Report

Rockaway Beach Downtown Transportation Plan

Prepared for

City of Rockaway Beach
and
Oregon Department of Transportation

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Contents

Section **Page**

Appendixes

Tables

Figures

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Executive Summary

The Rockaway Beach Downtown Transportation Plan addresses key transportation issues in the City of Rockaway Beach (see Figure 1-1). The plan focuses on the six-block segment of U.S. 101 from South 3rd Avenue to North 3rd Avenue. It emphasizes pedestrian and bicycle travel and parking on the west side of U.S. 101, including the Port of Tillamook Bay railroad and Miller Street areas. The plan also addresses the intersection of U.S. 101/South 2nd Avenue/Anchor Street; crossings of the railroad and U.S. 101; Pacific Street; and a new trail and bridge in the Rock Creek/State Recreation Area wayside.

The plan's goals are:

- Improve mobility, safety and accessibility for all travel modes.
- Improve pedestrian and bicycle circulation and facilities.
- Provide for improvements that can be implemented and that comply with applicable standards.

This plan has three sections: (1) Introduction, (2) Existing Conditions and Future Opportunities (3) Alternatives and Recommendations. The recommendations are summarized below.

Summary of Recommendations

U.S. 101

- Need: Improve pedestrian facilities and on-street parking, address safety and mobility issues at South 2nd Avenue/Anchor Street intersection, review warrants for left-turn lanes, consider benefits and drawbacks of Special Transportation Area (STA) designation.
- Recommendations:
  - West Side Sidewalk and Parking: Provide continuous parallel parking and sidewalk on west side of U.S. 101 from North 3rd Avenue to South 3rd Avenue. Would require conversion of existing diagonal parking area to parallel parking; additional parking would be added nearby.
  - U.S. 101/South 2nd Avenue/Anchor Street Intersection: Narrow entrance to Anchor Street with a landscaped, raised entrance; convert traffic to one lane; add parking on both sides; and add left-turn lane from South 2nd Avenue to U.S. 101.
  - Left-Turn Lanes on U.S. 101: Turn lanes are warranted by the Oregon Department of Transportation (ODOT) methodology, but are not recommended because of downtown impacts, especially loss of parking.

- Special Transportation Area (STA): An STA designation may be possible in Rockaway Beach and should be explored as a solution for long-term certainty. Because of the uncertainties in the STA process, in the short-term the City should work to implement the recommendations of this plan without STA designation.

Miller Street

- Need: Improve facilities for pedestrians and local bicycle traffic while also preserving business access.
- Recommendations: Provide bridge over Rock Creek, pedestrian/bicycle path across State Recreation Area (wayside) parking lot, and transform Miller Street to a "slow street" where pedestrians and bicyclists share the road with vehicles.

Pacific Street

- Need: Provide additional on-street parking in the downtown area and improve pedestrian facilities and circulation.
- Recommendations: Reconstruct Pacific Street to include diagonal parking on the west side, parallel parking on the east side, and sidewalks on both sides.

Railroad Crossings

- Need: There are no sidewalks or crossing safety devices on the roads that cross the railroad tracks.
- Recommendations: Provide sidewalks (and Americans with Disabilities Act-compliant ramp or bridge where required) on the three streets that cross the railroad. Determine whether any of the three crossings can be reconstructed with a gated rail crossing.

Parking Estimate

- Need: Parking is a high priority for Rockaway Beach. Some of the recommended concepts would remove existing parking; others would add parking.
- Recommendations: Potential parking impacts were estimated and additional sources of parking suggested. The net result is an increase in parking spaces in the downtown area.

SECTION 1

Introduction

The Rockaway Beach Downtown Transportation Plan is a focused effort that addresses key transportation issues in the City of Rockaway Beach (see Figure 1-1). The plan focuses on the six-block segment of U.S. 101 from South 3rd Avenue to North 3rd Avenue, with an emphasis on pedestrian and bicycle travel and parking on the west side of U.S. 101, including the Port of Tillamook Bay railroad and Miller Street areas. These issues were identified as priority issues by the city and through a review of existing transportation system conditions.

Planning Team and Process

Project Management Team

A project management team (PMT) was formed at the beginning of the planning process to provide overall guidance and policy direction for the transportation plan. The PMT, consisting of the Rockaway Beach, Oregon Department of Transportation (ODOT) and consultant staffs, met initially in October 2002 to begin the project. PMT members met subsequently as part of the project advisory committee (PAC) and communicated regularly throughout the project.

Public Involvement

A focused public involvement process was conducted as part of the transportation plan to ensure the substantive participation of Rockaway Beach citizens, stakeholders and other interested parties in the plan. Key components of the public involvement process were meetings of the city-appointed PAC—made up of elected and appointed city officials, other agency representatives, business owners and citizens at large—and a public open house.

Downtown Development Committee

The PAC for this project was the existing Rockaway Beach Downtown Development Committee. In addition to meeting as the PAC, the committee also met several times without the consultant staff to review and discuss various aspects of the proposed plan. This additional involvement helped ensure that the proposed concepts had a thorough review with the local advisory committee.

PAC Meeting 1

The purpose of the first PAC meeting on Jan. 23, 2003, was to introduce the committee and the consultant team, provide an overview of the project, and present and discuss background information and draft alternative concepts. Background information included the draft goals and objectives, and the existing conditions and future opportunities memorandum. Draft alternatives were presented for U.S. 101, Miller Street, Pacific Street,

and Anchor Street/2nd Avenue. The agenda and summary notes from the first PAC meeting are included in Appendix A.

Before this first official PAC meeting, members of the consultant staff also met informally with the PAC in November 2002 to review the project goals and objectives and gather input on potential projects and alternatives.

Public Open House

About 35 people participated in a public open house held on April 2, 2003. The participants included members of the city council, planning commission and downtown development committee; other members of the public; and agency staff members. The consulting team presented and discussed the draft alternative concepts, which had been revised on the basis of PAC comments. A summary of the open house is included in Appendix A.

Goals and Objectives

The PMT developed draft goals and objectives, which the PAC then reviewed. The purpose of the following goals and objectives is to create a framework for the transportation plan and help ensure that the plan responds to the needs and desires of the community. Many of the goals and objectives were drawn from existing planning documents for Rockaway Beach, such as the city's comprehensive plan and the Resource Team Report prepared by the Oregon Downtown Development Association (ODDA) in 2000.

Goal 1: Mobility, Safety and Accessibility

Improve mobility, safety, and accessibility for all travel modes.

Objectives:

1. Improve access to properties and local streets for all modes; identify access management solutions where needed.
2. Improve on- and-off street parking opportunities for auto and recreational vehicle (RV) users at business and recreational destinations.
3. Identify lane configurations and intersection improvements on U.S. 101, consistent with the Oregon Highway Plan (OHP), as needed to address circulation, safety and capacity deficiencies.
4. Create gateway treatments to let visitors on U.S. 101 know they are entering a city center.
5. Provide for improvements to public transportation loading areas and circulation routes.
6. Ensure transportation facilities allow for safe emergency vehicle access and circulation.
7. Address downtown transportation needs while maintaining railroad operations and safety.

Goal 2: Pedestrians and Bicycles

Improve pedestrian and bicycle circulation and facilities.

Objectives:

1. Create better pedestrian and bicycle linkages across U.S. 101 to link parks, beach access and motels to downtown.
2. Identify appropriate streetscape improvements, including landscaping, pedestrian-scale lighting, benches and street trees.
3. Improve bicycle and pedestrian safety and comfort on U.S. 101, focusing on the west side.
4. Provide facilities, such as sidewalks, crosswalks, curb extensions and signage, for safe and pleasant pedestrian travel.
5. Identify opportunities for off-street pedestrian and bicycle facilities, such as shared-use paths, trails and greenways.
6. Provide pedestrian access across the railroad tracks.

Goal 3: Implementation

Provide for improvements that are implementable and comply with applicable standards.

