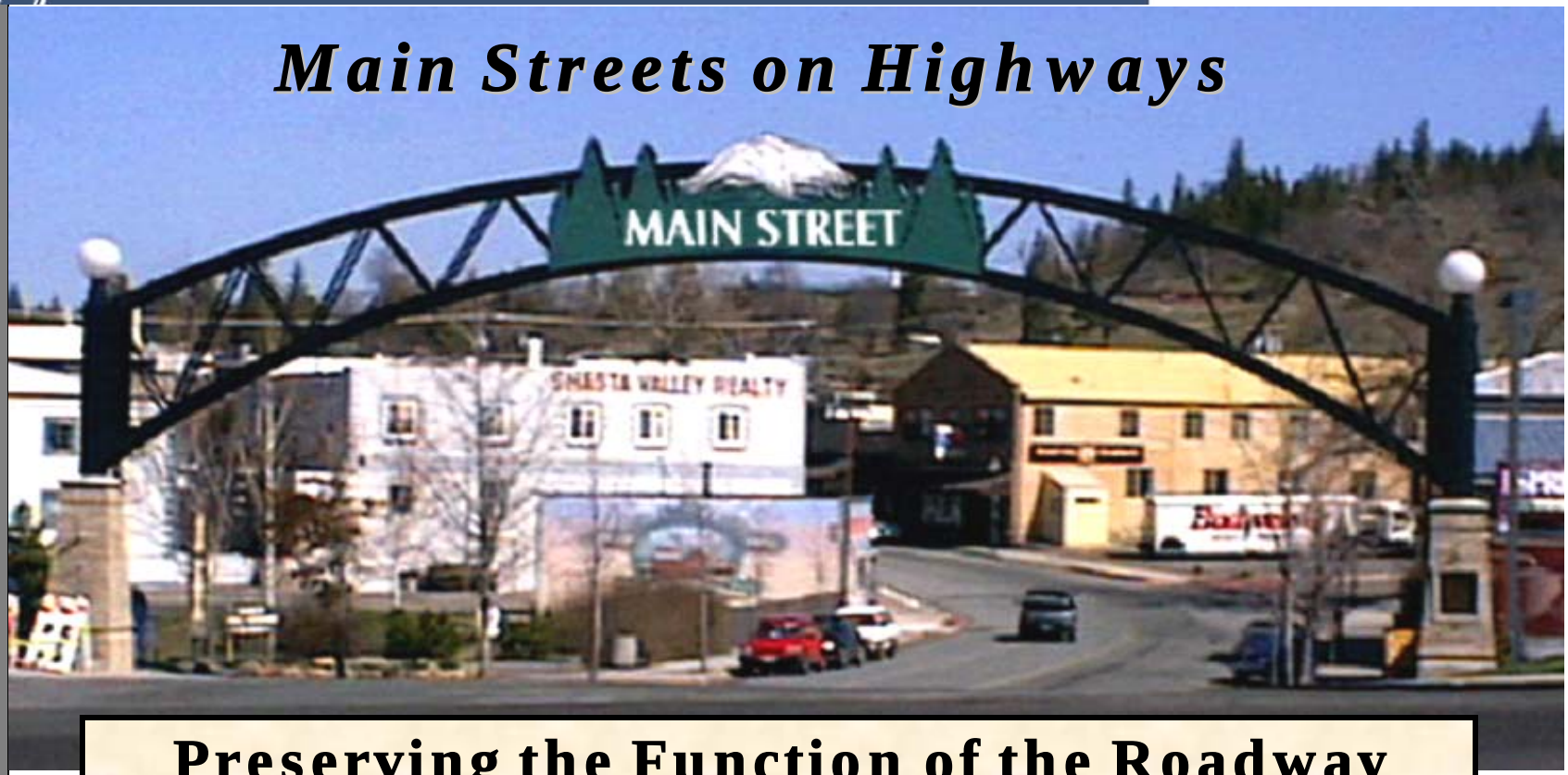
Oregon Department of Transportation

Main Streets on Highways



Preserving the Function of the Roadway While Respecting Local Vision

Presenters

Harold Lasley, P.E., Program Mgr.

Tracy White, Planner

7th TRB Conference on Access Management

Oregon Transportation Planning & Policy Framework for Main Street Highways

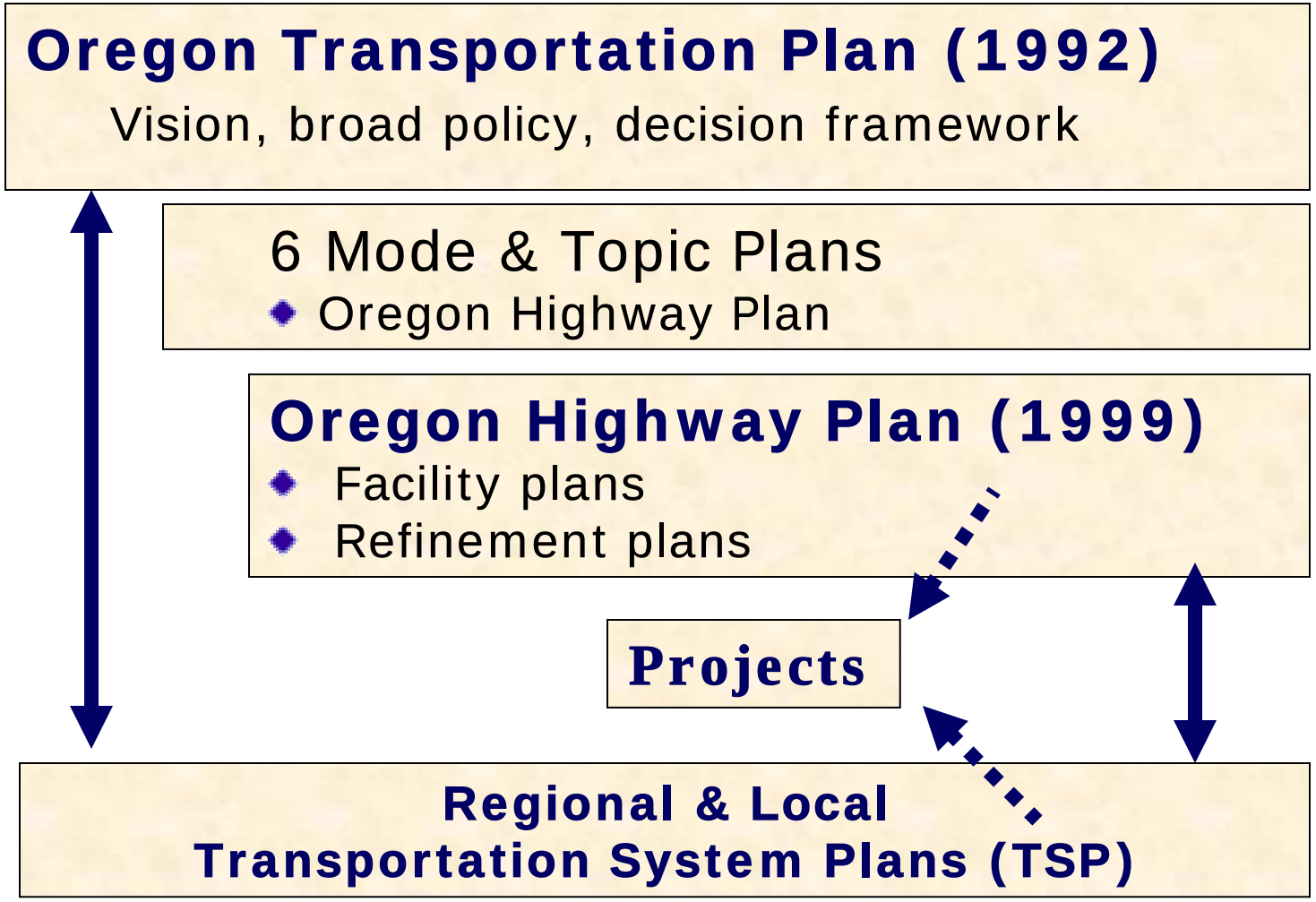
Special Transportation Area (STA) urban highway segment designation

- ODOT's way to recognize certain highway segments as 'Main Streets'
  - The primary highway management objective is access to community activities, businesses, residences
  - Safe and convenient pedestrian, bicycle, and transit movement along and across a highway

Overview

- Oregon Transportation Plan (1992)
- Oregon Highway Plan (1999)
  - Key policies
- Special Transportation Areas
  - Sidewalk & roadway design features

Integrated Transportation Planning



Oregon Highway Plan (1999)

Key provisions for Main Street highways

- Inter-governmental partnerships
- Land use & transportation integration
  - Urban highway segment designations
- Access & mobility standards

Oregon Highway Plan (1999)
Inter-agency partnerships

- Local governments are responsible for land use & the local transportation system
- ODOT is responsible for developing and maintaining the state highway system
- ODOT, regional, and local governments must work together to achieve access and mobility goals for a balanced, inter-connected transportation system

Oregon Highway Plan (1999)

Land use and transportation

Oregon statewide planning goals and laws recognize many transportation benefits of compact urban development patterns:

- Increase opportunities to walk and bike
- Increase opportunities to develop transit
- Increase local road connectivity
- Reduce vehicle trip length
- Reduce local trips on the highway
- Reduce overall cost of public infrastructure

Oregon Highway Plan (1999)

