Chapter 2
Existing Conditions

This chapter provides a description of existing conditions within the study area, including an overview of the surrounding environment, an inventory of existing transportation facilities, an evaluation of the recent crash history, and an analysis of operating conditions. The assessment of existing conditions provides a baseline for comparison to the future conditions analysis to be completed later and aids in the identification of opportunities and constraints when developing improvement alternatives to mitigate future deficiencies.

Study Area

The City of Junction City is located near the southern end of the Willamette Valley, approximately five miles northwest of Eugene and 26 miles south of Corvallis. OR 99 runs from north to south through the center of the city, splitting into OR 99W and OR 99E near the north city limits. Between 1st Avenue and 18th Avenue, OR 99 is also known as Ivy Street. OR 99 to the south creates a direct connection to the Eugene/Springfield area, Interstate 5, and the McKenzie Highway, which provides access to the Willamette National Forest and destinations in central Oregon. To the north, OR 99W parallels Interstate 5 for over 100 miles and connects Junction City to Corvallis and several other cities before terminating in Portland. OR 99E connects Junction City to Harrisburg and Albany and provides a route to Interstate 5 for travelers destined to the north. In addition, OR 36 intersects OR 99 near the south end of town and provides a connection to the coast and other destinations to the west.

Two railroad lines, owned by Union Pacific (UPRR) and Burlington Northern Santa Fe (BNSF), parallel OR 99 to the east through Junction City. The BNSF line, which is leased to Willamette & Pacific, runs through the middle of Holly Street while in town and stays within 100 feet of OR 99 as it continues to the south. The UPRR line, which carries a much higher volume of traffic, runs approximately 600 feet to the east of the BNSF line through most of the area, but diverges to the east near the southern urban growth boundary. The presence of these lines create barriers to the downtown area, reduce east-west connectivity, and limit access to the industrial lands between them south of town.

Study Area Land Use

The central area of the city, including lands immediately adjacent to OR 99, is currently zoned for commercial uses. Additional commercial land is located in and around the downtown area, roughly bounded by 4th Avenue, Front Street, 8th Avenue, and the alley between OR 99 and Juniper Street. To the west of this area, most of the land within the city is zoned for residential uses, with some areas set aside as public lands. Industrial lands are located in the northeast and southeast corners of the city, with additional residential land in between these areas.

The city is currently experiencing a lot of new development (mainly residential subdivisions) on the west side of town, which is where much of the developable land within the urban growth boundary (UGB) lies. More developable land, zoned for industrial uses, is located to the northeast and southeast. In addition, an undeveloped triangle of commercial land lies between OR 99E and OR 99W at the north end of the city.

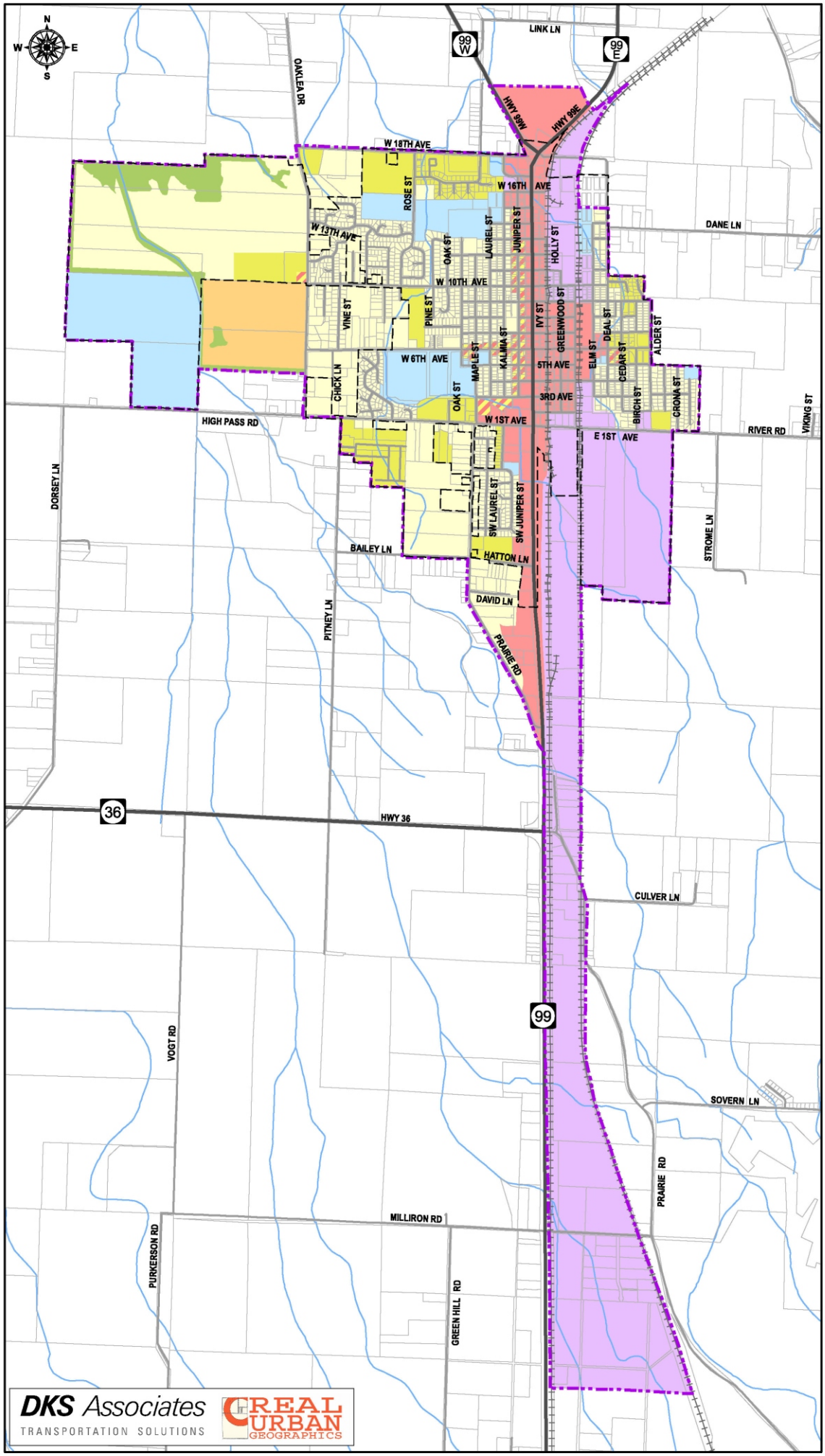
The City's comprehensive plan identifies essentially the same zoning as existing conditions within the urban growth boundary and follows a similar pattern for lands outside of the urban growth boundary, with the exception of approximately five acres of professional technical land on the west side of town and a large strip of industrial property paralleling OR 99 to the southeast. Figure 2-1 displays the comprehensive plan zoning of property within the urban growth boundary and how it relates to the existing transportation system. For comparison purposes, current land uses on area properties are shown in Figure 2-2.

Study Area Boundaries

The focus of this study will be on assessing the operation of OR 99 through the year 2026 and examining alternatives to preserve its ability to function in accordance with adopted standards. Considering observations made during a project area tour and the intent of this study, the study area boundaries will generally follow the existing City urban growth boundary limits, with some exceptions. On the west side, south of 1st Avenue, Pitney Lane will be included because of its potential for use as an alternate north-south route to OR 99.

To the south, the study area will be limited to the OR 99/OR 36 intersection for operational analysis purposes. While the City urban growth boundary extends well beyond this point, it is anticipated that OR 99 will have adequate capacity through this area, as it is already built out to five lanes and is protected from direct access by the adjacent railroad line.

A separate sub-area including the southern portion of the urban growth boundary bounded by the BNSF and UPRR railroads from 1st Avenue to the southern urban growth boundary (including the entire future prison site) will also be addressed with the goal of identifying a conceptual access plan to facilitate the orderly and timely construction of transportation facilities and potential new and/or consolidated railroad crossings as properties in this area develop. No operational analysis will be conducted for the sub-area.



OR 99

Junction City

Refinement Plan

FIGURE 2-1

Study Area Map

Legend

Comprehensive Plan Zone

- COMMERCIAL
- COMMERCIAL/RESIDENTIAL
- INDUSTRIAL
- LOW DENSITY RESIDENTIAL
- MED. DENSITY RESIDENTIAL
- OPEN SPACE/WETLANDS
- PROFESSIONAL/TECHNICAL
- PUBLIC