Objectives:

1. Propose new or updated design standards for city streets, in particular to emphasize traffic calming and pedestrian and bicycle travel.
2. Develop designs that improve local street connectivity as applicable.
3. Ensure that new facilities (and existing facilities as feasible) comply with the Americans with Disabilities Act (ADA).
4. Develop designs that minimize environmental impacts.
5. Develop designs that are cost-effective.
6. Develop designs that meet applicable local, county, state and federal plans, standards and criteria.
7. Develop a plan with sufficient detail to qualify for funding of engineering and construction phases.

Plan and Policy Review

As an initial step in the planning process, the consultant team reviewed applicable city, county, and state plans and policies relevant to the transportation planning process. The purpose of this review was to provide a policy context for the planning effort, help ensure that proposed projects were consistent with existing relevant plans and policies, and aid in the development of implementing ordinances for the transportation plan.

The consulting staff reviewed documents for the jurisdictions that own, regulate or provide public services on the public roadways in Rockaway Beach. These jurisdictions include the city, Tillamook County, the Tillamook County Transportation District (TCTD) and the State of Oregon. Results of the plan and policy review are included in Appendix B.

The following documents were reviewed:

Rockaway Beach

- Comprehensive Plan (Adopted 1981; amendments through June 1992)
- Zoning Ordinance (Ordinance No. 143, Articles 1-11) and Subdivision Ordinance (Article 13)
- Resource Team Report (ODDA, January 2000)
- Rockaway Beach Transportation Study: U.S. 101 and Railroad Improvement Project (ODOT, 1995)

Tillamook County

- Draft Tillamook County Comprehensive Plan (spring 2002)
- Tillamook County Zoning Ordinance (December 2002)
- Tillamook County Land Division Ordinance (December 2002)
- Tillamook County Public Road Improvement Ordinance (1999)
- Urban Growth Area Agreements Between County and Cities (1996)
- Tillamook County Transportation District

State of Oregon/ODOT

- State Planning Goals (1973)
- Transportation Planning Rule (Oregon Administrative Rule [OAR] 660-012)
- Oregon Transportation Plan (1992)
- Oregon Highway Plan (1999)
- Draft Oregon Rail Plan (2001)
- Oregon Public Transportation Plan (1997)
- Oregon Bicycle and Pedestrian Plan (1995)
- Oregon Transportation Safety Action Plan (1995)
- Access Management Rules (OAR 734-051)
- Freight Moves the Oregon Economy (1999)
- Transportation System Planning Guidelines (2001)
- Proposed Oregon Coast Highway Corridor Master Plan (ODOT, 1995)

- Scenic Byway Management Plan for the Nehalem, Tillamook, and Nestucca Regions of the U.S. 101 Corridor in Oregon (ODOT, 1997)
- Pacific Coast Scenic Byway Corridor Management Plan for U.S. 101 in Oregon (ODOT, 1997)

Federal

- Transportation Equity Act for the 21st Century (TEA-21) and Implementing Regulations (23 Code of Federal Regulations [CFR] 450 and 49 CFR 613)

SECTION 2

Existing Conditions and Future Opportunities

This section describes existing transportation conditions and deficiencies and identifies future opportunities for the focus areas of the plan. The project staff described and evaluated existing conditions, including roadway and intersection geometry, vehicle traffic, public transportation, pedestrian facilities and bicycle facilities. As appropriate, the staff identified future potential opportunities. The information in this section was used to develop proposed alternatives in the subsequent phase of the planning effort.

Existing Conditions and Deficiencies

Street Inventory

There are three principal public agencies (ODOT, Port of Tillamook Bay and the City of Rockaway Beach) that own the public rights-of-way in the study area (no Tillamook County roads are located in this portion of the city). Table 2-1 shows the functional classification of each street.

TABLE 2-1
Street Ownership and Functional Classification

Street Name	Right-of-way Ownership	Functional Classification
US Highway 101	Oregon Department of Transportation	State Highway—National Highway System Scenic Byway Non-freight Route
North 3rd Avenue	City of Rockaway Beach	Collector
North 2nd Avenue	City of Rockaway Beach	Local
North 1st Avenue	City of Rockaway Beach	Local
Nehalem Avenue	City of Rockaway Beach	Collector
South 1st Avenue	City of Rockaway Beach	Local
South 2nd Avenue	City of Rockaway Beach	Collector
South 3rd Avenue	City of Rockaway Beach	Local
Pacific Street	City of Rockaway Beach	Local
Miller Street	Port of Tillamook Bay	Local

The existing street geometry in the study area of Rockaway Beach consists primarily of one main highway (U.S. 101) with connecting local road side streets. Every intersection is two-way, stop-controlled from the side streets. There are three four-way intersections and five T-intersections. Intersection geometry is typical of a grid-type street layout. The intersections

are generally orthogonal with the exception of U.S. 101/South 2nd Avenue/Anchor Street. This intersection has a large paved throat on the east side of U.S. 101.

There are three primary street cross sections along U.S. 101. The northernmost cross section from North 3rd Avenue to North 1st Avenue consists of a sidewalk and on-street parking on the east side, two travel lanes, and a gravel shoulder on the west side. The middle cross section from North 1st Avenue to South 2nd Avenue consists of a sidewalk and on-street parking on the east side, two travel lanes, and a paved shoulder and diagonal parking on the west side. The southernmost cross section from South 2nd Avenue to South 3rd Avenue consists of a sidewalk and on-street parking on the east side, two travel lanes, and a gravel shoulder on the west side. Appendix C (Part 1) shows the approximate dimensions for each block along U.S. 101 in the study area.

The posted speed limit on U.S. 101 through downtown Rockaway Beach is 35 mph, while the side streets are posted at 25 mph. This is a typical speed limit for a downtown area of this type.

There are two parking scenarios along the U.S. 101 corridor. On-street parking is marked in a parking lane on the east side of U.S. 101 adjacent to a new curb and sidewalk. Off-street parking is provided in a diagonal parking frontage area on the west side of U.S. 101 partially in the ODOT and Port of Tillamook Bay rights-of-way.

The Port of Tillamook Bay railroad right-of-way is immediately adjacent to the western edge of U.S. 101. This creates the need for vehicles on the side streets to cross the railroad tracks in close proximity to U.S. 101. There are three rail crossings in the study area: North 3rd Avenue, South 1st Avenue and South 3rd Avenue.

Miller Street is in the eastern portion of the Port of Tillamook Bay right-of-way from South 2nd Avenue to South 3rd Avenue. It is used as front door access to commercial and residential properties. This street is paved, but not marked for parking. Many vehicles were observed parallel parking on the west side of Miller Street.

A portion of Miller Street is north of Rock Creek, mostly within the Port of Tillamook Bay right-of-way.

Miller Street is west of Pacific Street, a wide, local street that provides access to a motel, a few businesses and residences. Pacific Street is paved from South 3rd Avenue to South 2nd Avenue, gravel from South 2nd Avenue to South 1st Avenue. With a 60-foot right-of-way, Pacific Street can be used to provide additional parking.

Motor Vehicle Operations

The study area has been analyzed for motor vehicle operations for the existing condition (2002) and future condition (2022) based on the existing roadway geometry and lane configuration. Crash data have been gathered and traffic counts have been taken at key intersections to use in this analysis. These data are used to determine roadway capacity, and to identify and address safety concerns in the study area.

Study Intersections and Raw Traffic Counts

The operational analysis of existing (2002) and future, forecasted, no-build conditions (2022) was conducted at the following study intersections:

- U.S. 101 and North 3rd Avenue
- U.S. 101 and South 1st Avenue
- U.S. 101 and South 2nd Avenue
- U.S. 101 and South 3rd Avenue

These intersections were included in the analysis because they are the primary intersections in the study area and because recent traffic counts (2002) were available. Traffic counts were conducted at the intersections of U.S. 101 with North 3rd Avenue and 1st Avenue on November 5, 2002. At the intersections of U.S. 101 with South 2nd Avenue and South 3rd Avenue, traffic counts were conducted during Spring Break on Friday, March 29, and Saturday, March 30, 2002. See Appendix C (Part 2) for the raw traffic counts.

