayfinding Signage	Develop unique identity-guide signage	\$10,000
<b>Total Cost</b>			<b>\$2,885,000.00</b>

## **6.9 OTHER PROJECTS**

As mentioned in Section 6.7, the Preferred Alternative included projects that were identified as high priority by the TSP update TAC and PAC and are projects that are likely to be funded in part by public revenues, including Transportation System Development Charge (TSDC) fees. Included in this section are those transportation related projects that are:

- Lower priority street paving projects as identified by the TAC and PAC,
- Street lighting which is not eligible for TSDC fees and is unlikely to attract state grant funds, and
- Turnaround improvements which are not eligible for TSDC fees and are unlikely to attract state grant funds.

This section does not include analysis of potential environmental constraints which might affect the design and feasibility of these projects, nor have project cost estimates been produced. Given the limited City funds available to construct projects in this section, the City shall make efforts to secure funding from other public and private sources for these projects, particularly with assistance from development.

## **6.10 ADDITIONAL STREET PAVING PROJECTS**

The Preferred Alternative includes several street paving and road reconstruction projects that the TAC and PAC identified as being of primary importance. These projects were considered of high priority because they best met the criteria discussed in Section 6.3 of this report. In addition, the TAC and PAC identified six (6) medium and five (5) lower priority street paving projects for the street segments identified below:

### **Medium Priority**

- Humbug Street South,
- 1st Street West,
- 4th Street West,
- Center Street South,
- Howe Street East, and
- Mackey Lane East.

### **Lower Priority**

- Osprey Lane East,
- Weber Street East,
- Warren Street East,
- Simkins Street East, and
- Lewis Street East.

## **6.11 STREET LIGHTING**

Street lighting can be beneficial along some roadways and has potential to reduce road accidents, improve ease of wayfinding, and reduce crime and increase the perception of safety amongst the general public. Street lighting is most appropriate for urban areas and main street or commercial areas, where there are a variety of users (vehicle, pedestrian and bicyclists) active over a greater

period of the day. In rural areas, some residents find lighting to be intrusive and inconsistent with the rural character, and view of the night sky. Most street lighting improvements are undertaken by local agencies. The TAC/PAC have identified 13 priority locations for the installation of street lights, as shown on the **Appendix A, Street Lights** map.

## **6.12 TURNAROUND IMPROVEMENTS**

A well signed and connected street network promotes efficient traffic circulation. In situations where road connections have not yet been made or will not be made because of constraints, a dead end street results. Turnarounds are useful to facilitate maneuvers by fire trucks and other vehicles on dead end streets and are generally required for all dead end roadways with a length in excess of 150 feet. There are a variety of design configurations for turnarounds, but each community should adopt specific turnaround standards to meet the needs of their fire equipment load requirements. General design concepts can be found in **Appendix A, Cul-de-sacs** and **Turn-around** schematics. Turnarounds are not eligible for TSDC fees and are unlikely to attract state grant funds and are most likely to be funded by developers with potential contributions from unrestricted municipal funds. The TAC/PAC has identified 12 priority turnaround locations, as shown on **Appendix A, Turn-around** map.

## CHAPTER 7. FUNDING AND FINANCING

### 7.1 TRANSPORTATION FUNDING ANALYSIS

The purpose of Chapter 7 is to estimate future funding available for transportation projects within the Detroit study area over the life of the planning period (through 2030). Early TAC and PAC discussions included funding forecasts for the short (2015), medium (2020), and long-term (2030), to help determine the list of future transportation projects to be included in the updated TSP.

Transportation maintenance, safety, and capacity improving projects can be funded by a variety of governmental entities and private parties. Though some types of transportation funding can be reasonably estimated for future years (such as gas tax revenues), other funding sources are more difficult to predict (such as grant awards). Given uncertainty surrounding future transportation revenues, this section relies on past trends, and assumptions about the development of new fee revenue, to estimate the potential availability of future transportation funding.

### 7.2 PAST TRENDS

Since 2003, the City of Detroit received transportation funding primarily from three sources; municipal allotments of state gas tax receipts, ODOT Small City Allotment grants, and a franchise fee assessed on Consumer Power, Inc., the area electric utility (CPI Franchise). Table 7-1 below summarizes transportation projects constructed from funding received from all sources since 1993, adjusted to 4th Quarter 2008 dollars, using ODOT's Oregon Highway Construction Cost Trends Composite Index<sup>1</sup>. These costs are in addition to snow removal costs, a contracted service which is budgeted separately from other transportation maintenance projects.

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<sup>1</sup> 2008 costs are unadjusted. Costs for all other years are adjusted to 4th Quarter 2008 dollars.  
[www.oregon.gov/ODOT/HWY/ESTIMATING/docs/cost\\_trends/Table.pdf](http://www.oregon.gov/ODOT/HWY/ESTIMATING/docs/cost_trends/Table.pdf)