- HIGHWAY
- ROAD
- CITY LIMITS
- URBAN GROWTH BOUNDARY
- TAX LOTS
- RAILROAD
- STREAM

0 1,000 2,000 4,000 Feet

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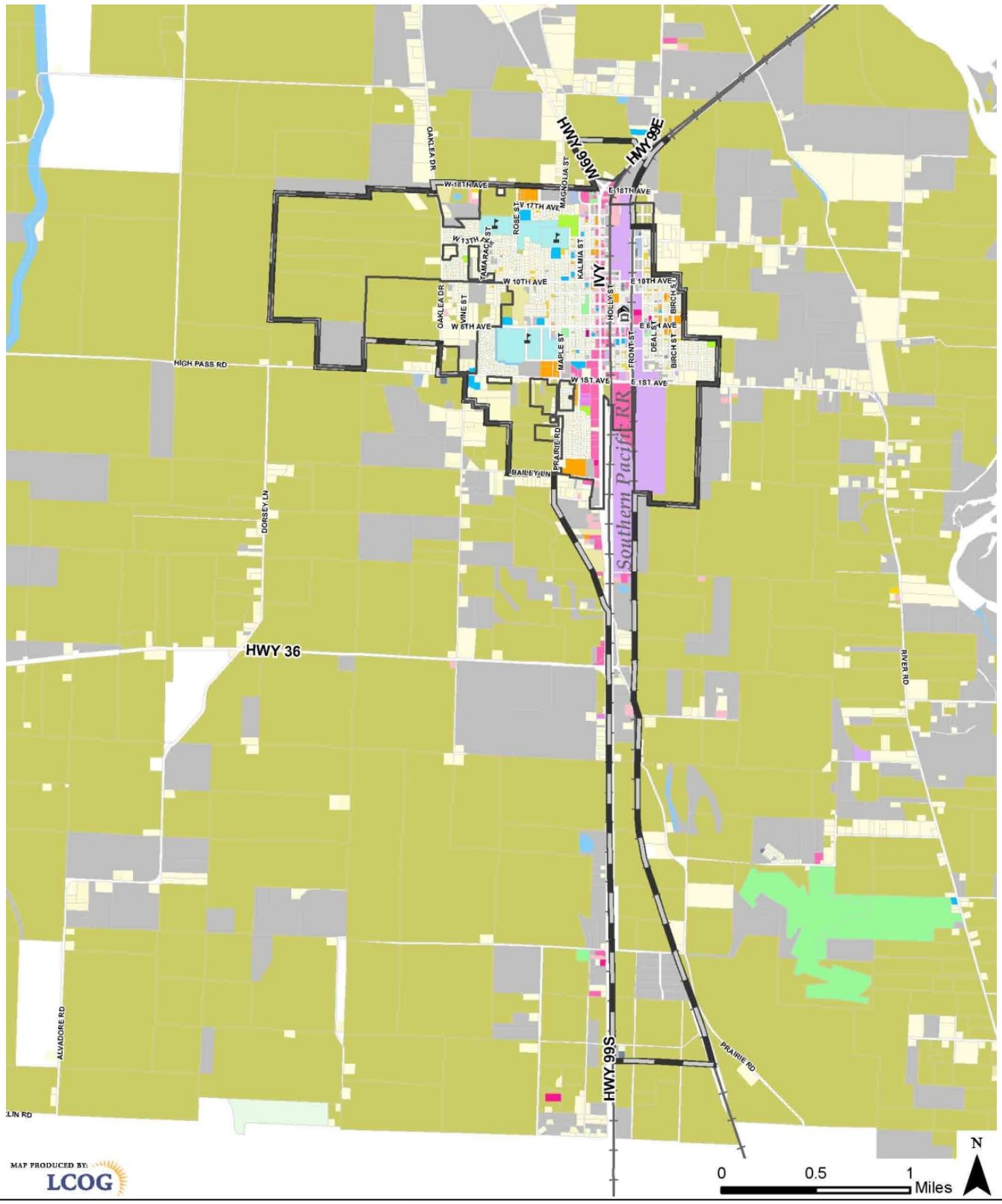
OR 99
Junction City
Refinement Plan

FIGURE 2-2

Existing Land Use



Legend

- Urban Growth Boundary
- City Limits

Land Use

Agriculture	Transportation Related	Mobile Home Park	Park	Utilities
Railroad	Government	Recreation	Group Quarters	Vacant
Communications	Wholesale	Multi-Family	Retail	Water
Duplex	Industrial	Mobile Home on Lot	Single Family	Alleyways, Walkways, Bikepaths
Education	Religious / Charitable	General	Timber	Road

Physical Condition

Roadway and Intersection Geometry

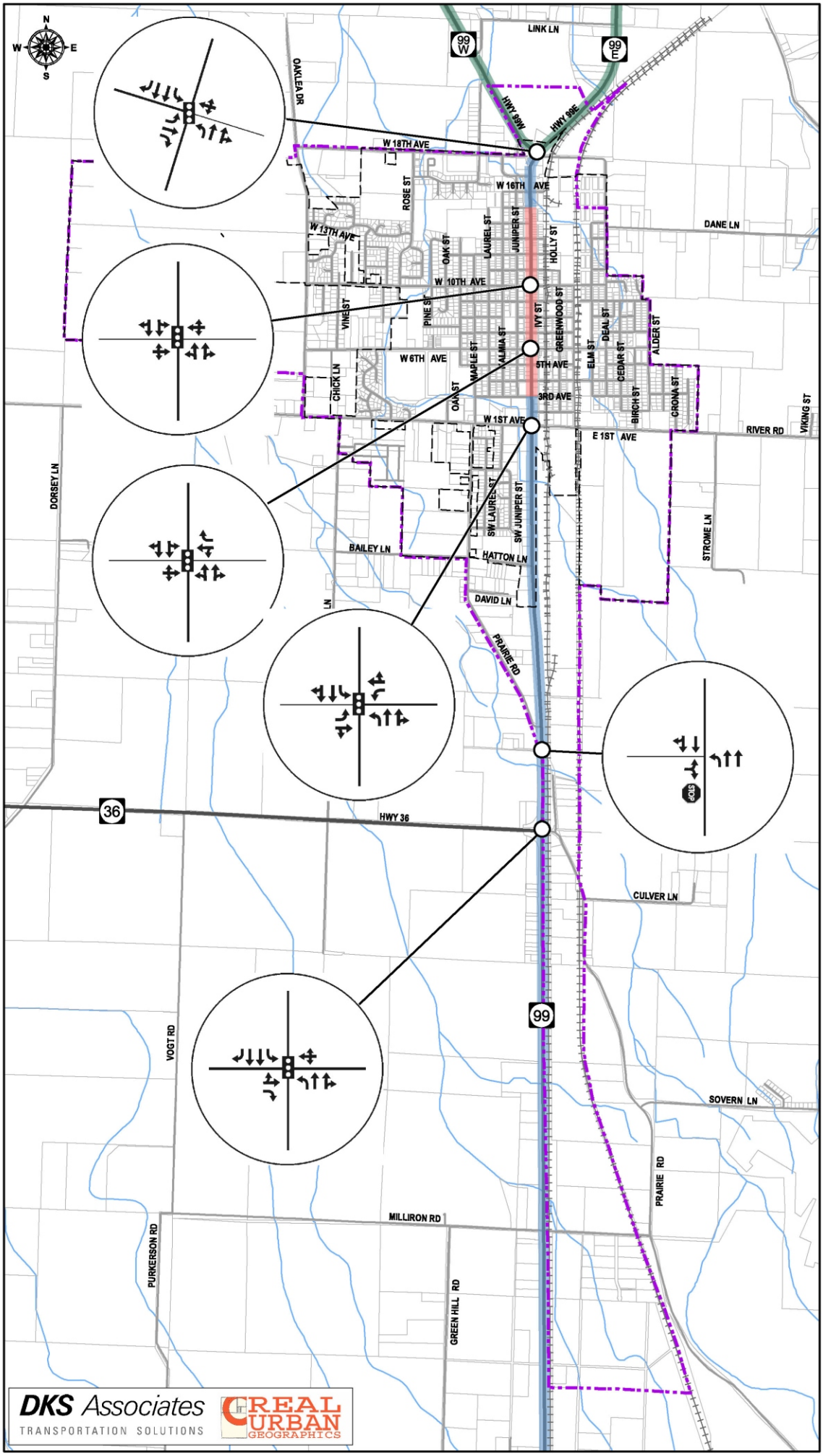
Approaching from the north, OR 99W and OR 99E are both two-lane highways with paved shoulders varying from 5 to 6 feet wide on OR 99W and from 3 to 4 feet wide on OR 99E. From this junction, OR 99 quickly reduces from a 5-lane cross-section to a 4-lane cross-section before crossing the Flat Creek Bridge. From this point (approximately 15th Avenue), the highway maintains a four-lane, 48-foot cross-section with no turn lanes to 3rd Avenue, where it widens to a five-lane cross-section through the remainder of the study area. Between 3rd Avenue and 1st Avenue, shoulder widths vary from 4 to 5 feet, but from 1st Avenue to the south they maintain an 8-foot width.

The restricted roadway width between the OR 99W/OR 99E intersection and 3rd Avenue, where no turn lanes are available, appears to be due to two constraints: 1) the existing width of the Flat Creek Bridge (approximately 70 feet), and 2) the presence of buildings on highway-adjacent properties that have been constructed in close proximity to the right-of-way line. Improvement alternatives that include widening this corridor will need to address both issues.

For the assessment of operations along the OR 99 corridor, the following intersections were selected for analysis.

- OR 99W at OR 99E
- OR 99 at 10th Avenue
- OR 99 at 6th Avenue
- OR 99 at 1st Avenue
- OR 99 at Prairie Road
- OR 99 at OR 36

The lane geometry and traffic controls present at each intersection, as well as the changes in highway cross-section through the corridor, are displayed in Figure 2-3. It should be noted that the proximity of the BNSF railroad to the east may impact the ability to modify these intersections in the future. To supplement this information, a roadway functional class and posted speed map for the city has been included in Figure 2-4.