Analysis of the Rockaway Automated Traffic Recorder

ODOT traffic analysis procedures call for 30th-highest-hour traffic volumes to be used to calculate volume-to-capacity (v/c) ratios for intersections and street segments. To identify seasonal factors to apply to the raw count data and determine 30th-highest-hour traffic volumes at each intersection, an analysis of the Rockaway automated traffic recorder (ATR) site (29-001) was conducted. The Rockaway ATR site was used in the analysis because it is the closest recorder along U.S. 101 in relation to the study intersections. It is located 2 miles south of the Rockaway Beach city limits.

On the Oregon Coast, the 30th-highest-hour traffic volumes typically occur during the peak tourist season (weekend afternoons in August). Data from the Rockaway ATR site that are available on the ODOT Web site[1] were used to determine a seasonal factor of approximately 1.23 to calculate 30th-highest-hour traffic volumes using the Saturday traffic counts conducted in March 2002 during Spring Break. The 30th-highest-hour traffic volumes calculated using this methodology for the intersections of U.S. 101 with South 2nd Avenue and South 3rd Avenue are consistent with a recent traffic analysis conducted for the Rockaway Beach City Hall project.

At the intersections of U.S. 101 with South 1st Avenue and North 3rd Avenue, traffic counts were conducted in November 2002. As directed by ODOT's Transportation Planning Analysis Unit (TPAU), the seasonal factor tables available on the ODOT Web site were used to calculate 30th-highest-hour traffic volumes[2] As discussed with the TPAU staff, the methodology described for the Spring Break 2002 counts was not applied to the November 2002 counts because the resulting high seasonal factor would artificially increase the minor approach turn movements. At each of the November 2002 count locations, a seasonal factor of approximately 1.60 was used to calculate 30th-highest-hour traffic volumes. The through volumes on U.S. 101 then were adjusted further at each of the November 2002 count locations to equal the 30th-highest-hour traffic volumes measured at the Rockaway ATR site.

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[1] http://www.odot.state.or.us/tdb/traffic_monitoring/01tvt/atr01_29.htm

[2] http://www.odot.state.or.us/tddtpau/papers/2000_Seasonal%20_Factors.pdf

See Appendix C (Part 3) for the balanced 2002 30th-highest-hour traffic volumes in Rockaway Beach.

Left-turn lanes were analyzed for each U.S. 101 intersection based on the ODOT *TPAU Analysis Procedures and Methods for Left Turn-Lane Criteria.* It was determined that the left-turn lane criteria are satisfied for the following intersections: U.S. 101/North 3rd Avenue, U.S. 101/North 2nd Avenue, U.S. 101/South 2nd Avenue and U.S. 101/South 3rd Avenue. In general, the turn lane criteria are based on the volume of turning traffic in relation to the volume of opposing through traffic. See Appendix C (Part 4) for left-turn lane details and results.

Analysis Inputs

Using the year 2002 30th-highest-hour traffic volumes, an operational analysis of existing conditions was conducted with Synchro, version 5, for the four study intersections. Synchro is based on the Highway Capacity Manual (HCM), Transportation Research Board Special Report 209. For each of the intersections, results from the Synchro HCM unsignalized report are reported in this transportation plan.

The following inputs were used in the analysis:

- Ideal saturation flow rate: 1,800 vehicles/hour
- Intersection geometry: Intersection geometry is based on observations from the field visit and sketches provided in the traffic counts.
- Synchro defaults for the peak hour factor (0.92) and heavy vehicle percentages (2 percent) were used in the analysis.
- Pedestrians: Minimal, less than 10 per hour across each minor approach
- Grade = 0 percent
- Posted speeds were entered for each segment.
- Lane width: 12 feet
- Right turn on red: Allowed

State Highway Mobility Standards

All of the study intersections included in the operational analysis of existing and future forecasted conditions in Rockaway Beach involve a state highway. The 1999 OHP designates U.S. 101 as a statewide National Highway System (NHS) non-freight route. In Rockaway Beach, the speed limit on U.S. 101 is 35 mph, and the section of highway is inside the urban growth boundary (UGB) in a non-metropolitan planning organization (MPO) area. Therefore, the mobility standard designated by the OHP for this section of roadway is a v/c ratio of less than 0.80. Each of the study intersections currently is unsignalized and the minor approaches have speed limits of less than 45 mph. Therefore, the OHP designates a maximum v/c ratio of 0.85 for local road approaches in the UGB (non-MPO areas, speed limit of less than 45 mph).

The highway mobility standards designated in the OHP apply primarily to transportation planning decisions. Separate mobility design standards are in ODOT's HCM. The performance standards in the HCM generally are equal to or higher than the standards in the OHP.

Level of Service Analysis

Level of service (LOS) is a measure of effectiveness for traffic operations at an intersection. Traffic is able to move freely at an intersection operating at LOS A, B or C. Traffic operations become progressively worse as traffic operations move toward LOS D and E. LOS F represents conditions where traffic volumes exceed capacity, resulting in long queues and delays. LOS is based on control delay time at an intersection for unsignalized intersections. Appendix C (Part 5) provides detailed LOS definitions.

Operational Analysis of Existing Conditions (30th Highest Hour)

Table 2-2 presents the LOS, OHP mobility standard, v/c ratio and delay time for each intersection analyzed under existing 30th-highest-hour conditions. Appendix C (Part 6) contains detailed reports for each intersection. Table 2-2 reports results for the movement with the worst operating performance on both the major and minor approaches at each intersection (major/minor). The operational performance of the major road is reported to show delay times and LOS experienced by a majority of the traffic moving through an intersection.

TABLE 2-2
Operational Analysis of Two-Way, Stop-Controlled Intersections—30th Highest Hour (Year 2002)

Intersection	LOS	OHP Mobility Standard	Maximum V/C Ratio	Delay (seconds)
U.S. 101 and North 3rd Avenue Critical Movement: Westbound	A/D	0.80/0.85	0.04/0.36	1.0/29.2
U.S. 101 and South 1st Avenue Critical Movement: Eastbound	A/C	0.80/0.85	0.02/0.19	0.6/23.4
U.S. 101 and South 2nd Avenue Critical Movement: Westbound	A/E	0.80/0.85	0.05/0.48	1.5/41.4
U.S. 101 and South 3rd Avenue Critical Movement: Westbound	A/C	0.80/0.85	0.02/0.18	0.6/22.8

Source: Synchro Highway Capacity Manual Unsignalized Report.

LOS = level of service.

OHP = Oregon Highway Plan.

As shown in Table 2-2, all of the study intersections meet mobility standards designated in the OHP under existing 30th-highest-hour conditions.

Intersection Crash Analysis—Existing Conditions

A crash analysis was conducted using data obtained from ODOT for six intersections along U.S. 101 within the Rockaway Beach city limits: U.S. 101 at North 3rd Avenue, North 2nd Avenue, North 1st Avenue, South 1st Avenue, South 2nd Avenue and South 3rd Avenue.

Crash data from January 1, 1997, to December 31, 2001, were obtained from ODOT for each intersection. Table 2-3 summarizes the number of crashes resulting in property damage only, injuries and fatalities at each of the six intersections, including the entering approaches, from years 1997 to 2001. The crash analysis is based on reported accidents only.

TABLE 2-3
Crash Analysis (Year 1997 to 2001 Data)

Location	Property Damage	Injuries	Fatalities	Crash Rate[1]
U.S. 101 at North 3rd Avenue	2	2	0	0.31
U.S. 101 at North 2nd Avenue	1	0	0	N/A
U.S. 101 at North 1st Avenue	2	0	0	N/A
U.S. 101 at South 1st Avenue	0	0	0	0
U.S. 101 at South 2nd Avenue	2	1	0	0.24
U.S. 101 at South 3rd Avenue	0	0	0	0

Source: ODOT Crash Data, Years 1997 to 2001.

