APPENDIX I

Geometric Analysis

The following tables and text describes existing geometric conditions and deficiencies for portions of ORE 22, ORE 99W, and Dallas-Rickreall Highway located within the study area. Lane widths, horizontal and vertical geometry, and other factors are considered.

Conditions Study For:

Willamina-Salem Highway, Highway No. 30 (OR 22)

OR 22/OR 99W Intersection
M.P. 15.50 to 16.30

Geometry

Configuration

Rickreall Intersection is signalized and located approx. 7 miles West of Salem. OR 22 is a flat, high-speed four-lane expressway, that begins prior to the Dallas–Rickreall Highway (DRH) connection. The 1999 OHP classifies Willamina-Salem Highway No. 30 as a highway of statewide importance. The Highway Design Manual has the Willamina-Salem Highway classified as Rural Principal Arterial.

Geometric Deficiencies

OR 22: Paved shoulder width (extg. 1.8m) std. 2.4, less than desirable

Vertical Alignment, over the RR structure. (extg. 463m) std. 790m, stopping sight distance. No reported accidents, but this could be a problem in the future.

Spiral length (extg. 91.44m) std. 150m, less than desirable.

Turning radius do not accommodate trucks well

Left turn pocket to DRH is to close to the signalized intersection and has marginal storage.

Operations

Section written by TPAU, includes
OR22 v/c ratio of 0.89, 1999; future 2025(no build) v/c ratio of 1.36

Safety

The 5 year crash record (1996 – 2000) for the intersection listed:
OR 22 @ OR 99W, 14 rear-ends, vehicles stopped at the signal.
4 turning 9 T-bones & 1 sideswipe, high speed or speed differential.
OR 22 @ OR 223 (DRH), see report for this section.
There are several factors associated with this intersection that might contribute to a crash. 1. OR 22 @ OR 99W is an isolated signal in a rural setting on a high-speed facility (expressway) and where diver would not expect to see a signal. 2. OR 22 runs East/West and early morning and late afternoon sun could interfere with viewing of the signal. 3. This is a high commuter route.

Conditions Study For:

Pacific Highway West, Highway No. 92 (OR 99W)

OR 99W @ Rickreall
M.P. 57.30 to 58.00

Geometry

Configuration

Rickreall Intersection is signalized and located approx. 7 miles West of Salem and Rickreall Road intersection is in Rickreall, or another three tenths of a mile farther south of OR 22/OR 99W intersection on OR 99W. Rickreall is an unincorporated community that is split by OR 99W. There are several businesses and a grade school along it. The posted speed is 45mph. The 1999 OHP classifies Pacific Highway West No. 92 as a regional level of importance. The Highway Design Manual lists Pacific Highway West as a Rural Minor Arterial.

Geometric Deficiencies

Addition lane: A left turn refuge is needed because of all the access points to 99W, and high speed.
Left turn pocket to Rickreall Road is adequate, but will need to be lengthen for future (2015) storage.

Operations

Section written by TPAU, includes
OR99W v/c ratio of 0.58, 1999; future (no build, yr. 2025) v/c ratio of 1.08

Safety

OR 99W @ Rickreall Rd, 1 rear-end, stopped to make a turn into one of the many local accesses. 6 turning, with most trying to get on to 99W. 6 T-bones, high speed, and lack of gaps for turning movements.
There are several factors that can be associated with this section. OR 99W divides Rickreall community, where there are many access turning points to distract drivers. The volume of traffic through Rickreall on 99W doesn't lend it self to many gaps in the traffic. The speed through the community is probably higher than the posted speed. A speed study would need to be performed to determine if vehicle speeds are excessive.

Conditions Study For:

Dallas-Rickreall Highway, Highway No. 189 (OR 223 or DRH)

OR 223/OR 22 Intersection
M.P. 3.97 to 4.10

Geometry

Configuration

The Dallas-Rickreall Highway Y intersection is another one tenth of a mile farther west on OR 22. This Highway ends at OR 22 and is classified as Rural Minor Arterial.

Geometric Deficiencies

Left turn pocket to DRH is to close to the signalized intersection and has marginal storage.