**Table 7-1. Past and Present Detroit Transportation Projects (1993-2008)**

Date	Location	Improvements Completed	Funding Sources			Total Project cost
			ODOT Gas Tax	CPI Franchise	ODOT SCA Grant	
2008	Nine City Streets	Graded, graveled and abated dust on nine streets	\$6,932	\$0	\$0	\$6,932
2008	Detroit Ave. S. & Clester Rd.	Installed two speed bumps on each street	\$925	\$3,060	\$0	\$3,985
2008	Clester Rd., Patton Rd. S., parking lot, Forest Ave.	Patched holes and damage in asphalt	\$0	\$645	\$0	\$645
2008	Howe Street	Graded and graveled	\$0	\$700	\$0	\$700
2007	Detroit Ave. N. & Parking areas. Clester Rd. & Detroit Ave. S.	Striped and painted "slow" sign on Clester Rd. and Detroit Ave. S.	\$4,518	\$0	\$0	\$4,518
2006	"D" Street from Detroit Ave N. to Patton N. & from West Forest Ave. to South Patton	Overlaid pavement	\$4,406	\$0	\$30,302	\$34,708
2006	Forest Ave. W.	Installed gravel in front of KC's Espresso	\$509	\$0	\$0	\$509
2006	Various City streets	Repaired streets and installed gravel	\$461	\$0	\$0	\$461
2005	Detroit Ave. N from Forest Ave W. to "D" Street	Overlaid pavement	\$0	\$0	\$36,516	\$36,516
2005	Various City streets	Graded and installed gravel	\$17,896	\$5,686	\$0	\$23,582
2004	Lake Ave. (Meyer St. to Hill St.) & Guy Moore Dr.	Overlaid pavement	\$0	\$0	\$46,475	\$46,475
2003	Detroit Ave. N. & Parking areas	Striped	\$3,797	\$0	\$0	\$3,797
2003	Front Street from Breitenbush Rd. to Highway 22	Overlaid pavement	\$0	\$0	\$36,664	\$36,664
2002	Front Street N. & S.	Overlaid pavement	\$41,138	\$0	\$45,740	\$86,878
1998	Various City streets	Installed gravel	\$1,454	\$0	\$0	\$1,454
1997	Various City streets	Installed gravel	\$2,392	\$0	\$0	\$2,392
1997	Various City streets	Installed gravel	\$3,652	\$0	\$0	\$3,652
1997	Various City streets	Installed gravel	\$895	\$0	\$0	\$895
1997	No location info.	Paved	\$999	\$0	\$0	\$999
1997	Various City streets	Installed gravel	\$540	\$0	\$0	\$540
1996	Mackey Ln.	Installed gravel	\$484	\$0	\$0	\$484
1996	Hill St. & Mackey Ln.	Prepared for paving and widening, and paved Mackey Lane	\$0	\$0	\$55,502	\$55,502
1994	Lakecrest Dr.	Improved and paved road	\$0	\$0	\$67,278	\$67,278
1993	Detroit Ave. S.	Installed shoulder rock	\$3,544	\$0	\$0	\$3,544
1993	Various City streets	Striped	\$1,838	\$0	\$0	\$1,838
<b>Total Funds Spent (1993-2008)</b>			<b>\$96,380.00</b>	<b>\$10,091.00</b>	<b>\$318,477.00</b>	<b>\$424,948.00</b>
<b>Average Total Funds Spent Per Year</b>			<b>\$6,023</b>	<b>\$630</b>	<b>\$19,904</b>	<b>\$26,559</b>

In addition to the projects in **Table 7-1**, the City of Detroit has records indicating that additional road improvements occurred on Guy Moore Drive, Detroit Avenue South, and Mackey Lane in 1993. However, the records are unclear as to the source of the revenue used to fund these projects. Because it is unclear that the source of these funds would be available in future years, they were not included in this trend analysis.

### **7.3 FUTURE POTENTIAL REVENUE**

As shown in **Table 7-1**, approximately \$26,559 dollars averaged per year are spent on transportation projects in Detroit from three unrestricted revenue sources. A fourth revenue source was adopted by the City of Detroit in 2006, a Transportation System Development Charge (TSDC). This section develops an estimate of potential future funding sources for transportation improvements based on past funding trends and revised TSDC assumptions. TSDC revenue raised since 2006 was not used to project future TSDC revenue, as the TSDC has not been in place long enough to provide the basis for an accurate long-term projection.

A TSDC is a fee on new development to help pay the costs of infrastructure needed to accommodate the growth in trips caused by that new development. A TSDC may raise as much revenue as the costs of the infrastructure needed to serve that growth. The TSDC fee is the cost of the needed infrastructure divided by the amount of growth in that community, often expressed in terms of equivalent dwelling units (EDUs). In the City of Detroit, one EDU equals a single family home.

Although the City of Detroit conducted a preliminary buildable lands analysis, assumptions about potential development to occur in Detroit by 2030 were made based upon analysis utilized to develop the City's water system master plan. According to a staff evaluation, the City of Detroit has an estimated 263 part-time residences and 88 full-time residences in Detroit. A recent water infrastructure needs analysis was conducted for the City of Detroit, and estimated that the number of part-time residences would experience a 3 percent annual increase over a 20-year period and that full-time residences would experience a 1.5percent annual increase. This expected 20-year annual growth rate was applied to this TSP update's 22-year planning horizon, with a resulting expectation of 275 new dwelling units over the life of this plan. As there are currently 296 vacant residential lots available in Detroit, the expected 275 new dwelling units can be accommodated.

The Mid-Willamette Valley Council of Governments (MWVCOG) reviewed a preliminary lands analysis for the City of Detroit. Though not finalized, the analysis suggests the City of Detroit is limited in the amount of developable and redevelopable commercial and industrial property. As such, this report assumes no TSDC revenue from commercial or industrial development within the planning horizon (2030). However, should commercial or industrial development occur, it will be assessed a TSDC fee. (Please note: The City of Detroit does not have public sanitary sewer system and lack of such facilities also places limitations on growth for both residential and non-residential growth.)

