8: Motor Vehicles

This chapter summarizes needs for the motor vehicle system for both existing and future conditions in the City of Richland. This chapter also outlines the criteria to be used in evaluating needs, provides a number of strategies and recommends plans for motor vehicles (automobiles, trucks, buses and other vehicles). The needs, criteria and strategies were identified in working with the City's Steering Committee and Technical Advisory Committee for the Transportation Plan. This group explored automobile and truck needs in the City of Richland and provided input about how they would like to see the transportation system in their city develop. The Motor Vehicle modal plan is intended to be consistent with other jurisdictional plans including BFCG's Regional Transportation Plan (RTP), and Washington State Department of Transportation's Washington Transportation Plan (WTP) and Highway System Plan (HSP).

The motor vehicle element involves several elements. This chapter is separated into the following ten sections:

- Criteria
- Functional Classification (including summary of cross sections and local street connectivity)
- Circulation and Capacity Needs
- Safety
- Access Management
- Maintenance
- Neighborhood Traffic Management
- Parking
- Transportation System Management/Intelligent Transportation Systems
- Truck Routes

Criteria

The City of Richland Vision Statement lays out a set of goals and policies to guide transportation system development in Richland (see Chapter 2). Many of these goals and policies pertain specifically to motor vehicles. These goals and policies represent the criteria that all motor vehicle improvements or changes in Richland should be measured by, to determine if they conform to the intended direction of the City.

Goal 1: The City will provide an efficient transportation network including road, rail, water and air, to serve existing needs and to accommodate new development.

- Policy 1 – The City will coordinate planning and operation of transportation facilities with programs to optimize multi-modal transportation programs.
- Policy 2 – The City will coordinate the location of major utility and transportation

corridors.

- Policy 5 – The City will maintain the existing transportation network, and projects that impact the existing network will support expansion of the network.
- Policy 6 – The City will identify and prioritize transportation system needs citywide to meet current and future demand.
- Policy 7 – The City will establish a program to consistently upgrade its existing signal system to improve traffic flow and progression.
- *New Policy 8 – The City will seek to integrate appropriate facility design with compatible land use types to reduce environmental and livability impacts.*
- *New Policy 9 – The City will pursue transportation equity throughout the City with an equitable distribution of transportation projects.*

Goal 2: The City will maximize the operating efficiency of its transportation system.

- Policy 1 – The City will develop its roadway functional classification system in accordance with the regional functional classification system developed by the FHWA.
- Policy 3 – The City will actively coordinate the planning, construction, and operation of transportation facilities and programs that may affect the City with local, regional and state jurisdictions.
- *New Policy 4 – The City will develop and deploy incident management plans on the primary arterial system.*
- Goal 3: The City will support beautification efforts for major entryways into Richland.
- Policy 1 – The City will encourage the development and enhancement of principal entryways into Richland.
- Policy 2 – The City will maximize the use of landscaping and other types of buffers along major transportation corridors.

Goal 4: The City will encourage public/private partnerships for financing transportation projects that foster economic growth and address the needs of growth and development.

- Policy 1 – The City will reserve property for needed rights-of-way as quickly as possible by requiring dedication of right-of-way as a condition for development.
- Policy 2 – The City will only consider land use changes (such as planned unit developments, master planned projects, rezones and plats) when existing and proposed transportation system needs are adequately met.
- Policy 3 – The City will route *principal and minor* arterials around, rather than through, neighborhoods and communities to minimize traffic impacts on residential neighborhoods.
- Policy 7 – The City will encourage the development community to site and construct transportation facilities that are compatible with adjacent land uses to minimize potential conflicts.

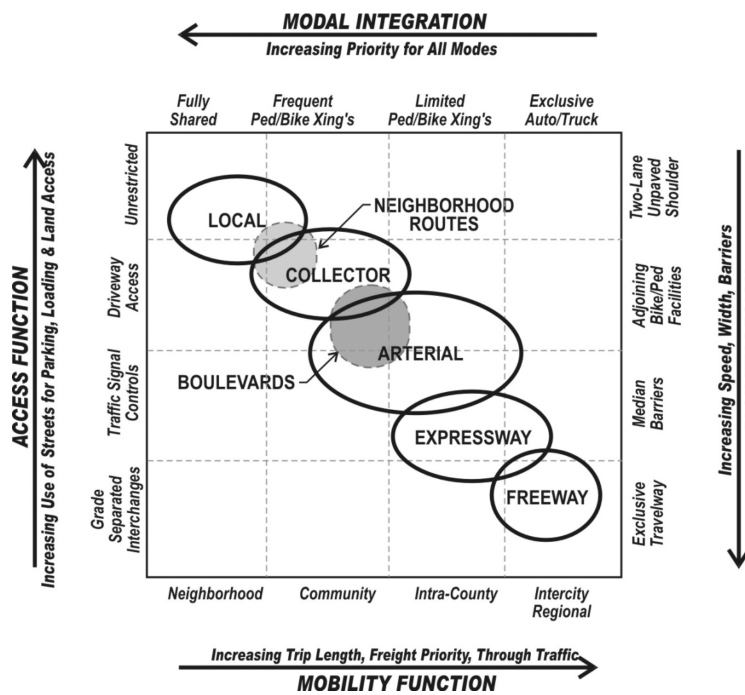
Goal 6: The City will encourage the use of transportation modes that maximize energy conservation, circulation efficiency and economy.

- Policy 1 – The City will support increased use of multi-modal transportation. This includes, but is not limited to, high occupancy vehicle lanes, bicycle trails, park-and-ride facilities, carpools, vanpools, buses and mass transit.

Functional Classification

Roadways have two functions, to provide mobility and to provide access. From a design perspective, these functions can be incompatible since high or continuous speeds are desirable for mobility, while low speeds are more desirable for land access. Arterials emphasize a high level of mobility for through movement; local facilities emphasize the land access function; and collectors offer a balance of both functions

Functional classification has commonly been mistaken as a determinate for traffic volume, road size, urban design, land use and various other features which collectively are the elements of a roadway, but do not represent function. For example, the volume of traffic on a roadway is directly related to land uses and because a roadway carries a lot or a little traffic does not necessarily determine its function. The traffic volume, design (including access standards) and size of the roadway are outcomes of function, but do not define function.



Connectivity and Functional Class

Function can be best defined by connectivity. Without connectivity, neither mobility nor access can be served. Roadways that provide the greatest reach of connectivity are the highest level facilities. Conversely, those with the shortest connections are the lowest level facilities. For a community such as Richland, the linkage between connectivity and street functional definition helps to relate street design, access spacing, and other transportation elements to issues specific to community design and livability. Other agencies, such as BFCG and WSDOT use terms that conform to federal conventions (see next section for details), and generally have a much higher requirement for mobility, whereas, most of the city streets (collector, local) emphasize access and neighborhood type values.

Arterials can be defined by regional level connectivity. These routes go beyond the city limits in providing connectivity and can be defined into two groups: principal arterials (typically state routes) and arterials. The efficient movement of persons, goods and services depends on an interconnected arterial system. Collectors can be defined by citywide or district wide connectivity. These routes span large areas of the city but typically do not extend significantly into adjacent jurisdictions. They are important to city circulation. In the past, textbooks on functional classification generally defined all other routes as local streets, providing the highest level of access to adjoining land uses. These routes do not provide through connection at any significant regional, citywide or district level.

However, based upon connectivity, there is a fourth level of functional classification - neighborhood route. In many past plans, agencies defined a minor collector or a neighborhood collector; however, use of the term collector is not appropriate. Collectors provide citywide or large district connectivity and circulation. There is a function between a collector and a local street that is unique due to its level of connectivity. Local streets can be cul-de-sacs or short streets that do not connect to anything.[1] Neighborhood routes have more connectivity than do traditional local streets and are use to get in and around neighborhoods. They have connections within the neighborhood and between neighborhoods. These routes have neighborhood connectivity, but do not serve as citywide streets. They have been the most sensitive routes to through, speeding traffic due to their residential frontages. Because they do provide some level of connectivity, they can commonly be used as cut-through routes in lieu of congested or less direct arterial or collector streets that are not performing adequately. Cut-through traffic has the highest propensity to speed, creating negative impacts on these neighborhood routes. By designating these routes, a more systematic citywide program of neighborhood traffic management can be undertaken to protect these sensitive routes.

In the past, traffic volume and the size of a roadway have been directly linked to functional classification. More recently, urban design and land use designations have also been tied to functional classification. All of these approaches to functional classification tend to be confusing and ever changing, complicating an essential transportation planning exercise. The planning effort to identify connectivity of routes in Richland is essential to preserve and protect future mobility and access, by all modes of travel. In Richland, it is not possible to have a citywide neo-traditional layout. Past land use decisions, topography and environmental features preclude this[2]. Without defining the varying levels of connectivity now in the Transportation Plan, the future impact of the adopted Comprehensive Plan land uses will result in a degraded ability to move goods and people (existing and future) in Richland. The outcome would be intolerable delays and much greater costs to address solutions later rather than sooner.

By planning an effective functional classification of Richland streets[3], the City can manage public facilities pragmatically and cost effectively. These classifications do not mean that because a route is an arterial it is large and has lots of traffic. Nor do the definitions dictate that a local street should only be small with little traffic. Identification of connectivity does not dictate land use or demand for facilities. The demand for streets is directly related to the land use. The highest level connected streets have the greatest potential for higher traffic

[1] Or in the case of neo-traditional grid systems, extensive redundancy in facilities results in local status to streets that have greater than local connectivity.

[2] While subdivisions or areas of neo-traditional development exist and are possible (even desirable), on the whole, the concept cannot be generically applied citywide in lieu of functional classification.

[3] Including definition of which routes connect through Richland, within Richland and which routes serve neighborhoods and the local level in the city.

volumes, but do not necessarily have to have high volumes as an outcome, depending upon land uses in the area. Typically, a significant reason for high traffic volumes on surface streets at any point can be related to the level of land use intensity within a mile or two. Many arterials with the highest level of connectivity have only 35 to 65 percent “through traffic”. Without the connectivity provided by arterials and collectors, the impact of traffic intruding into neighborhoods and local streets goes up substantially.

If land use is a primary determinate of traffic volumes on streets, then how is it established? In Washington, land use planning laws require the designation of land uses in the Comprehensive Plan. These land use designations are very important not only to the City for planning purposes, but to the people that own land in Richland. The adopted land uses in Richland have been used in this study, working with the BFCG regional forecasts for growth in the region for the next 20 years. As discussed in Chapter 10, if the outcome of this Transportation Plan is either too many streets or solutions that are viewed to be too expensive, it is possible to reconsider the core assumptions regarding Richland’s livability - its adopted land uses or its service standards related to congestion. The charge of this Transportation Plan is to develop a set of multi-modal transportation improvements to support the Comprehensive Plan land uses. Key to this planning task is the functional classification of streets.

Functional Classification Definitions

The street functional classification of streets in Richland is represented by Figure 8-1. Any street not designated as an arterial, collector or neighborhood route is considered a local street.