Land use and transportation

Urban highway segment designations

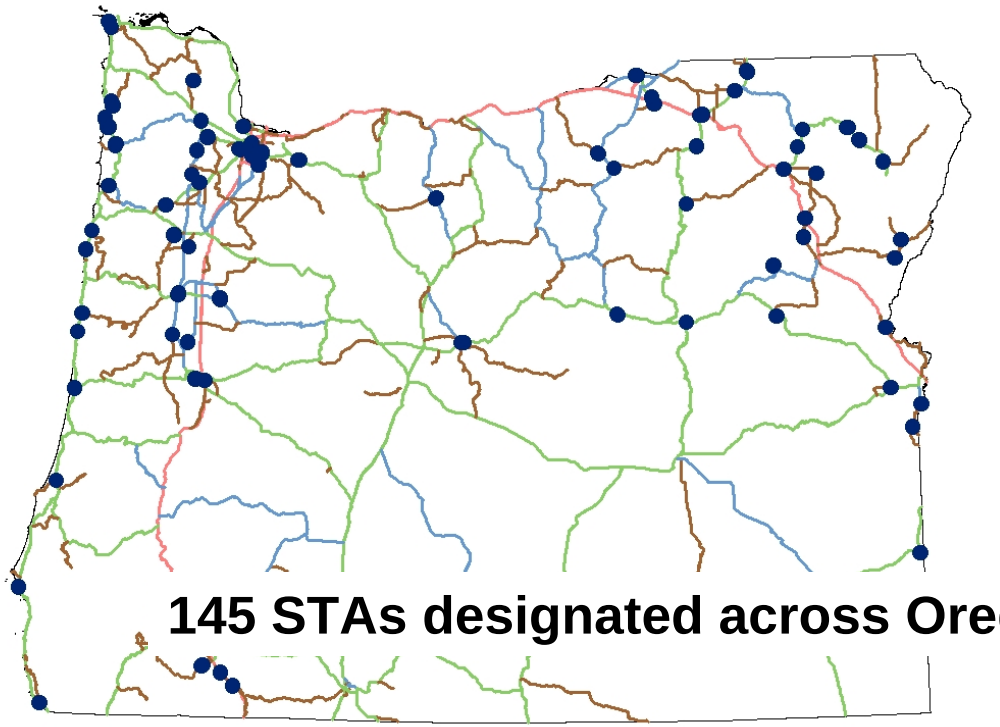
- A policy framework to achieve compact urban form
- Integrates land use, alternative modes, traffic management, & access management
- Fosters inter-agency partnership and collaboration
- Allows ODOT flexibility to use special highway design standards

Oregon Highway Plan (1999)
Balancing Access and Mobility

- The balance between access and mobility is based on highway function and management priorities
- Special Transportation Area highway designation allows the balance to shift
  - away from motor vehicle access and mobility
  - toward improved access and convenience for alternative modes

Urban highway segment designation

Special Transportation Area (STA)



Legend

- STA
- Interstate Hwy
- Statewide Hwy
- Regional Hwy
- District Hwy
- State Boundary

OREGON DEPARTMENT OF TRANSPORTATION

Special Transportation Areas

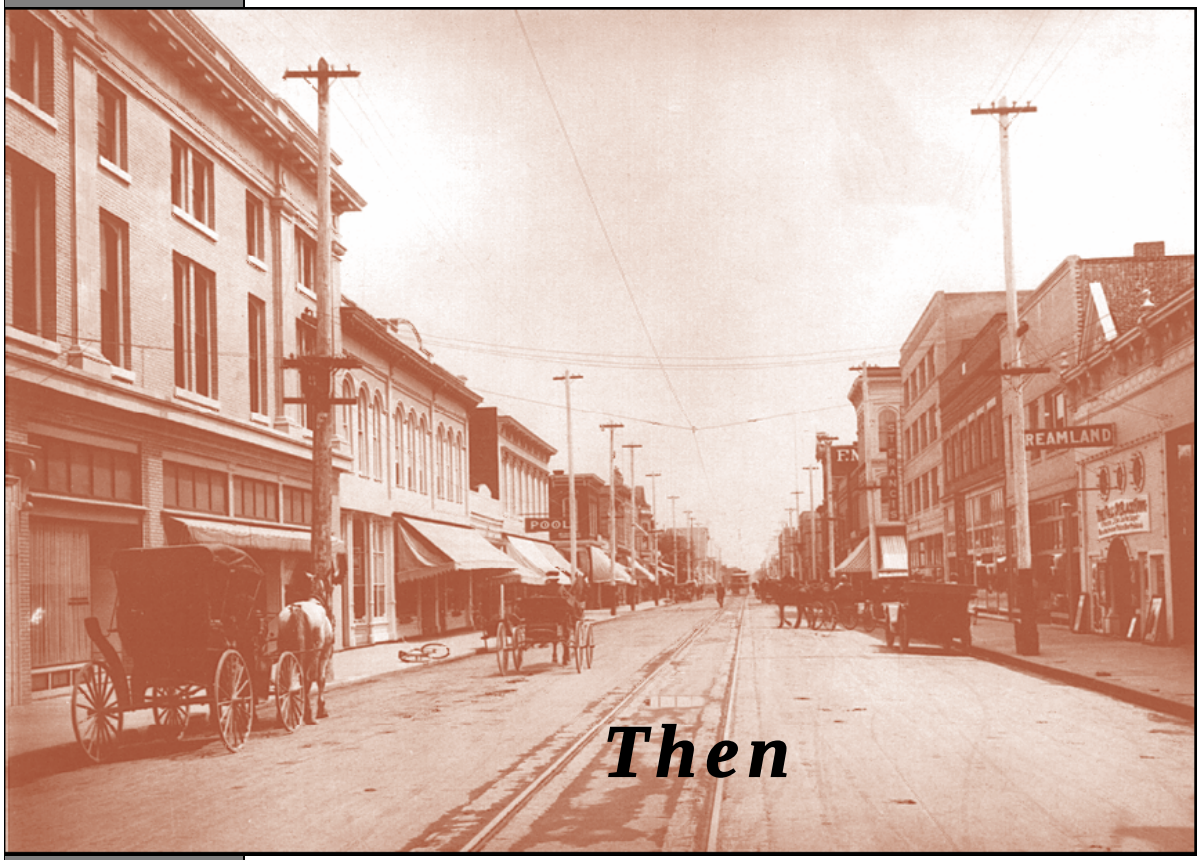
145 STAs Designated

0 10 20 40 60 80 100
Miles
0 25 50 100 150
Kilometers

File

Date

Historic Main Street



Center of civic & social life

Central business district and commercial center

Characteristics:

- Pedestrian friendly
- City block pattern
- Mix of uses
- Buildings close to street
- Wide sidewalks
- On-street parking

Main Street Today

- Some Main Streets kept their character
- Others were lost to strip development, parking lots, and expanded highways
- Communities want to revitalize Main Street
- New or expanded Main Streets are the focus of new compact, urban development

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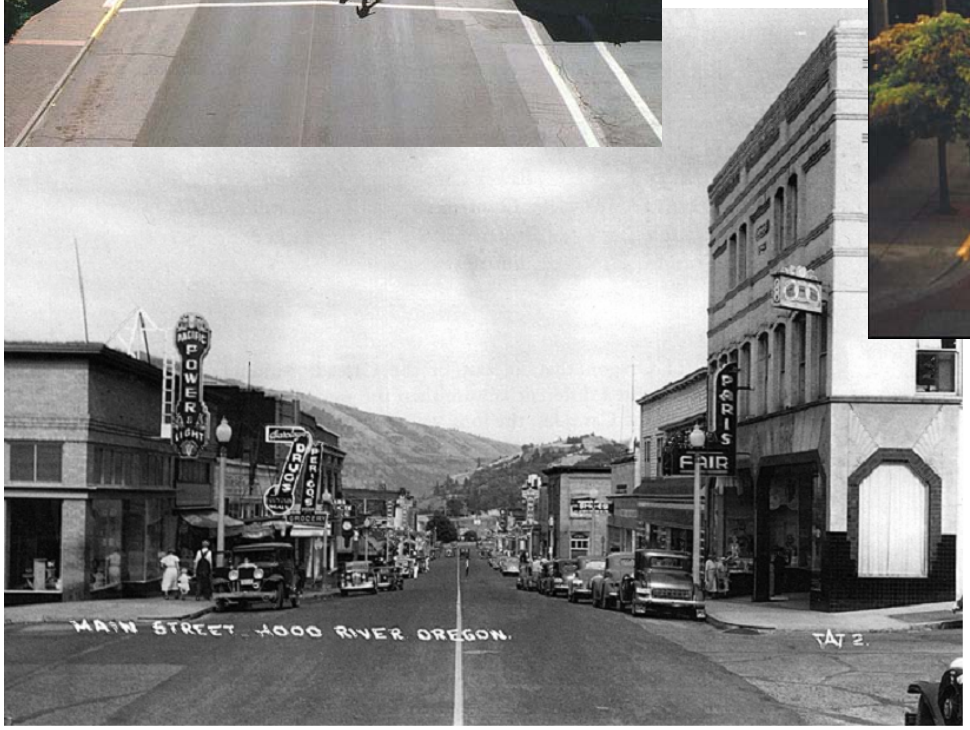
Urban highway segment designation

Special Transportation Area (STA)



Traditional Main Street

Oregon Department of Transportation

When Main Street is a Highway

The challenge is to balance community access with the need for through traffic flow

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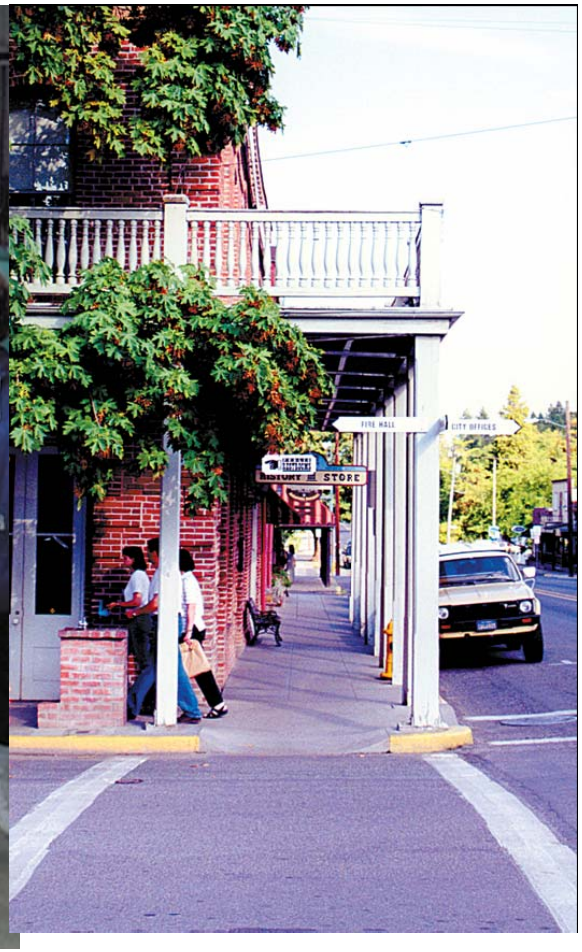
Special Transportation Area (STA)