Cities have some discretion in establishing the total level of TSDC funding, because they have some discretion over how many growth-serving projects they choose to fund with TSDCs. Detroit's current TSDC rate is \$1,335 per single-family home. However, this TSP update process is anticipated to identify more projects necessary to serve future growth, and increased costs of building infrastructure based on inflation, than were assumed in the original TSDC process. For the purposes of discussion, this Chapter assumes the updated TSDC will include a fee of \$2,300 per single-family home. Therefore, the future annual TSDC revenue equals the TSDC rate (\$2,300) multiplied by the number of expected new residential units (275) divided by the planning horizon (22 years), or, \$28,750.

**Table 7-2** estimates the availability of transportation funding in future years, starting in 2009, based on past funding availability and estimated future TSDC revenue. The table is divided into funds available in the short (2015), medium (2020), and long term (2030), to help determine what timeline to establish for the development of future transportation projects.

**Table 7-2. Estimated Future Transportation Revenue**

	<b>16-Year Trend</b>	<b>2015</b>	<b>2020</b>	<b>2030</b>
<b>ODOT Gas Tax</b>	\$6,023/year	\$42,161	\$30,115	\$60,230
<b>CPI Franchise</b>	\$630/year	\$4,410	\$3,150	\$6,300
<b>ODOT SCA Grant</b>	\$19,904/year	\$139,328	\$99,520	\$199,040
<b>TSDC</b>	\$28,750/year	\$201,250	\$143,750	\$287,500
<b>Total Per Time Period</b>		\$387,149	\$276,535	\$553,070
			<b>Total</b>	\$1,216,754

Note: TSDC revenue is based upon a variety of assumptions regarding fee level and future development.

As shown in **Table 7-2**, with the adoption of a TSDC, approximately \$1.2 million in transportation funding from all sources may occur through the life of this project (2030).

#### **7.4 SNOW REMOVAL**

Winter weather in the study area requires that roads be plowed after storms with snowfall of six (6) inches or greater. Over the last several years, the City of Detroit’s annual budget usually allowed for approximately \$5,000 for snow removal. Because the City does not own its own snow removal equipment, road clearing services are contracted in combination with non-paid assistance from Marion County, the City of Salem, and the National Guard during high snowfall years. In fiscal year 2007-2008, heavy snowfall resulted in the City of Detroit paying over \$27,000 for snow removal services, which required a transfer of \$20,000 from another City budgeted item.

Heavy snow provides a challenge for snow “storage.” Berms may reach ten (10) feet in height and create safety hazards by blocking views at intersections, including Highway 22. Furthermore, with already narrow travel lanes on hillside streets, the roadways become narrower. The City has been given permission in the past to store snow on Forest Service land by Detroit Lake and has also stored snow at the former elementary school site owned by the City. Power outages, lasting from several minutes to a week or more, occasionally accompany heavy snowfalls.

#### **7.5 PROJECT IDEAS**

A Technical Advisory Committee (TAC) and Planning Advisory Committee (PAC) were established to provide information and guidance to the project team as it developed the Detroit TSP. The TAC and PAC have generated a variety of ideas early in the TSP development stages for resolving transportation deficiencies noted in this report, including:

- Providing more uniformity in signage of street names and installation/replacement of some of the current street signs. Street signage should include directional locations to allow identification of street separations for north/south and east/west. A list of current **street names** is included in **Appendix A**,
- Installing “no-jake brake” signs at city limits to remind freight vehicles of existing prohibition on using air brakes in urban areas,

- Pursuing funding assistance, such as ODOT’s Bicycle and Pedestrian grant program, to ensure safer roadside conditions for bicyclists and pedestrians. Examples of high priority pedestrian and bicycle routes include Clester Road and, potentially, 2nd Street between Patton and Highway 22, and
- Devising methods for alerting motorized vehicles regarding the presence of pedestrians/bicyclists at all Highway 22 crossings. Example measures/methods could include such things as moving the “welcome” sign to city limits, pedestrian crossing signage, lighting, electronic messaging, electronic speed sign, or changes in roadway textures

## 7.6 TOTAL PRIORITY ALTERNATIVE COST

The Priority Alternative includes the highest priority projects refined by the Technical and Planning Advisory Committees (TAC and PAC). The TAC and PAC recommend the City of Detroit seek to implement all of the projects in this Alternative in the short-term (2009-2015). The estimated cost of the Priority Alternative is included in **Table 7-3**. Detailed descriptions and cost estimates for individual projects are included in Chapter 6: Preferred Improvements. See Table 6-1.

**Table 7-3. Priority Alternative Cost Estimates**

<b>Map Key</b>	<b>Project Location</b>	<b>Project Description</b>	<b>Project Cost</b>
1	Hwy 22 @ Forest Ave	Provide crosswalk and construct sidewalk to Front St	\$166,000
2	Hwy 22 @ Breitenbush Rd	Provide crosswalk and medians	\$256,000
4	Hwy 22/Detroit Ave Intersection	Revise turn movements from Detroit Ave to Hwy 22 to left turn only, provide right turn deceleration lane on Hwy 22	\$324,000
5	Hwy 22 @ Meyer St & Guy Moore Dr	Construct southbound Hwy 22 left turn lane	\$325,000
7	Detroit Ave (Hwy 22 to Forest Ave)	Roadway reconstruction, add sidewalks, curbs, parking, streetscape amenities	\$374,000
9	Detroit Ave @ D Street	Define right of way and review traffic control	\$152,000
13	D Street (Detroit to Patton)	Add sidewalks consistent with urban collector standard	\$151,000
16	Clester Rd	Improve street to Local Street with Walkway cross section	\$400,000
21	2nd St, Hwy 22 to D St	Path/Trail Connection	\$80,000
23	Mackey Lane	Path/Trail Connection with bridge over ravine	\$357,000
24	Tumble to Breitenbush Rd	Path/Trail Connection	\$73,000
26	Gateway Treatment	Create Gateway Treatments	\$25,000
27	Bike Route Signage	Mark bike routes with sharrows/signing	\$10,000
28	Public Parking Lot	Construct public parking lot with illumination and signage	\$182,000
29	Guide-Wayfinding Signage	Develop unique identity-guide signage	\$10,000
<b>Priority Alternative Total Cost</b>			<b>\$2,885,000</b>

Source: Detroit Transportation System Plan, Chapter 6, 2009.