Principal Arterials are typically freeways and state highways that provide the highest level of regional connectivity. These routes connect over the longest distance (many miles long) and are less frequent than other arterials or collectors. These highways generally span several jurisdictions and many times have statewide importance (as defined in the WSDOT Highway System Plan).[4] In Richland, I-182 and two state routes (SR 240 and SR 395) are designated Highways of Statewide Significance. SR 224 (Van Giesen Street west of SR 240) is not designated as a Highway of Statewide Significance.

Arterial streets serve to interconnect and support the principal arterial highway system. These streets link major commercial, residential, industrial and institutional areas. Arterial streets are typically spaced about one mile apart to assure accessibility and reduce the incidence of traffic using collectors or local streets for through traffic in lieu of a well placed arterial street. Access control is the key feature of an arterial route. Arterials are typically multiple miles in length. Many of these routes connect to cities surrounding Richland and commonly provide access to freeways via interchanges.

Collector streets provide both access and circulation within and between residential and commercial/industrial areas. Collectors differ from arterials in that they provide more of a citywide circulation function, do not require as extensive control of access (compared to arterials) and penetrate residential neighborhoods, distributing trips from the neighborhood and local street system. Collectors are greater than 0.5 to 1.0 miles in length.

[4] Washington State Highway System Plan, 2002-2032, Washington Department of Transportation, February 2002.

Neighborhood routes are usually long relative to local streets and provide connectivity to collectors or arterials. Because neighborhood routes have greater connectivity, they generally have more traffic than local streets and are used by residents in the area to get into and out of the neighborhood, but do not serve citywide/large area circulation. They are typically about a quarter to a half-mile in total length. Traffic from cul-de-sacs and other local streets may drain onto neighborhood routes to gain access to collectors or arterials. Because traffic needs are greater than a local street, certain measures should be considered to retain the neighborhood character and livability of these routes. Neighborhood traffic management measures are often appropriate (including devices such as speed humps, traffic circles and other devices - refer to later section in this chapter). However, it should not be construed that neighborhood routes automatically get speed humps or any other measures. While these routes have special needs, neighborhood traffic management is only one means of retaining neighborhood character and vitality.

Local Streets have the sole function of providing access to immediate adjacent land. Service to "through traffic movement" on local streets is deliberately discouraged by design.

DKS *Associates*
TRANSPORTATION SOLUTIONS

City of Richland Transportation Plan

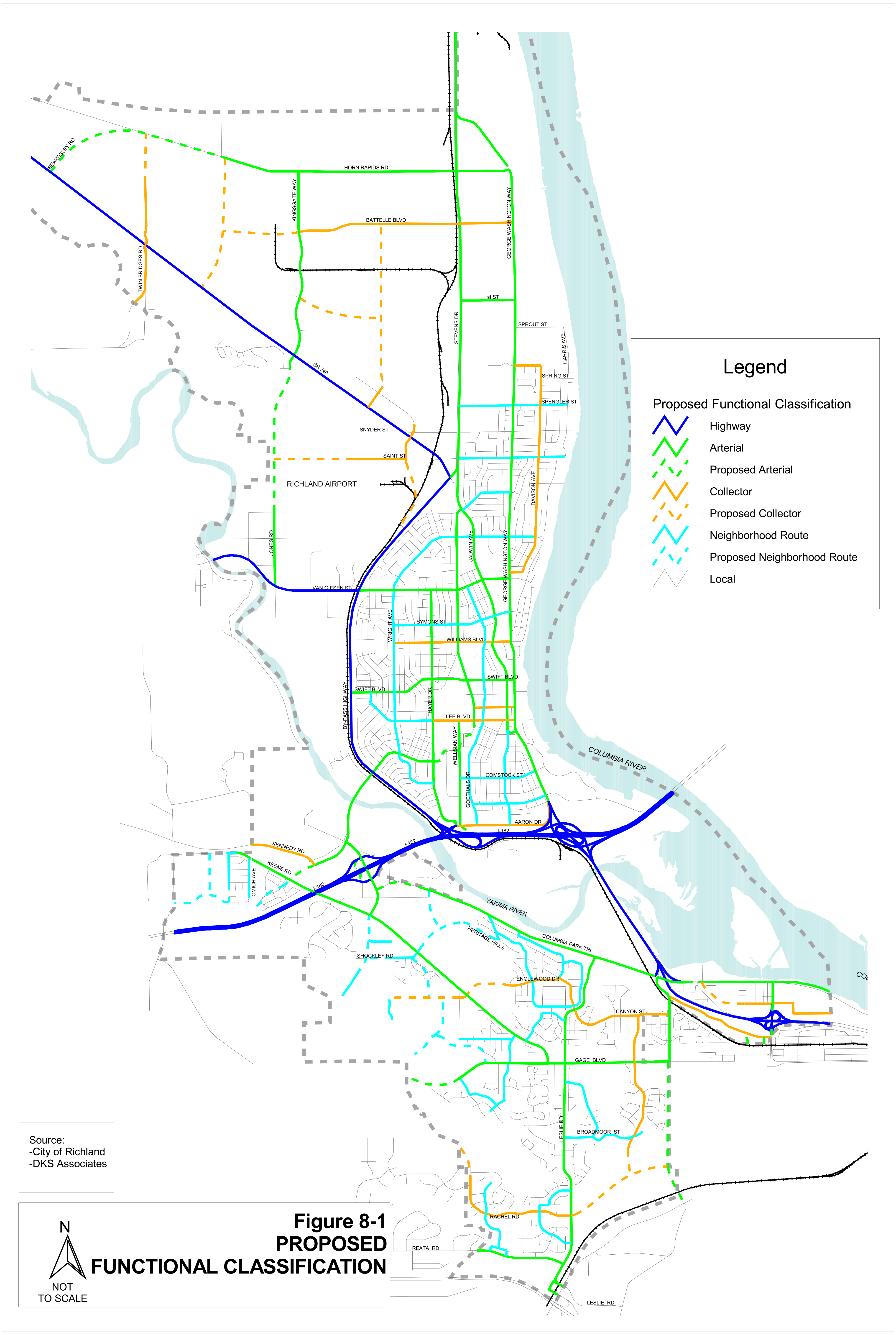


Figure 8-1
PROPOSED FUNCTIONAL CLASSIFICATION

Other Jurisdictions and Functional Class Definitions

The City of Richland will need to coordinate with regional agencies to assure consistency in cross section planning as the WSDOT Highway System Plan and the BFCG Regional Transportation Plan moves forward in its periodic update. Both of these agencies conform to street functional class conventions established by the Federal Highway Administration. These designations are required for federal plan monitoring and funding applications. The designations for major regional facilities within the study area are summarized in Table 8-1.

Table 8-1: BFCG Regional Motor Vehicle System Designations

Roadway	BFCG
Interstate 182	Interstate
SR 240	Expressway/Other Freeway
SR 224 (Van Giesen)	Minor Arterial
Stevens Drive	Principal Arterial
George Washington Way	Principal Arterial
Leslie Road	Principal Arterial
Keene Road	Principal Arterial

Sources: WSDOT, *Highway System Plan,* 2002, and Benton-Franklin Council of Governments, *Regional Transportation Plan*, 2002, Figure 4.3. Refer to RTP for complete description of lower class roadways.

Recommended Functional Classification Changes in Richland

The proposed street functional classification differs from the existing approved functional classification. Neighborhood routes were not defined in the existing functional classification. The proposed functional classification was developed following detailed review of the city, region, and state street facility functional classification maps. Table 8-2 summarizes the major differences between the proposed functional classification and the existing designations for streets in Richland. This table also outlines the streets, which were previously designated collectors that are now identified as neighborhood routes.

Criteria for Determining Changes to Functional Classification

The criteria used to assess functional classification have two components: the extent of connectivity (as defined above) and the frequency of the facility type. Maps can be used to determine regional, city/district and neighborhood connections. The frequency or need for facilities of certain classifications is not routine or easy to package into a single criterion. While planning textbooks call for arterial spacing of a mile, collector spacing of a quarter to a half-mile, and neighborhood connections at an eighth to a sixteenth of a mile, this does not form the only basis for defining functional classification. Changes in land use, environmental issues or barriers, topographic constraints, and demand for facilities can change the frequency for routes of certain functional classifications. While spacing standards can be a guide, they must consider other features and potential long term uses in the area (some areas would not experience significant changes in demand, where others will). Linkages to regional centers and community centers are another consideration for addressing frequency of routes of a certain functional classification. Connectivity to these areas is important, whereas linkages that do not connect any of these centers could be classified as lower levels in the functional classification.

Table 8-2: Proposed Changes to Existing Roadway Functional Classification

Roadway	Existing Class	Proposed Class
I-182	Principal Arterial	Principal Arterial
SR 240	Principal Arterial	Principal Arterial
Canyon Street	Neighborhood Collector	Collector
Davison Avenue	Not Classified	Collector
Englewood Drive	Neighborhood Collector	Collector
Gage Boulevard (Keene Road—East City Limits)	Principal Arterial	Arterial
Gage Boulevard (West City Limits to Keene Road)	Minor Arterial	Collector
George Washington Way	Principal Arterial	Arterial
Hanford Street	Not Classified	Collector
Hills West Way/Canyon Avenue	Neighborhood Collector	Collector
Horn Rapids Road (East of Stevens Drive)	Not Classified	Arterial
Keene Road	Principal Arterial	Arterial
Lee Boulevard (Thayer Drive to George Washington Way)	Minor Arterial	Collector
Leslie Road	Principal Arterial	Arterial
Proposed Leslie Road	Proposed Principal Arterial	Proposed Arterial
Reata Road	Principal Arterial	Arterial
Steptoe Extension	Proposed Principal Arterial	Proposed Arterial
Stevens Drive (Horn Rapids—Jadwin)	Principal Arterial	Arterial
Stevens Drive (North of Horn Rapids Road)	Not Classified	Arterial
Twin Bridges Road (South City Limits to SR 240)	Minor Arterial	Collector
Williams Boulevard (Wright Avenue to Thayer Drive)	Neighborhood Collector	Collector
Williams Boulevard (Thayer Drive to Stevens Drive)	Not Classified	Collector

It is acceptable for the city to re-classify street functional designations to have different naming conventions than the RTP street functional classifications, however, the general intent and purpose of the facility, whatever the name, should be consistent with state and federal guidelines[5].

Table 8-3 summarizes roadway class changes for city streets that are proposed as Neighborhood Routes. Many non-classified roadways (local streets) were added to this list, along with most of the previously named arterial-collector streets.

[5] Functional classifications on state facilities include: Principal Arterial — Interstate and state-wide travel, Minor Arterial — intercity and interregional travel, and Collector — intercounty travel that feed the arterial system. Refer to RCW 47.05.021 for a more complete description.