Sidewalk and Roadway Design



Main Streets have many uses other than transportation

Special Transportation Area (STA)

Design for pedestrian access & comfort

- Wide sidewalks
- Curb extensions
- Curbs & ramps
- Street trees
- Street furniture
- Patterned crosswalk

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Special Transportation Area (STA)

Design for pedestrian access & comfort

- Narrow travel lanes
- Pedestrian refuges
- Landscaped medians
- Bike lanes
- On-street parking

Special Transportation Area (STA)

Design for pedestrian access & comfort

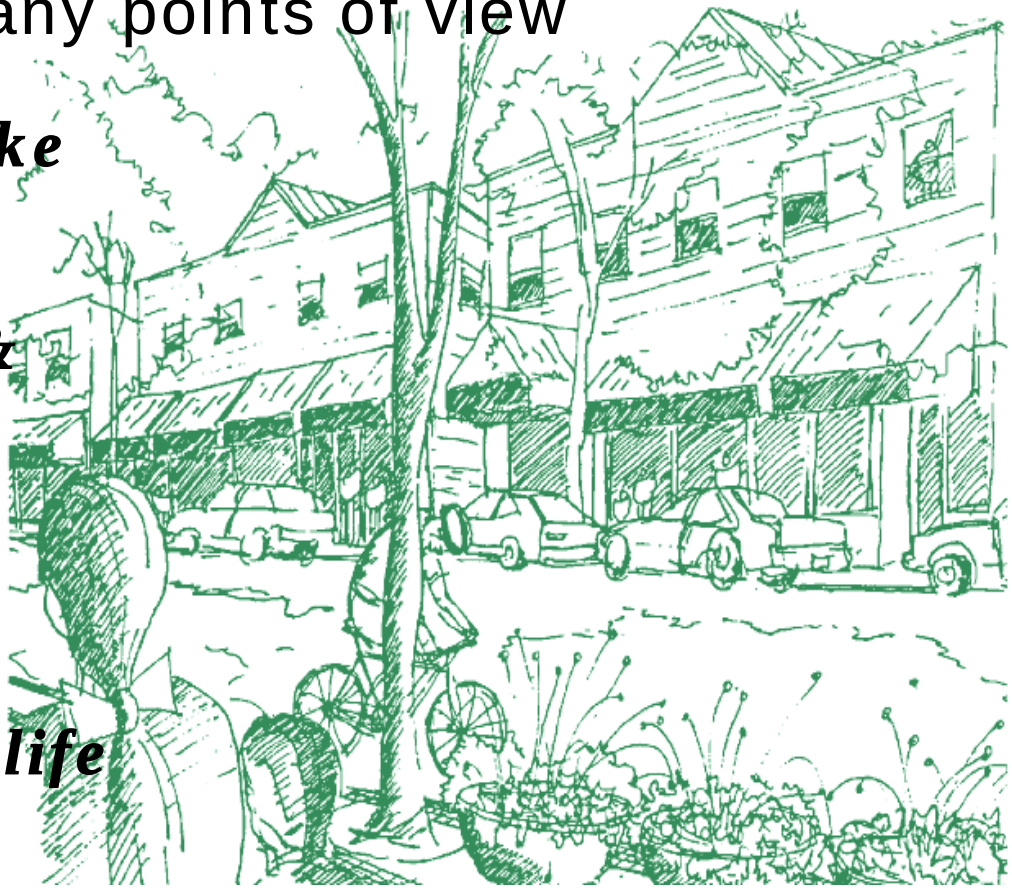
- Improve aesthetic appearance of street
- Slow down traffic

Special Transportation Area (STA)

Policy and design framework

Foster partnerships and collaboration with local communities so that Main Street is attractive and works from many points of view

- ***Pedestrian & bike safety & activity***
- ***Slow, smooth, & safe traffic flow***
- ***Community economic vitality***
- ***High quality of life***



Oregon Department of Transportation

Highway Design Manual
1993 – 2003

A Decade of Evolving 4R Urban Roadway Design Standards

General Design Philosophy

1993 HDM	**No overarching urban design "philosophy" articulated**
	- Brief section on urban highway design and analysis - General guidance on "special design elements" such as sidewalks, bike lanes, medians, and on-street parking.
	"Through traffic movements and bus routes are deliberately discouraged on local streets."
1996 HDM	**No change**
2003 HDM	**Major chapter on "Urban Highway Design" to implement 1999 OHP**
	- Overarching philosophy to "…balance needs of autos, trucks, transit, bicyclists, and pedestrians…."

	- Urban design chapter focuses on expressways, arterials, and highway segments (STA, CC, UBA)
	  - Standards, characteristics, function, and general design philosophy for each
	  - Section 8.4 covers STA

	"Main Street – When a Highway Runs Through It" published as a complement to the OHP and resource for HDM

Urban Highway Classifications

1993 HDM	**Freeway, arterial, collector, local route**
	- Subcategories (i.e. principal, minor)
1996 HDM	**No change**

2003 HDM	**Incorporate 1999 OHP highway classification system and highway segment designations**
	- Interstate (NHS), Statewide (NHS), Regional, District, Local Interest Road
	- Highway Segments
	  - Special Transportation Area (STA
	  - Urban Business Area (UBA)
	  - Commercial Center (CC)
	Section on "Non-Designated Urban Highways" cover facilities that are not STA, UBA, or CC.
	
	Also use previous terms to describe highway forms (i.e. arterial, collector, local route)

Mobility/Capacity Standards

1993 HDM	**Traffic analysis for design based on existing DHV projected 20 years**
	Design based on "ideal" capacity for prototypes with application of adjustment factors (i.e. trucks, terrain)
1996 HDM	**No change**
2003 HDM	**STA volume/capacity standard** • 0.85 – 0.95 based on highway classification (0.65 – 0.85 on non-STA urban highways, based on classification)

Lane Width

1993 HDM	**10'-12' based on ADT, design speed, and truck volume**
1996 HDM	**No change**
2003 HDM	**STA Standards**
	• 10'-12' (11' preferred)
	• 11' min. required on NHS route

Parking

1993 HDM	**On-street parking may be provided where appropriate or required** ☞ 8-10’ min. width
1996 HDM	**No change**
2003 HDM	**In STA, on-street parking should be included whenever possible**
	☞ 7’ for parking only
	☞ 12’ for combined parking and bicycle lane (preferred)
	Specific approval criteria for *diagonal* parking, although discouraged

Access/Road Approaches

1993 HDM	**No adopted spacing standards for driveway or public street connections** - Standards/guidelines for related design elements - Drainage, turning radius, sight distance, undesirable locations, profile
	Guidelines for acquisition of access control based on highway classification - Vary from full access control for freeways to no access control on local streets
1996 HDM	**No change**
2003 HDM	**STA Spacing Standards**
	For public road approaches = the existing city block spacing or the city block spacing as identified in the local comprehensive plan
	Private land access discouraged in favor of frequent connections to public roads
	Where driveways allowed and land use patterns permit, minimum spacing for driveways is 175' or mid-block if current city block spacing <350 feet

Pedestrian Facilities

1993 HDM	**Sidewalks, where appropriate or required**
	6' minimum; 5' min. for low volume Additional width for high volumes, wheelchairs, or to meet needs of adjacent development or local codes
	Consider **buffer of planted strip (2' min.) in high traffic areas or to place utility poles, signs, mailboxes, etc.**
1996 HDM	**Planted buffer strip increased to 3' min.**
2003 HDM	**Full chapter on "Pedestrian & Bicycle" facilities**
	"Adequate pedestrian facilities critical to vitality of STA."
	Sidewalks 10' standard with at least 6' clear walking path Consider greater width where right of way is available
	Buffer *strongly* recommended; 4' min. May consist of on-street parking, tree wells, planter boxes, or other amenities

Crosswalks

1993 HDM	**Marked crosswalks *should be kept to a minimum* and located at signalized intersections and established school crossings** - Crossing should be near enough to permit full benefit from traffic control devices - Lighting may be installed if justified by traffic investigation
1996 HDM	**No change except deleted "Marked crosswalks should be kept to a minimum"**
2003 HDM	**In <u>STA</u>** - All public road connections should allow crossings at each leg; marked crosswalks at all signalized intersections. - Use curb extensions, channelization, median islands to reduce crossing distance and improve visibility and safety - Consider mid-block crossings to enhance *pedestrian* mobility and circulation

Bikeways/Lanes/Paths

1993 HDM	**Types: shared roadway, shoulder, bike lane, bike path** - 14' travel lane preferred for shared roadway
	Bike lanes appropriate where bike *and* motor vehicle use is high - 6' standard; 5' min. against barrier curb or parking - 4' min. on open shoulder
1996 HDM	**Oregon Bicycle & Pedestrian Plan (1995) provides expanded reference for standards and guidelines**
2003 HDM	**In STA** - 5' min. shared shoulder/bike lane where installation will not reduce sidewalk width below 10'
	Oregon Bicycle & Pedestrian Plan (1995) provides expanded reference for standards and guidelines

Medians

1993 HDM	**Primarily used to separate opposing traffic** - Need and design dictated primarily by traffic safety and operations - 2'-4' min. width - 12'-14' desirable for turn lanes and CTWLTL
1996 HDM	**Changed to 4' min. and 12' desirable**
2003 HDM	**Raised curb medians may be used to improve pedestrian crossing and general mobility** - 4' min., 6' standard, 8' preferred
	Pedestrian medians may be used for mid-block crossings
	CTWLTL should be avoided

Traffic Calming

1993 HDM	**Not mentioned**
1996 HDM	**No change**
2003 HDM	**Section on Traffic Calming added**
	Guidelines include use of - curb extensions - on-street parking - trees, landscaping - raised medians - lighting - hanging baskets - raised planters

STA Cost Per 500' Block

PROJECT TYPE	LANES	BASE ROADWAY COST	A	B	C	D	TOTAL
PAVING + MUST DO	2	37K	70K	80K	110K	90K	$387K
	4	47K	70K	80K	110K	90K	$397K