[1] Crash rate in terms of million entering vehicles. N/A indicates average daily traffic volumes not available.

Using average ADT volumes for the 5-year period, crash rates were determined for each intersection and are summarized in Table 2-3.

All intersections with available average daily traffic (ADT) volume information have crash rates lower than 0.31 per million entering vehicles, which does not indicate safety deficiencies.

Segment Crash Rates—Existing Conditions

As described in the 2000 State Highway Crash Rate Tables published by the Crash Analysis and Reporting Unit, U.S. 101 is considered a non-freeway, primary highway. Table 2-4 summarizes the year 2000 crash rate and the 5-year average crash rate (1996 to 2000) for the segment of U.S. 101 within the Rockaway Beach city limits.

TABLE 2-4
Crash Rates along U.S. 101 in Rockaway Beach

Location	Year 2000 Crash Rate[1]	5-year Average Crash Rate[1]
U.S. 101 – Rockaway Beach (Urban)	0.63	0.97

Source: 2000 State Highway Crash Rate Table, Crash Analysis and Reporting Unit, ODOT.

[1] Crash rate in terms of million vehicle miles.

On urban sections of primary, non-freeway segments throughout Oregon, the 5-year statewide average crash rate was 3.52 crashes per million vehicle miles (MVM) and the 2000 statewide average rate was 2.95 per MVM. As shown in Table 2-4, both the year 2000 and

5-year average crash rates along U.S. 101 are lower than the statewide averages on similar types of roadway.

Rail Operations

U.S. 101 parallels an active, low-volume freight railroad. The railroad is owned by the Port of Tillamook Bay and maintains a right-of-way of 60 feet (30 feet from the centerline on each side). The rail operates once per day and travels at a top speed of 10 mph. The maximum length of the trains is about 2,450 feet and the average length of the trains is 1,500 feet. Three railroad crossings (and beach access roads) exist in the downtown study area: North 3rd, South 1st, and South 3rd Avenues. In addition to carrying freight traffic, the railroad also operates a seasonal dinner train in this location.

Public Transportation

The Tillamook County Transportation District (TCTD) provides public transportation service in Tillamook County. The Tillamook-Manzanita fixed route provides service between the Cities of Tillamook and Manzanita. This route has stops at 2nd Street and Laurel Avenue in Tillamook; Fred Meyer; the City Hall in Bay City; at 6th Street and U.S. 101 in Garibaldi; at Anchor Street and 3rd Avenue in Rockaway Beach; in Wheeler; in Nehalem, and in Manzanita on 5th Street. The transfer point at 2nd Street and Laurel Avenue in Tillamook connects with other TCTD routes. The Tillamook-Manzanita route operates Monday through Saturday. On Monday through Friday, there are six round trips and on Saturday there are four round trips between Tillamook and Manzanita. The Tillamook-Manzanita route has the highest ridership of all the routes and serves a high number of commuters.

TCDC also operates a dial-a-ride (DAR) service in Tillamook County. The service operates on weekdays (except for holidays) from 8 a.m. to 5 p.m. These hours can be extended depending on demand and driver availability. DAR service is available to all users, with priority service to seniors and disabled passengers. Riders are asked to call 2 hours in advance to schedule a ride. Currently, it costs $1 to ride DAR per one-way trip per zone.

First Student, a private busing company, provides school bus service in Rockaway Beach.

Pedestrian Facilities

Wide sidewalks, on-street parking on the east side of U.S. 101 and retail storefront development help to create a comfortable pedestrian environment in downtown Rockaway Beach. The town recently constructed sidewalks and curb extensions on the east side of U.S. 101 in the downtown core between North 3rd and South 3rd Avenues. The curb extensions shorten the crossing distance of U.S. 101 by 8 feet. They also increase the visibility of pedestrians crossing the street. There is on-street parallel parking on the east side between North 3rd and South 3rd Avenues. This creates a physical buffer for pedestrians walking along U.S. 101. ADA-compliant[3] curb ramps have been installed on all sidewalks on the east side of U.S. 101 between North 3rd and South 3rd Avenues with the exception of the north sides of North 1st Avenue and Nehalem Avenue, and the south sides

[3] Americans with Disabilities Act standards call for curb ramps with a minimum width of 4 feet, a maximum slope of 8 percent, landing width of 4 feet and a solid, slip resistant surface.

of South 2nd and South 3rd Avenues. Marked "parallel line" crosswalks also exist on all streets crossing U.S. 101 between North 3rd and South 3rd Avenues. No sidewalks exist on the west side of U.S. 101. No sidewalks exist on the east-west streets providing beach access (North 1st, South 1st, South 2nd, South 3rd Avenues).

Bicycle Facilities

U.S. 101 is designated as the Oregon Coast Bike Route and serves thousands of cyclists each year. A 7-foot-wide shoulder bikeway accommodates southbound bicyclists on U.S. 101 in the study area. No bike facilities exist in the northbound direction. Most cyclists along this route travel southbound, in the direction of prevailing winds. Miller Street functions as a local on-street bike route because of its low traffic volume. No off-street multi-use paths or bike lanes exist in Rockaway Beach. No bike parking facilities exist on either side of U.S. 101.

Bicycle and Pedestrian Circulation Issues

The most notable deficiency in the pedestrian environment is the lack of sidewalks on the west side of U.S. 101. Also, U.S. 101 creates the most significant crossing impediment to pedestrian and bicycle travel in Rockaway Beach. This is because most homes and businesses exist on the east side of U.S. 101, and the beach and tourist lodging facilities are west of U.S. 101. South 1st and Nehalem Avenues are the primary access points to the beach and, therefore, are the two crossings with the greatest pedestrian use. Pedestrian trip generators, such as the school, library, bank, post office, transit stop and future civic center, are located east of U.S. 101. Another pedestrian and bicycle impediment to north-south travel is located on Miller Street at Rock Creek, where Miller Street does not cross the creek. Currently, some pedestrians walk around the creek and onto the railroad tracks to continue on Miller Street north or south of Rock Creek.

Future Conditions and Opportunities

Motor Vehicles

Year 2022 Traffic Volumes

Year 2022, future, forecasted, no-build, 30th-highest-hour traffic volumes were developed to evaluate future operating conditions in Rockaway Beach at each of the four study intersections. The ODOT Future Volume Tables, which are available on the ODOT Web site[4], were used to determine a projected growth rate of 1.3 percent along U.S. 101 within the Rockaway Beach city limits. The ODOT Future Volume Tables use historical data to project future ADT volumes along state highways. The 1.3 percent growth rate was applied to year 2002 30th-highest-hour volumes to calculate year 2022, future, forecasted, 30th-highest-hour traffic volumes.

See Appendix C (Part 7) for growth rate calculations and Appendix C (Part 8) for the 2022, future, forecasted, 30th-highest-hour traffic volumes at each of the study intersections.

[4] http://www.odot.state.or.us/tddtpau/papers/2019_Future%20_Volumes.pdf.

Operational Analysis of Future Conditions (30th Highest Hour)

Table 2-5 presents the LOS, OHP mobility standard, v/c ratio and delay time for each intersection analyzed under 2022, future, forecasted, 30th-highest-hour conditions. Appendix C (Part 9) contains detailed reports for each intersection. Intersections that will not meet OHP mobility standards under future, forecasted, 30th-highest-hour conditions are shown in bold, italic text.