Operations

Section written by TPAU, includes

OR223 v/c ratio of 0.64, 1999: future 2025(no build) v/c ratio of 1.00

Safety

The 5 year crash record (1996 – 2000) for the intersection listed are:
9 rear-ends, Storage length too short and high speed combination.
7 turning, vehicles miss judging the high speed and lack of adequate gaps for turning.
2 T-bones, & 3 sideswipes, high volumes, the proximity to intersection and merging/lane changing.
There are several factors associated with this intersection that might be deemed as contributors to any one crash. The OR 22 @ OR 99W is an isolated signal in a rural setting on a high-speed facility (expressway) and where diver would not expect to see a signal. High volume of commuter traffic. The lack of adequate gaps for lane changes.
Storage length and the distance between the intersections are inadequate. The driver must pay specific attention to this intersection to avoid an accident

Pacific Hwy West (99W)
Willamina - Salem Hwy (OR22)
Dallas-Rickreall Hwy (OR223)
Polk County
Geometric Deficiencies

	ORE 99W NB approach	ORE 99W SB approach	ORE 22 WB approach	ORE 22 EB approach	ORE 223 EB approach
Cross Section (lanes & shoulders)	**A**	**A**	**A**	**A**	**A**
Number of approach lanes	**A**	**A**	**5**	**A**	**A**
Horizontal Alignment	90 degree	90 degree	90 degree	90 degree	110 degree
Vertical Alignment	**flat**	**flat**	**2**	**2**	**flat**
LT turn storage length	**A**	**A**	**5**	**A**	**A**
Existing Signal	**A**	**A**	**A**	**A**	**NA**
Right Turn Lane	**5**	**NA**	**NA**	**NA**	**NA**
Horizontal/Vertical Clearance					
Intersection Spacing	**A**	**A**	**A**	**A**	**6**
Intchg. Spacing					
Intersection Sight Distance	**A**	**A**	**2**	**A**	**A**
Access Mgmt.	**A**	**A**	**A**	**A**	**A**
Turning Radius	**4**	**A**	**4**	**A**	**A**

A : Acceptable

: Not Applicable

: Geometric Deficiency

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RICKREALL Willamina-Salem Highway (ORE-22) M.P. 15.50 to 16.30 Region 2 Polk County 09/26/01 Prepared by: BTS
Pacific Hwy West (ORE-99W) Intersection M.P. 57.30 to 58.00 *Accident History Data 1995 to 2000
Dallas-Rickreall Hwy #189 (DRH) M.P. 3.97 to 4.10

Geometric Deficiencies (ORE-22)

Note	Deficiency	Standard
1	Shoulder Width 1.8m ORE- 22	ODOT - 2.4m
2	Vertical Alignment 463m crest ORE-22 @ RR structure	ODOT - 600m for algebraic difference
3	Spiral Length 91.4m ORE-22 @ Dallas-Rickreall Hwy	ODOT - 150m
4	Turning Radius @ 16m ORE-22 SW & SE corners	ODOT - 20m
5	45m, Current left turn storage is marginal ORE-22 WB, Storage length should be longer or double left.	300m, By Analysis.
6	ORE-22 @ DRH left turn storage is too close to signal	ODOT - 800m

Existing Safety/Operational Deficiencies

SPIS Top 10% Sites		Computed Accident Rate
ORE-22	77.82	ORE-22

28 people injuries in a five year period.*

ORE-22 @ 99W, 14 rear-ends,14 Turning, 9 T-bone & 1 side-swipes
ORE-22 @ DRH, 9 rear-ends, 3 side-swipes, 2 T-bone, & 7 turning
ORE-99W @ Rickreall Rd 1 rear-ends, 6 turning & 6 T-bone

Fatalities		SIP Accident Category	
ORE-22	0	ORE-22	4
ORE 99W	0	ORE 99W	2
ORE 99W	NA	ORE 99W	

DRH, 21 accidents in a 5 year period*
ORE 99W, 38 accidents in a 5 year period*

High number of crashes typically associated with the combination of traffic signal and high speed.
Rickreall community is subject to congestion by having many access points to the highway.
ORE-22 Volume Capacity (v/c) Ratio std. is 0.70. The mobility standard for the year 2025 will be 1.36.
99W/Rickreall v/c ratio is 0.75 for an unincorporated community and will be 1.08 in the year 2025.
DRH, Existing 0.92 v/c ratio, The mobility standard should be 0.80. Additional lanes will be needed to meet mobility standards.