## 7.7 REVENUE FORECAST

As presented in **Table 7-1**, an average of \$26,559 dollars of public funding per year will have been spent from 1993 through 2008 on transportation projects in Detroit (in 2008 dollars). In addition, the City currently has a Transportation System Development Charge (SDC) program in place, and it is recommended that Transportation SDC fees be increased to generate at least \$28,750 in annual revenue (in 2008 dollars).

**Table 7-4** estimates the availability of public transportation funding in the short-term (2009-2015), based on past funding availability and assuming an increase in the Transportation SDC from \$1,335 to \$2,300 per single-family home. The table presents funds anticipated to be available in the short-term (2009-2015) and compares them to the estimate of project costs from Table 7-3.

**Table 7-4. Estimated Short-Term Public Transportation Revenues (2008 Dollars)**

	16-Year Trend	Short-Term Revenue (2009-2015)
<b>ODOT Gas Tax</b>	\$6,023/year	\$42,161
<b>CPI Franchise</b>	\$630/year	\$4,410
<b>ODOT SCA Grant</b>	\$19,904/year	\$139,328
<b>TSDC</b>	\$28,750/year	\$201,250
<b>Total Short-Term Revenues</b>		\$387,149
<b>Total Priority Alternative Costs</b>		\$2,885,000
		<b>[\$2,497,851]</b>

As indicated in **Table 7-4**, the estimated short-term project costs exceed anticipated revenue by approximately \$2.5 million.

## 7.8 TRANSPORTATION FUNDING STRATEGY

A significant discrepancy exists between Detroit’s future transportation needs and the funding streams that were used to date to pay for needed improvements. To meet the transportation vision established by the TSP’s TAC and PAC, the City of Detroit will have to compete for additional external transportation revenue (such as grants and state-led highway projects) as well as establish new local revenue sources. Based on the projects identified in Chapter 6, the following four-part funding strategy is recommended for the City of Detroit:

- Pursue funding of Highway 22 projects by presenting needs at the Mid-Willamette Valley Area Commission on Transportation (MWACT) meetings. The MWACT is a forum to discuss and set regional transportation priorities on the state highway system within Marion, Polk, and Yamhill counties. Priority projects are submitted to the Oregon Transportation Commission, where they compete for limited state highway modernization funds.
- Work with the United States Forest Service and other communities along the Highway 22 corridor to pursue funding for the Canyon Journeys Trail. As there is significant overlap between portions of the Canyon Journeys Trail alignment and the City of Detroit’s Pedestrian and Bicycle Route System, construction of the Canyon Journeys Trail will help the City accomplish local transportation goals.
- Increase Detroit’s TSDC charge on new development and create new local funding sources. These dollars could be used to match funding from outside sources, such as Oregon

Department of Transportation (ODOT) funds and other grant sources, and to build projects which are not grant eligible.

- Apply for competitive state and federal grants, many of which are described in Sections 7.9 and 7.10.

The following pages include a discussion of the most readily available sources of transportation funding for cities in Oregon, some of which have already been used to fund transportation projects in Detroit in the past. The City of Detroit should seek to familiarize themselves with programs not used in the past to ensure that the City is maximizing funds available to complete priority projects.

## **7.9 STATE AND FEDERAL FUNDING**

### ***Statewide Transportation Improvement Program***

ODOT's short-term capital improvement program, the Statewide Transportation Improvement Program (STIP), provides project funding and scheduling information for the department and Oregon's metropolitan planning organizations. It is a four-year program developed through the coordinated efforts of ODOT, federal and local governments, Area Commissions on Transportation, tribal governments and the public. In developing this funding program, ODOT must verify that the identified projects comply with the Oregon Transportation Plan, ODOT Modal Plans, Corridor Plans, local comprehensive plans, and Safe, Accountable, Flexible, Efficient Transportation Equity Act – a Legacy for Users (SAFETEA-LU) planning requirements. The STIP must fulfill Federal planning requirements for a staged, multi-year, statewide, intermodal program of transportation projects. Specific transportation projects are prioritized based on Federal planning requirements and the different State plans. ODOT consults with local jurisdictions before highway-related projects are added to the STIP. The 2010-2013 STIP is currently in draft form, and contains over \$1.2 billion in projects and programs, based on federal funding levels established in 2005 under SAFETEA-LU.

### ***Special Small City Allotment***

ODOT administers the Special Small City Allotment (SCA) program that provides funding of up to \$25,000 to cities with populations under 5,000. The SCA funds are from the state gas tax, and may be used to fund improvements to a city's local transportation system.

### ***Safer Routes to School***

Under the Oregon Safer Routes to School Program (Federal funding administered by ODOT), approximately \$3.7 million is available for grants between 2006 and 2010. The grants can be used to identify and reduce barriers and hazards to children walking or biking to school. ODOT estimates that they will receive an average of \$1.4 million annually for this program through the lifetime of SAFETEA-LU. (Currently, there are no public school facilities within the City's UGB.)