Table 8-3: Richland Street Routes that Change to Neighborhood Route

Street Name	Existing Street Class	Proposed Street Class
Adair Street	Not Classified	Neighborhood Route
Adams Street	Not Classified	Neighborhood Route
Birch Avenue (Van Giesen Street to Duportail St)	Not Classified	Neighborhood Route
Catskill Street	Not Classified	Neighborhood Route
Clermont Drive	Not Classified	Neighborhood Route
Cottonwood Drive (Swift Boulevard to Thayer Drive)	Not Classified	Neighborhood Route
Duportail Road (South of Keene Road)	Arterial Collector	Neighborhood Route
Escobar Road	Not Classified	Neighborhood Route
Greenbrook Boulevard	Not Classified	Neighborhood Route
Lapierre Canyon Drive	Not Classified	Neighborhood Route
Lee Boulevard (Cottonwood Drive to Wright Ave)	Not Classified	Neighborhood Route
Lorayne Boulevard	Not Classified	Neighborhood Route
Mata Court	Not Classified	Neighborhood Route
Mata Road	Not Classified	Neighborhood Route
Oxford Avenue	Not Classified	Neighborhood Route
Oxford Street	Not Classified	Neighborhood Route
Proposed Arterial Collector West of Sirron Avenue	Proposed Arterial Collector	Proposed Neighborhood Route
Proposed Arterial Collector Between Keene Road and Shockley Road	Proposed Arterial Collector	Proposed Neighborhood Route
Proposed Connection from Keene Road to Heritage Hills Drive	Proposed Arterial Collector	Proposed Neighborhood Route
Proposed Connection from Heritage Hills Dr to Columbia Park Trail	Proposed Arterial Collector	Proposed Neighborhood Route
Proposed Connector Roadways (Southwest of Keene/Englewood)	Arterial Collector	Neighborhood Route
Shockley Road	Arterial Collector/Proposed Arterial Collector	Neighborhood Route/Proposed Neighborhood Route
Symons Street (Wright Avenue to Jadwin Avenue)	Not Classified	Neighborhood Route
Symons Street (Jadwin Avenue to George Washington Way)	Arterial Collector	Neighborhood Route
Tajo Court	Not Classified	Neighborhood Route

Characteristics of Streets for each Functional Classification

The design characteristics of streets in Richland were developed to meet the function and demand for each facility type. Because the actual design of a roadway can vary from segment to segment due to adjacent land uses and demands, the objective was to define a system that allows standardization of key characteristics to provide consistency, but also to provide criteria for application that provides some flexibility, while meeting standards.

Figures 8-2 to 8-4 depict sample street cross-sections and design criteria for arterials, collectors, neighborhood routes and local streets. Figure 8-2 shows the Existing Richland Standard Cross-Sections for Arterial and Collector Streets, Figure 8-3 shows the proposed cross-sections for Arterial and Collectors, and Figure 8-5 show the existing and proposed Richland Local Street Standard Cross-Sections.

Planning level right-of-way needs can be determined utilizing these figures and Table 8-4 and the lane geometry outlined later in this chapter. Specific right-of-way needs will need to be monitored continuously through the development review process to reflect current needs and conditions (that is to say that more specific detail may become evident in development review which requires improvements other than these outlined in this 20 year general planning assessment of street needs).

The analysis of capacity and circulation needs for Richland outlines several roadway cross sections. The most common are 2, 3 and 5 lanes wide. Where center left turn lanes are identified (3 or 5 lane sections), the actual design of the street may include sections without center turn lanes (2 or 4 lane sections[6]) or with median treatments, where feasible. The actual treatment will be determined within the design and public process for implementation of each project. The plan outlines requirements, which will be used in establishing right-of-way needs for the development review process.

Table 8-4: Proposed Street Characteristics

Street Element	Characteristic	Width/Options
Vehicle Lane Widths:	Truck Route =	12 feet
(Minimum widths)	Bus Route =	11 feet
	Arterial =	12 feet
	Collector =	11 feet
	Neighborhood =	10 feet
	Local =	9 to 10 feet
	Turn Lane =	12 feet
On-Street Parking:		8 feet
Bicycle Lanes:	New Construction =	6 feet
(minimum widths)	Reconstruction =	5 to 6 feet
Curb Extensions for Pedestrians:	Consider on any Pedestrian Master Plan Route	
Sidewalks:	Local =	5 feet
(Minimum width)	Neighborhood =	5 feet
	Collector =	5 to 8 feet
	Arterial =	5 to 8 feet
Landscape Strips:	Residential/Neighborhood =	Required
	Collector/Arterial =	Required
Medians:	5-Lane =	Required
	3-Lane =	Optional
Neighborhood Traffic Management:	Local =	Should not be necessary
	Neighborhood =	Should Consider

6 For example, adjacent to environmentally sensitive or physically constrained areas.

Street Element	Characteristic	Width/Options
	Collectors = Arterials =	Under Special Conditions Only under Special Conditions, not recommended.
Transit:	Arterial/collectors = Neighborhood =	Appropriate Only in special circumstances
Turn Lanes:	When Warranted[7]	
Access Control:	See later section for Arterials and Collectors	

Notes:

9 foot lanes would only be used in conjunction with on-street parking.

In constrained conditions on collectors, neighborhood and local routes, a minimum width of 10 feet may be considered for turn lanes (except on bus routes).

The City recognizes that there will not be 20 feet of unobstructed pavement on 32 foot streets with on street parking.

5-6 foot bike lanes are desired, but due to constraints, they are likely to be limited to 4 feet.

Sidewalks should be 5 foot with landscape strip, 6 foot against curb.

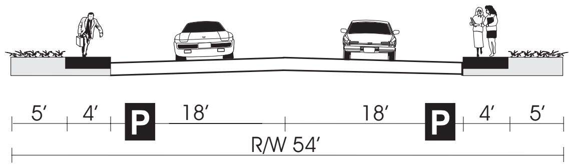
Larger sidewalks than minimums should be considered for areas with significant pedestrian volumes. In commercial areas where pedestrian flows of over 100 pedestrians an hour are present or forecast, specific analysis should be conducted to size sidewalks appropriately for safe movement.

Wherever arterial or collectors cross each other, planning for additional right-of-way to accommodate turn lanes should be considered within 500 feet of the intersection. Figure 8-5 summarizes the Richland streets that are anticipated within the Transportation Plan horizon to require right-of-way for more than two lanes based on projected traffic patterns and current capacity constraints. Some of these routes, such as George Washington Way, are currently at the projected right-of-way requirements. For facilities that do not currently meet the projected right-of-way widths planning level right-of-way needs, which can be much broader in scope and more expansive in required land acquisition than in the design and build phase of the project, can be determined utilizing Figure 8-5 and the lane geometry outlined later in this chapter. Specific right-of-way needs will need to be monitored continuously through the development review process to reflect current needs and conditions. This will be necessary since more specific detail may become evident in development review which requires improvements other than these outlined in this 20 year general planning assessment of street needs.

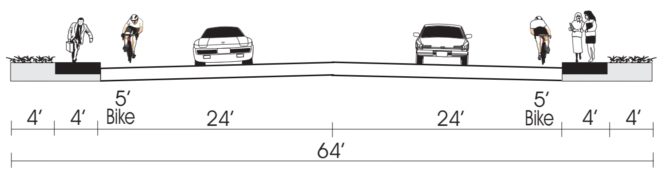
These cross sections are provided for guiding discussions that will update the City of Richland's document entitled *"City of Richland Standard Specifications and Details"*.

[7] Turn lane warrants should be reviewed using Highway Research Record, No. 211, NCHRP Report No. 279, the Washington Department of Transportation Design Manual, or other updated/superseding reference.

2 Lane Section (Existing)



3 Lane Section (Existing)



5 Lane Section (Existing)

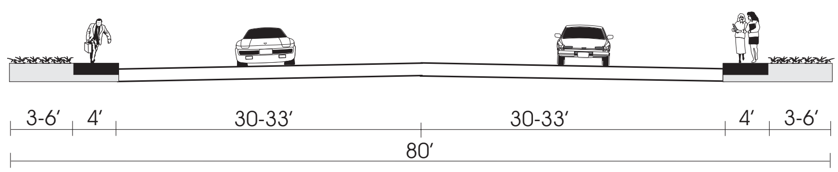
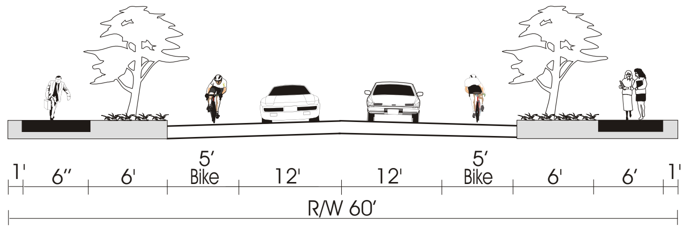
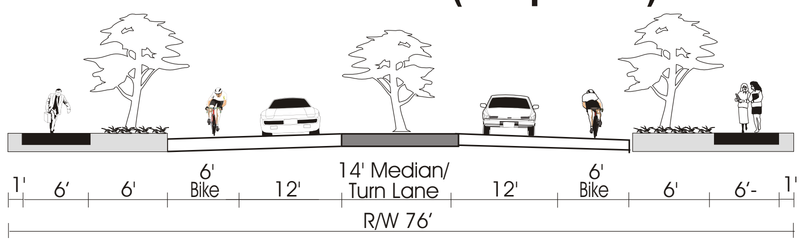


Figure 8-2
ARTERIAL/COLLECTOR STREETS
RICHLAND EXISTING
SAMPLE STREET CROSS SECTIONS

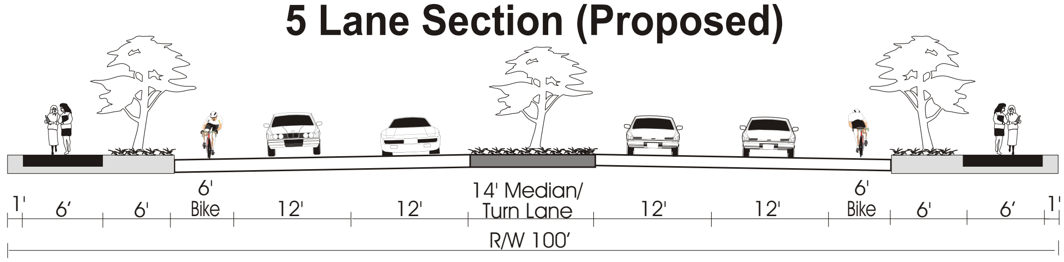
2 Lane Section (Proposed)



3 Lane Section (Proposed)



5 Lane Section (Proposed)



Arterial & Collector Proposed Street Design Characteristics

(typically minimums unless stated otherwise)

Characteristic	Arterials	Collectors
Vehicle Lane Widths (Truck Route - 12 ft.) (Bus Route - 11 ft.) (Turn Lane - 12-14 ft.)*[1]	12 ft.	11 ft.
On-Street Parking	8 ft.	
Bicycle Lanes (minimums)	New Construction - 4-6 ft. Reconstruction - 4-6 ft.	
Sidewalks (minimums)	5-8 ft.	5-8 ft.
Landscape Strips	Optional (compensate with wider sidewalk on arterials & collectors if omitted)	
Medians	5-Lane - Required 3-Lane - Optional	
Neighborhood Traffic Management (NTM)	Not Recommended	Under Special Conditions
Transit	Appropriate	
Turn Lanes	When Warranted *[2]	
Access Control	See Later Discussion	

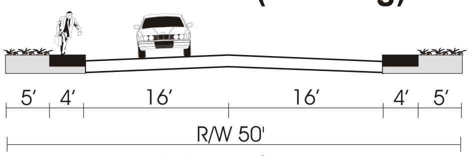
Notes:

1. In constrained conditions on collectors, neighborhood and local routes, a minimum width of 10 feet may be considered (except on bus routes). 14-feet is desirable for continuous two-way left turn lanes.
2. Turn lane warrants should be reviewed using Highway Research Record No. 211, NCHRP Report No. 279, WSDOT Design Manual or other updated/superseding reference.