A. Amenities (Street Furn., Plantings, Kiosks, Signs, Etc.) ($70,000)

B. Curb & Sidewalk, Bulb outs, Medians, Etc. ($80,000)

C. Decorative Lighting, Lamps, Posts, Etc. ($110,000)

D. Underground Utilities ($90,000)

STA Cost Per 500' Block

PROJECT TYPE	LANES	BASE ROADWAY COST	A	B	C	D	TOTAL
PAVING + MUST DO + CROWN PAVING + DRAINAGE + UTILITY ADJUST.	2	125K	70K	80K	110K	90K	$475K
	4	145K	70K	80K	110K	90K	$495K

A. Amenities (Street Furn., Plantings, Kiosks, Signs, Etc.) ($70,000)

B. Curb & Sidewalk, Bulb outs, Medians, Etc. ($80,000)

C. Decorative Lighting, Lamps, Posts, Etc. ($110,000)

D. Underground Utilities ($90,000)

STA Cost Per 500' Block

PROJECT TYPE	LANES	BASE ROADWAY COST	A	B	C	D	TOTAL
FULL DEPTH RECON-STRUCT W/ CURB, SIDEWALK, BULB OUTS, ETC.	2	305K	70K	80K	110K	90K	$575K
	4	370K	70K	80K	110K	90K	$640K

A. Amenities (Street Furn., Plantings, Kiosks, Signs, Etc.) ($70,000)

B. Curb & Sidewalk, Bulb outs, Medians, Etc. ($80,000)

C. Decorative Lighting, Lamps, Posts, Etc. ($110,000)

D. Underground Utilities ($90,000)

Two STA Project Examples

- *Lincoln City (Taft)*
- *Milwaukie*

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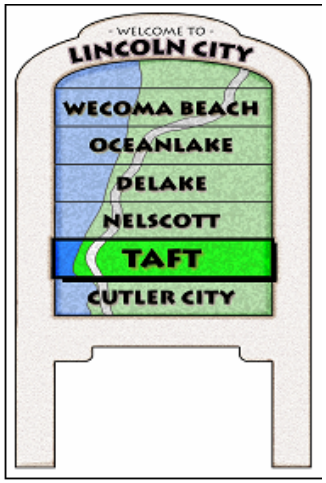
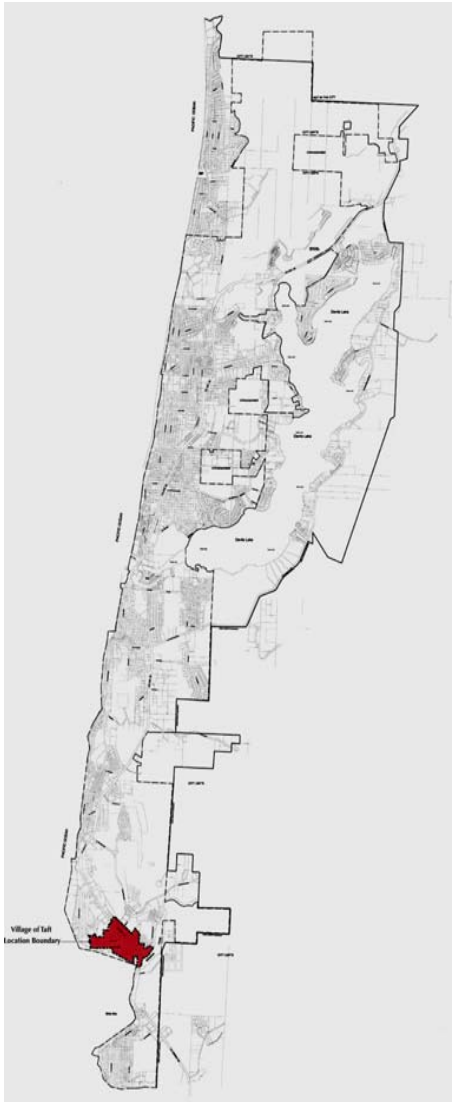
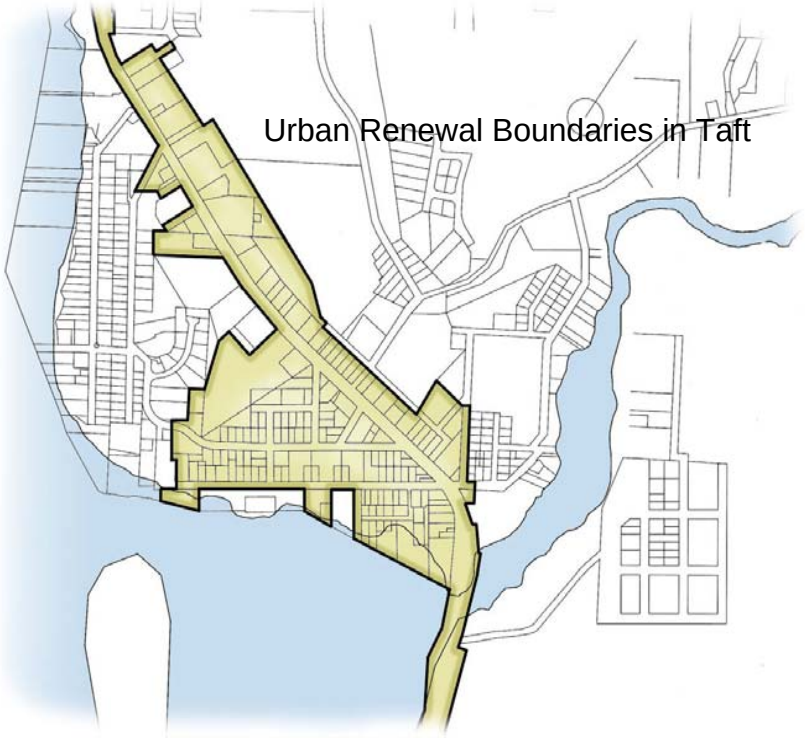
Lincoln City, OR – Taft Village
US Highway 101

Taft Village Background







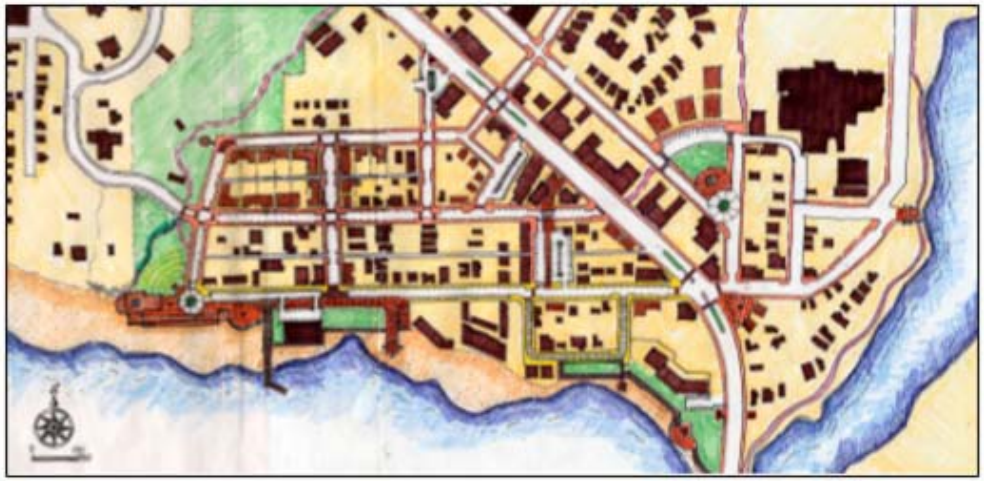
Taft Village Historical Main Street

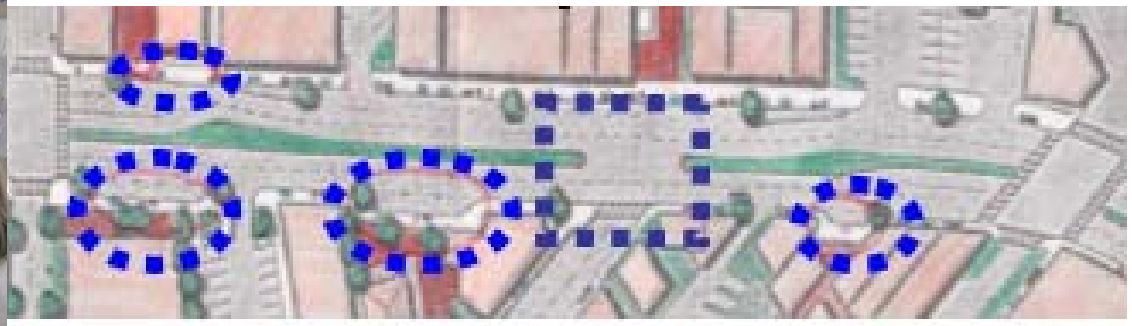
Then

Now

Oregon Department of Transportation

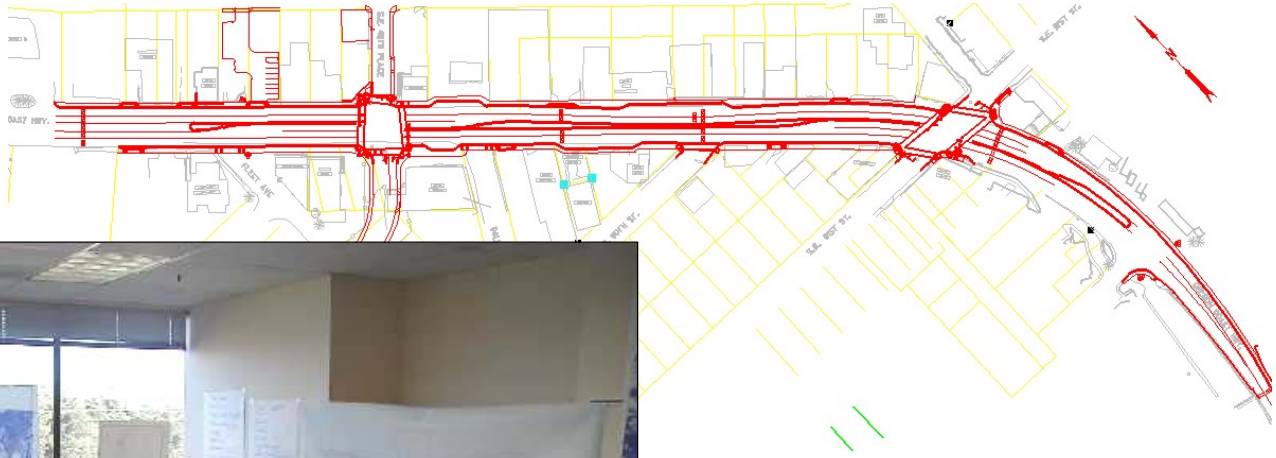
Taft Community Planning & Design Charrett Process