OR 99

Junction City

Refinement Plan

FIGURE 2-3

Existing
OR 99
Lane Configurations
& Traffic Controls

Legend

Lane Configurations

- 2 LANES
- 4 LANES
- 5 LANES

- HIGHWAY
- ROAD
- CITY LIMITS
- URBAN GROWTH BOUNDARY
- TAX LOTS
- RAILROAD
- STREAM

0 1,000 2,000 4,000 Feet

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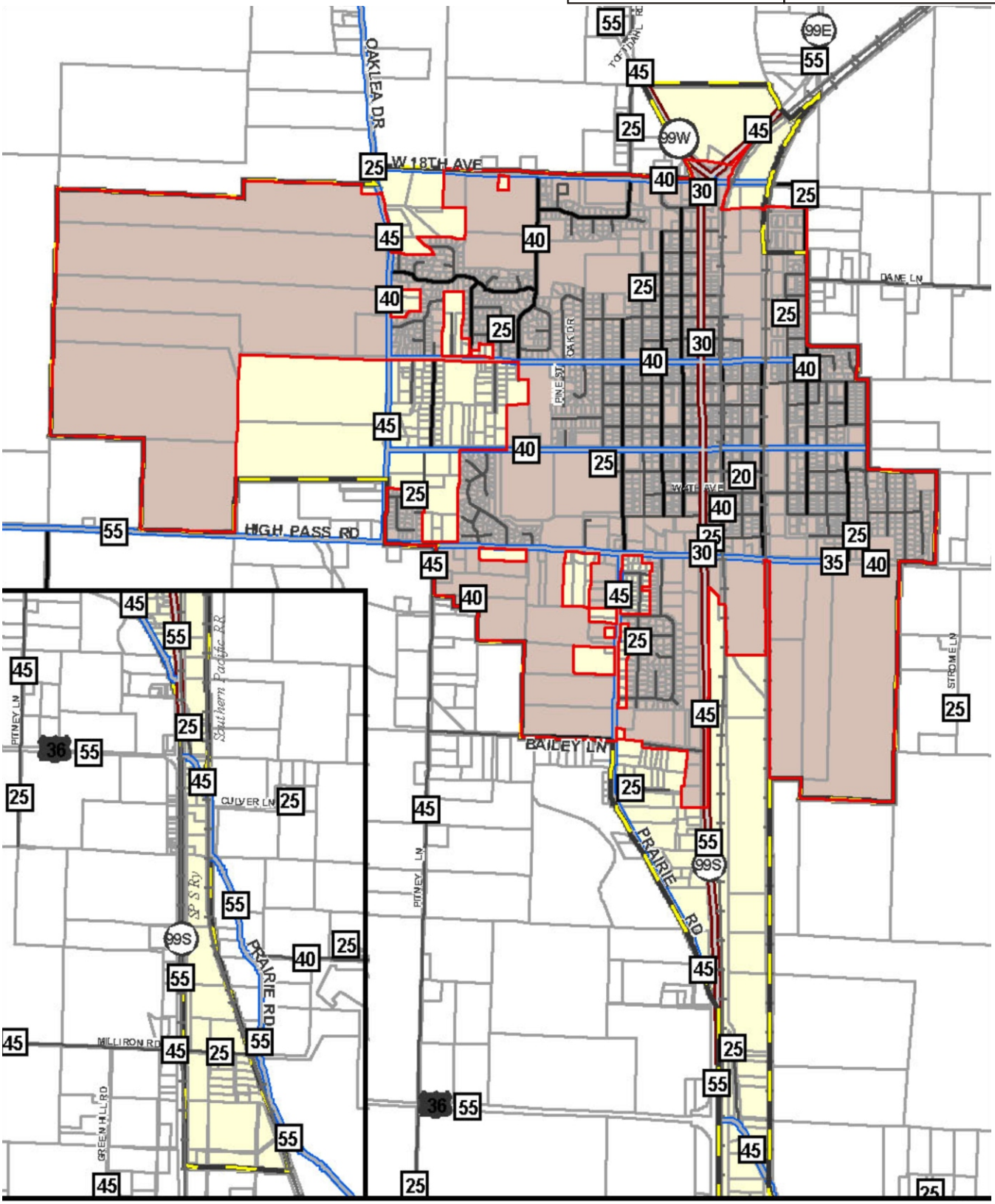
OR 99
Junction City
Refinement Plan

FIGURE 2-4
Roadway Functional Class & Speed



Legend

- Urban Growth Boundary
- City Limits

Functional Class

- Major Arterial
- Major Collector
- Minor Collector
- Local

Roads

55 Road Speed

0 1,000 2,000 Feet

N

LCOG

Printing Date: April 11, 2007

Sidewalks and Bike Lanes

The locations of sidewalks and bike lanes along OR 99 were inventoried and have been mapped on Figure 2-5. Through the study area, sidewalks are available on both sides of the highway between the OR 99W/OR 99E junction and 1st Avenue, with additional sidewalk on the west side from 1st Avenue to a point approximately 800 feet to the south.

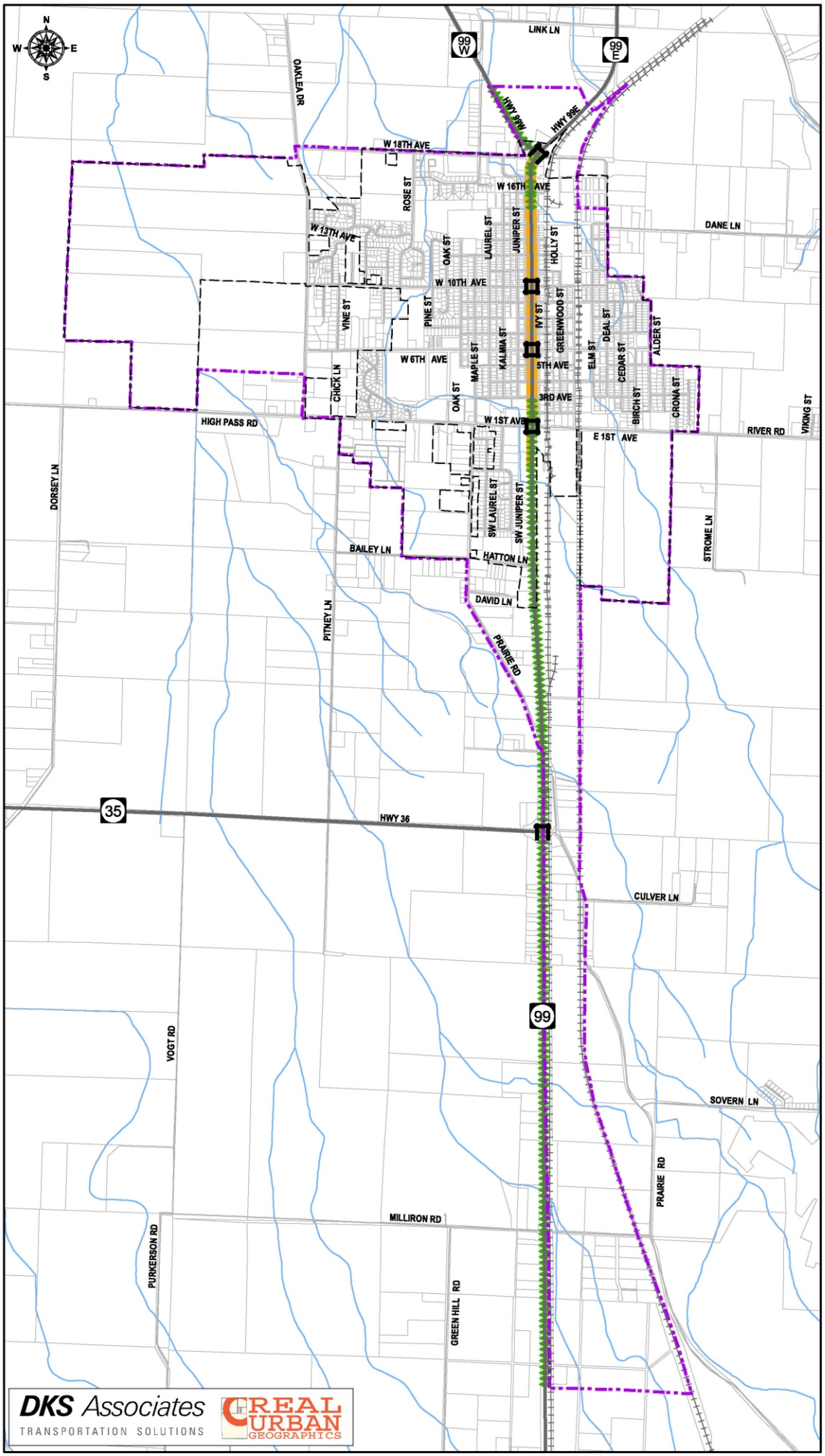
Marked crosswalks on OR 99 are located at the intersections of OR 99W/OR 99E, OR 99/10th Avenue, OR 99/6th Avenue, OR 99/1st Avenue, and OR 99/OR 36. Crosswalks are present on all approaches with the exception of the OR 99W/OR 99E intersection, which does not maintain a crosswalk on the southwest (OR 99) approach and the OR 99/OR 36 intersection, which does not maintain a crosswalk on the south approach.

There are no marked bike lanes on OR 99 within the City, but as previously indicated, there are some segments of highway maintaining adequate shoulder widths for bicycle use. On OR 99W and OR 99E, most of the shoulder is wide enough to be used as a shoulder bikeway, however, the 3-foot widths sometimes seen on OR 99E should be considered inadequate for bicycle use. From the OR 99W/OR 99E junction, adequate shoulders are available for bicycle use through the Flat Creek bridge. However, from the end of the bridge to 3rd Avenue, there are no shoulders or separate bicycle facilities available. Once past 3rd Avenue, the shoulders widen and are again adequate for bicycle use through the remainder of the study area to the south.

Transit

The Lane Transit District (LTD) serves Junction City with two bus routes that provide connections throughout the Eugene-Springfield area. The 95X Junction City Express travels between Junction City and Eugene via OR 99, circulating through town to pick up and drop off passengers. Service is only available on weekdays, with one trip made in the morning between 6:30 and 7:00 a.m. and three trips in the afternoon between 3:00 and 7:00 p.m.

The 95 Junction City route travels between Junction City and Eugene via River Road. This route provides service on both weekdays and Saturdays, with three weekday trips in the morning between 6:00 a.m. and 1:00 p.m. and three weekday trips in the afternoon between 2:00 and 6:00 p.m. On Saturdays, one a.m. trip is made between 9:00 and 10:00 a.m. and one p.m. trip is made between 4:30 and 5:30 p.m. Figure 2-6 displays the locations of these bus routes within the study area, as well as the locations of designated bus stops.



OR 99

Junction City

Refinement Plan

FIGURE 2-5

Existing
OR 99
Pedestrian &
Bicycle Facilities

Legend

- EXISTING MARKED CROSSWALK (signalized)
- EXISTING SHOULDER BIKEWAY
- EXISTING SIDEWALK
- HIGHWAY
- ROAD
- CITY LIMITS
- URBAN GROWTH BOUNDARY
- TAX LOTS
- RAILROAD
- STREAM