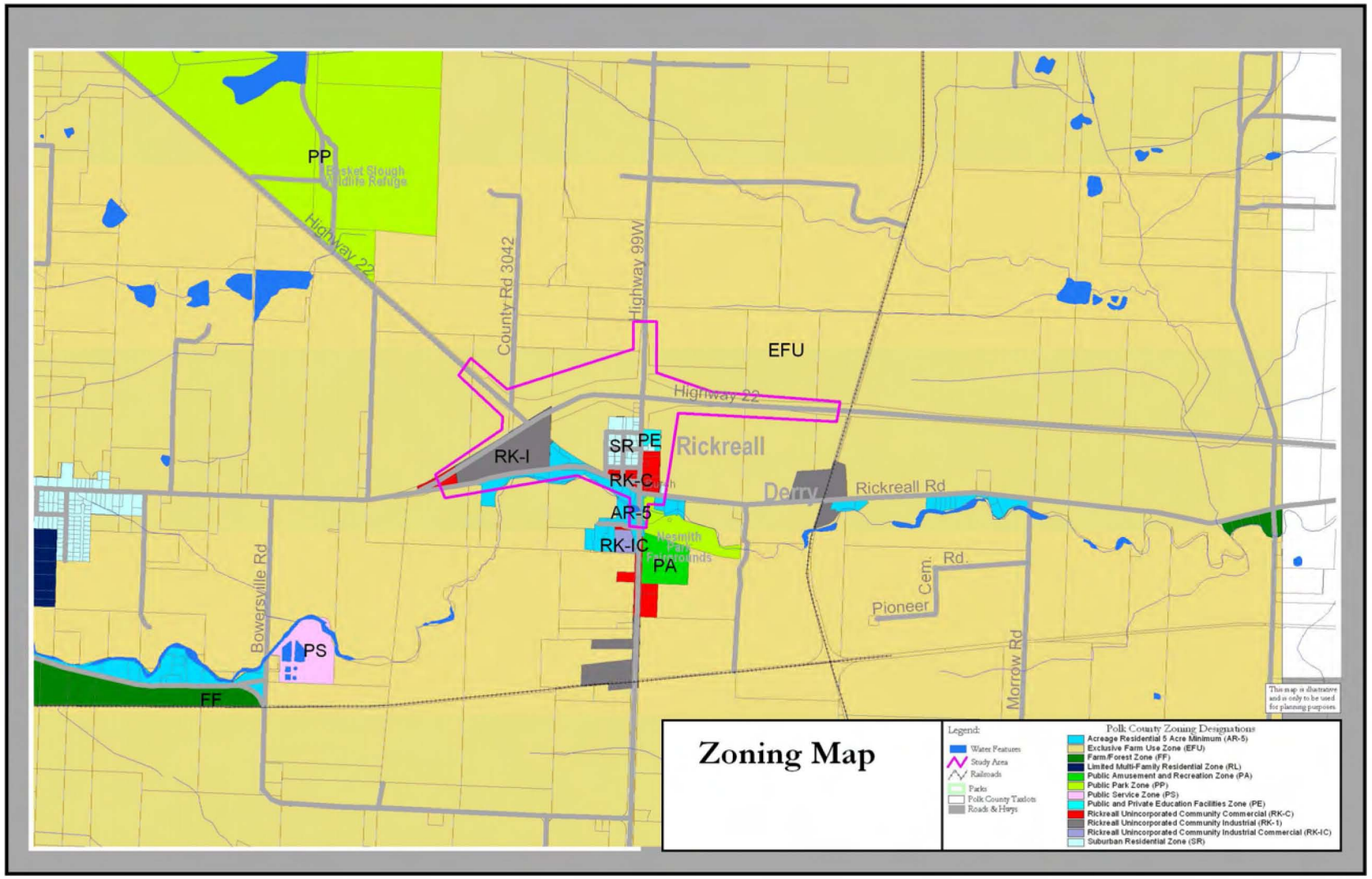
Significant Geometric Deficiencies with Safety/Operational Issues

Note	Deficiency
5	Current traffic volume indicates a need for a double left.
6	Westbound ORE-22 traffic backs up in the left turn pocket of ORE-22 @ DRH, approx. 75% of the distance to 99W.

Future Traffic and Development

Geometric Deficiencies Expected to Become Significant with Growth in Traffic

Note	Deficiency
5	WB ORE-22, storage length will need to be a double left turn.
6	The current distance of 400m on ORE-22 between DRH & ORE-99w will only increase the accident potential.


PP
Basket Slough Wildlife Refuge
Highway 22
County Rd 3042
Highway 99W
EFU
Highway 22
SR
PE
Rickreall
RK-I
RK-C
Derry
Rickreall Rd
AR-5
RK-IC
PA
Bowersville Rd
Cem.
Rd.
Pioneer
PS
FF
Morrow Rd
This map is illustrative and is only to be used for planning purposes.
Zoning Map
Legend:
Water Features
Study Area
Railroads
Parks
Polk County Taxlots
Roads & Hwys
Polk County Zoning Designations
Acreage Residential 5 Acre Minimum (AR-5)
Exclusive Farm Use Zone (EFU)
Farm/Forest Zone (FF)
Limited Multi-Family Residential Zone (RL)
Public Amusement and Recreation Zone (PA)
Public Park Zone (PP)
Public Service Zone (PS)
Public and Private Education Facilities Zone (PE)
Rickreall Unincorporated Community Commercial (RK-C)
Rickreall Unincorporated Community Industrial (RK-1)
Rickreall Unincorporated Community Industrial Commercial (RK-IC)
Suburban Residential Zone (SR)