### ***State Motor Vehicle Fund***

The State of Oregon collects gas taxes, vehicle registration fees, overweight/overheight fines and weight/mile taxes and distributes a portion of these revenues to counties and cities using an allocation formula. The State distributes a local share to cities based on a per capita rate. Revenues vary from year to year as the allocation formula can vary. Funds can be used for capital improvements or maintenance. While the gas tax provides needed transportation system revenue, it is unlikely to keep pace with future maintenance needs. Over time fuel efficiency and the appearance of hybrid or mixed-fuel vehicles offset the future purchasing power of the gas tax.

### ***Special Public Works Fund***

The Special Public Works Fund (loans and grants) provides funding for public works that encourage economic and community development, such as supporting private projects resulting in creation or retention of permanent jobs. Loans that are provided through the Special Public Works Fund are typically available at below market rates.

### ***Recreational Trails Program***

The Recreational Trails Program is administered by the Oregon Parks and Recreation District and provides funds to states to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. Examples of trail uses include hiking, bicycling, in-line skating, equestrian use, and other non-motorized and motorized uses. These funds are available for both paved and unpaved trails, but may not be used to improve roads for general passenger vehicle use or to provide shoulders or sidewalks along roads. The project sponsors provide at least a 20 percent match, which can be in the form of cash, force account labor, equipment, materials, volunteer labor, donated equipment, donated materials, and federal, state and local grants, or the combination thereof.

Recreational Trails Program funds may be used for:

- Maintenance and restoration of existing trails;
- Purchase and lease of trail construction and maintenance equipment;
- Construction of new trails, including unpaved trails;
- Acquisition of easements or property for trails;
- State administrative costs related to this program (limited to seven percent of a State's funds); and
- Operation of educational programs to promote safety and environmental protection related to trails (limited to five percent of a State's funds).

### ***Oregon Transportation Infrastructure Bank (OTIB)***

The OTIB is a statewide revolving fund available to local governments to provide long-term (up to 30-years) low interest loans designed to promote innovative transportation funding solutions. Projects must be Federal-Aid eligible. OTIB funds can be spent on engineering, environmental permitting, right-of-way, construction, and project management. Applications are accepted on an ongoing basis.

### ***Oregon Immediate Opportunity Fund***

The Immediate Opportunity Fund program, managed by ODOT and the Oregon Economic and Community Development Department, provides a maximum of \$500,000 for public road work associated with an economic development related project of regional significance, provided the project creates primary employment. Additionally, although lesser shares will be considered, the grantee should provide an equal local match.

### ***Bicycle and Pedestrian Grant Program***

The State Bicycle and Pedestrian Grant Program provides funds for highways, county roads and local streets where improvements are needed for pedestrians and/or bicyclists. Eligible project types include: Americans with Disabilities Act upgrades; completing short sections of missing sidewalks or bike lanes; street crossing improvements; intersection improvements; and minor widening for bike lanes or shoulders.

### ***Land and Water Conservation Fund***

Land and Water Conservation Fund is a federally funded program that provides grants for planning and acquiring outdoor recreation areas and facilities, including trails. Funds can be used for right-of-way acquisition and construction. These funds are administered by the Oregon Parks and Recreation Department.

***Measure 66 Funds – Oregon State Lottery***

Passed in 1998, Measure 66 Funds are coordinated by Oregon State Parks. These funds can be used for trail right-of-way acquisition and construction. “15% of the net proceeds from the State Lottery shall be deposited in a parks and natural resources fund created by the Legislative Assembly. Of the moneys in the parks and natural resources fund, 50% shall be distributed for the public purpose of financing the protection, repair, operation, and creation of state parks, ocean shore and public beach access areas, historic sites and recreation areas,” with recreation areas including trails.

***Transportation Enhancement Program***

ODOT’s Transportation Enhancement (TE) program reimburses local governments for some of the costs of “additional activities not normally required on a highway or transportation project” that strengthen the “cultural, aesthetic, or environmental value” of the transportation system. Types of activities funded by the TE program include “pedestrian and bicycle projects; historic preservation related to surface transportation; landscaping and scenic beautification; environmental mitigation (highway runoff and wildlife protection only).” Local jurisdictions that apply for TE reimbursements must provide matching funds of a minimum of 10.27percent.

***Energy Efficient and Conservation Block Grant***

Included in the Energy Independence and Security Act of 2007, these funds are designated to assist in implementing energy efficiency and conservation strategies. Developing and implementing programs to conserve energy used in transportation, including bike lanes and pedestrian pathways, is an eligible activity under this grant. The Oregon Department of Energy is currently developing the rules they will use to distribute \$5.7 million of these funds to small cities and counties.

***State Administered Community Development Block Grants***

This Federal program provides each state the opportunity to administer funds for non-entitlement areas. Non-entitlement areas include those units of general local government which do not receive these funds directly as part of the entitlement program (Entitlement Cities and Urban Counties). Non-entitlement areas are cities with populations of less than 50,000 (except cities that are designated principal cities of Metropolitan Statistical Areas), and counties with populations of less than 200,000. Community Development Block Grant Grantees may “use Community Development Block Grants funds for activities that include (but are not limited to): acquiring real property; reconstructing or rehabilitating housing and other property; building public facilities and improvements, such as streets, sidewalks, community and senior citizen centers and recreational facilities; paying for planning and administrative expenses, such as costs related to developing a consolidated plan and managing Community Development Block Grants funds; providing public services for youths, seniors, or the disabled; and initiatives such as neighborhood watch programs.”