TABLE 2-5
Operational Analysis of TWSC Intersections—30th Highest Hour (Year 2022)

Intersection	LOS	OHP Mobility Standard	Maximum V/C Ratio	Delay (seconds)
U.S. 101 and North 3rd Avenue Critical Movement: Westbound	A/F	0.80/0.85	0.05/0.68	1.2/70.6
U.S. 101 and South 1st Avenue Critical Movement: Eastbound	A/E	0.80/0.85	0.03/0.34	0.7/35.0
U.S. 101 and South 2nd Avenue Critical Movement: Westbound	***A/F***	***0.80/0.85***	***0.07/0.92***[1]	***1.9/136.0***
U.S. 101 and South 3rd Avenue Critical Movement: Westbound	A/E	0.80/0.85	0.03/0.36	0.8/38.0

Source: Synchro HCM Unsignalized Report

[1] By adding an exclusive left-turn lane on the westbound approach to the intersection of U.S. 101 and South 2nd Avenue, the maximum v/c ratio on this approach would be 0.71 under future, forecasted, 2022, 30th-highest-hour conditions.

LOS = level of service.

OHP = Oregon Highway Plan.

v/c = volume-to-capacity.

As shown in Table 2-5, three of the four study intersections will meet mobility standards designated in the OHP under future, forecasted, 30th-highest-hour conditions. The westbound movement at the intersection of U.S. 101 with South 2nd Avenue will not meet OHP mobility standards under future, forecasted conditions during the peak tourist season. As measured during the Spring Break traffic count in 2002, there are currently a high number of left- and right-turn movements from the westbound approach at this intersection. The westbound approach is a shared left-turn/through/right-turn lane. As shown in the analysis of future conditions, making a turn from this approach becomes more difficult as through traffic volumes increase on U.S. 101. To improve operations at this intersection under future, forecasted conditions, the addition of a westbound left-turn lane should be considered at this location. With the addition of an exclusive left-turn lane on this approach, the maximum v/c ratio of the westbound minor approach would be 0.71.

Rail

Three railroad crossings (and beach access roads) exist in the study area: North 3rd, South 1st, and South 3rd Avenues. These are unimproved crossings with asphalt pavement leading to the rail alignment and asphalt in-fill area between rails. Current ODOT standards recommend that an improved grated rail crossing be installed to provide for safe crossing

across rails. Based on field observation, it appears that the vertical profile may restrict the installation of a grated crossing. The proximity of the rail to the edge of U.S. 101 most likely will restrict the ability to transition the vertical profile between the elevated rails and the highway elevation.

A technical field survey and preliminary engineering should be performed to identify if any of the three crossings could be reconstructed with a grated rail crossing.

Pedestrian crossings could be improved by constructing a sidewalk or path that would level the approach grade across the railroad tracks. A designated sidewalk would help direct pedestrians safely across the tracks and away from vehicular traffic.

Bicycle and Pedestrian

The following potential future opportunities were identified on the basis of the review of existing conditions:

- A pedestrian/bicycle bridge across Rock Creek would allow safe and continuous pedestrian and bicycle circulation on Miller Street along the west side of the downtown core area. A bicycle and pedestrian path could connect Miller Street south of Rock Creek between the city-operated parking lot at South 1st Avenue and the railroad tracks. Miller Street then could function as a local north-south pedestrian alternative to U.S. 101. This is the current location of the Chamber of Commerce "caboose." It might be necessary to relocate the caboose to allow space for a new path.
- The entrance to the Rockaway Beach State Recreation Area on South 1st Avenue could be enhanced as a pedestrian gateway to the beach. This could take the form of a wide sidewalk or esplanade entrance to the beach.
- There is ample room on the east side of the railroad right-of-way for a sidewalk or pedestrian path along U.S. 101. This walkway should be set back from U.S. 101 travel lanes. A buffer, such as on-street parallel parking, off-street diagonal parking or vegetation, would improve the safety and comfort of this walkway.

SECTION 3

Alternatives and Recommendations

This section describes the draft alternatives developed by the consultant team and presented to the PMT and PAC and to the general public at the open house. It indicates which alternatives were rejected and which were supported for further development. At the end of this section, a table is presented that compares all of the alternatives against the plan's goals, objectives and evaluation criteria.

The alternatives development process consisted of the following steps:

- The consultant team, PMT and PAC developed goals and objectives.
- The consultant team developed the existing conditions and future opportunities document, which was reviewed by the PMT and PAC.
- The consultant team developed a set of draft alternatives for presentation and review at the PMT and PAC meeting on Jan. 23, 2003. The draft concepts were revised on the basis of discussions at that meeting.
- In February 2003, the consultant team presented the concepts related to U.S. 101 to a group of ODOT staff members for their review and comment.
- Based on input from the January and February 2003 meetings, the consultant team revised the concepts and presented them at a public open house on April 2, 2003.
- Subsequently, the consultant team wrote the draft transportation plan and presented it for a final review to the PMT, PAC and ODOT staff.

U.S. 101

This portion of the plan recommends several changes to U.S. 101, including the following:

- A cross section that accommodates pedestrian facilities and parking on the west side of the highway
- Safety and mobility issues at the intersection with South 2nd Avenue and Anchor Street
- Railroad crossings
- Left-turn lanes
- Designation of an STA

West Side Sidewalk and Parking

The consultant team developed a cross section for the west side of U.S. 101 from North 3rd Avenue to South 3rd Avenue. The cross section would accommodate a 6-foot-wide sidewalk and an 8-foot-wide parking lane in addition to the existing 6-foot-wide shoulder bikeway

and 12-foot-wide travel lane on the west side of U.S. 101 (see Figure 3-1). No changes are proposed to the cross section on the east side of U.S. 101, which includes a 10-foot-wide sidewalk, an 8-foot-wide parking lane and a 12-foot-wide travel lane.

<show cross-section and new plan view>

Sidewalk

The cross section allows for a 6-foot-wide sidewalk and parallel parking for the entire length of U.S. 101 between North 3rd Avenue and South 3rd Avenue. Currently, there is no sidewalk on the west side of U.S. 101. As shown in the cross section and plan view figures, the existing ODOT right-of-way cannot accommodate all of these features. Although the demarcation between the ODOT right-of-way and the adjacent Port of Tillamook Bay right-of-way varies, the sidewalk on the west side would be located primarily on the Port of Tillamook Bay right-of-way. A low (2-foot-high) wall should be provided to discourage trespassing across the railroad tracks and guide pedestrians to the appropriate crossings of the railroad tracks. The Port of Tillamook Bay staff has preliminarily provided its approval for this use (see letter of support in Appendix XXX).

Parking

To provide a continuous sidewalk on the west side of the highway, some changes in parking would be required. Currently, informal parallel parking exists on the west side of U.S. 101 except between Nehalem Avenue and South 2nd Avenue where there is a diagonal parking area separated from the highway by railroad ties. It is proposed that this parking area be converted to parallel parking to provide a continuous sidewalk on the west side of U.S. 101. This change would result in a loss of parking on this block; however, several additional parking spaces could be provided nearby (see further discussion in the Parking Estimate subsection). This change also would allow a 10-foot-wide sidewalk to be provided in this area, mirroring the east side of the street and greatly helping define the core area of downtown Rockaway Beach. If the existing diagonal parking configuration is retained, a continuous sidewalk could not be provided.

Pedestrian Crossings

Marked crosswalks demarcate locations for pedestrians to cross the street, alert drivers to the presence of pedestrians and alert drivers to their legal obligation to yield when pedestrians are in the crosswalk. Typically, crosswalks are marked by two parallel lines.

Pedestrian crossings are safer and more comfortable when the crossing distance is shorter. For this reason, curb extensions from the new west side sidewalk should be used to the extent possible at corners where there are marked or unmarked crossings of U.S. 101.

A more aesthetic treatment for crosswalks would involve the use of concrete pavers or stamped asphalt. Stamped and dyed asphalt is the less expensive of the two options, but does not last as long as concrete pavers. Both of these treatments provide a color and texture change that would enhance the appearance of the roadway and help define the area of downtown Rockaway Beach. Installing these treatments on U.S. 101 would require approval from ODOT.

Recommendation

- Based on the support of the participants at the April 2, 2003, public open house, a continuous sidewalk with parallel parking is recommended along the west side of U.S. 101 between North 3rd Avenue and South 3rd Avenue. This would require the conversion of the existing diagonal parking area to parallel parking.