Figure 8-3
ARTERIAL/COLLECTOR STREETS RICHLAND PROPOSED SAMPLE STREET CROSS SECTIONS

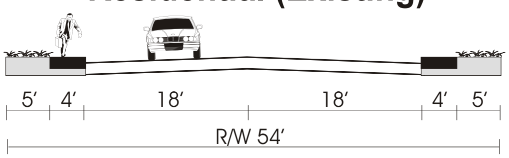
EXISTING

Residential (Existing)



50' Right-of-way

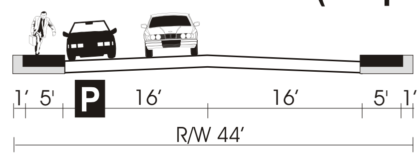
Residential (Existing)



54' Right-of-way

PROPOSED

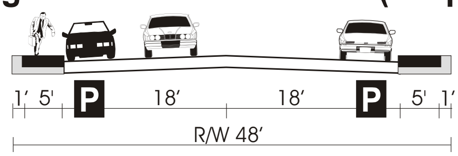
32' Standard Residential (Proposed)



44' Right-of-way

<1,000 vpd

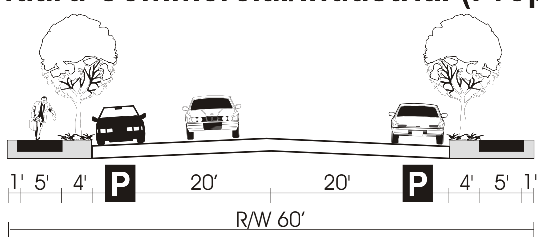
36' Neighborhood Residential (Proposed)



48' Right-of-way

>1,000 vpd

40' Standard Commercial/Industrial (Proposed)



60' Right-of-way

Local Proposed Street Design Characteristics
(typically minimums unless stated otherwise)

Characteristic	Neighborhoods	Locals
Vehicle Lane Widths (Bus Route - 11 ft.)	10 ft.	9 - 10 ft.*2
On-Street Parking	8 ft.*3	
Sidewalks (minimums)	5 ft.	5 ft.
Medians		
Neighborhood Traffic Management (NTM)	Should Consider	Should Not be Necessary
Transit	Special Circumstances	Not Appropriate
Turn Lanes		
Access Control		

Proposed Notes:

1. *In constrained conditions on collectors, neighborhood and local routes, a minimum width of 10 feet may be considered (except on bus routes).*
2. *9 foot lanes would only be used in conjunction with on-street parking.*
3. *For local residential streets, the City recognizes that there will not be 20 feet of unobstructed pavement.*

Legend

P - *On-street Parking Lane*

Figure 8-4
LOCAL STREETS
RICHLAND EXISTING & PROPOSED
SAMPLE STREET CROSS SECTIONS

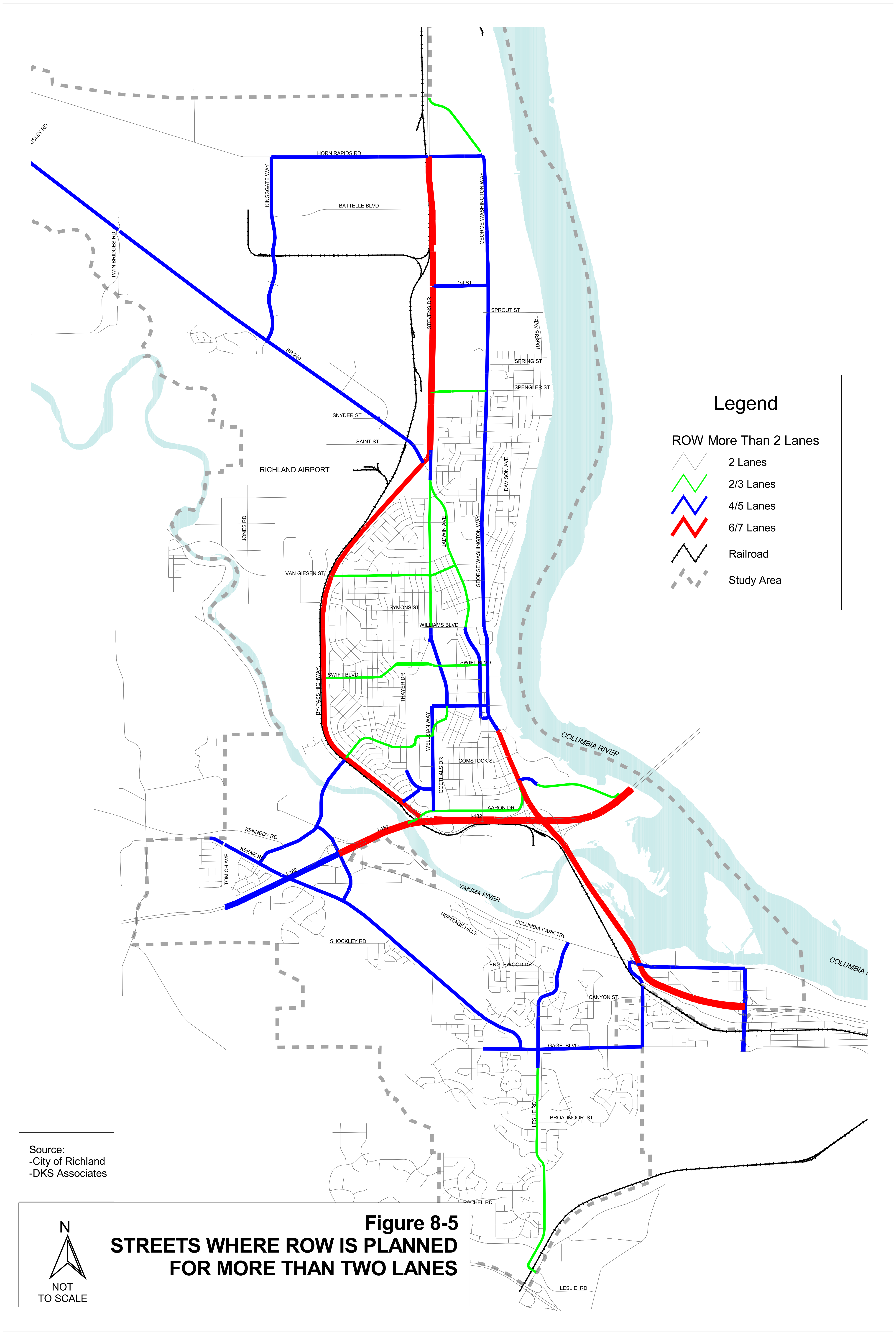


Figure 8-5
STREETS WHERE ROW IS PLANNED FOR MORE THAN TWO LANES

Connectivity/Local Street Plan

Much of the local street network in Richland is built, in many cases, fairly well connected. In other words, multiple access opportunities exist for entering or exiting neighborhoods. However, there are a number of locations where, the majority of neighborhood traffic is funneled onto one single street. This type of street network results in out-of-direction travel for motorists and an imbalance of traffic volumes that impacts residential frontage. The outcome can result in the need for wider roads, traffic signals and turn lanes (all of which negatively impact traffic flow and degrade safety). By providing connectivity between neighborhoods, out-of-direction travel and vehicle miles traveled (VMT) can be reduced, accessibility between various modes can be enhanced and traffic levels can be balanced out between various streets. Several goals and policies established by this Transportation Plan are intended to accomplish these objectives.

In Richland, some of these local connections can contribute with other street improvements to mitigate capacity deficiencies by better dispersing traffic. Several roadway connections will be needed within neighborhood areas to reduce out of direction travel for vehicles, pedestrians and bicyclists. This is most important in the sub-areas to the west where a significant amount of new development is possible (i.e. Badger Mountain area). In many areas of Richland, most of the land is built out. Figure 8-6 through Figure 8-8 show the proposed Local Street Connectivity Plan for Richland. In most cases, the connector alignments are not specific and are aimed at reducing potential neighborhood traffic impacts by better balancing traffic flows on neighborhood routes. The arrows shown in the figures represent potential connections and the general direction for the placement of the connection. In each case, the specific alignments and design will be better determined upon development review. The criteria used for providing connections is as follows:

- Every 300 feet, a grid for pedestrians and bicycles
- Every 500 feet, a grid for automobiles

To protect existing neighborhoods from potential traffic impacts of extending stub end streets, connector roadways should incorporate neighborhood traffic management into their design and construction. Neighborhood traffic management is described later in this chapter. All stub streets should have signs indicating the potential for future connectivity.

The arrows shown on the local connectivity figures indicate priority connections only. Topography, railroads and environmental conditions limit the level of connectivity in Richland. Other stub end streets in the City's road network may become cul-de-sacs, extended cul-de-sacs or provide local connections. Pedestrian connections from the end of any stub end street that results in a cul-de-sac should be considered mandatory as future development occurs. The goal would continue to be improved city connectivity for all modes of transportation.