***Emergency Management Performance Grants***

These are federal grants that states apply for on behalf of themselves or local governments. The grants provide the support that state and local governments need to achieve measurable results in key functional areas of emergency management: 1) Laws and Authorities; 2) Hazard Identification and Risk Assessment; 3) Hazard Management; 4) Resource Management; 5) Planning; and 6) Operations and Procedures. Construction and renovation costs are not allowed, but the grant could potentially be used for planning cul-de-sacs, or writing new codes that requires cul-de-sacs.

## **7.10 LOCAL FUNDING**

The paragraphs below summarize local options for funding projects in Detroit.

### ***City Gas Tax***

The City could levy a per gallon tax on fuel sold in Detroit. Typical taxes range from \$0.01 to 0.03 per gallon and Woodburn, Tillamook, and The Dalles are examples of communities that use such a tax. The City could contract with the State Fuel Tax Branch to collect and administer the tax.

### ***Local Vehicle Registration Fee***

The City could approach Marion County and request they establish a vehicle registration fee, which is subject to voter approval. If adopted, a County must share a minimum 40 percent of the funds raised with the cities within the County, unless the County and cities mutually arrive at a different distribution agreement. A County vehicle registration system would operate similarly to the existing statewide system. Although this revenue raising method has been discussed by local jurisdictions, no county government has implemented such a program in Oregon.

### ***Local Property Tax Levies/Street Bonds***

This method is typically used to fund road improvements that will benefit an entire community. General obligation bonds are supported by a property tax levy on assessed value of property. This method requires voter approval of bond issues and, because of the high costs of bond underwriting, is not usually viable for funding single projects that cost less than \$2,000,000.

### ***Local Improvement Districts (LIDs)***

Local Improvement Districts levy special assessment charges 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 typically used 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. LIDs can be initiated by property owners or the City, and the collected funds are commonly used to repay debt on bonds incurred to undertake the infrastructure improvements. These bonds are guaranteed by payments from the affected properties through a property lien that sunsets when the LID share is paid off. LIDs typically require at least 51 percent of the affected properties to approve the LID. Costs can be determined based on road frontage or square footage.

### ***Reimbursement District or Zone of Benefit District***

Public or private entities that build road systems can be compensated by future property owners at a proportional rate, as development occurs. Usually limited to private construction of roads, this mechanism can be useful for public/private developments. Implementation of these districts requires local legislative action.

### ***Road User, or Street Utility, Fees***

This method would charge City residents and nonresidential users a monthly or yearly fee for use of the City road system, similar to water and sewer utility fees. User fees go to maintenance activities and have been instituted in a number of communities. The City of Medford's TSP, for example, recommends that the Medford user fee generate over \$100 million over the 20-year life of the plan.

A fee of this type would free up other local transportation dollars (such as gas tax receipts) to be used for constructing transportation projects.

***Transportation System Development Charges (SDCs)***

SDCs 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 services, such as increased school enrollment, parks and recreation use, or traffic congestion. The City of Detroit's Transportation SDC is currently \$1,335 per single-family house, with higher rates charged to commercial and industrial properties based on the relatively higher numbers of trips these uses generate.

The City reviewed TSDC methodology and rates under an earlier ordinance and further reviews those two items at the time of changes in either the methodology or rates.

## APPENDIX A - METHODOLOGY (7 pages)

### Methodology

This document outlines the traffic analysis and evaluation framework that will be used in the Detroit TSP update. Its intent is to state the key assumptions and methodologies that will be used as part of the traffic analysis.

#### **Analysis Years & Time Periods**

Transportation analysis will be conducted for the following years:

- o Existing Conditions (2008)
- o Forecast Year (2030)

The traffic analysis will be conducted for the 30th highest volume. An overall study area peak hour will be determined by 16-hour intersection turning movement counts that were provided by ODOT as part of the study. The counts did not include 15 minute volume breakdown.

#### **Existing and Future Traffic Volumes**

Turning movements over a 16-hour period were collected for each of the study area intersections by ODOT. The peak hour turning movement counts will be adjusted to account for seasonal effects according to ODOT Transportation Planning Analysis Unit (TPAU) *Analysis Procedures Manual*. The ATR Characteristic Table method or the ATR Seasonal Trend Table method will be used to develop the 30th highest peak hour traffic volumes.

The derived 30th highest hour design volumes will be balanced between adjacent study intersections as outlined by ODOT standards. The existing conditions analysis will be conducted using the 30<sup>th</sup> highest hour volumes. The goal of the study is to assign one study area peak hour for use in the traffic analysis. Based on the count data provided the peak hour from 2 pm to 3 pm was used. The counts data did not include 15 minute volume breakdown.

#### **Forecasting/Modeling Methodology**

2007 counts were adjusted to year 2008 utilizing growth factor, based on historic trending from TPAU future volume tables, calculated according to ODOT *Analysis Procedures Manual*. Detroit is small, less than 600 people. Looking at the raw traffic counts, see attached, the minor street volumes are very small. Applying the growth factor to create the 2008 volumes resulted in very little difference to the minor street movements, less than 5 trips. The difference is insignificant in light of the volume balancing required between intersections and rounding of volumes to the nearest 5 trips.