0 1,000 2,000 4,000 Feet

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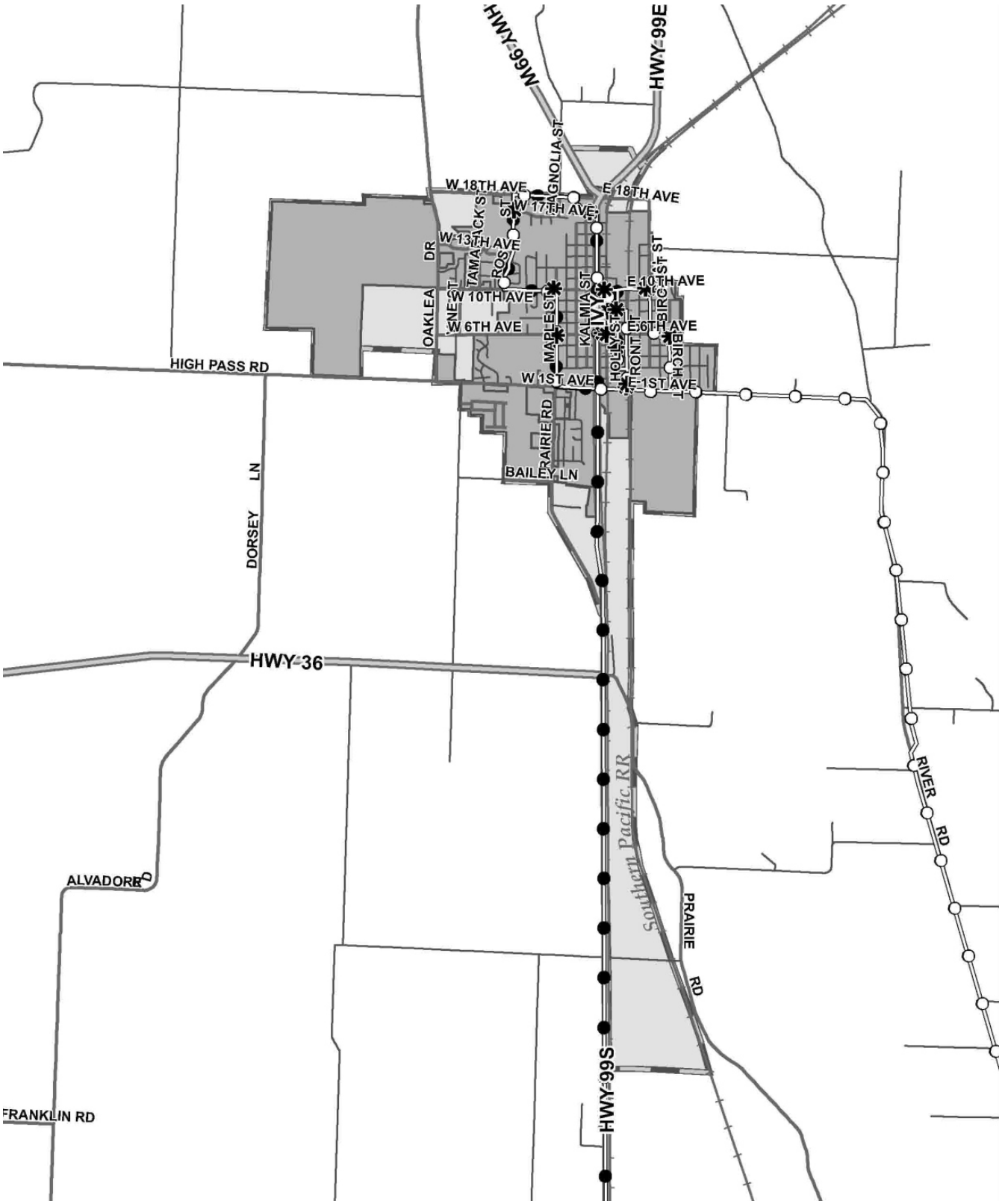
OR 99
Junction City
Refinement Plan

FIGURE 2-6
Existing LTD Bus Routes



Legend

- Urban Growth Boundary
- City Limits
- BusStops_LTD_05
- Bus Routes (LTD 2005)
  - 95
  - 95x

0 0.5 1 Miles

N

MAP PRODUCED BY: LCOG

Pavement Conditions

ODOT evaluates highway pavement conditions for all highways under state jurisdiction using a pavement condition index to rate conditions considering the amount of rutting, cracking, and other damage found to be present. This index, which uses a scale from 100 to 1, is then used to assign a qualitative grade for sections of highways, indicating that pavement conditions are "Very Good" to "Very Poor".

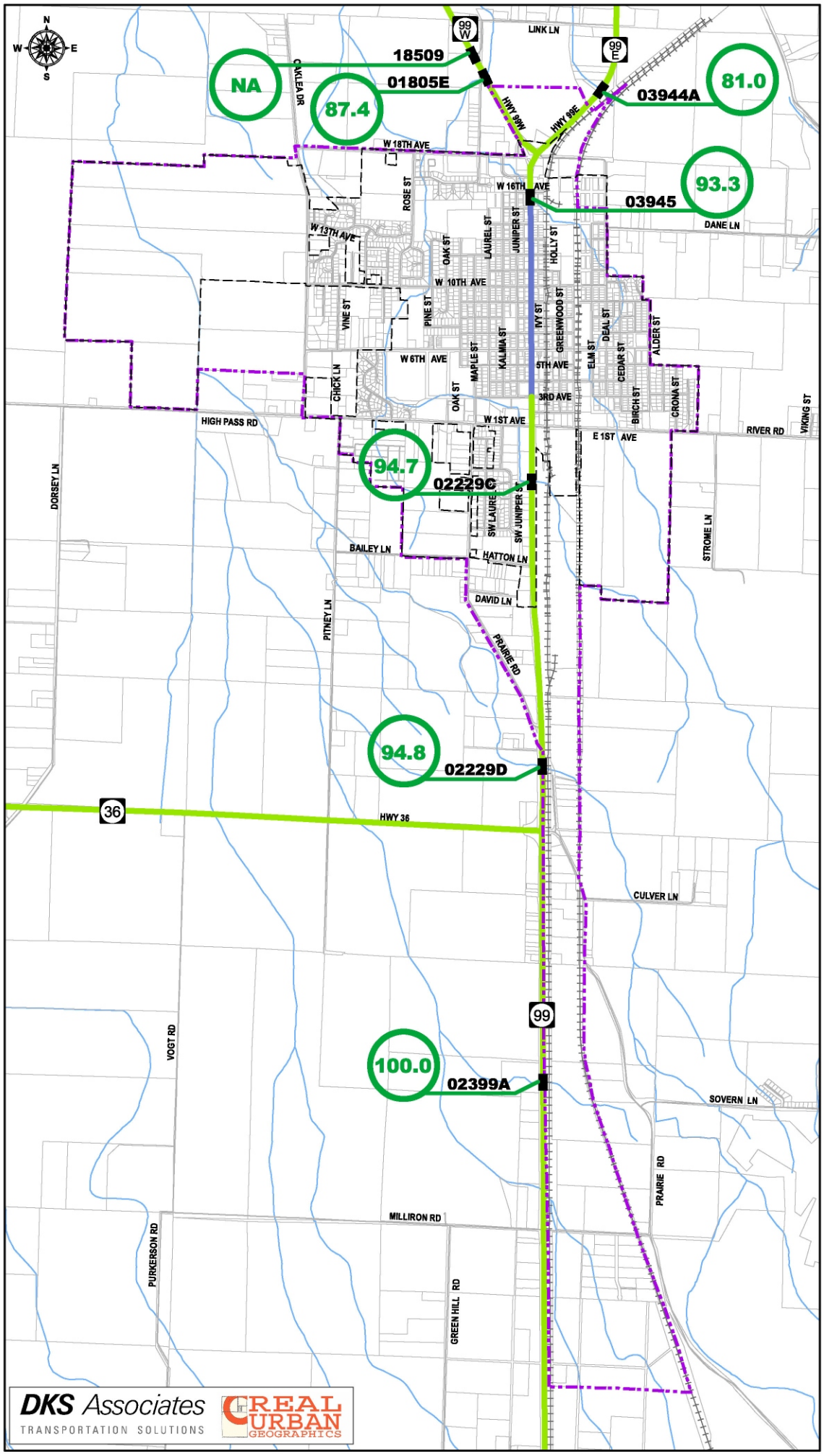
Figure 2-7 illustrates the state highway pavement condition ratings from 2004 for all highways within the study area. As shown, all pavement has been rated as, "Good", with the exception of the segment between 15th Street and 3rd Street on OR 99, which was recently paved in 2003 and rated as, "Very Good".

Bridges

Within the study limits, there are seven bridges on OR 99W and OR 99E. According to ODOT Bridge Inspection Reports, all bridges were inspected in 2005 and rated as "Not Deficient", with sufficiency ratings between 80 and 100 (note that inspection records for the bridge on OR 99W at mile point 108.32 could not be found).

Bridge sufficiency ratings are an indication of structural condition and are made on a scale from 1 to 100, with a rating of 1 being extremely poor and 100 being excellent. While all decisions on the future of bridges are dependant on engineering studies, in general, ratings of 50 or greater indicate that a bridge is in good condition, while ratings under 30 indicate that replacement or rehabilitation may be needed.

All bridges and their corresponding sufficiency ratings are shown on Figure 2-7.



OR 99

Junction City

Refinement Plan

FIGURE 2-7

Existing
OR 99
Pavement &
Bridge Conditions

Legend

- BRIDGE
- PAVEMENT CONDITION RATED "GOOD"
- PAVEMENT CONDITION RATED "VERY GOOD"
- # = BRIDGE SUFFICIENCY RATING
- x = BRIDGE ID NUMBER
- NA = RATING NOT AVAILABLE
- CONDITION NOT DEFICIENT
- ROAD
- CITY LIMITS
- URBAN GROWTH BOUNDARY
- TAX LOTS
- RAILROAD
- STREAM

0 1,000 2,000 4,000 Feet

Highway Access

ODOT maintains access management spacing standards for all highways under its jurisdiction that identify the minimum required separation between adjacent approaches to a highway (on the same side of the highway). These standards vary depending on the management objectives for the highway, the posted speeds, and the character of the surrounding land uses. Because the study area passes through both urban and rural areas and maintains several posted speed changes, the access management spacing standards for the study highways will vary. Table 2-1 breaks the study area into different zones characterized by changes in access management spacing standards. The locations of the zone boundaries are delineated in the series of Figures 2-8A through 2-8D.

Table 2-1: Study Area Access Management Spacing Standards

Zone	Highway Segment	Classification	Segment Designation	Urban/ Rural	Posted Speed	Access Spacing Standard
1	OR 99W: MP 108.32 - 108.50	Regional Hwy	Other	Rural*	55 mph	990 ft.
2	OR 99W: MP 108.50 - 108.70	Regional Hwy	Other	Urban	45 mph	750 ft.
3	OR 99W/99: MP 108.70 - 109.83	Regional Hwy	Other	Urban	30 mph	425 ft.
4	OR 99: MP 109.83 - 110.04	Regional Hwy	Other	Urban	45 mph	750 ft.
5	OR 99: MP 110.04 - 111.27	Regional Hwy	Other	Urban	55 mph	990 ft.
6	OR 99E: MP 31.78 - 32.07	Regional Hwy	Other	Rural	55 mph	990 ft.
7	OR 99E: MP 32.07 - 32.29	Regional Hwy	Other	Rural*	45 mph	750 ft.
8	OR 99E: MP 32.29 - 32.46	Regional Hwy	Other	Urban	30 mph	425 ft.

* Segment lies in both Urban and Rural areas, but spacing standard is not impacted.