City of Richland
Transportation Plan

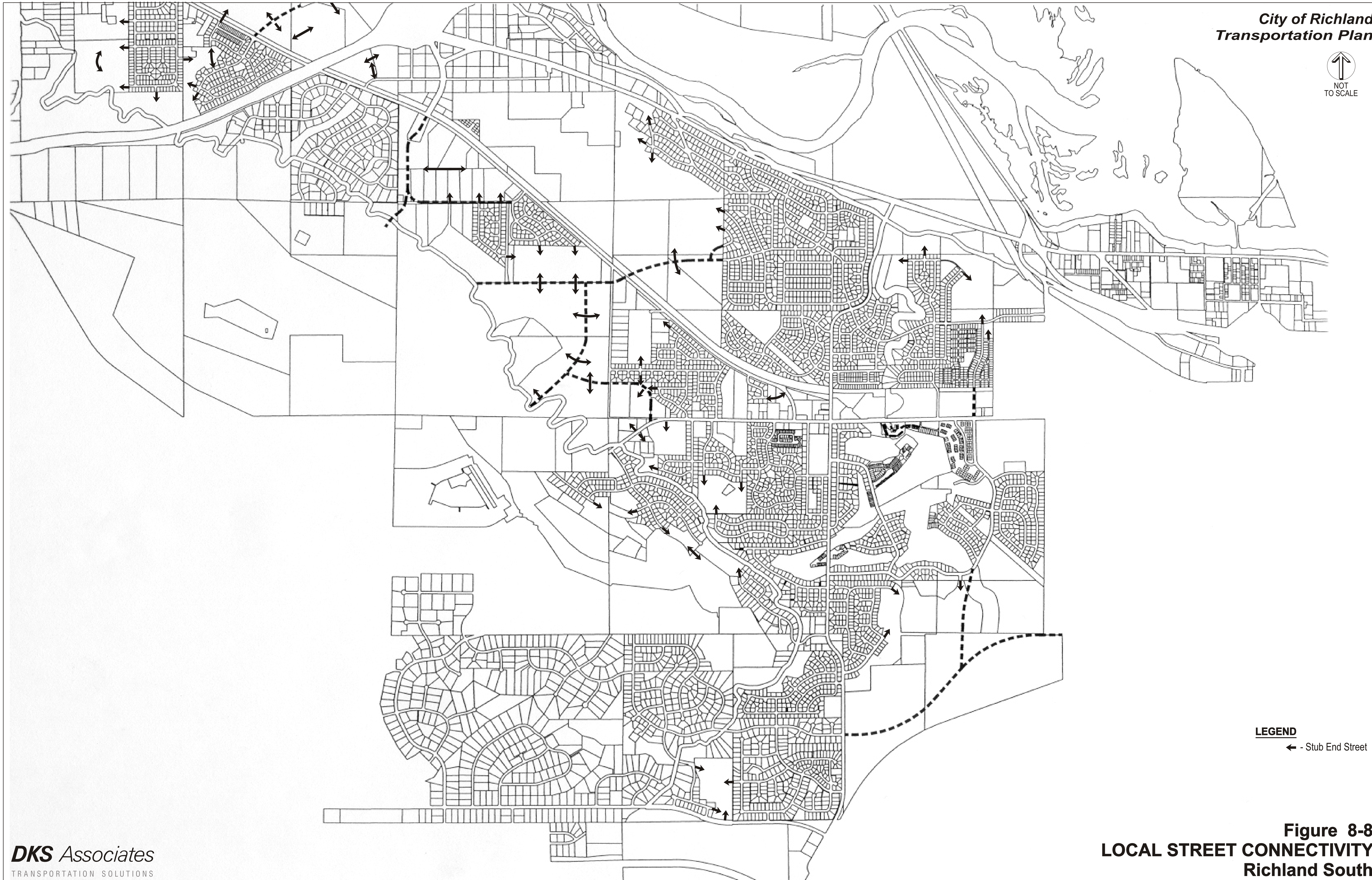
Figure 8-6
LOCAL STREET CONNECTIVITY
North Richland

DKS Associates
TRANSPORTATION SOLUTIONS

DKS Associates
TRANSPORTATION SOLUTIONS

City of Richland
Transportation Plan

Figure 8-7
LOCAL STREET CONNECTIVITY
Richland Center



DKS Associates
TRANSPORTATION SOLUTIONS

Figure 8-8
LOCAL STREET CONNECTIVITY
Richland South

Circulation and Capacity Needs

The motor vehicle capacity and circulation needs in Richland were determined for existing and future conditions. The process used for analysis is outlined below, followed by the findings and recommendations of the analysis. The extent and nature of the street improvements for Richland are significant. Many of the improvements discussed in this section were previously identified in the City's Transportation Improvement Program, the BFCG RTP, and WSDOT Highway System Plan. The 2020 capacity analysis done through the city's transportation plan confirmed the need for investments, plus it identifies additional projects for traffic signal and intersection improvements that compliment other roadway projects. The study also highlights long-range issues on state facilities that will require further analysis and design decisions to adequately support regional mobility and performance standards.

This section outlines the type of street improvements that would be necessary as part of a long-range master plan. Phasing of implementation will be necessary since not all the improvements can be done at once. This will require prioritization of projects and periodic updating to reflect current needs. It should be understood that the improvements outlined in the following section are a guide to managing growth in Richland, defining the types of right-of-way and street needs that will be required as development occurs.

Strategies

A series of strategies were developed to address the future motor vehicle needs of Richland. The following listing reflects the initial prioritization of strategies.

- Promote Regional Circulation (I-182, SR 240, SR 224)
- Improve Local Street Circulation (connectivity)
- Provide Additional Street System Capacity to LOS D[8] (turn lanes, signals, widening, new roads)
- Improve Operation of Existing System (signal coordination, intelligent transportation systems, neighborhood traffic management)
- Transportation Demand Management (telecommuting, alternative modes, pricing)
- Change Land Use to Promote Alternative Modes Use
- Improve Access Control to increase capacity
- Change Level of Service Definitions

Future Intersection Capacity Analysis

Year 2020 traffic volume forecasts were analyzed to identify locations where peak hour performance will drop below minimum desirable levels (worse than LOS D). This focuses on the 38 study intersections that were previously examined under Existing Conditions (2003 traffic volumes), but also includes a review of road segment approaches to major intersections. The following tables summarize intersection levels of service in Richland for 2020 operating conditions. The planned street improvements listed in Chapter 4 are expected to be constructed and operational by 2020. Traffic volumes were developed as described

[8] Level of service D as defined by the Highway Capacity Manual, latest version.

previously and applied to existing intersection geometries, except where additional through lane capacity was programmed in the future. The value in this analysis as a starting point in reviewing the motor vehicle system performance is that it highlights where the planned system fails to meet performance standards. These locations will be reviewed to consider street improvements alternatives that could better serve planned growth.

Findings

Many of the intersections controlled by traffic signals will continue to operate at LOS C or better with growth planned to 2020. However, a number of intersections will degrade to unacceptable levels of service. Five of the study intersections will operate at LOS F without further improvements and four more will degrade to LOS D or E.

Most of the unsignalized intersections operate at LOS D or worse. This means that the minor street approaches to these intersections experience moderate to long delays. The major street movements generally are not impeded and typically only a handful of minor street vehicles experience delay. Signal warrants were evaluated to determine where traffic signals might be needed at locations that do not have a traffic signal today (see discussion below). Several of the study intersections in Richland met MUTCD's Eight-Hour Volume Warrant (Warrant 1) under 2020 traffic volume conditions. Table 8-5 and Table 8-6 show the future 2020 base intersection levels of service within Richland.

Table 8-5: Future (2020) Base PM Peak Hour Intersection Level of Service (Signals)

Intersection	Level of Service	Average Delay	Volume/ Capacity
Duportail/Queensgate	F	>80.0	>1.00
George Washington/Adams/Columbia Pt.	E	71.1	0.93
George Washington/Knight	B	14.1	0.78
George Washington/Williams	B	12.9	0.74
George Washington/McMurray	B	19.4	0.86
George Washington/Spengler	B	19.0	0.81
George Washington/Jadwin	C	30.6	0.92
George Washington/Lee	B	11.8	0.72
George Washington/Swift	C	26.2	0.94
George Washington/Van Giesen	B	12.7	0.77
I-182 WB/SR 240/Aaron*	F	>80	>1.00
Jadwin/Lee	A	9.2	0.58
Jadwin/Swift	A	7.8	0.47
Jadwin/Van Giesen	B	13.4	0.46
Keene/Gage	A	5.9	0.50
Queensgate/Keene	C	34.4	0.69
Leslie/Gage	C	28.3	0.80
SR 240/Swift	C	28.7	0.94
SR 240/Van Giesen	F	>80.0	>1.00
SR 240/Stevens	F	>80.0	>1.00

Intersection	Level of Service	Average Delay	Volume/ Capacity
SR 240/Duportail *	F	>80.0	>1.00
Stevens/Lee	C	26.6	0.71
Stevens/Swift	A	7.6	0.43
Stevens/Williams	B	18.2	0.57
Thayer/Swift	A	7.6	0.43

Note: Signalized and All-Way Stop Intersection LOS:

LOS = Level of Service
Delay = Average vehicle delay in the peak hour for entire intersection
V/C = Volume to Capacity Ratio

Note: * Locations influenced by downstream traffic queues. Reported LOS likely understates actual conditions. Signalized and All-Way Stop Intersection LOS:

Table 8-6: Future (2020) Base PM Peak Hour Intersection Conditions (Unsignalized)

Intersection	Major/Minor Street LOS	Eighth-Highest Hour Signal Warrants Met?
Gage Blvd/Bellerive Rd	B/F	No
George Washington/First	B/F	Yes
Keene/Shockley	B/E	No
Leslie/Columbia Park Trail	F/F	Yes
SR 240/Hagen/Robertson	B/F	Yes
SR 240/Kingsgate	A/F	Yes
Stevens/Spengler	A/F	Yes
Stevens/Battelle	A/F	Yes
Stevens/Knight	A/F	Yes
Swift/Wright	A/F	No
Thayer/Duportail	A/B	No
Thayer/Van Giesen	A/E	No
Wellsian/Aaron	B/F	Yes

* Most delayed major street LOS/most delayed minor street LOS

Preliminary Traffic Signal Warrants

Preliminary signal warrants[9] were evaluated at all unsignalized intersections in the project study under year 2020 Base traffic volume conditions. The results of this analysis are shown in Table 8-6. Meeting signal warrants does not guarantee that a signal will be installed. Before a signal can be installed on a state highway, a traffic signal investigation must be conducted or reviewed by the Washington State Department of Transportation. Traffic signal warrants must be met and the State Highway Engineer approval obtained before a signal will be placed on a state highway. Signals on non-state facilities need to be reviewed and approved by appropriate local officials. Richland's Transportation Operations Section document

[9] Preliminary Signal Warrants, MUTCD Warrant 1 (Eight Hour Vehicular Volume). Eight hour volumes were estimated based on peak hour volumes.

states that traffic controlled signals should not be installed unless one or more of the signal warrants in the MUTCD are met.

Preliminary signal warrants were met under year 2020 traffic volume conditions at three of the study intersections in Richland. Two of these intersections are already signalized, but were unsignalized at the time that traffic counts were conducted for this study. The intersection that is currently unsignalized, but meets warrants in the future is SR 240/Kingsgate. Since only peak hour traffic volumes were available for study intersections, peak hour volumes were factored to estimate eighth highest hour traffic volumes. Eighth highest hour volumes typically represent about 56.5 percent of peak hour volumes[10]. Therefore, peak hour volumes were multiplied by 0.565 to estimate eighth highest hour volumes. Condition A—Minimum Vehicular Volume reflects whether there is enough volume on both the main street and side street to warrant a traffic signal. Condition B—Interruption of Continuous Traffic is also a measure of volume, but puts more emphasis on the volume of the main street. If either Condition A or Condition B is met, Warrant 1 is met. Under some circumstances (when all other alternatives have been exhausted), Warrant 1 can be met if both Condition A and Condition B are met to the 80% level.

<u>I-182 Freeway Ramp Weaving Analysis</u>

High traffic growth on SR 240 and I-182 were reviewed to assess the quality of traffic weaving during PM peak hours. An initial analysis was conducted using *Highway Capacity Manual* methods based on travel demand model outputs. The ability for ramp traffic entering the mainline travel stream at reasonable speeds is a primary indicator of freeway performance. The findings summarized in Table 8-7 highlight the need for further study of the segments of I-182 between George Washington Way and Queensgate Drive. Several weave sections fail (LOS F) during the PM peak period. It is reasonable to assume that in both cases the reverse travel direction will fail during the AM peak period.