U.S. 101/South Second Avenue/Anchor Street Intersection

The consultant team looked at ways to improve the U.S. 101/South 2nd Avenue/Anchor Street intersection with respect to safety and function.

The existing U.S. 101/South 2nd Avenue/Anchor Street intersection has unconventional, skewed geometry and is challenging for both motorists and pedestrians. South 2nd Avenue is currently a two-lane, two-way street. Anchor Street is currently a two-lane, one-way street in the southbound direction from South 2nd Avenue. The geometry should be changed to allow for safer vehicle maneuvers and shorter pedestrian crossing distances. In addition, based on traffic volume forecasts, the intersection will fail to meet the mobility standards set by the OHP if the existing lane configurations remain (see Section 2).

Mobility

The addition of a westbound right-turn lane from South 2nd Avenue to U.S. 101 (see Figure 3-XX) is proposed to address future mobility deficiencies. Adding the turn lane would provide additional capacity for traffic entering and crossing U.S. 101 from South 2nd Avenue. With this change, the intersection will meet OHP mobility standards. The addition of the turn lane would require a change from diagonal parking to parallel parking for the north side of South 2nd Avenue between Anchor and Beacon Streets, resulting in the loss of about two parking spaces (see the Parking Estimates subsection for further details).

INSERT FIGURE FROM CH2M HILL

Safety

To address the safety concerns at this intersection, the consultant team, PAC and public open house participants recommended the option shown in Figure 3-XX:

- Construct a curb extension to narrow the entrance width of the intersection on the east side of U.S. 101, construct a raised approach apron to the Anchor Street entrance, provide landscaping adjacent to the street and make the entrance one-lane, one-way (southbound).
- Establish one-way parallel parking on both sides of Anchor Street where applicable to South 3rd Avenue.

The changes will help to "de-emphasize" the entrance to Anchor Street, making it less desirable to use as a thoroughfare while maintaining its function for local traffic, including emergency vehicles and recreational vehicles. These changes also would substantially shorten the pedestrian crossing distance at this location.

The raised area should be constructed to make it aesthetically appealing by using brick, concrete or asphalt that may be stamped with a pattern and/or colored. Natural materials,

such as cobblestone or brick, also can be considered. A driveway style approach should be constructed at either end of the apron to allow for safe vehicle undercarriage clearance and passage of emergency vehicles. Landscaped areas are shown in Figure 3-XX to frame the streetscape and act as traffic calming.

The other option presented at the open house included a curb extension without the raised approach or the landscaped area. While this alternative was supported, the additional features of other alternative were preferred by the open house participants.

Recommendation

- Based on the discussion above and input from the PAC and the general public, the changes shown in Figure 3-XX are recommended for implementation.

Left-Turn Lanes on U.S. 101

As discussed in Section 2, the need for left-turn lanes from U.S. 101 to the cross streets was analyzed as part of the review of existing and future conditions. This potential need has been raised before by the ODOT staff as well as by the recent city hall traffic studies. Based on the ODOT guidelines, left-turn lane criteria are satisfied at all U.S. 101 intersections in the study area (U.S. 101/North 3rd Avenue, U.S. 101/North 2nd Avenue, U.S. 101/South 2nd Avenue and U.S. 101/South 3rd Avenue) for northbound and southbound left-turning vehicles. The installation of turn lanes at each intersection would improve vehicle operations and keep through traffic moving on U.S. 101.

The addition of left-turn lanes in the study area would mean the removal of most of the on-street parking along U.S. 101 where turn lanes would be installed, including the recommended new parking areas. While vehicle mobility and safety are a goal of the city, on-street parking in the downtown core area is considered a higher priority because it is crucial for the economic success of the downtown area.

Recommendation

- Both the PAC and the open house participants strongly opposed adding left-turn lanes on U.S. 101. The existing two-lane configuration on U.S. 101 in the downtown core area should remain.
- If left-turn lanes are needed to address mobility or safety problems on U.S. 101, the possibility of locating them outside the downtown core area, while still providing access to key destinations, should be explored.

Special Transportation Area

The PAC and city staffs are interested in pursuing an STA designation on a portion of U.S. 101 in Rockaway Beach to better balance the needs of through traffic with local traffic and economic development. There are concerns that future changes to U.S. 101 could conflict with the city's goals of maintaining and enhancing the downtown area as an aesthetically appealing destination that functions well for pedestrians and bicyclists and is economically vibrant.

A tool developed and supported by the Oregon Transportation Commission, STAs are designated segments of state highways designed to make a downtown district function well when the state highway is also the community's main street. For example, an STA may have special features that result in lower speeds, narrower lane widths, and wider sidewalks on the state highway. As of May 2003, four STAs have been conditionally designated on district or regional highways in Oregon. To date, no STAs have been designated on statewide highways, such as U.S. 101. Although the STA designation process is under review by ODOT, designations on statewide highways require a detailed management plan and an agreement between the local jurisdiction and ODOT. Details of the STA management plan requirements are provided in the OHP.

Potential Benefits

- Provides greater flexibility for state highway standards, such as highway mobility, street spacing, signal spacing and street treatments. For example, highway mobility standards may allow for more congestion than on other urban highways.
- Receives ODOT approval up front, addresses exceptions early in the planning process and in writing
- Potential funding benefits—may help the community's main street (for example, U.S. 101) qualify for funds
- Provides certainty about how the highway will be managed

Potential Drawbacks

- Criteria and the process are exacting. They must be a good fit to the existing city conditions or the city must have future plans that would make it a good fit.
- It is a new program that has not yet been implemented on a statewide highway, such as U.S. 101.
- There may be other, easier ways to make the desired changes

Review of STA Characteristics

Table 3-1 provides a preliminary review of STA characteristics as they relate to Rockaway Beach. Because the STA requirements are complex and subject to interpretation, this analysis should be considered a starting point for the city to consider the value of pursuing an STA designation.

TABLE 3-1
Preliminary Review of STA Characteristics as They Relate to Rockaway Beach[1]

Characteristic	Is Characteristic Present Today or Likely in Future?	Notes
Location		
Must straddle a state highway; any new development to be built off the highway or only on one side	Maybe	Most existing development is on east side of U.S. 101. Would be stronger candidate for STA if development were on both sides.
Cannot be located on a freeway or expressway	Yes	U.S. 101 is a statewide highway and not a freeway or expressway.
Area has a majority, if not all, of STA attributes, either as existing or planned uses and infrastructure through an adopted plan	Maybe	Issues listed as "maybe" in this table would need to be resolved, such as through future plans.
STA does not apply to entire city	Yes	Proposed STA area would be in downtown core area such as South 3rd Avenue to North 3rd Avenue.
Traffic		
STA located in compact area with local street network to facilitate local auto and pedestrian circulation	Maybe	Development is relatively compact, but not entirely. Local street network provides moderate circulation off U.S. 101, but could be improved.
Traffic speeds are slow, generally 25 mph or less	Yes	Current posted speed on U.S. 101 in downtown area is 25 mph.
Identify strategies for addressing freight and through traffic including speed, possible signalization, parallel or other routes, actions elsewhere in the corridor	Maybe	Would need to study options for parallel routes to ensure adequate traffic capacity.
Design		
In STA area, there are mixed uses; buildings are close together	Maybe	There are mixed uses and buildings in the core area close together. However, development on the west side of U.S. 101 is limited.
Sidewalks have ample width and are adjacent to highway and buildings	Yes	Sidewalks on the east side have been widened. Improvements proposed in this plan would improve sidewalks and pedestrian circulation on the west side.
Public road connections are preferred over private driveways	Maybe	Access management is a key component of an STA. Some driveway closures might be required.
On-street parking or shared parking lots are located behind or to the side of buildings	Yes	There are no parking lots on U.S. 101 in front of buildings.
Streets are designed for ease of crossing by pedestrians	Yes	Improvements proposed in this plan would improve pedestrian crossing conditions.