A physical inventory of existing approaches to OR 99W, OR 99E, and OR 99 was collected through the study area, with descriptive information recorded for each approach indicating the approach's location, how the approach has been constructed and how it is currently being used. This physical inventory was compiled into Table A.1, which has been included in the appendix to this memorandum. Additional investigation regarding property access rights, including a search of approach permits issued in the study corridor and right of way research conducted was performed, with results documented in Table A.2 (also included in appendix). To compliment the physical inventory, a graphical display of individual approach locations along the highway is shown in the series of Figures 2-8A through 2-8D.

Using this information, a comparison of existing conditions to ODOT's access management spacing standards was made to evaluate areas needing improvement. Tables 2-2A and 2-2B provide the results of this investigation, displaying the number of approaches found in the zones identified above for each side of the study highways and comparing the average approach spacing per section to the applicable access management spacing standard. While this level of analysis can not be used to identify potential improvements to approach spacing, it does reflect the degree to which the spacing standards are being met and provides an indication of the extent of improvements needed. The rightmost column in the table indicates the approximate number of

driveway or public street approaches that would be allowed to fully comply with access spacing standards. Because this type of analysis does not account for access spacing between zone boundaries, the actual numbers shown are not as important as the magnitudes of differences between the actual number of approaches and the number that would be allowed according to the spacing standards.

Table 2-2A: OR 99W/99E Existing Southbound (west side of highway) Approach Spacing

Zone	Number of Approaches	Segment Length (ft.)	Average Approach Spacing (ft.)		Number of Approaches Able to Meet Standard
			Actual	Standard	
1	1	950	950	990	1*
2	1	1,055	1,055	750	1
3	40	5,965	150	425	14
4	5	1,110	220	750	1
5	27	6,500	240	990	6
6	7	1,530	220	990	1
7	2	1,160	580	750	1
8	1	900	900	425	2
Totals	89	19,170	-	-	27

* Segment Length is shorter than Spacing Standard

Table 2-2B: OR 99W/99E Existing Northbound (east side of highway) Approach Spacing

Zone	Number of Approaches	Segment Length (ft.)	Average Approach Spacing (ft.)		Number of Approaches Able to Meet Standard
			Actual	Standard	
1	1	950	950	990	1*
2	0	1,055	1,055	750	1
3	44	5,965	135	425	14
4	0	1,110	1,110	750	1
5	8	6,500	815	990	6
6	3	1,530	510	990	1
7	1	1,160	1,160	750	1
8	1	900	900	425	2
Totals	58	19,170	-	-	27

* Segment Length is shorter than Spacing Standard

These tables show that in zones 1, 2, 7, and 8 (segments of OR 99W and OR 99E north of the junction), there are relatively few existing approaches and that the applicable access management spacing standards are currently met or are very close to being met. However, in zone 6, which is the northern segment of OR 99E in the study area, existing access density increases.

South of the junction of OR 99W and OR 99E, access density increases substantially, with average approach spacing in zone 3 (OR 99W/99E junction to south of 1st Avenue) dropping below 200 feet. Of course, it should be acknowledged that the approach counts include public street intersections and that this zone spans the downtown area where the public street grid creates city blocks of approximately 300 feet in length. Therefore, even if all private approaches were removed, the average approach spacing would still be only slightly greater than 300 feet.

Zones 4 and 5 (south of 1st Avenue to OR 36) represent a transition from the densely developed zone 3 area to more of a highway commercial/semi-rural area where posted speeds have increased to 45 and 55 mph and public street intersection spacing has increased significantly. On the west side of the highway, access density continues to be relatively high, but on the east side, the presence of the railroad tracks limits access opportunities.

Legend

- UGB
- Approach
- # Approach Number
- Access Control
- Tax Lot
- Z# Access Management Zone Boundary and Number

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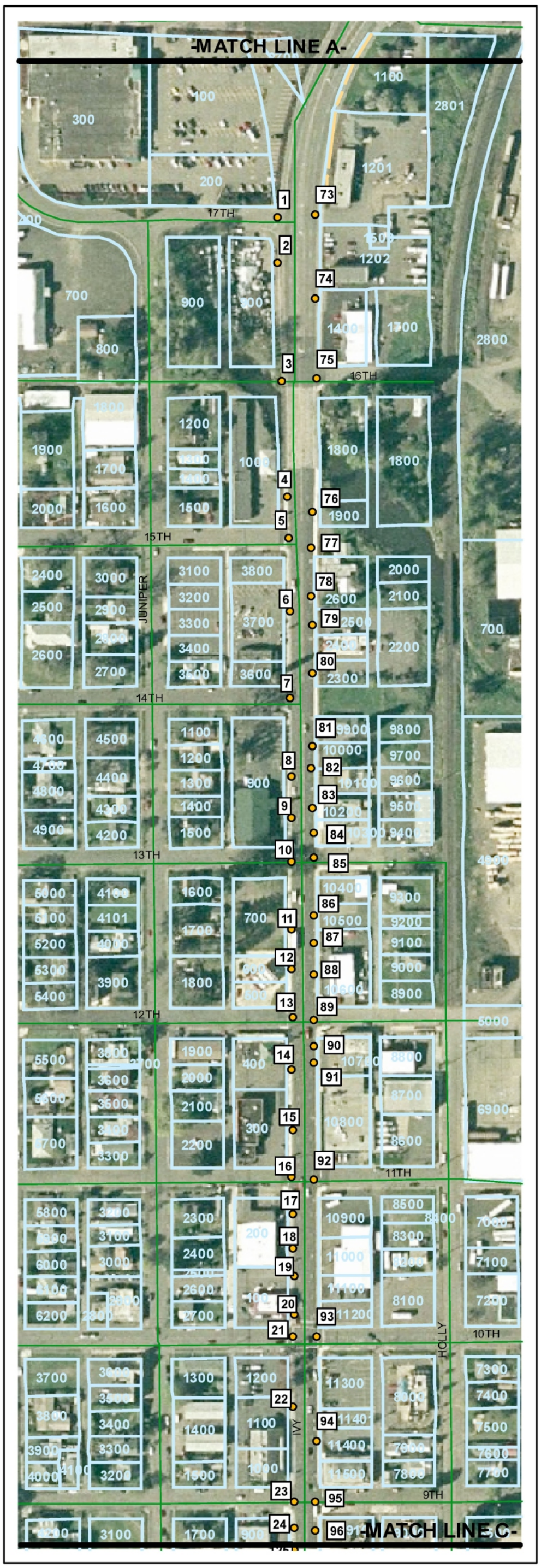
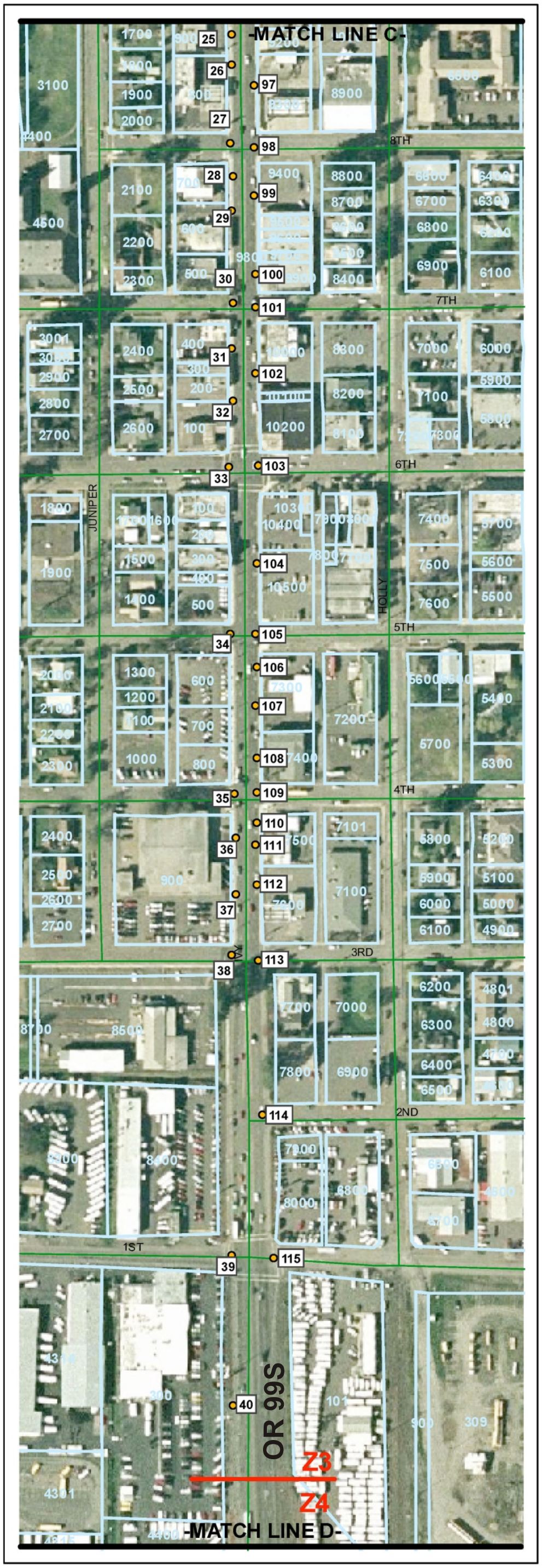
200 100 0 200 Feet