Table 8-7: I-182 Ramp Weaving Analysis (2020 PM Peak Hour)

Location	Direction	Level of Service
Queensgate Drive to SR 240 Bypass	Westbound Eastbound	F B
SR 240 Bypass to George Washington Way	Westbound Eastbound	F D

<u>Outstanding 2020 Circulation Issues</u>

The above analysis identified several critical deficiencies in the city and state street facilities that require further study. The following section of this chapter examines alternative solutions regarding these outstanding issues.

- SR 240 Bypass intersections fail during the PM peak period between Coast Street and Aaron Drive. The 2020 southbound PM peak directional volume is higher than can be effectively served with at-grade intersections.

[10] Based on surveys conducted by the Oregon Department of Transportation between 1991 and 1994.

- The 2020 travel demands at the SR 240 Bypass intersection at Aaron Drive is severely over planned capacity. Alternatives should consider circulation options to reduce the number of vehicles entering the intersection, and/or modify the junction capacity to serve planned demand. This could include grade separation of the Aaron Drive approach.
- I-182 ramp volumes and weaving conditions will exceed planned capacity during the peak hours. Alternative ramp designs should be considered to increase capacity and reduce the need for weaving with mainline flows. This could include braided ramps between SR 240 south into Kennewick and SR 240 north towards the bypass that eliminate the need to merge with mainline I-182 lanes.
- Limited roadway width and right-of-way along Jadwin Avenue and George Washington Way near the Central Business District restrict options for recommended bike facilities and provisions for on-street parking.
- There has been discussion of the concept of rerouting Leslie Road to the east just north of Rachel Road to intersect at Clearwater/10th Avenue in Kennewick. This would include a grade separation of the BNSF tracks near Clearwater Avenue. The need for this realignment should be investigated, especially in light of the planned extension of Steptoe Street from Clearwater Avenue to Gage Boulevard.

System Circulation Alternatives

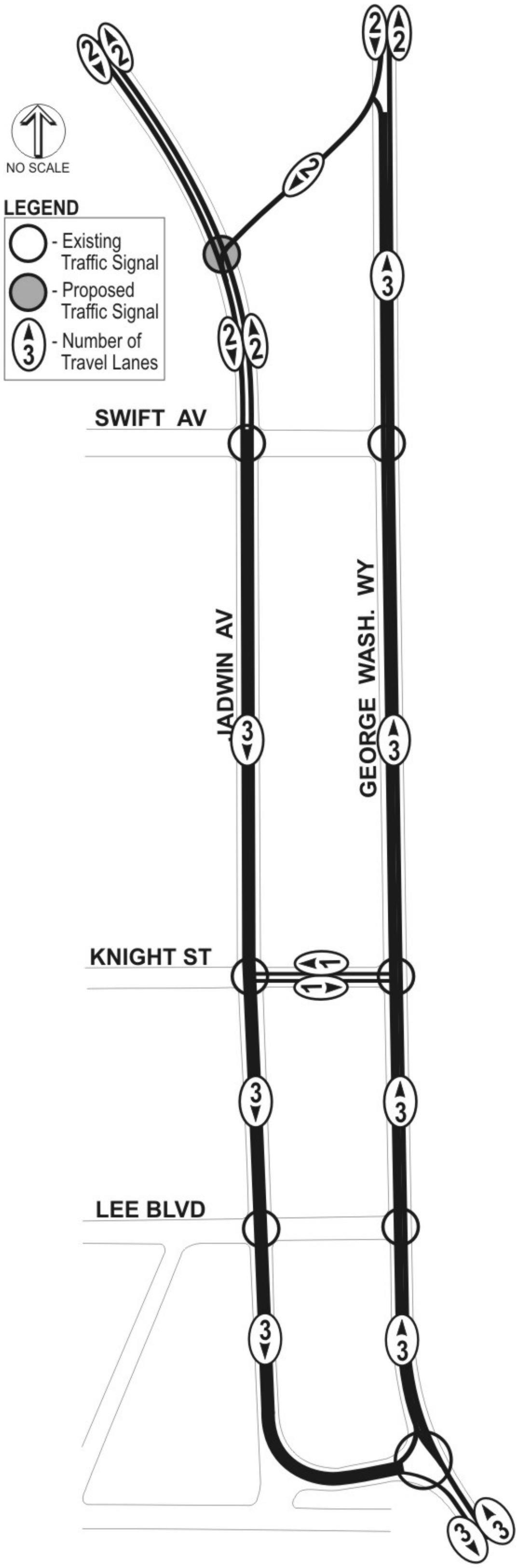
The 2020 traffic volume forecasts indicate a significant growth of north-south traffic on roadways such as George Washington Way, SR 240, Stevens Drive and Jadwin Avenue. Selected model volumes for 2001 and 2020 summarized in Table 8-8 show substantial growth on the state facilities and moderate growth on most of the city streets. The primary reason is that most jobs are north of the Yakima River and most housing lies south of it. The land use allocations reflected in the current Comprehensive Plans will not substantially change this dynamic. New employment growth in the North Richland Industrial area, as an example, will exacerbate existing peak commute congestion.

Table 8-8: Peak Hour Model Volumes (2001 and 2020)

Roadway	Segment	2001	2020	Percent Growth
I-182	Queensgate—SR 240	3,160	5,400	71%
	SR 240—George Washington Way	5,040	8,410	67%
	George Washington Way—East	4,190	7,670	83%
SR 240	Stevens—Van Giesen	3,450	4,440	29%
	Duportail—Aaron	3,950	4,960	26%
	I-182 to Columbia Park Trail (Causeway)	5,470	7,550	38%
SR 224	West of SR 240	2,020	2,660	32%
George Washington Way	North of Spengler	1,240	1,470	19%
	Williams—Swift	2,040	2,230	9%
	North of Aaron/Columbia Point	3,580	4,250	19%

The Yakima River and Interstate 182 divide Richland into two sections. Currently, there are only two connections to south Richland and Kennewick linking the jobs in the northern section with housing in the southern section. These bridge crossings have become major recurring congestion problems. This lack of connectivity makes the system's inability to serve travel demand growth in the future more acute. The planned construction of the Duportail Street extension and bridge across the Yakima River may be very important to relieving capacity issues under future traffic volume conditions. Additional north-south routes and access across the river could reduce travel time for many trips through Richland.

There is also significant growth between Richland and West Richland. Similar to the north-south connectivity issue, there are limited opportunities for east-west travel. Van Giesen reaches and exceeds its capacity by 2020. Again, the Yakima River, as well as the Tri-City, Olympia Railroad line, are barriers between the two cities. Alternatives for additional east-west circulation should be explored.



George Washington and Jadwin Avenue Circulation

Two key arterials in the City of Richland are Jadwin Avenue and George Washington Way. These arterials run parallel to each other and are separate by a block between Williams and their intersection with each other. Alternative conceptual plans have been developed in part to improve traffic flow (particularly on George Washington Way) and in part to provide bicycle lanes, on-street parking, and improved pedestrian conditions. The two alternatives that have been developed include:

- One-Way Couplet – Jadwin Avenue and George Washington Way converted to a one way couplet between Williams at the north and their intersection with each other at the south (see illustration at left).
- Two-Way Reduction Travel Lanes – Two lanes traveling north and one lane traveling south on George Washington Way, and two lanes traveling south and one lane traveling north on Jadwin Avenue (see illustration on page 8-31).

One-Way Couplet

The one-way couplet would include a diverter road that would link George Washington Way south bound traffic with Jadwin Avenue, just north of Swift Avenue. The diverter road would meet Jadwin at a signalized intersection and continue south as a two-way street for about a block to Swift Avenue. Jadwin would then become a three lane, one-way street southbound between Swift Avenue and George Washington Way. George Washington Way would become a three lane one-way street northbound for the same distance.

The travel demand forecast model was run with the assumed improvements in place. Table 8-9 summarizes intersection level of service with the couplet assumed. In general, level of service decreases slightly at intersections along Jadwin and increases slightly at intersections along George Washington Way. Overall, volume-to-capacity (V/C) ratios are more balanced (fewer high and low values). Intersections generally operate at a better level of service under these conditions since traffic signals can be converted to two-phase signals which provide more green time overall (less time is spent changing between phases).

Table 8-9: Intersection Level of Service (Base Case Compared to One and Two-Way Couplet)

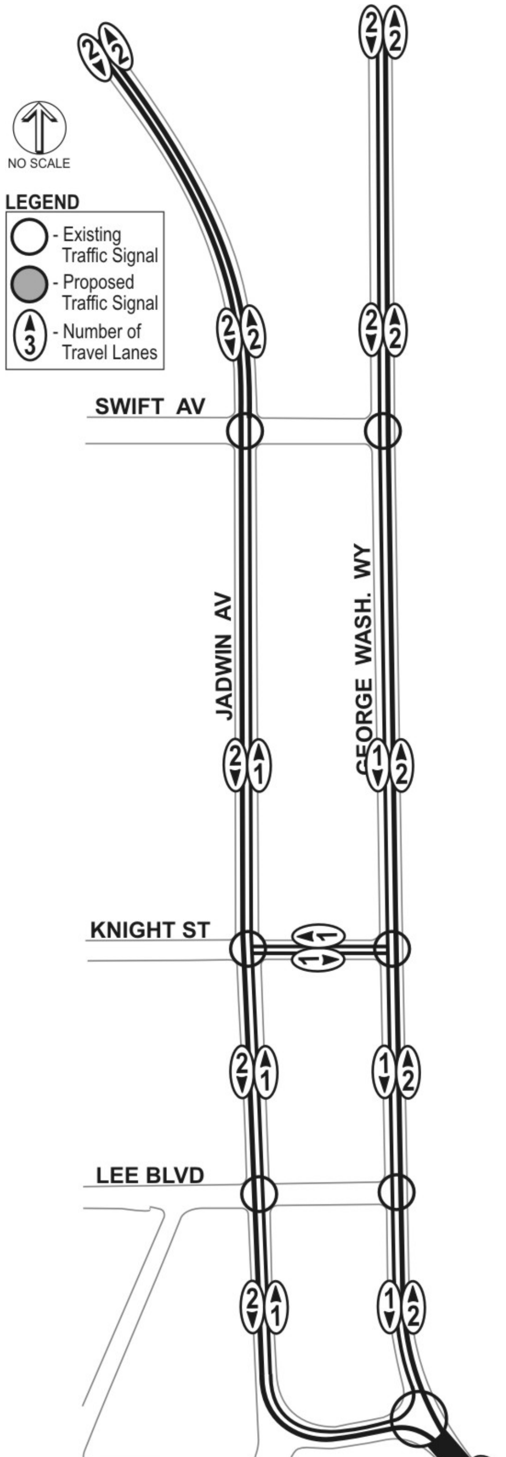
	Existing Circulation			One-Way Couplet			Two-Way Couplet		
Intersection	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C
Swift/Jadwin	7.8	A	0.47	19.5	B	0.79	11.0	B	0.61
Lee/Jadwin	9.2	A	0.58	20.4	C	0.80	16.5	B	0.73
Jadwin/George Washington	30.6	C	0.92	8.0	A	0.59	61.8	E	0.98
Swift/George Washington	26.2	C	0.94	5.9	A	0.50	31.7	C	0.92
Knight/George Washington	14.1	B	0.78	9.7	A	0.57	24.2	C	0.92
Lee/George Washington	11.8	B	0.72	7.6	A	0.60	14.7	B	0.80

From a circulation perspective, there is very little out-of-direction travel required for vehicles traveling through on Jadwin or George Washington, but it does add out-of-direction travel for vehicles with an origin or destination within the couplet area. It may be less convenient to access certain land uses. There are fewer turning conflicts at intersections which can improve safety.