The same methodology was used to determine the 2030 Future no-build forecast volumes, although the growth factor was applied to through traffic on Hwy 22 only. Data provided by the City of Detroit and Mid-Willamette Valley Council of Governments (MWVCOG) was used to forecast future turn-movement volumes for the minor streets. The analysis followed a composite ODOT level 1 and level 2 methodology. The volumes on the minor and local streets were so low, some movements even zero trips, and erratic, that determining a growth trend required further investigation. An estimate for local minor street volumes was determined based on potential land development and population estimates, checked against trend information. There will be approximately 100 new residents over the next 20 years, based on PSU projections. The probable land development estimates about 270 new condos/single family residences over the next 20 years. Most of homes in Detroit are only seasonally occupied. The year round residents number less than 150 people, and many are seniors. The local count data indicates that the peak travel time for residents is 11 am to 1 pm. See Table B-1. Given this information, the ITE trip generation for the number of units was reduced by half and applied to the street network. See attached Table for calculations. Because the minor street volumes are so low, applying any growth factor to these volumes, in addition to the development trips, would likely result in double counting.

**Mobility Standards**

Mobility standards from the City of Detroit and ODOT will be used to determine acceptability of facility operations for this study. State highway mobility standards were developed for the 1999 Oregon Highway Plan (OHP) as a method to gauge reasonable and consistent standards for traffic flow along state highways. These mobility standards consider the classification (e.g., freeway, district) and location (rural, urban) of each state highway. Mobility standards are based on V/C ratios. The 1999 OHP, with amendments adopted by the Oregon Transportation Commission from November 1999 through January 2006, was released on August 23, 2006. This version of the 1999 OHP will be used in this study. Hwy 22 or the N. Santiam Hwy No. 162, is a Statewide Highway, Freight Route, within a UGB, with a posted speed of 40 mph. Tables 1 shows the mobility standards.

The 2003 Oregon Highway Design Manual (HDM) will be used in the determination of mobility standards for acceptability of future facility operations with improvements.

**Table 1: Detroit TSP Mobility Standards**

Roadways/Intersections	ODOT Classification	Control Type	Jurisdiction	Existing or Future No-Build Mobility Standard	Future Build Mobility Standard
Clester, Patton, 'D', Detroit, Forest	Local	Stop	City of Detroit	None	None
Hwy 22	Regional Hwy and statewide NHS freight route	Stop	ODOT	0.75	0.70

**Notes:**

<sup>1</sup> Indicates OHP Mobility Standard V/C ratio for stop-controlled roadway approach

### Traffic Analysis Software and Input Assumptions

Synchro software, version 7, will be used for the intersection analysis. The reported results will be the V/C ratios and LOS from the HCM report.

**Table 2: Synchro Operations Parameters/Assumptions**

Arterial Intersection Parameters	Condition	
	Existing (2008)	No-Build and Build Alternatives
Peak Hour Factor	0.88	- 0.85 for side street approaches - 0.90 for State Highway
Ideal Saturation Flow Rate per Lane (for all movements)	1750	From Existing
Lane Width	12 feet	From Existing
Percent Heavy Vehicles	From traffic count, 5%	From Existing
Bus Blockages	From field visit, otherwise assume 0	From Existing
Intersection signal phasing and coordination	N/A no signalized intersections	Optimize phase and cycle length,
Intersection signal timing optimization limits	N/A no signalized intersections	60 to 120 seconds depending on the number of phases <sup>1</sup>
Minimum Green time	N/A no signalized intersections	If additional signal warranted, 10 seconds if no pedestrian time is required
Yellow and all-red time	N/A no signalized intersections	If additional signal warranted, (Y) = 4 seconds and (R) = 1 second
Right Turn on Red	N/A no signalized intersections	If additional signal, then "allow"

<sup>1</sup>Assumptions consistent with White Paper on Application of Oregon Highway Plan Mobility Standards.

Table 1-

Summary of All Turning Movements by Intersection - 2008

	Detroit Ave @ Forest Ave	Santiam HWY @ Santiam Ave	N Santiam Hwy) @ Breitenbush/De troit Ave	Santiam HWY @ French Creek	Detroit Ave @ "D" St.	Santiam Hwy @ Forest Ave.	Patton & Clester
11:00-12:00	125	585	868	513	151	707	32
12:00-1:00	121	1016	1230	496	142	999	31
1:00-2:00	140	1061	1257	491	112	1041	21
2:00-3:00	122	1082	1382	468	143	1155	17 Peak Hour
3:00-4:00	92	1004	1332	497	124	1135	20
4:00-5:00	97	1017	1274	382	155	1179	24
5:00-6:00	94	838	1266	418	106	1148	18

Table 1

**RAW Count Data**

INTNAME	INTID	DATE	TIME	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	Totals
Hwy 22 & French Creek	1	8/8/2007	2-3:00 PM	0	0	0	2	0	3	1	201	0	0	260	1	468
Hwy 22 & Breitenbush/Detroit	2	8/12/2007	2-3:00 PM	27	583	48	43	343	71	71	31	12	18	49	86	724
Detroit Ave & D Street	3	8/8/2007	2-3:00 PM	19	20	0	0	32	28	25	0	18	0	0	0	142
Patton & Clester	4	8/8/2007	2-3:00 PM	1	5	0	0	2	4	1	0	4	0	0	0	17
Detroit Ave & Forest Ave	5	8/8/2007	2-3:00 PM	1	2	6	29	12	10	4	13	3	2	7	28	117
Hwy 22 & Forest	6	8/12/2007	2-3:00 PM	53	623	1	1	361	15	46	4	42	0	6	4	1156
Hwy 22 & Santiam Ave	7	8/19/2007	2-3:00 PM	4	738	0	0	327	2	1	0	10	0	0	0	1082