FIGURE 2-8A
Existing Approach Locations





Legend

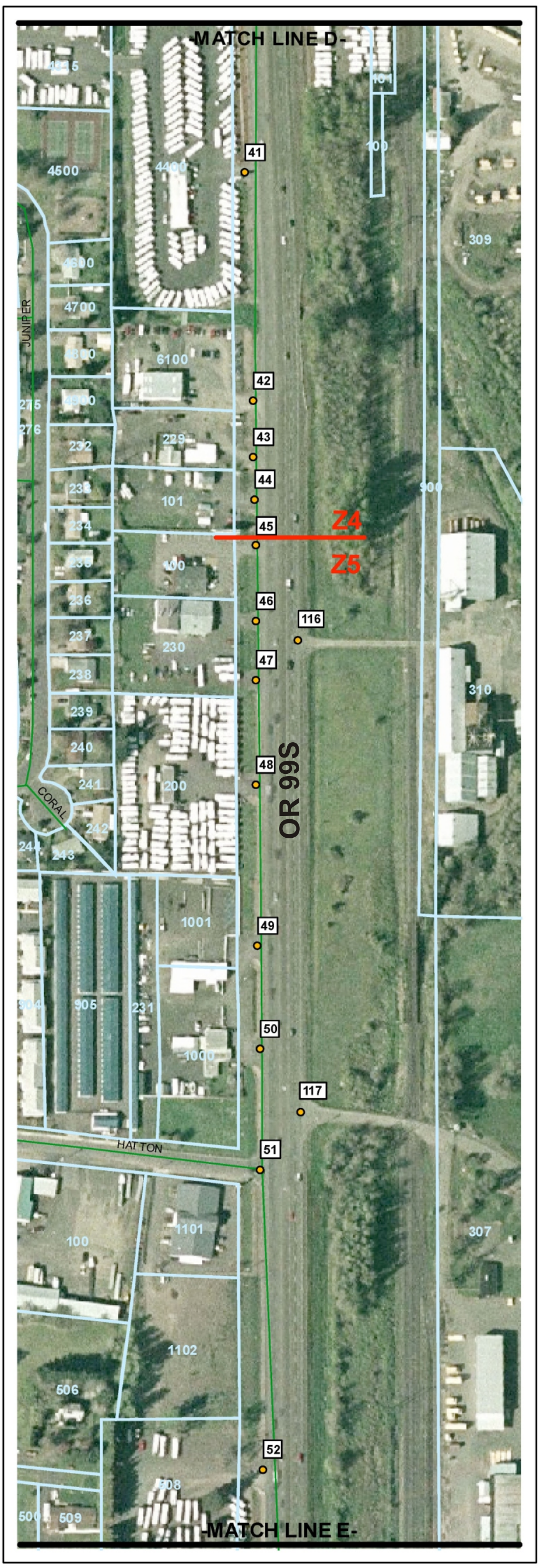
- UGB
- Approach
- Approach Number
- Access Control
- Tax Lot
- Z# Access Management Zone Boundary and Number

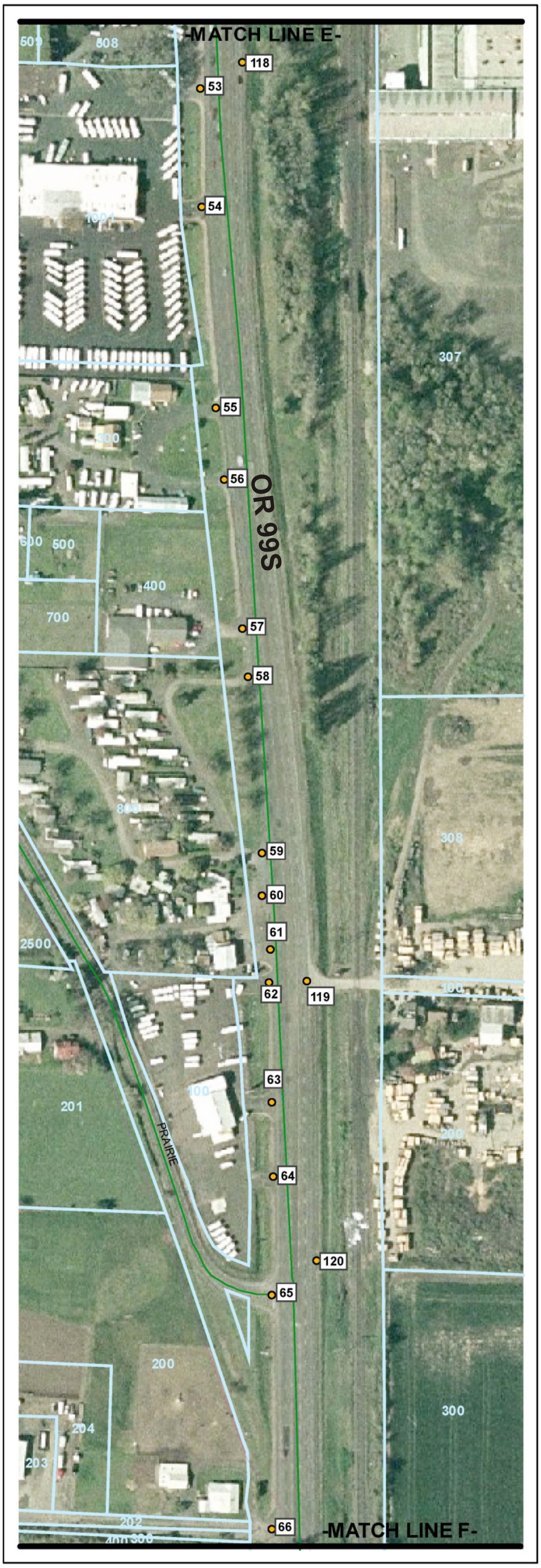
N W E S

200 100 0 200 Feet

DKS Associates
TRANSPORTATION SOLUTIONS

FIGURE 2-8B
Existing Approach Locations





Legend

- UGB
- Tax Lot
- Approach
- Z# Access Management Zone Boundary and Number
- # Approach Number

N W E S

DKS Associates
TRANSPORTATION SOLUTIONS

200 100 0 200 Feet

FIGURE 2-8C
Existing Approach Locations

Legend

- UGB
- Approach
- # Approach Number
- Tax Lot
- Z# Access Management Zone Boundary and Number

N W E S

DKS Associates
TRANSPORTATION SOLUTIONS

200 100 0 200 Feet

FIGURE 2-8D
Existing Approach Locations

Safety Analysis

The last five years (2001 – 2005) of available crash data for the OR 99 study corridor was obtained from ODOT to analyze current conditions. To identify potential deficiencies, crash rates for sections of OR 99 were compared to statewide average crash rates for similar facilities. Sections experiencing higher crash rates than the statewide average were investigated further to see if crash patterns could be mitigated through countermeasure implementation.

Crash rates identifying the number of crashes per million vehicle-miles traveled for specified sections of OR 99, as well as statewide average crash rates for various facility types, were obtained from ODOT's *2005 State Highway Crash Rate Tables*[1]. Highway sections analyzed in these tables are categorized by area type and functional classification to provide a basis for comparison between various facilities. For this analysis, OR 99 was classified as a non-freeway principal arterial, and the study corridor was separated into "Rural City" and "Rural Area" categories. Predetermined highway sections within these categories are provided in the crash rate tables with crash rates calculated for each section, as well as for groups of contiguous sections within the same area type. The reported crash rates through the OR 99 corridor are shown in Tables 2-3 and 2-4.

Rural Area Sections

Within the study corridor, there are two areas that fall under the Rural Area category: the section of OR 99E north of the city limits and the section of OR 99 from the southern city limits to OR 36. Crash rates for each of these sections are listed below in Table 2-3, which shows the crash rates experienced on the OR 99E section north of the city limits to have been consistently below the statewide average crash rates over the last five years. In 2001 and 2005, the crash rate experienced on the section from the south city limits to OR 36 were much lower than the statewide average, but in 2003 and 2004, they increased dramatically and were significantly higher than the statewide average.

Table 2-3: OR 99 5-year Crash Rate Comparison for Statewide Rural Areas

Section Limits (Milepoints)	Section Description	Crashes per Million Vehicles				
		2005	2004	2003	2002	2001
	Statewide Average Rate	**0.68**	**0.62**	**0.72**	**0.72**	**0.85**
29.09 – 32.32	OR 99E: Harrisburg – Junction City	0.30	0.60	0.20	-	0.30
110.39 – 111.27	OR 99: J.C. South City Limits – OR 36	0.38	**1.58**	**1.23**	-	0.37

Note: Bold type indicates the crash rate is greater than the statewide average.

Taking a closer look at the section between the south city limits and OR 36, it was found that out of a total of 20 crashes occurring over the five-year period, seven happened in 2003 and nine happened in 2004. In the following year, only two crashes occurred. In the years with high amounts of crashes (2003 and 2004), no correlation was found between crashes and time of day, day of week, crash type, weather conditions, or lighting conditions. However, it was noticed that

[1] *2005 State Highway Crash Rate Tables (August 2006)*. Retrieved August 24, 2006, from Oregon Dept. of Transportation Web site: http://www.oregon.gov/ODOT/TD/TDATA/car/CAR_Publications.shtml

in 2003, all crashes occurred in the months of February, September, and October, while in 2004 all crashes occurred between October and December. Given that no other trend was noticed and that crashes were infrequent in 2001 and 2002 and dropped again in 2005, no action is needed at this time. However, crash rates over the next couple of years should be monitored to see if an increase occurs again. Furthermore, the fact that this segment is less than one mile long could be an indication that crash frequencies are being over-exaggerated.

Rural City Section

The "Rural City" section of the study area includes OR 99 between the north and south city limits. As shown in Table 2-4, the crash rates experienced on this segment have been much higher than the statewide average crash rate for similar facilities during each of the last five years. In fact, the crash rates experienced more closely resemble those found in urban cities within the state.

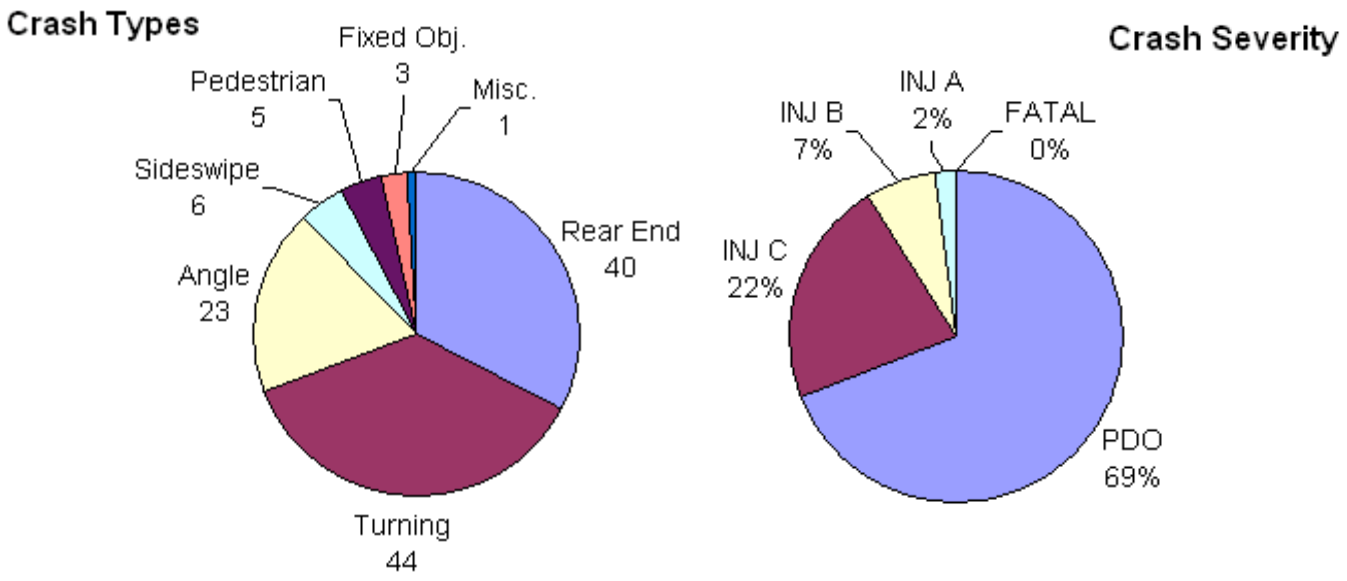
Table 2-4: OR 99 5-year Crash Rate Comparison for Statewide Rural Cities

Section Limits (Milepoints)	Section Description	Crashes per Million Vehicles				
		2005	2004	2003	2002	2001
	Statewide Average Rate	**0.90**	**0.99**	**1.28**	**1.16**	**1.70**
108.68 – 110.38	OR 99E: N. City Limits to S. City Limits	**2.54**	**2.06**	**3.05**	**2.29**	**2.40**

Note: Bold type indicates the crash rate is greater than the statewide average.