There are both benefits and disadvantages for pedestrian and bicyclists with the implementation of a one-way couplet alternative. Existing four-lane cross-sections on Jadwin and George Washington would be replaced with three travel lanes, allowing room for bike lanes and, likely, on-street parking on one side. On-street parking provides a buffer between pedestrians and vehicle traffic and creates a more desirable pedestrian environment. There are currently no bike lanes on either Jadwin or George Washington, so restriping to include bike lanes would be a significant improvement. This is a critical area for providing both bicycle and pedestrian facilities since many pedestrian/bicycle generators are located in the downtown area. Table 8-10 summarizes advantages and disadvantages for pedestrians, bicycles and transit with the implementation of a one-way couplet.

Table 8-10: Advantages/Disadvantages by Mode for One-Way Couplet

Mode	Advantages	Disadvantages
Pedestrians	More acceptable gaps are likely to be available for pedestrians since the pedestrian must only focus on one direction and signals provide more substantial gaps On-street parking and bike lanes provide a buffer between pedestrians and fast moving cars	Higher vehicle speeds are more likely with a one-way couplet where progression is good and there are fewer conflicts to look out for More traffic would be attracted to Jadwin in the evening commute, making Jadwin less friendly to pedestrians
Bicycles	One-way progression is easier than two-way progression for bicycles One-way streets allow for safer travel routes for bicycles	High volumes in the peak directions on Jadwin and George Washington Way can cause safety issues for bicycles Vehicles may be more likely to speed in a one-way couplet where progression is good and there are fewer conflicts to look out for
Transit	Buses are more efficient when allowed to stop in the travel lane. This is more feasible with an additional travel lane in each direction	Potential lack of access to certain generators in one direction



Two-Way Couplet

The first alternative considered for Jadwin Avenue and George Washington Way involves removing a northbound lane on Jadwin Avenue and a southbound lane on George Washington Way. In theory, this geometric configuration will encourage individuals traveling south to use Jadwin Avenue because of the higher available capacity. Similarly, individuals traveling north will be encouraged to use George Washington Way. While some traffic will be diverted to the facility with the highest capacity, access will still be allowed for individuals traveling in both directions, allowing for access to mid-block business and other traffic generators.

Based on the results of the travel demand modeling, vehicles would tend to stay on George Washington Way until capacity is reached before they would divert to Jadwin Avenue. Therefore, the traffic operation benefits of this alternative are not significant. However, transportation goals besides the reduction of delay and increase in level of service could be addressed with this scenario. The reduction of a four-lane cross section to a three-lane cross section means that right of way space will be provided for on street parking, bike lanes or wider sidewalks, all of which encourage non-motorized forms of transportation.

Table 8-9 also compares future traffic conditions with this scenario. The new circulation pattern performs similarly for most of the affected intersections within the couplet area. The exception is at Jadwin Avenue/GWW where the reduction in travel lanes will substantially increase delay and degrade the LOS condition in 2020. The primary benefit for this configuration is similar to that discussed for the one-way couplet, which reduces pedestrian conflicts and allows room for on-street parking and/or bike facilities.

With only minimal reduction in automobile delay achieved through the couplet design, and with a negative reaction in the community and business interests, a significant modification to the downtown George Washington Way/Jadwin Avenue configuration is not recommended until further degradation of operations along the corridor warrant action.

SR 240 Bypass

Without further improvements, SR 240 Bypass Highway will experience significant operational problems by 2020 at several key intersections within Richland. In particular, the intersections at SR 240/Stevens, SR 240/Van Giesen, SR 240/Swift, SR 240/Duportail and SR 240/Aaron/I-182 WB will fail, even with minor improvements (signal improvements, turn lanes, etc.). Improvements that are more substantial will be required for the corridor to function at acceptable levels of service, based on the mobility standards recommended in the WSDOT Highway System Plan. One of the primary strategies of the Motor Vehicle Plan development is promote regional circulation on state facilities[11]. By giving higher mobility priority to the SR 240 Bypass, the demands for north-south travel on parallel city facilities will be lessened. To accomplish this, access from city streets would have to be reduced. The concept of upgrading SR 240 to a freeway between I-182 and Stevens Drive has been considered and preliminary analysis has been conducted.

Shift in North-South Peak Hour Demand

A new travel demand forecast was made assuming grade-separated interchange improvements were in place at SR 240/Stevens and at SR 240/Van Giesen. Traffic volumes were compared on several facilities for the "with" and "without" interchange scenarios. The addition of the two interchanges attracts a small number of vehicles to SR 240, but this is limited to about 100-200 vehicles in the evening peak hour (two-way) toward the north end of the facility. Toward the south end of the facility, between Duportail and I-182, about 400 additional vehicles are attracted to SR 240. Traffic volumes on George Washington Way remain relatively constant (within 20-30 vehicles two-way in the evening peak hour) toward the north, but decrease by about 200 near I-182. These system-wide vehicular changes are relatively small, however, traffic will generally flow on SR 240 without delay and the intersections at Stevens Drive and Van Giesen Street will no longer exceed capacity.

Other Changes in Corridor Access

Additional changes to existing access onto the SR 240 Bypass would likely be required to complete the upgrade to a freeway facility. This would likely include reduction or elimination of access at Duportail Street and Swift Boulevard. These two cross street carry the least approach traffic during peak hours of any on the length of the SR 240 Bypass within the city limits. Possible concepts for new access would be converting the Duportail Street connection at SR 240 to an overcrossing only, with a bridge extension across the Yakima River to the Queensgate interchange area (see next section). The Swift Boulevard connection could be limited to right-in/right-out turns only, however, another possible option would be to completely disconnect Swift Boulevard at SR 240. While these changes have been considered conceptually, they were not included in the travel demand forecast modeling work that was completed. These changes may have more significant system-wide changes in traffic volume than has been observed in the analysis to date.

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[11] Refers to Goal 4:Policy 3 – The City will route *principal and minor* arterials around, rather than through, neighborhoods and communities to minimize traffic impacts on residential neighborhoods

An additional consideration is the SR 240 interchange at I-182. While this existing interchange design can likely handle the small amount of additional traffic associated with the conversion of SR 240 to "freeway" status, the Aaron Drive/I-182 Westbound On-Ramp intersection (see photo at right) will need to be reconfigured. The peak hour volume on southbound SR 240 eastbound to I-182 will require direct, uncontrolled access from SR 240 onto the I-182 freeway. The existing at-grade traffic signal at SR 240/Aaron Drive would have to be modified or eliminated by new street extensions or grade-separated facilities. The Thayer Road intersection with Aaron Drive will be eliminated and replaced with a new street that connects from the I-182 westbound off-ramp intersection at Thayer Road to Wellsian Way. Further study is required to determine how to increase mobility of SR 240 Bypass while maintaining essential local access to this retail area.

SR 240 Bypass at Aaron Drive and I-182

Interstate 182

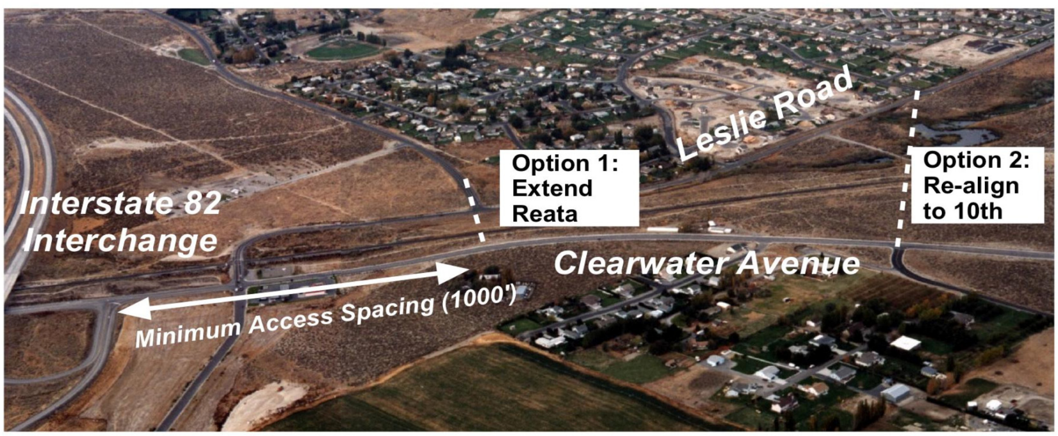
Another critical portion of the state facilities is Interstate 182 between Queensgate Drive and George Washington Way. Peak hour 2020 traffic forecasts on the mainline and ramps cannot be adequately served with the planned improvements. The segment of I-182 between Queensgate Drive and SR 240 Bypass will exceed weaving capacity by 2020 during peak hours. The freeway weaving analysis demonstrated how important the planned auxiliary lanes and loop ramp improvements at the Queensgate interchange are to providing satisfactory service. The implementation of these additional lanes and lengthening of the weaving area eastbound will helpt to restore acceptable conditions through the year 2020.

The proposed construction of the Duportail Street Bridge across the Yakima River would further relieve this segment of freeway by providing alternative circulation routes for trips with local origins and destinations. Travel model analysis showed that the new bridge would serve 8,000 to 10,000 daily vehicles between SR 240 Bypass and Queensgate Drive. This represents approximately 15 to 20 percent of the 2002 forecasted volumes on the parallel section of I-182.

The freeway segment between SR 240 Bypass and George Washington Way requires further analysis to develop a strategy for serving 2020 highway volumes. The combination of a relatively short distance (2,100 feet between ramp gores) and high volume of traffic weaving from ramp to mainline flows cannot be adequately served. It was determined during the plan development that a majority of southbound SR 240 Bypass traffic (65 percent) is using I-182 for only a short distance to continue south on SR 240 during the PM peak hours. The reverse occurs in the morning peak hours between northbound SR 240 (Causeway section) to I-182 eastbound to the SR 240 Bypass northbound. The City of Richland and Washington State Department of Transportation is planning to conduct an operational study specifically related to the issues on this segment of I-182 between SR 240 (north) and SR 240 (Causeway—south). This study should also consider appropriate changes to access in the Aaron Drive area of the city.