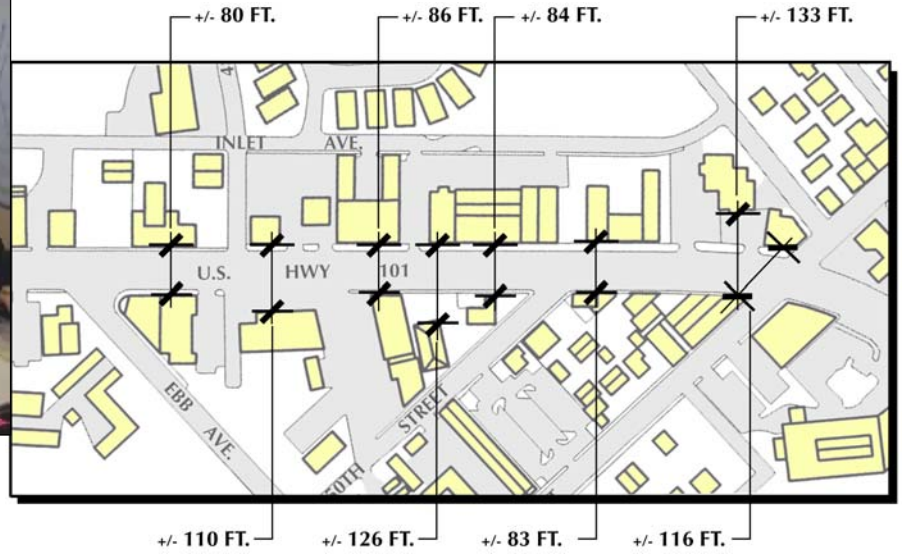




Oregon Department of Transportation

Taft Community Planning & Design Charrett Process





Taft Village – STA Designation

Highway 101 before project construction

- Principle urban arterial
- NHS - Statewide highway

- 2002 ADT = 16-23K
- 2015 Design ADT = 28-32K
- 8% truck traffic

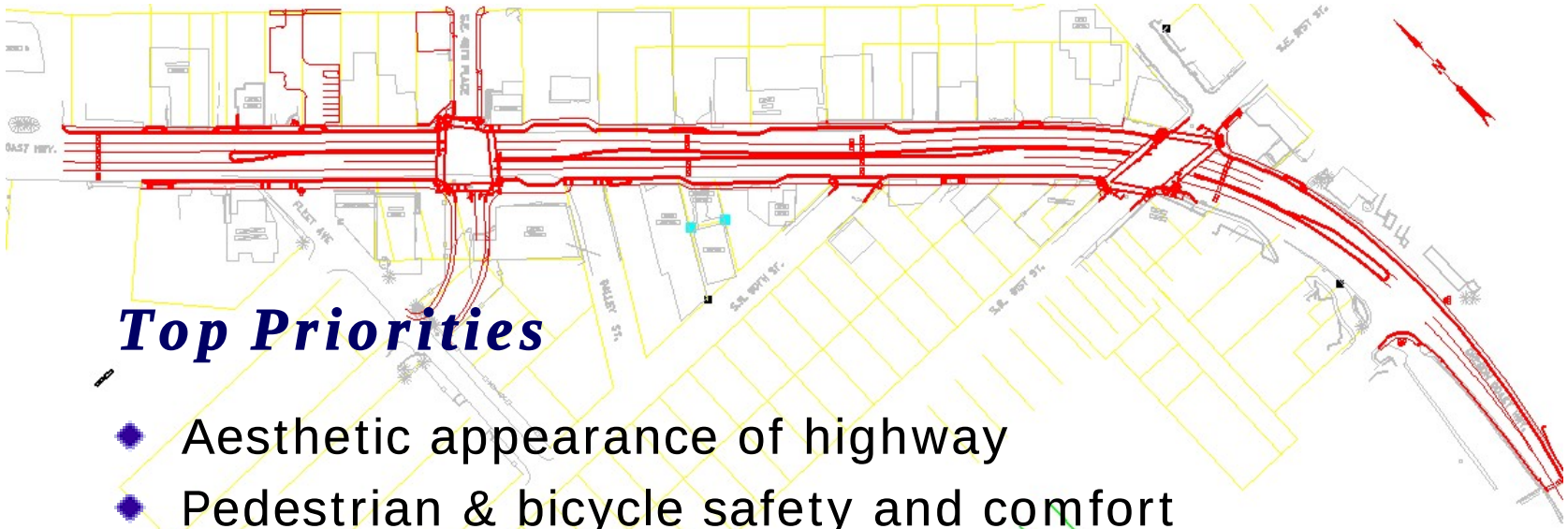
- Design speed = 25 mph
- Posted speed = 30 mph
- Actual speed = 45 mph

- 80-85 ft R/W
- 60-ft cross-section
- 4, 12-ft lanes
- On-street parking
- No left turn lanes
- Discontinuous sidewalks

- 20 crashes 1996-2000

Highway 101 before project construction

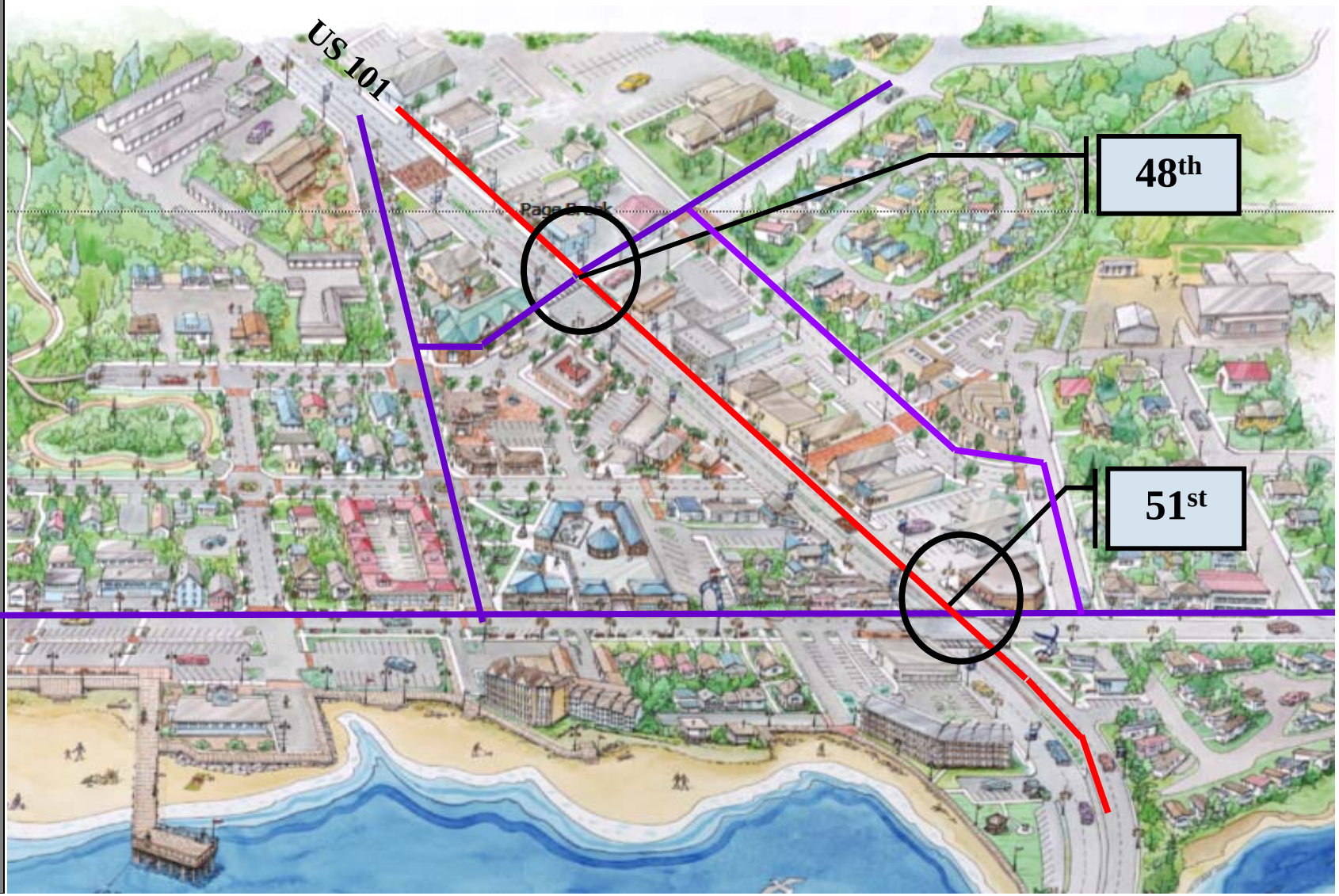
Shared City & ODOT Project Objectives



Top Priorities

- Aesthetic appearance of highway
- Pedestrian & bicycle safety and comfort
- Queues and delays at intersections
- Access management
- Traffic signal improvements & synchronization
- Bottleneck lane configuration and congestion
- On-street parking along Hwy 101
- Local street connectivity

Highway 101 improvements focused between 48th and 51st in the STA highway segment



Highway 101 after project construction

- 50-ft cross section
- 11-ft inside lanes
- 14-ft outside shared bike lanes
- New & upgraded signals
- Protected left turns
- Left turn pockets
- Landscaped medians
- Pedestrian refuges
- Recessed on-street parking
- New curb & sidewalk

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Highway 101
Access & Circulation Improvements