[1] This section is based on the Special Transportation Area (STA) description in the Oregon Highway Plan. As of May 2003, the STA designation process is under review.

Recommendation

- Short-term: Because of the exacting requirements of the STA process and uncertainty as to whether the city could meet the requirements in a timely manner, the city should work to implement the contents of this plan without an STA designation.
- Long-term: To provide the city with greater certainty about the future management of U.S. 101 in Rockaway Beach, the city should explore an STA designation in Rockaway Beach. A first step toward accomplishing this would be to work with ODOT to develop an STA management plan according to the requirements in the OHP.

Miller Street

To further enhance pedestrian and bicycle circulation on the west side of U.S. 101, the consultant team explored changes to Miller Street between the State Recreation Area (wayside) and South 3rd Avenue. These include:

- A pedestrian/bicycle bridge over Rock Creek
- A new pedestrian/bicycle trail at the east end of the State Recreation Area (wayside) parking lot
- Redesigning Miller Street from South 1st Avenue to South 3rd Avenue as a "slow street"

Together these changes would provide a continuous pedestrian/bicycle route that provides access to and from the businesses on the east side of the highway and the ocean beach.

Rock Creek Biking/Walking Bridge

A bridge across Rock Creek would provide an important north-south connection for walkers and bicyclists in Rockaway Beach (see Figure 3-X). Currently, the creek interrupts Miller Street and people trespass on and across the Port of Tillamook Bay railroad tracks to continue north or south on Miller Street. The bridge would be at least 12 feet wide. It would connect to a new trail to the north that travels along the wayside parking lot.

[insert graphic]

New Biking/Walking Trail at Wayside Lot

To provide a continuous local bicycle and walking connection, a 12-foot-wide trail should be constructed that would connect the new Rock Creek Bridge and the beach via South 1st Avenue (see Figure 3-X). This would provide a connection to Miller Street, south of South 1st Avenue. Depending on its design, this trail could require the removal of two or three parking spaces in the wayside parking lot. As discussed in the Parking Estimates subsection, additional parking spaces could be created nearby.

[insert graphic]

Slow Street Concept: South 1st Avenue to South 3rd Avenue

The recommendation for Miller Street between South 1st and South 3rd Avenues is to transform it to a shared walking/biking/slow driving street (see Figure 3-XX). This concept

of a "slow street" is also known as a woonerf, a Dutch word that means "street for living." This would be accomplished by placing trees, planters, chicanes and parallel parking along the roadway. Vehicle traffic would continue to use the street, and the one-way southbound vehicular access and on-street parking on the west side of the street would be maintained.

A different roadway texture and color also should be used to signify that the street is a "slow street." Typically, pavers or stamped asphalt could be used in this context. To strengthen the identity of downtown Rockaway Beach, brick pavers could be used that match the ones used in the sidewalk on the east side of U.S. 101. With these features, the street maintains its function for vehicles, but also supports shared use with pedestrians and bicyclists.

A low barrier would be added between the east side of the street and the Port of Tillamook Bay railroad tracks to direct pedestrians to the street crossings and discourage them from crossing the tracks in other locations.

The new pedestrian-oriented Miller Street would provide an opportunity for a series of interpretive signs along the east side of Miller Street (between the street and the railroad). These signs could provide images and explanations about the history of Rockaway Beach, especially in relation to the railroad. This series of historical signs would provide an added attraction for visitors and residents.

[insert graphic]

Recommendation

- The three concepts above (Rock Creek biking/walking bridge, biking/walking trail through the wayside lot, and Miller Street "slow street" concept) were presented to the PAC and the open house participants and are recommended for implementation.
- Interpretive signs along the east side of Miller Street are recommended.

Pacific Street

To provide additional on-street parking options near the downtown core area, the consultant team developed four cross-section options for Pacific Street between South 1st Avenue and South 3rd Avenue. The cross sections assume a 60-foot right-of-way. The primary difference among the options is the provision of parallel or diagonal on-street parking, as follows:

- Option 1: parallel parking on west side, diagonal parking on east side
- Option 2: parallel parking on both sides
- Option 3: diagonal parking on west side, parallel parking on east side
- Option 4: diagonal parking on both sides

Based on review by the PAC and the open house participants, Option 3 was selected as the preferred cross section. The option would include space for diagonal parking on the west side of the street and parallel parking on the east side of the street (see Figure 3-XX). The mixture of diagonal and parallel parking was preferred because it provides more parking than is currently available, but it also strikes a balance with the other needs and uses of the

streets. Diagonal parking was preferred on the west side because this is similar to the existing condition and because it would have fewer conflicts with residential driveways.

The street would have 10-foot-wide travel lanes in each direction, 5-foot-wide sidewalks, and 3-foot-wide sidewalk buffers on each side. The sidewalk buffers could consist of vegetation and appropriate street trees (with roots that would not break up the concrete). The buffer would provide physical separation between the roadway and sidewalk, thereby creating a more pleasant pedestrian environment.

Recommendation

- Per the discussion above, Option 3 (two 10-foot-wide travel lanes, sidewalks on both sides, diagonal parking on the west side, parallel parking on the east side) is recommended.

Railroad Crossings

Sidewalks at least 6 feet wide should be provided along the primary access roads that cross the railroad tracks at locations where the slope of the sidewalk would not exceed 5 percent (or rise-to-run ratio of 1:20). This new sidewalk would require coordination with and approval by ODOT's rail division. Where grade differences exceed 5 percent, a ramp or bridge may be required (see Figure 3-XXX).

[insert graphic]

As identified in Section 2, the railroad crossings do not have gated crossings and have steep vertical approaches on the roadways. Current ODOT standards recommend that an improved grated rail crossing be installed to provide for safe crossing across rails. A technical field survey and preliminary engineering should be performed to identify if any of the three crossings could be reconstructed with a grated rail crossing.

Recommendation

- Provide sidewalks (and ADA-compliant ramp or bridge where required) on the three streets that cross the railroad. Further investigate whether any of the three can be reconstructed with a gated rail crossing.

Parking Estimates

At the request of the city staff, the recommendations in the plan were reviewed to determine how they would affect parking in the downtown area (see Table 3-2). As part of this effort, the city staff suggested several locations where additional parking could be created. Table 3-2 indicates that although some of the recommendations would result in a loss of parking, others would create additional parking. The net change (with the addition of new parking areas) is an increase of approximately 73 parking spaces.

The parking estimates are based on approximate block length, with subtractions for driveways or other areas inappropriate for parking. The estimates assume standard parking dimensions (20-foot length for parallel parking space; 14-foot length for diagonal).

Additional information on parking in the downtown area is the 2002 city hall traffic report prepared by CTS Engineers.