By examining individual crashes within this area for the five-year period, it was noted that out a total of 122 crashes, 44 (36%) were related to turning movements and 40 (33%) were related to rear end collisions. Furthermore, the four-lane section with no turning lanes that was previously described between 15th Avenue and 3rd Avenue accounts for 44% of this distance, but experienced a disproportionate 77% of the section's crashes. Given the types of crashes and the environment in which they are occurring, it appears that the lack of turning lanes and high number of access points within the city limits may be major contributors to the high crash frequency within this corridor. Figure 2-9 provides further information on crash types and crash severities documented within the city limits on OR 99.

Figure 2-9: OR 99 Crashes within Junction City Limits



As shown in Figure 2-9, there were also five crashes on OR 99 within the city limits involving pedestrians. These crashes have been investigated further and are detailed in Table 2-5.

Table 2-5: Pedestrian Crashes on OR 99 within the City Limits

Crash Number	Location	Severity	Age of Ped.	Ped. Crossing Direction	Cause / Error
1	MP 109.16 (north of 11th Ave.)	Injury C	70	East to West (crossing OR 99)	Pedestrian crossed between intersections.
2	MP 109.47 (6th Ave.)	Injury C	63	West to East (crossing OR 99)	Auto (traveling east to south) failed to yield right-of-way to pedestrian.
3*	MP 109.47 (6th Ave.)	Injury A Injury A	52 52	East to West (crossing OR 99)	Auto (traveling east to south) failed to yield right-of-way to pedestrian.
4	MP 109.75 (north of 1st Ave.)	Injury A	42	unknown (crossing OR 99)	unknown
5	MP 109.76 (1st Ave.)	Injury C	unknown	East to West (crossing OR 99)	Auto (traveling west to north) failed to yield right-of-way to pedestrian.

* Crash involved 2 pedestrians.

According to this information, all pedestrian-related crashes involved attempted crossings of OR 99. In most cases, it appears the cause of the crash was the driver failing to yield the right-of-way to the pedestrian.

Intersection Analysis

Crash rates at study intersections were calculated to identify problem areas in need of mitigation. Because the total number of crashes experienced at an intersection is typically proportional to the number of vehicles entering it, a crash rate describing the frequency of crashes per million entering vehicles (MEV) is used to determine if the number of crashes occurring should be considered high. Using this technique, a crash rate of 1.0 MEV or greater is commonly used to identify when further investigation is warranted. As shown in Table 2-6, crash rates calculated at all study intersections are well below this threshold, indicating the frequency of crashes occurring is normal for the volume of traffic served.

Table 2-6: Study Intersection Crash Rates (MEV)

Intersection	Crash Rate
OR 99W @ OR 99E	0.03
OR 99 @ 10th Ave.	0.51
OR 99 @ 6th Ave.	0.34
OR 99 @ 1st Ave.	0.16
OR 99 @ Prairie Rd.	0.00
OR 99 @ OR 36	0.08

SPIS Ratings

This analysis was supplemented by reviewing ODOT's Safety Priority Index System listing for locations in the study corridor ranked among the state's top 10% of hazardous locations. The Safety Priority Index System (SPIS) is a method developed by ODOT for identifying hazardous locations on state highways. The SPIS score is based on three years of crash data and considers crash frequency, crash rate, and crash severity. ODOT bases its SPIS on 0.10-mile segments to account for variances in how crash locations are reported. This information is a general comparison of the overall safety of the highway based on crash information for all sections throughout the state.

According to ODOT's 2005 SPIS ratings, the intersection on OR 99 at 6th Avenue is the only location within the study area with a rating within the top 10%. In the last five years, a total of 15 crashes occurred at this intersection, with seven of them happening in the year 2003. No more than three crashes occurred in any of the remaining four years. Considering that the SPIS rating may be inflated due to one bad year that has been followed by two years with very few crashes and that a traffic signal was recently installed in 2003, conditions at this location are expected to improve.

Operational Analysis

To assess the highway's ability to adequately accommodate travel demand under existing conditions, traffic volume counts were obtained and used along with other inventory data including intersection geometrics and traffic controls to analyze the performance of study intersections. The methodology used and results obtained are described below.

Traffic Volumes

At the north end of the study area, average daily traffic volumes experienced on OR 99W and OR 99E are approximately 6,000 and 8,100 vehicles, respectively. Through the remainder of the study corridor to the south, daily traffic volumes range from 15,500 to 16,200 vehicles. Heavy vehicles are estimated to make up approximately 15% of the daily traffic volumes, but during the weekday peak hour they drop to approximately 4%.

For the analysis of study intersection performance, ODOT supplied 16-hour manual classification counts taken in November 2005. From these six intersections, a common weekday peak hour was selected between 5:00 and 6:00 p.m. Because transportation improvements are typically designed for the 30th highest hour (30 HV) of traffic volumes experienced within the year, a seasonal factor was applied to the November counts obtained to better represent volumes seen during that time. Because there are no Automatic Traffic Recorder (ATR) stations within the study corridor to provide reliable annual traffic data, ODOT's 2005 Seasonal Trend Table[2] was used to develop a seasonal factor. The Seasonal Trend Table, developed by ODOT's Transportation Planning Analysis Unit, was constructed by averaging seasonal trend groupings from all ATRs across the state. To emulate seasonal peak volumes on OR 99 through Junction City, data from this table for ATRs on highways characterized by summer peaks and commuting between cities were averaged. The resulting factors increased the November counts by 16 to 20%, depending on the time of the month in which the counts were collected.

In addition, a growth factor of 2.2% per year was applied to the counts collected in 2005 to reflect volumes that would be present in 2006, which was the selected base year for this study. The growth rate was obtained through ODOT's Primary 2024 Future Volume Table,[3] which uses historic growth trends to project future highway traffic volumes. This growth rate also results in similar growth on the crossing local streets as seen in the Junction City Transportation System Plan (March 2000, LCOG).

The 30HV traffic volumes developed for 2006 at study intersections are displayed in Figure 2-10. These volumes have also been balanced to show a reasonable amount of variation in inflows and outflows between adjacent intersections given the number of opportunities for vehicles to enter or exit the highway, as some counts were not collected during the same day.

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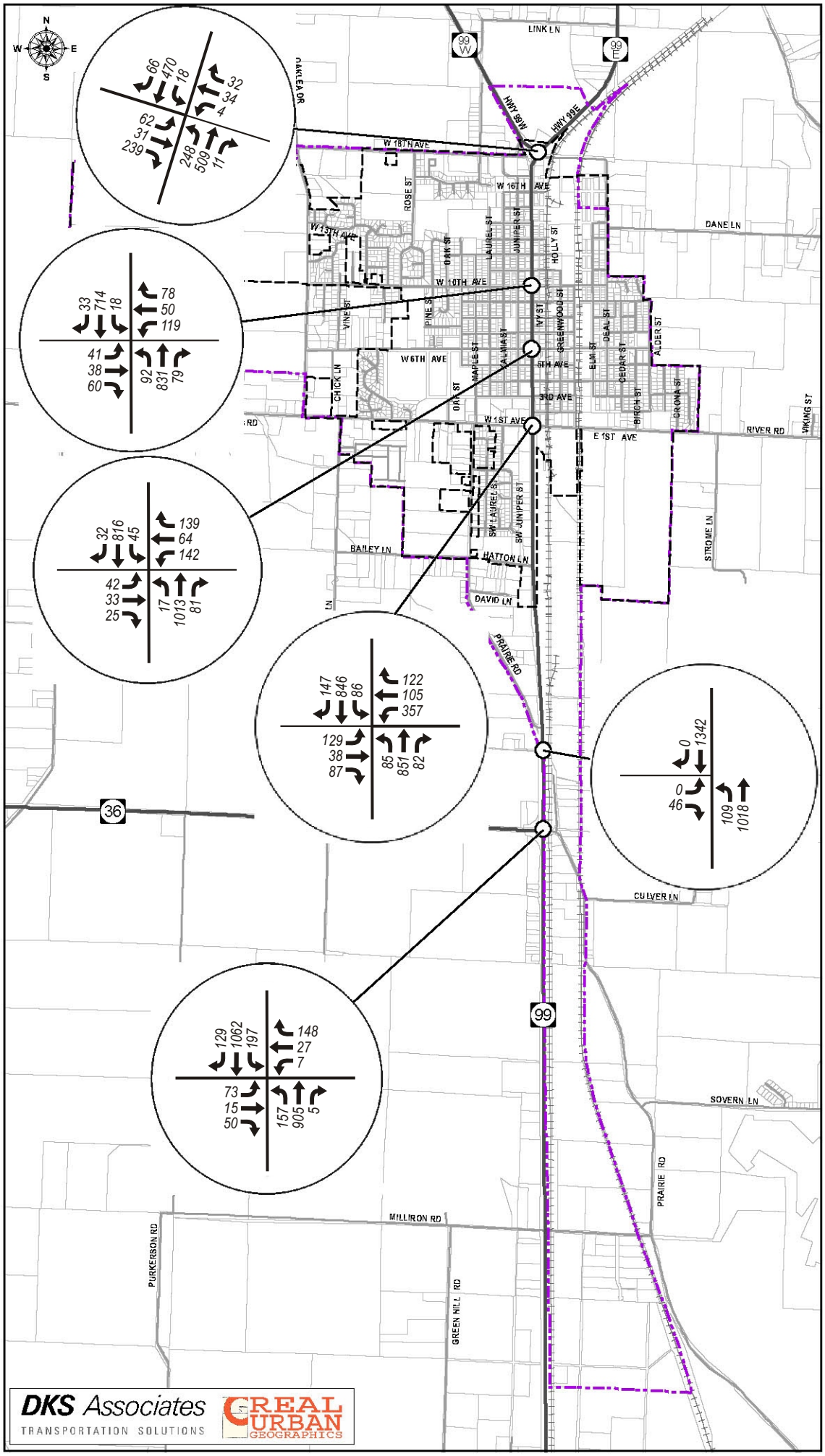
[2] *2005 Seasonal Trend Table*. Retrieved July 5, 2006, from Oregon Dept. of Transportation Web site: http://www.oregon.gov/ODOT/TD/TP/TADR.shtml