14-ft outside shared bike lanes
11-ft inside lanes

Landscaped median

Curb & sidewalk
Recessed parking

Left turn lane

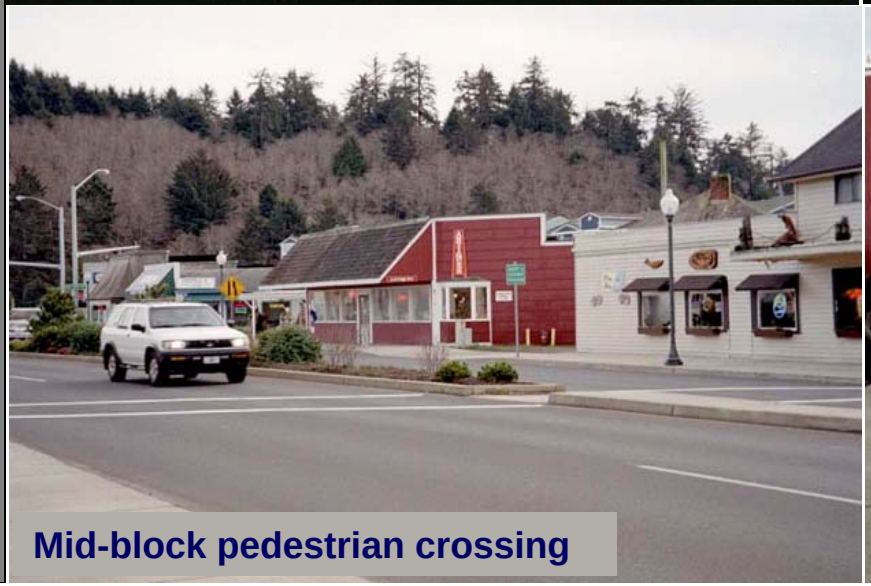
Oregon Department of Transportation

Highway 101

Access & Circulation Improvements

Street furniture

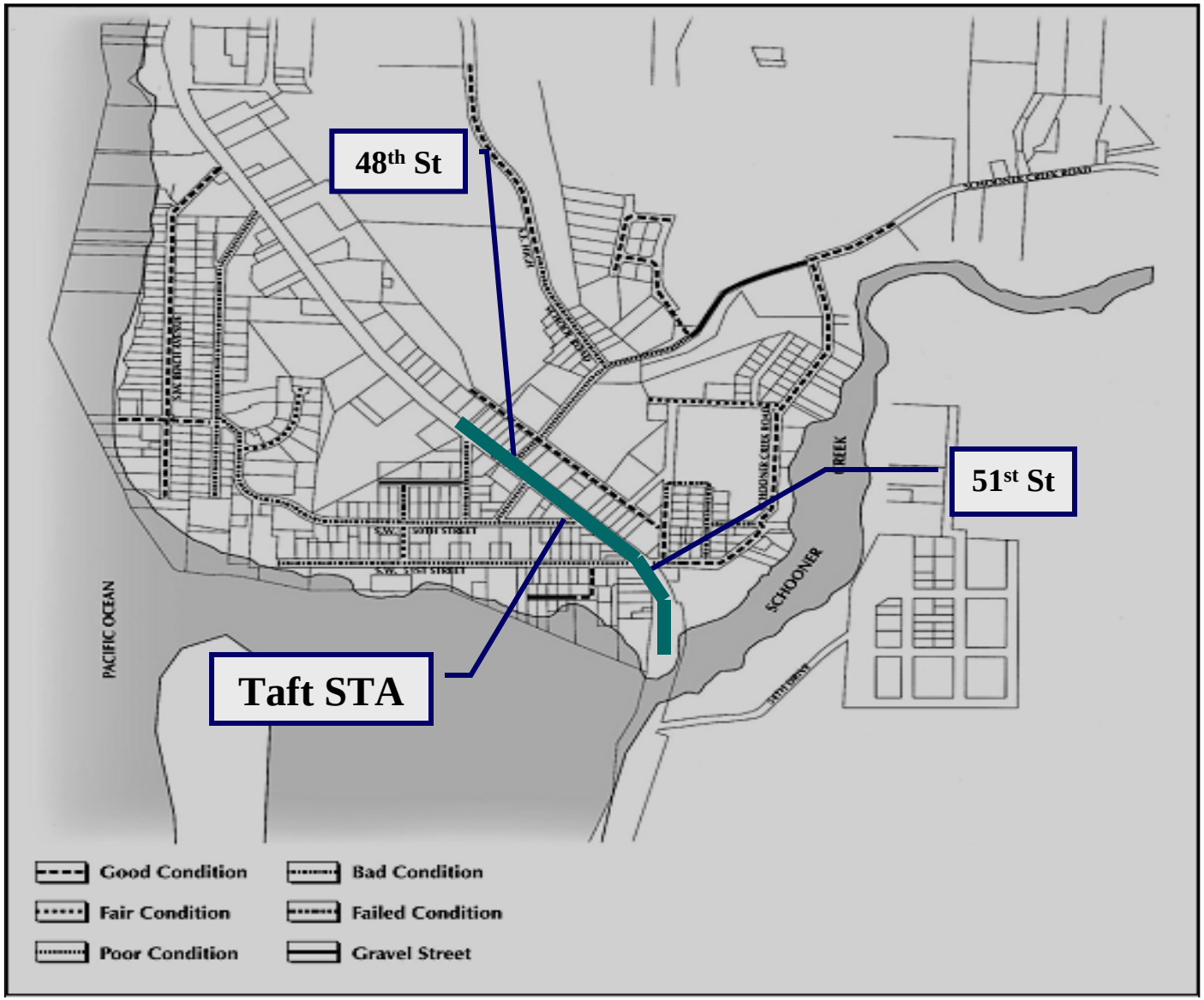
Curb & sidewalk
Left turn lane



Mid-block pedestrian crossing

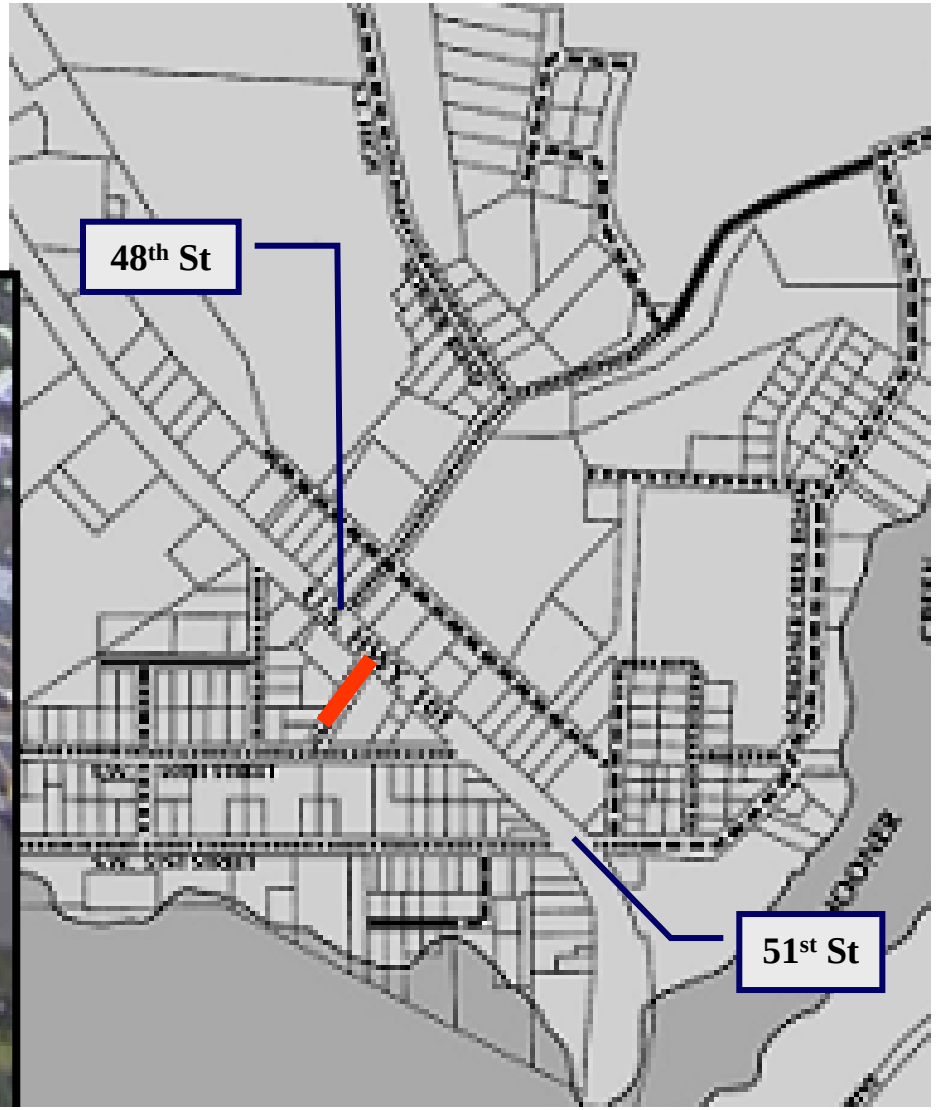
Recessed on-street parking

Local Street Network



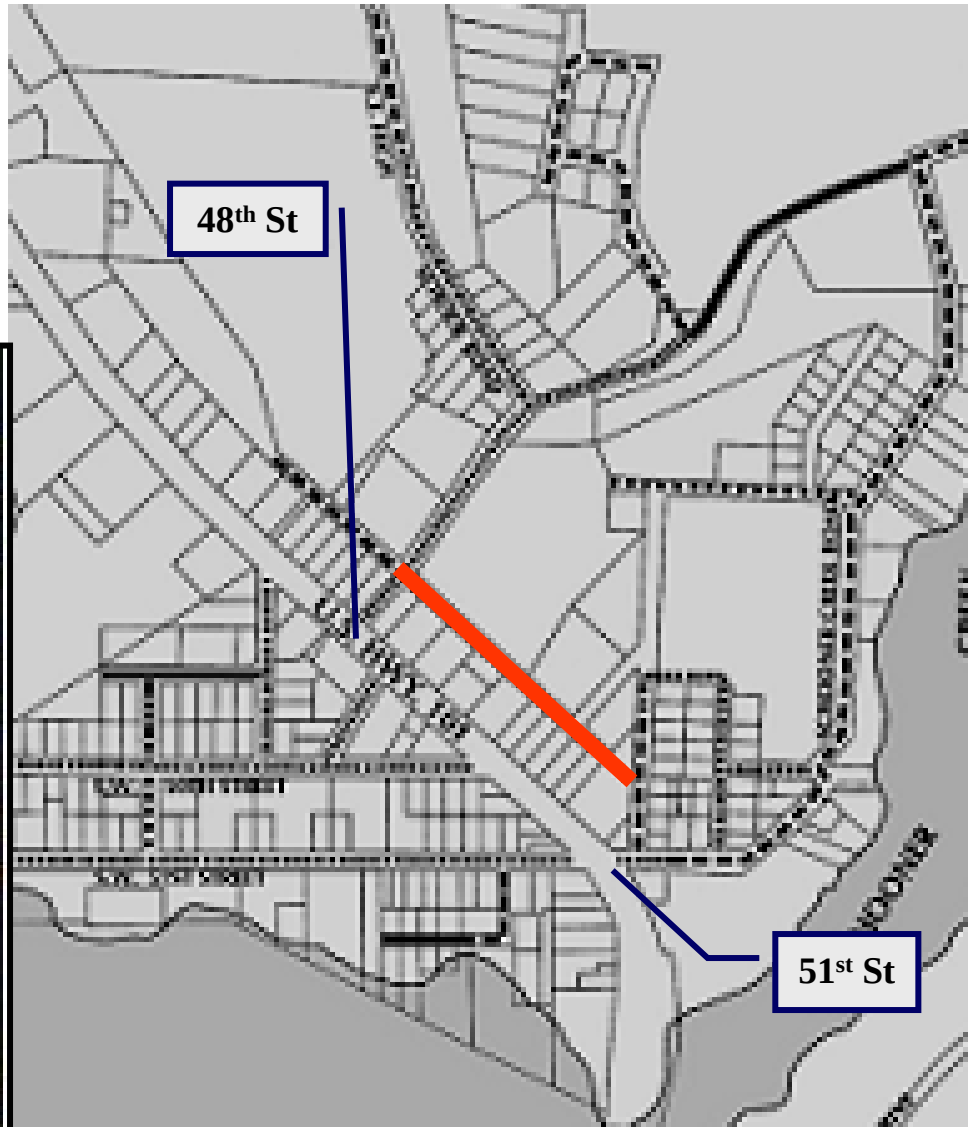
Key Access & Circulation Improvements