**ADJUSTED 2008**

INTNAME	INTID	DATE	TIME	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Hwy 22 & French Creek	1	8/8/08	2-3:00 PM	0	0	0	0	0	5	0	205	0	0	265	0
Hwy 22 & Breitenbush/Detroit	2	8/8/08	2-3:00 PM	30	595	50	45	350	75	75	30	10	20	50	90
Detroit Ave & D Street	3	8/8/08	2-3:00 PM	20	20	0	0	35	30	25	0	20	0	0	0
Patton & Clester	4	8/8/08	2-3:00 PM	0	5	0	0	0	5	0	0	5	0	0	0
Detroit Ave & Forest Ave	5	8/8/08	2-3:00 PM	0	0	5	30	10	10	5	15	5	0	5	30
Hwy 22 & Forest	6	8/8/08	2-3:00 PM	55	635	0	0	370	15	45	5	45	0	5	5
Hwy 22 & Santiam Ave	7	8/8/08	2-3:00 PM	5	735	0	0	325	0	0	0	10	0	0	0

**Balanced and ADJUSTED 2008**

INTNAME	INTID	DATE	TIME	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Hwy 22 & French Creek	1	8/8/08	2-3:00 PM						5		450			775	
Hwy 22 & Breitenbush/Detroit	2	8/8/08	2-3:00 PM	30	635	50	45	350	55	55	25	10	20	40	85
Detroit Ave & D Street	3	8/8/08	2-3:00 PM	20	55			70	55	35		20			
Patton & Clester	4	8/8/08	2-3:00 PM		5				5			5			
Detroit Ave & Forest Ave	5	8/8/08	2-3:00 PM	5	5	5	45	20	10	5	15	5	5	5	65
Hwy 22 & Forest	6	8/8/08	2-3:00 PM	55	680			365	15	30	5	30		5	5
Hwy 22 & Santiam Ave	7	8/8/08	2-3:00 PM	5	735			395				10			

Table

Seasonal Adjustment of Traffic Volumes

INTNAME	INTID	DATE	Seasonal Adjustment Factor	2008 Adjustment Factor	Total 30 HV Adjustment factor	2030 Adjustment Factor	2030 Total 30 HV Adjustment factor
Hwy 22 & French Creek	1	8/8/2007	1.0118	1.010	1.022	1.244	1.259
Hwy 22 & Breitenbush/Detroit	2	8/12/2007	1.0118	1.010	1.022	1.244	1.259
Detroit Ave & D Street	3	8/8/2007	1.0118	1.010	1.022	1.244	1.259
Patton & Clester	4	8/8/2007	1.0118	1.010	1.022	1.244	1.259
Detroit Ave & Forest Ave	5	8/8/2007	1.0118	1.010	1.022	1.244	1.258
Hwy 22 & Forest	6	8/12/2007	1.0118	1.010	1.022	1.244	1.259
Hwy 22 & Santiam Ave	7	8/19/2007	0.9644	1.010	0.984	1.244	1.224

Calculation Adjustments

2008 ATR CHARACTERISTIC TABLE										
SEASONAL TRAFFIC TREND	AREA TYPE	# OF LANES	WEEKLY TRAFFIC TREND	AADT	DHP CLASSIFICATION	ATR	COUNTY	HIGHWAY ROUTE, NAME, & LOCATION	MP	STATE HIGHWAY NUMBER
RECREATIONAL SUMMER	RURAL	3	WEEKEND	4800	STATEWIDE HIGHWAY	24 013	MARION	OR 22 NORTH SAHTIAM HWY EAST OF GATES	33.54	162
RECREATIONAL SUMMER	RURAL	2	WEEKEND	4700	STATEWIDE HIGHWAY SCENIC BYWAY	24 015	MARION	OR 22 NORTH SAHTIAM HWY EAST OF DETROIT	51.30	162

Calculation of Seasonal Adjustments

Peak Period Season Factor	Rural 0.7654	Adjustment Factor	Average	Adjustment Factor Peak Period/Count Date =
Count Date Seasonal Factors				
August (5th)	0.7714	0.992		
August (15th)	0.7773	0.964	0.7745	1.0118

Calculation of Annual Adjustments

Hwy 22(Hwy No. 162)	Mp	2007	2027	RSO	Annual Growth	
Gates Automatic Traffic Recorder Sta. 24-013. 0.95 mile west of Railroad Avenue S E (Entrance to Minto County Park)	33.69	4900	5200	0.3077	0.003	0.3%
0.30 mile east of Detroit Dam	43.03	4100	4800	0.8071	0.008	0.8%
0.01 mile east of Breitenbush Road	50.08	4300	5200	0.7834	0.010	1.0%
Detroit Automatic Traffic Recorder Sta. 24 015. 1.20 miles east of Detroit Avenue	51.3	4200	4800	0.2858	0.007	0.7%

Table

Detroit Future Trip Generation Estimates  
2008-2030 Based on Key Buildable Parcels

Location	Description	# of Units	ITE Trip Rate	ADT
West of Hwy 22	Condominium/Townhous 2.3 acres @ 30 units/acre	70 units	5.86	410
East of Hwy 22	Single-family Dwelling	200 units	9.57	1914

Detroit Future Trip Generation Estimates  
2008-2030 Based on Key Buildable parcels

Location	Description	# of Units	ITE Trip Rate	PM Trips
West of Hwy 22	Condominium/Townhous 2.3 acres @ 30 units/acre	70 units	0.24	17
East of Hwy 22	Single-family Dwellings	200 units	1.01	202