[3] *Primary 2024 Future Volume Table*. Retrieved June 30, 2006, from Oregon Dept. of Transportation Web site: http://www.oregon.gov/ODOT/TD/TP/TADR.shtml



OR 99

Junction City

Refinement Plan

FIGURE 2-10

2006 30HV
Traffic Volumes

Legend

- HIGHWAY
- ROAD
- CITY LIMITS
- URBAN GROWTH BOUNDARY
- TAX LOTS
- RAILROAD
- STREAM

0 1,000 2,000 4,000 Feet

DKS Associates
TRANSPORTATION SOLUTIONS

REAL URBAN GEOGRAPHICS

Capacity Analysis

All study intersections are located along OR 99 which is under ODOT jurisdiction. For this reason, all intersections are subject to ODOT's mobility standards as outlined in the 1999 Oregon Highway Plan[4] (OHP). ODOT's mobility standards are based on volume-to-capacity (v/c) ratios, which are comparisons of the actual volume using the intersection (or a particular movement) to the maximum volume that could be served. A v/c ratio greater than 1.0 would indicate that there is more demand for the intersection than can be provided, which often results in long queues at the approaches.

The OHP requires that different v/c thresholds be met for each classification of highway, reflecting the management objectives for that type of facility. Through the study area, OR 99 is classified as a regional highway and lies within the UGB of Junction City, which is a member of the Lane Council of Governments. In addition, this section of highway was classified as a freight route by the Oregon Transportation Commission through an amendment to the OHP adopted in August 2005. Considering these factors, Table 6 in the OHP shows that all study intersections must maintain a v/c ratio no greater than 0.85 to comply with adopted mobility standards. Because the intersection with Prairie Road is unsignalized, the movements that are stop-controlled or must yield right of way may dictate whether the intersection can operate safely and efficiently. Therefore, according to the OHP, a mobility standard requiring a v/c ratio of 0.90 or lower for those movements shall be applied. The applicable mobility standard for each intersection is repeated in Table 2-7.

To perform the intersection capacity analysis, all study intersections were modeled in Synchro and analyzed using Highway Capacity Manual[5] (HCM) methodology. Intersections were analyzed using the 30HV volumes, lane configurations, and traffic controls previously described, along with signal timing data provided by ODOT. The capacity analysis worksheets have been included in the appendix for reference.

As shown in Table 2-7, all study intersections currently comply with ODOT's mobility standards, with the exception of the intersection on OR 99 at 1st Avenue. According to the signal timing sheets provided by ODOT, this intersection is currently programmed to run on a fixed cycle length. The signal timing for this intersection, as well as others within this corridor, may be revisited under the future year analysis to see if adequate mitigation can be provided without requiring high-cost capacity improvements.

Also, it should be noted that while the stop-controlled and yielding movements on the intersection of OR 99/Prairie Road are shown have very low v/c ratios, the southbound through movements are experiencing a v/c ratio of 0.58 (mobility standard for this movement would be 0.85). While operations on stop-controlled and yielding movements often degrade faster than other movements as intersection volumes increase, this southbound through movement will need to be evaluated again during the future year analysis to ensure adequate operations are being maintained.

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[4] *1999 Oregon Highway Plan* – August 2005 Amendment, Oregon Department of Transportation, 2005.
[5] 2000 Highway Capacity Manual, Transportation Research Board, Washington DC, 2003.

Table 2-7: 2006 30HV Existing Intersection Performance

Study Intersection	Intersection Performance			Mobility Standard
	Delay	LOS	V/C	V/C
Traffic Signal Control				
OR 99E & OR 99	15.9	B	0.59	0.85
10th Avenue & OR 99	11.9	B	0.71	0.85
6th Avenue & OR 99	11.3	B	0.64	0.85
1st Avenue & OR 99	33.4	C	**0.88**	0.85
OR 36 & OR 99	23.3	C	0.72	0.85
STOP Sign Control				
Prairie Road & OR 99	16.6	B/C	0.17*	0.90

LOS Level of service

"A/A" refers to level of service of left turning traffic from major street and the average level of service of traffic turning from the minor street onto the major street.

Delay Average vehicle delay in seconds for all movements at signalized and four-way stop intersections. Minor street delay in seconds at unsignalized intersections.

V/C Volume to capacity ratio of the intersection.

* critical v/c for OR 99/Prairie Rd is on northbound left turn.

Black background and bold type indicates mobility standard is not met.

Sub-Area Conceptual Access Plan

As previously noted, there are lands bounded by the BNSF and UPRR railroads from 1st Avenue to the southern urban growth boundary, including the entire future prison site, which may be difficult to develop due to the inaccessibility of the individual properties resulting from the presence of the railroads. These properties are zoned for industrial development, but are currently developed with a mix of industrial and agricultural uses that are being served through a combination of private and public railroad crossings. As these properties attempt to redevelop, the existing means of access may not be adequate to serve the new uses or restrictions on existing railroad crossings may not allow for continued use. Therefore, to facilitate the development of this area, a conceptual access plan will be developed to guide the construction of future roads and railroad crossings.

Figure 2-11 displays the sub-area bounded by the railroad tracks and the locations of existing access points serving all properties within it. The access points shown include both public and private crossings, many of which would not remain after redevelopment of this area. The goal of the conceptual access plan will be to provide access to all properties within this area, while reducing the number of rail crossings as much as possible. Developing new public streets and taking advantage of existing public rail crossings will be key elements of this plan.

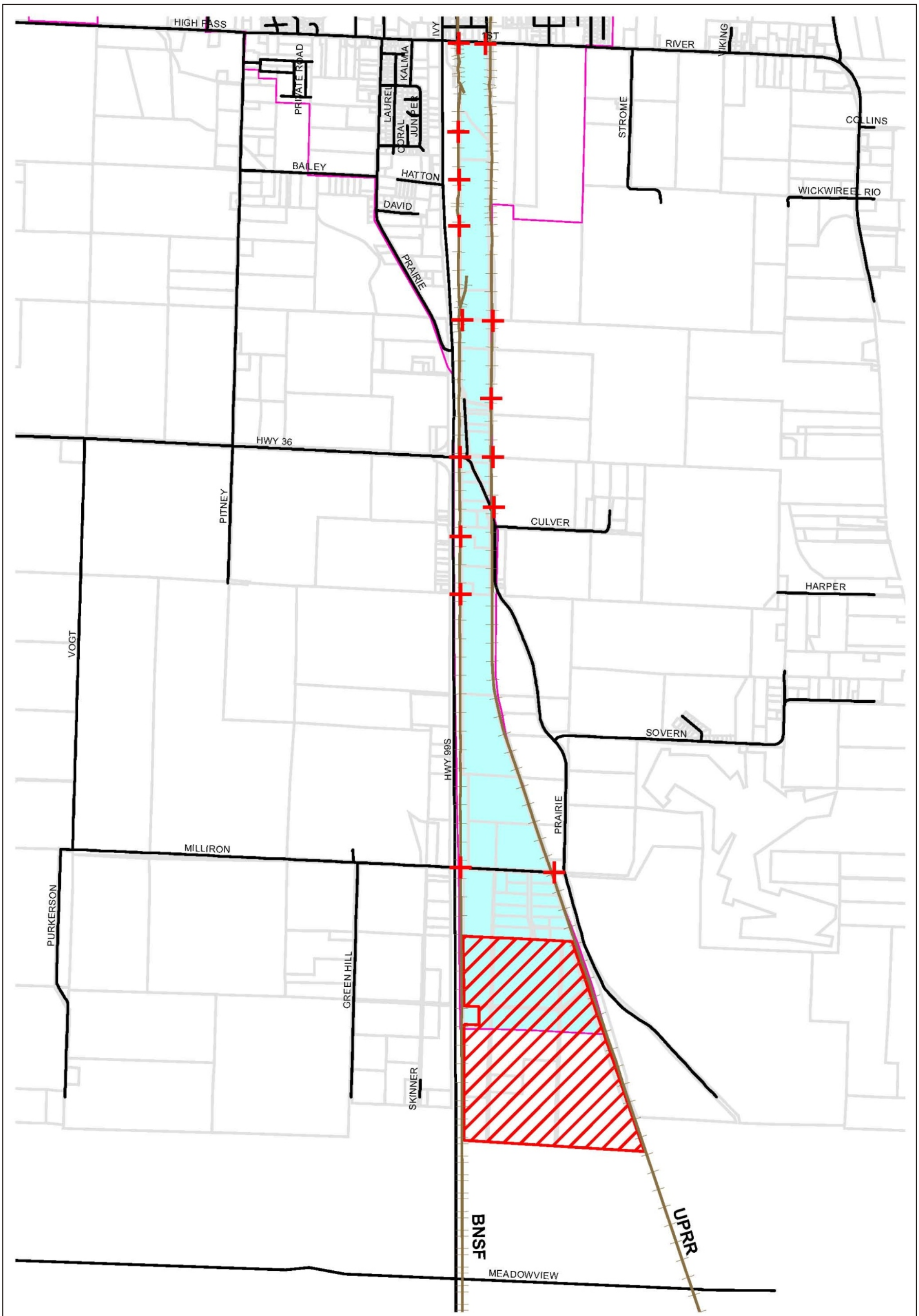

FIGURE 2-11
Existing
Sub-Area Access
Locations