A public street closed on west side of highway & converted to shared, public off-street parking with RIRO highway access.



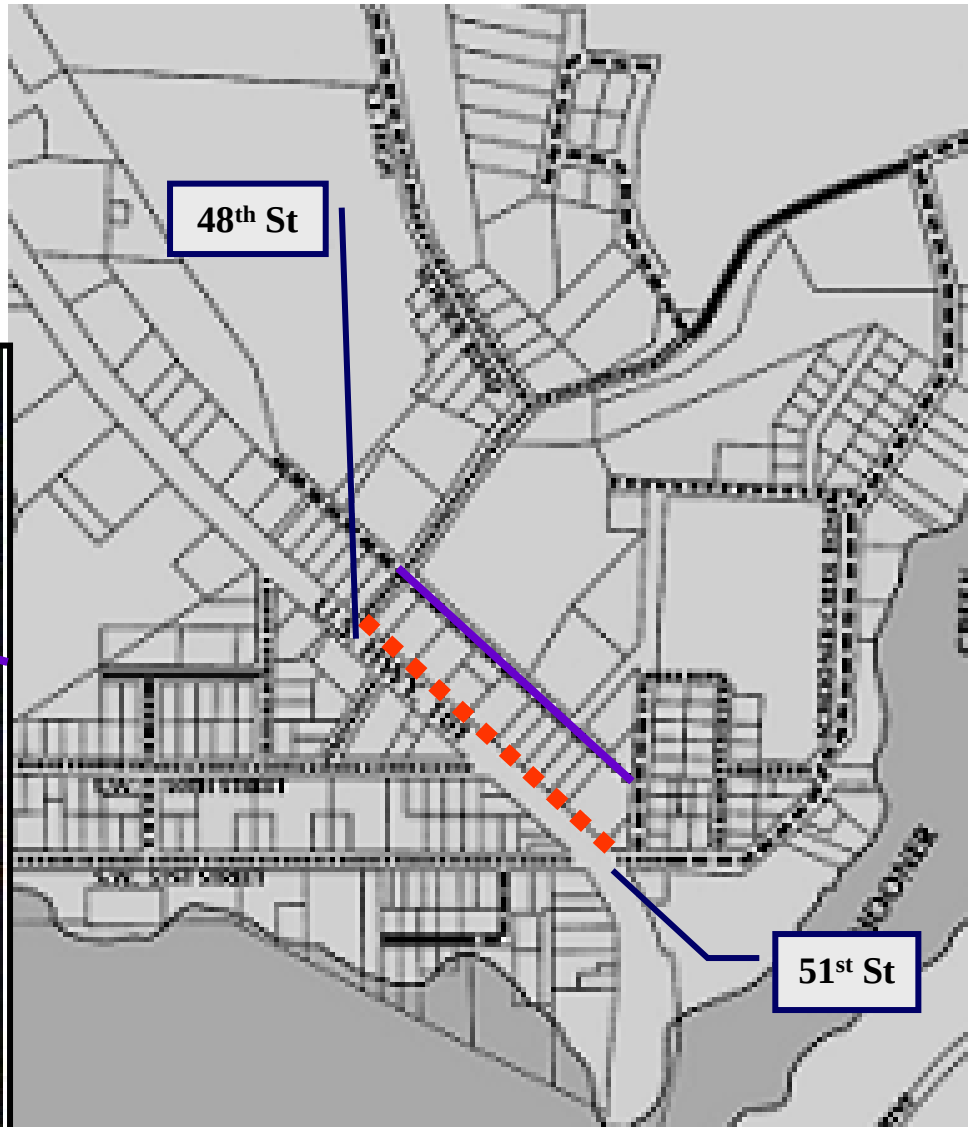
Key Access & Circulation Improvements

Inlet Ave improved between 48th & 51st.
Businesses reoriented toward Inlet Ave.



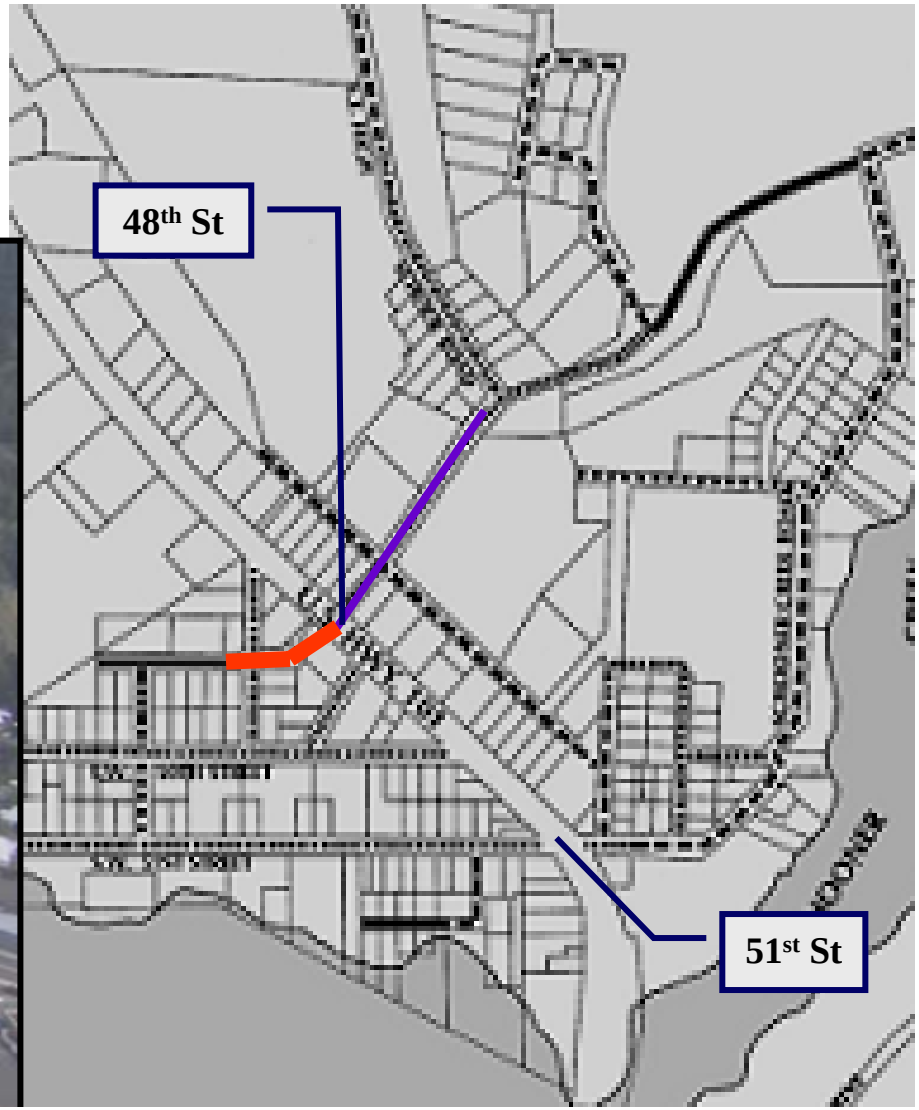
Key Access & Circulation Improvements

Driveways closed on east side of US 101.
ODOT purchased access control.



Key Access & Circulation Improvements

48th St extended west to improve local street connections.