TABLE 3-2
Estimate of Existing and Proposed Parking Spaces[1]

	Existing Parking Spaces		Proposed Parking Spaces		
Location	Estimated Number	Type	Estimated Number	Type	Notes
West side of U.S. 101 (North 3rd Avenue to Nehalem Avenue)	25	Parallel informal (unmarked)	22	Parallel (marked) with curb extensions	Loss of three spaces because of addition of curb extensions, which are integral part of pedestrian improvements.
West side of U.S. 101 (Nehalem Avenue to South 2nd Avenue)	36	Diagonal	22	Parallel (marked) with curb extensions	Loss of 11 spaces because of change from diagonal to parallel and 3 spaces from addition of curb extensions.
West side of U.S. 101 (South 2nd Avenue to South 3rd Avenue)	8	Parallel (unmarked)	6	Parallel (marked) with curb extensions	Loss of two spaces because of addition of curb extensions.
Pacific Street (South 1st Avenue to South 3rd Avenue)	88	Some parallel, some diagonal (unmarked)	106	Parallel on east side, diagonal on west side (marked)	Estimated addition of 18 spaces because of change from parallel to diagonal. Would require funds to pave and improve street.
Miller Street (South 1st Avenue to South 3rd Avenue)	48	Parallel on west side	40	Parallel on west side with landscaping islands	Loss of eight spaces because of addition of landscaping islands. Construct only after additional parking has been created elsewhere.
South 2nd Ave (U.S. 101 to Beacon Street)	6	Diagonal	4	Parallel	Loss of two spaces because of safety improvements at Anchor Street/U.S. 101 intersection.
Anchor Street (South 2nd Avenue to South 3rd Avenue)	25	Parallel, assume one side only (unmarked)	37	Parallel (two sides)	Estimated addition of 12 spaces by marking parallel parking on both sides of street (accounts for driveways). Low cost.
South Beacon Street (South 2nd Avenue to South 3rd Avenue)	0	(Unimproved street)	40	Parallel (west side only)	Unimproved street with 40-foot right-of-way. Consider one-way traffic northbound on Beacon Street.
Construct new parking lot at police station site after civic center constructed.	0	(Occupied by Police Station)	28	Parking lot	Estimate is from CTS Engineers city hall study.
South 2nd Avenue west of railroad tracks	12	Parallel (unmarked)	16	Diagonal	Addition of four spaces because of conversion from parallel to diagonal. Low cost.
Total Estimated Spaces	**248**		**321**		**Net increase of 73 spaces (estimated)**

[1] Estimates are based on block length, with subtractions for driveways. Assumes standard parking dimensions (20-foot length for parallel parking space; 14-foot length for diagonal).

Evaluation Criteria and Results

As part of the alternatives development and review process, both the draft and preferred alternatives were qualitatively evaluated using criteria based on the plan goals and objectives (see Section 1). The criteria were developed by the consulting team, PMT and PAC.

The purpose of the evaluation was to document the features of the alternatives considered and to ensure that the recommended alternatives were consistent with the plan goals and objectives. Table 3-3 presents the evaluation criteria and results.

Implementation

Construction Cost Estimates

Costs to construct the various projects were estimated at a planning level (see Table 3-4). Based on the conceptual design of each project, a 60 percent contingency has been included in the estimate to account for potential unknowns typically identified during preliminary and final design. The estimates do not include right-of-way, major structures (for example, retaining walls), engineering, wetland or utility relocation costs.

TABLE 3-4
Cost Estimates

Project	Additional Assumptions	Estimated Cost
U.S. 101: Add parking, sidewalk and crossing barrier wall to west side (North 3rd Avenue to South 3rd Avenue).	Assumes project is 2,100 feet long = 0.40 mile. Project is asphalt overlay and new roadway to include two 12-foot-wide lanes, parallel parking on west side (new), 6-foot-wide shoulder on both sides. Includes 0.4 mile of landscaping with pedestrian protection along railroad. Includes curb, 6-foot-wide sidewalk and drainage on both sides of the road.	$1.15 million
U.S. 101/South 2nd Avenue/Anchor Street Intersection: Reconstruct intersection per plan.	Assumes intersection reconfiguration and partial reconstruction. Raised decorative pavement on Anchor Street with landscaping on both sides. Extend sidewalk and curb on south side of intersection to narrow entrance throat.	$120,000
Miller Street: Bridge over Rock Creek, pedestrian/bicycle path across wayside parking lot, "slow street" from South 1st Avenue to South 3rd Avenue.	Assumes project is 1,300 feet long = 0.25 mile. Project is decorative pavement roadway reconstruction to include 20 feet of pavement width, parallel parking on one side, shared bike/ped/vehicle facility. Pedestrian protection along railroad. Includes 0.28 mile of landscaping. Includes curb, 5-foot-wide sidewalk and drainage on both sides of the road. (Bridge = $42,000; trail = $6,000; "slow street" = $862,000.)	$910,000
Pacific Street: Reconstruct from South 1st Avenue to South 3rd Avenue to include diagonal parking on the west side, parallel parking on the east side and sidewalks on both sides.	Assumes project is 1,300 feet long = 0.25 mile. Project is asphalt overlay and new roadway to include two 10-foot-wide lanes, parallel parking on one side, diagonal parking on opposite side, no bike lanes. Includes 0.25 mile of landscaping. Includes curb, 5-foot-wide sidewalk and drainage on both sides of the road.	$900,000

U.S. 101

- West side sidewalk and parking
- U.S. 101/South 2nd Avenue/Anchor Street intersection

Miller Street

- Provide bridge over Rock Creek, pedestrian/bicycle path across State Recreation Area (wayside) parking lot, transform Miller Street to a "slow street" where pedestrians and bicyclists share the road with vehicles:

Pacific Street

- Reconstruct Pacific Street to include diagonal parking on the west side and parallel parking on the east side, and sidewalks on both sides.

Funding

A variety of local, state, and federal funding sources can be used to improve the transportation system. Most of the federal and state programs are competitive, and involve clear documentation of the project need, costs and benefits. Local funding for the projects in this transportation plan typically would come from the city, Tillamook County and/or potential future bond or other local revenues. Other local funding sources might include grants and private funds.

Table 3-5 summarizes some potential public funding sources for Rockaway Beach's pedestrian, bicycle and roadway improvements. Some of these funds are restricted to the type of improvements that qualify for assistance. Typically, state and federal funds require projects to comply with current ADA guidelines for accessibility.

It is recommended that Rockaway Beach explore an application to the Oregon Pedestrian and Bicycle Program for the Miller Street "slow street" project. It is also recommended that the city apply to the State Recreational Trails program for the Wayside Trail and Rock Creek Bridge. However, the city will need to find additional local funding to design the trail, because the funding is dedicated to construction. The state Transportation Enhancements Program (part of the federal TEA-21 legislation) also may be a source for a package of improvements that could include Miller Street, the trail, Pacific Street and U.S. 101. If these applications are unsuccessful, the city should consider local funds through bonds or other revenue.

TABLE 3-5
Potential Funding Sources

Source	Description	Eligible Projects	Funding Cycle
Oregon State Transportation Improvement Program (STIP)	Administered by Oregon Department of Transportation (ODOT). The STIP provides funding for capital improvements on federal, state, county and city transportation systems. Projects must be regionally significant.	Roadway, public transportation, bicycle, pedestrian, air, freight, bridge	4 Years
Oregon Transportation Investment Act (OTIA)	Passed by the 2001 Oregon legislature. Projects were selected with extensive input from local communities and other stakeholders. Projects must be regionally significant.	Pavement conditions, lane capacity, bridges	N/A
Transportation Enhancements	Must serve transportation need.	Bike/pedestrian/trail	2 Years

TABLE 3-5
Potential Funding Sources

Source	Description	Eligible Projects	Funding Cycle
Oregon Bike/Pedestrian Grants	Administered by ODOT's Pedestrian and Bicycle Program. Must be in public right-of-way.	Bike/pedestrian	2 Years
System Development Charges (SDCs)	Fees on new construction allocated for parks, streets and public improvements. Where available, funds can be used for right-of-way acquisition and trail construction.	Bike/pedestrian/ roadway	Varies
Local/county bond measures approved by voters	Funds can be used for right-of-way acquisition, engineering, design and construction.	Bike/pedestrian/ roadway	Varies
Local Improvement Districts	Districts typically are created by local property owners, imposing a "new tax" to fund improvements. Funds can be used for right-of-way acquisition and construction.	Bike/pedestrian/ roadway	Varies
State Parks Recreational Trails Fund	Construction funds for trail projects	Off-roadway bike/ pedestrian	Annual
Beach Access Fund	Construction funds for beach access improvements	Beach access	Varies

TSP Exemption

Cities in Oregon are required under the state Transportation Planning Rule (TPR) to prepare and periodically update a transportation system plan (TSP). Because Rockaway Beach has not had the need or opportunity to conduct a full TSP and because this downtown transportation plan fulfills only some of the TPR requirements, documentation to aid in the city in requesting a TSP exemption from the state has been prepared as part of this plan and provided to the city.