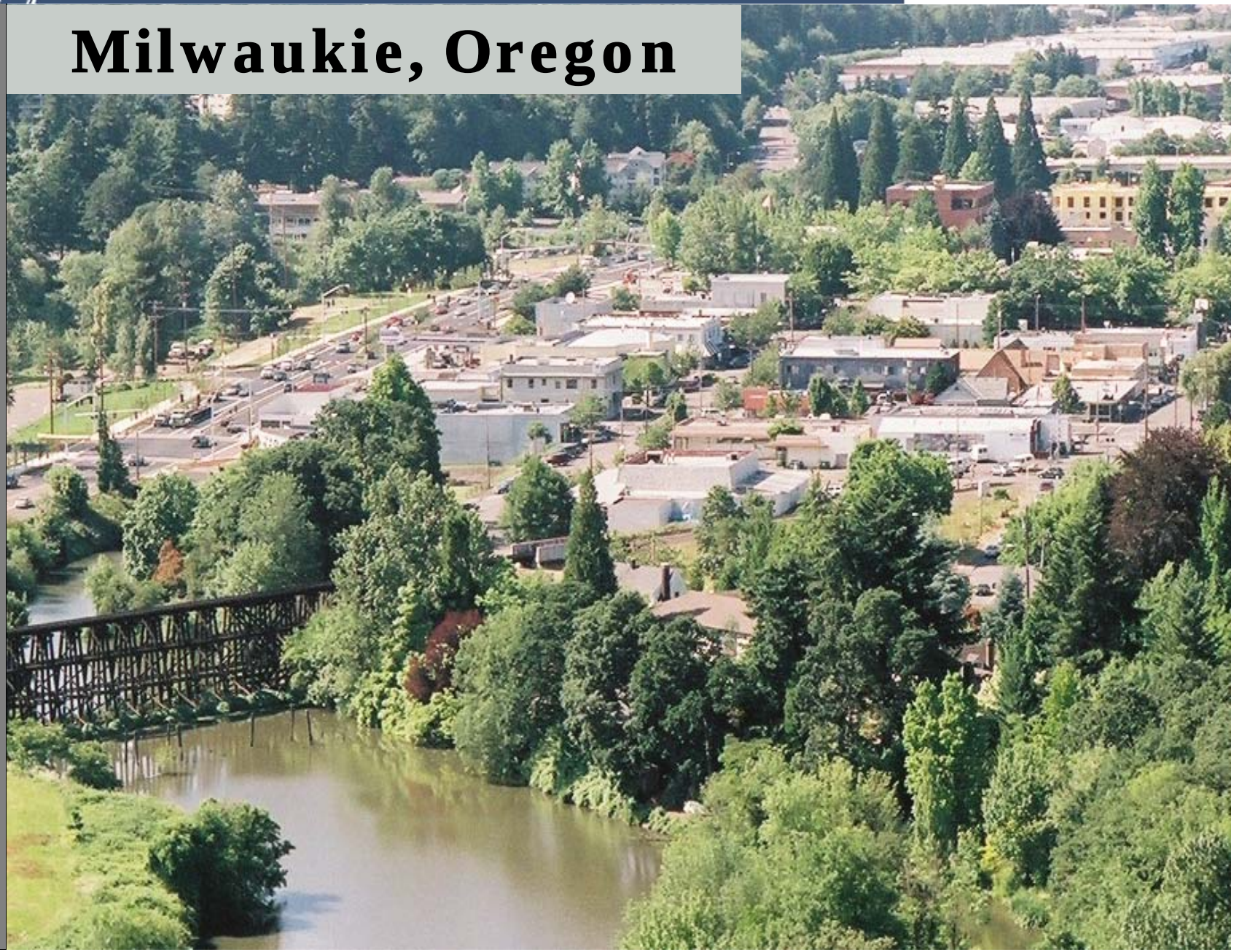
Off-System Local Street Improvements

Lincoln City – Taft Village from the air today

Oregon Department of Transportation

Milwaukie, Oregon

Hwy. 99 East (McLoughlin Blvd)
Harrison St – Kellogg Creek



Community Background

- Growing suburb of Portland Metro area
- Founded early 1900's
- Population 21,000
- Bordered by Willamette River
- Major employers: United Grocers, Oregon Cutting Systems, Warn Industries, regional hospital
- Average annual precipitation is 47"


Main St.
Public Parking
Kellog Creek
Hwy 99E McLoughlin
NB
SB
Riverfront Park Area
Boat Ramp


HARRISON ST
JACKSON ST
Public Parkin
Vacant Bldg.
NB
S
MCLAUGHLIN BLVD
Bike Lane
Multi-use Pa
17TH AVE


JACKSON ST
MONROE ST
MCLOUGHLIN BLVD
NB
Sidewalk
On-street parking
Both buildings removed during project


MONROE ST
JEFFERSON ST
Gas station - 2 drwys. on hwy.
NB
Sidewalk
S
Boat Ramp Entrance
Multi-use path


JEFFERSON ST
WASHINGTON
Kellogg Ck.
NB
Gas Station
MCLOUGHLIN BLVD
Multi-use path
Boat Ramp Entrance
To Willamette River
Boat ramp parking

The Project

- A result of extensive land use and transportation planning by the City, Region, County, and State.
- Conceptual design refined as part of a Transportation Growth Management grant.
- STA designation adopted Jan 15, 2004.
- Design and construction managed by City with ODOT guidance and approval
- Constructed 2005-2006.

Land Use & Transportation Planning Background

Milwaukie Downtown & Riverfront Land Use Framework Plan

- "Vision" to set direction for new development and redevelopment
- "Building placement and access are oriented towards Main Street with curb cuts eventually being phased out along the east side of McLoughlin Boulevard."

Land Use & Transportation Planning

Oregon Highway Plan

- "District" Highway classification (STA segment)
  - Facilities of county-wide significance
  - Function largely as county/city arterials or collectors
  - Management objective: Moderate to low-speed operations in urban areas. Inside STAs, local access is a priority
- STA segment not a state freight route

Land Use & Transportation Planning

Milwaukie TSP

- Walkway/Bikeway/Transit Plans include routes to downtown including highway
- Traffic Circulation Framework calls for “boulevard” design
- Highway designated major freight route for all segments in city

Land Use & Transportation Planning

Town Center Master Plan

- "Vision"
  - compact environment with pedestrian amenities, high quality transit service, multimodal street networks
  - future mixed use
  - downtown employment and housing development
- Parking Plan with on-street, public and private surface lots

Land Use & Transportation Planning

STA Management Plan

- Addressed truck freight mobility
  - Existing parallel state freight routes (I-205 & Hwy 224)
  - Median and turn lanes on the highway
  - Low to moderate vehicle speeds (30 mph)
- Downtown destinations connected by network of local streets in addition to highway
- New combined bus and light rail transit center under development in downtown core
- List of needed future improvements
- Commitment to study and improve access control measures along highway corridor and connecting city streets

Project Priorities & Objectives

Community

- Support vision for development and redevelopment plans
  - Mixed land use, “anchor stores,” cultural centers/landmarks
  - Improve pedestrian and visual connections between the downtown core and the riverfront
  - Reclaim highway as part of the city’s identity
- Bike lanes connecting to regional trail
- Eliminate existing on-street parking
- Traffic calming
- Convenient boat ramp access

Project Priorities & Objectives

ODOT

- Capacity – no significant reductions
  - Peak hour design volume = 56,800 ADT (year 2020)
  - Current ADT 45,000 (3.5% trucks)
  - HDM mobility standard (v/c) = 0.95
    - Max. for 2-hr. peak hour operating conditions through 20 year horizon
  - Adequate traffic calming in transition areas entering STA

Typical Roadway Section

Existing = 81.5’

Side-walk	Parking Lane	Travel Lane	Travel Lane	Median	Travel Lane	Travel Lane	Side-walk
8’	7’	12’	11’	12’	10.5’	11’	10’

Design = 101’

Side walk	Plant Strip	Bike Lane	Travel Lane	Travel Lane	Median	Travel Lane	Travel Lane	Bike Lane	Plant Strip	Side walk
*8’	**6.5’	5’	11’	11’	16’	11’	11’	5’	6.5’	10’

*Sidewalk south of SE Jefferson = 12’

**Planter strip includes standard curb

Access Management Strategy

- Meet or at least move in direction of STA access spacing standards
  - Min. 175’ or mid-block if block spacing < 350’
- Restrict turning movements where possible
- Decrease width of approaches where possible, but accommodate existing use
- Combine & consolidate existing approaches where possible, but allow properties to function as currently developed

Access Management Strategy

- Approaches to City-owned properties may be closed or relocated as appropriate to meet goals of strategy.
- Issue permits to all approaches constructed or reconstructed by project
  - Only two properties had permits
  - Revocable provisions

Major Design Issues

- Queue storage length
  - Queue storage length overlapped overlapped raised median/pedestrian refuge at two intersections
- 20-yr. design mobility standard
  - 2025 peak hour v/c ratio 1.04 – 1.08 at two intersections (design standard 0.95)
- Both issues required approval of design exceptions

Project Outcomes

Enhanced Pedestrian & Bicycle Access

- Wider sidewalks with landscaped buffer
- Distinctive crosswalk patterns
- Additional signalized intersection (ped. crossing)
- Extends pedestrian character of downtown core
- Pedestrian refuges/bulbouts
- Bike lanes along entire segment on both sides
- Improved bike circulation with local streets and regional trail
- Traffic calming
- Improved visual attractiveness

Project Outcomes

Reduced conflict points

- Two driveways eliminated
- Driveways narrowed
- Right turn only at entry/exit from driveways
- Left turns only at signalized intersections
- Bike lanes along entire segment on both sides

Better alignment with local land use and transportation plans

City took over highway maintenance responsibilities


ARCO
ampm
CROSSWALK CLOSED
CROSSWALK CLOSED


ARCO
Autozone
BANK OF THE WEST
CINEMAS

What We Are Learning

- Public generally supports access management that favors non-auto movement in STA
  - Enhancing pedestrian, bike, and transit enhances "main street" character and community's sense of place.
- STA roadway design and access standards facilitate many community objectives
  - Tradeoffs between through movements and local access favor local access
  - Traffic calming
  - Better alignment of adjacent land use and transportation
- Local government street standards, development codes, transportation and land use planning need to support STA access management.
  - Private driveways discouraged
  - Access to public streets
  - Development of local street network & circulation

What We Are Learning

- STA project development is a paradigm shift for ODOT's engineering culture
  - STA expands design issues beyond traditional design concerns
  - STA design is often more expensive
    - Justification may not be readily apparent
    - Other needed improvements may be eliminated
- Viewing projects as more than "highway improvements" strengthens collaboration and partnership with local governments and private sector.
  - More willing to share costs and offer public support
  - Project can stimulate economic activity and vitality
- Higher level of customer satisfaction with project development process.

Additional information available on ODOT's Access Management Program web site

http://www.oregon.gov/ODOT/HWY/ACCESSMGT/

ODOT, Transportation Development-Planning Section
Oregon Transportation Plan
Oregon Highway Plan

ODOT Highway, Roadway Engineering
Oregon Bicycle and Pedestrian Plan
Oregon Highway Design Manual (2003 English Manual)

City of Lincoln City
Urban Renewal Department
Planning and Community Development Department

City of Milwaukie, Oregon
Community Development – Planning
Community Development – Engineering

"Main Street … When a highway runs through it: A Handbook for Oregon Communities"