Leslie Road near I-82

There has been discussion of the concept of rerouting Leslie Road to the east just north of Rachel Road to intersect at Clearwater Avenue and 10th Avenue in Kennewick. This would include a grade separation of the BNSF tracks near Clearwater Avenue. The need for this realignment should be investigated, especially in light of the planned extension of Steptoe Street from Clearwater to Gage. Preliminary evaluation of this new connection was done during the plan development. It showed that the new connection would carry about 500 to 600 vehicles during peak hours, a level consistent with a three-lane cross section. The reduction in volumes on the existing Leslie Road and Steptoe Street would be modest, between 200 and 300 vehicles per hour. The preliminary findings suggested that this new



Leslie Road Circulation Options

connection would not substantially change traffic operations in this area.

Another design aspect to be considered is the spacing between the existing Leslie Road intersection and the I-82 off-ramp junctions. To conform to proposed access spacing standards, it may be advisable to re-align Leslie Road as suggested, and to restrict access or close the current connection near Reata Road. The illustration shows that the separation between the I-82 ramp junction and the proposed Reata Road extension (Option 1) complies with the recommended access spacing standard for arterial roadways. Option 2: Re-Align Leslie Road to 10^{th} Street would also comply with this spacing standard. The further analysis should consider which option is most cost effective, or if some combination of the two options is   most appropriate.

Access Management

Access Management is a broad set of techniques that balance the need to provide efficient, safe and timely travel with the ability to allow access to the individual destination. WSDOT has clear and concise access management policies and the supporting documentation to ensure that the highway system is managed as wisely as possible for the traveling public. Proper implementation of Access Management techniques should guarantee reduced congestion, reduced accident rates, less need for highway widening, conservation of energy, and reduced air pollution.

Access management is control or limiting of access on arterial and collector facilities to preserve their functional capacity. Numerous driveways erode the capacity of arterial and collector roadways. Preservation of capacity is particularly important on higher volume roadways for maintaining traffic flow and mobility. Where as local and neighborhood streets function to provide access, collector and arterial streets serve greater traffic volume. Numerous driveways or street intersections increase the number of conflicts and potential for accidents and decrease mobility and traffic flow. Richland, as with every city, needs a balance of streets that provide access with streets that serve mobility.

Several access management strategies were identified to improve access and mobility in Richland:

- Provide left turn lanes where warranted for access onto cross streets
- Work with land use development applications to consolidate driveways where feasible
- Meet WSDOT access requirements on arterials
- Establish City access standards for new developments on collectors and arterials
- The following recommendations are made for access management:
- Incorporate a policy statement regarding prohibition of new single-family residential access on arterials and collectors. A design exception process should be outlined that requires mitigation of safety and NTM impacts. This addresses a problem in Richland where property owners consume substantial staff time on issues of residential fronting impacts after they have chosen to build adjacent to an arterial.
- Use Benton County and WSDOT standards for access on arterials and collectors under their jurisdiction.
- Specific access management plans be developed for arterial streets in Richland to maximize the capacity of the existing facilities and protect their functional integrity. New development and roadway projects should meet the requirements summarized in Table 8-11.

Table 8-11: Recommended Access Spacing Standards for City Street Facilities

Street Facility	Maximum spacing of roadways and driveways	Minimum spacing of roadways and driveways
Arterial	1,000 feet	600 feet
Collector:	400 feet	200 feet
All Roads	Require an access report stating that the driveway/roadway is safe as designed meeting adequate stacking, sight distance and deceleration requirements as set by WSDOT, Benton County and AASHTO.	

Access management is not easy to implement and requires long institutional memory of the impacts of short access spacing – increased collisions, reduced capacity, poor sight distance and greater pedestrian exposure to vehicle conflicts. The most common opposition response to access control is that "there are driveways all over the place at closer spacing than mine – just look out there". These statements are commonly made without historical reference. Many of the pre-existing driveways that do not meet access spacing requirements were put in when traffic volumes were substantially lower and no access spacing criteria were mandated. With higher and higher traffic volume in the future, the need for access control on all arterial roadways is critical – the outcome of not managing access properly is additional wider roadways which have much greater impact than access control.

Staff will have to come back at a later to date to propose revisions to the development code to reflect the standards being developed in the Transportation Plan and Comprehensive Plan. At that time, additional attention can be given to the specific standards and whether exceptions are appropriate to be written into the code or if variances are the action needed. Three standards are recommended.

- First, a restriction of direct access of new single-family units on arterials and collectors (this would include an exception process that addresses safety and neighborhood traffic management needs).
- Second, an access report with new land development that requires applicants to verify design of their driveways and streets are safe meeting adequate stacking needs, sight distance and deceleration standards as set by WSDOT, Benton County, the City and AASHTO (utilizing future traffic volumes from this plan as a future base for evaluation).
- Third, driveways should not be place in the influence area of intersections. The influence area is that area where queues of traffic commonly form on the approach to an intersection (typically between 150 to 300 feet). In a case where a project has less than 150 feet of frontage, the site would need to explore potential shared access, or if that were not practical, place driveways as far from the intersection as the frontage would allow (permitting for 5 feet from the property line).

Recommended Improvements

The improvements needed to mitigate 2020 future conditions combine both those identified in prior plans (the BFCG's RTP and the WSDOT Highway System Plan) and those determined as the outcome of the transportation plan analysis. The improvements shown in Figure 8-9 include both city and state street improvements, including projects from the adopted City of Richland Transportation Improvement Program (2003-2008).

- Table 8-13 lists recommended improvements to city streets.
- Table 8-14 lists recommended improvements to city traffic control at intersections.
- Table 8-15 lists recommended improvements to state facilities.

The cost estimate shown in these table are taken from prior plan documents, or are estimated by DKS Associates using standard assumptions for new facilities. Further refinement should be made of these estimates prior to capital budgeting.

Table 8-12: Recommended City Street Projects (not in order of priority)

ID	Location	From	To	Project	Source*	Cost ($1,000's)
1	Center Pkwy	Tapteal	Gage	Construct 3-Lane roadway	RTP	$550
2	First Street	George Wash Way	Stevens	Widen existing street	RTP	$1,280
3	Spengler Rd	Stevens	Logston	Construct 3-Lane roadway	RTP	$1,750
4	Steptoe St	Gage	Clearwater	Construct a 4-lane roadway	RTP	$4,500
5*	I-182	Wellsian Way		Install exit ramp to Wellsian Way	RTP	$1,500
6	Keene Rd	Queensgate	West City Limits	Widen existing road and construct bridge across I-182	RTP	$5,200
7	Batelle Blvd	Stevens	Kelly	Construction of a 2-lane roadway	RTP	$850
8	Duportail St	Kennedy	Keene	Construction of a 5-lane roadway	RTP	$1,300
9	Duportail St	SR 240	Across Yakima River	Construction of a four lane bridge plus pedestrian and bicycle ways	RTP	$9,000
10	Wellsian Wy and Stevens Dr Realignment	Stevens/Lee	Thayer	Widen to 3 lanes west of Wellsian Way, 4/5 lanes east of Wellsian Way	RTP	$2,000
11	Leslie Rd	Meadow Hills	Clearwater	Widening to include additional lane each direction	RTP	$1,500
12	Logston Blvd	Robertson	Batelle	Construction of a 3-lane rural roadway	RTP	$2,150
13	Jones Rd	Kingsgate	Van Giesen	Construction of a 3-lane rural roadway	RTP	$4,000
14	Duportail St	Wellsian	SR 240	Add center turn lane	RTP	$1,000
15*	SR 240	I-182	Columbia Center Blvd	Replace Yakima River Bridge with eight lane structure, add general purpose lane each direction	RTP	$69,000
16	Stevens Rd	Spengler	SR 240	Improvements	TIP	$2,300
17	Jadwin Ave	George Wash Way		Intersection Reconstruction	TIP	$1,000
18*	Knight St	Stevens Dr	George Wash Way		TIP	$2,000
19	Gage Blvd	East City Limits	Leslie Rd		TIP	$2,900
20	George Wash W	I-182	Van Giesen	Overlay and Utilities	TIP	1,000
21*	Jadwin Ave	McMurray	Knight	Overlay and Utilities	TIP	

ID	Location	From	To	Project	Source*	Cost ($1,000's)
22	Thayer Dr/Wellsian Way	I-182	Thayer/Wellsian	New Connection	TIP	$1,200
23	Wellsian Way/Stevens Dr Connection	Stevens Dr	Wellsian Way	New Connection	TIP	$1,000
24	Columbia Park Trail	West City Limits	Leslie Road		TIP	$7,135
25	Columbia Park Trail	SR 240	East City Limits		TIP	$4,100
26	First St	Kingsgate	Logston Street	Phase II	TIP	$3,300
27	Horn Rapids Rd	George Washington Way	Stevens Dr	Phase II	TIP-Develop	$2,110
28	Horn Rapids Rd	Stevens Dr	SR 240	Phase III	TIP-Develop	$7,900
29	Fowler St	Stevens Dr	SR 240		TIP-Develop	$30,700
30	Battelle Blvd	Kingsgate Way	Blanchard	West Extension	TIP-Develop	$3,200
31	Blanchard Blvd	SR 240	Horn Rapids Rd		TIP-Develop	$7,000
32	Unnamed Rd #1	Westcliff Blvd	South		TIP-Develop	$3,400
33	Sky Meadows Ave	Gage Blvd	Meadow Hills Dr		TIP-Develop	$1,000
34	Englewood Dr	Keene Rd	Glenwood		TIP-Develop	$2,600
35	Gage Blvd	West End	City Limits		TIP-Develop	$2,900
36	Queensgate Dr	Keene Rd	Meadow Hills Dr		TIP-Develop	$3,100
37	Shockley Rd	Keene Rd	Queensgate Dr		TIP-Develop	$1,200
38	Spengler Rd	George Washington Way	Robertson Ave		TIP-Develop	$2,800
39	Westcliff Blvd	Keene Rd	Meadow Hills Dr		TIP-Develop	$3,600
40	Center Blvd	Steptoe St	Leslie Blvd		TIP-Develop	$5,600
41	Bellerive Dr	Broadmoor St	Center		TIP-Develop	$1,700
42	Unnamed Road #2	Unnamed Road #1	Gage Blvd		TIP-Develop	$3,300
43	Leslie Rd Realignment	Loryane J. Blvd	Clearwater Ave		TIP-Develop	$4,600
	Subtotal of projects identified in the TIP and funded by development					***$86,700***
44	Racquet Rd	Terminal Dr	Bronco Lane		TIP-2008+	$1,000
45	SR 224/SR 240			Grade Separated Interchange	TIP-2008+/ WSDOT/City	$15,000
46	Comstock St	George Wash Way	Wellsian Way		TIP-2008+	$3,100

ID	Location	From	To	Project	Source*	Cost ($1,000's)
47	Twin Bridges Rd	SR 240	Horn Rapids Rd		TIP-2008+	$5,000
48	Twin Bridges Rd	SR 240	South City Limits		TIP-2008+	$2,500
49	Hagen Rd	Saint St	Port of Benton Airport Entrance		TIP-2008+	$3,600
50	North Richland Toll Bridge	Richland	Franklin County		TIP-2008+	
51	Lee Blvd	Jadwin Ave	Wright St	Phase II	TIP-2008+	$6,100
52	Saint St	Hagen Rd	Jones Rd		TIP-2008+	$4,100
53	SR 240/Stevens Dr			Grade Separated Interchange	WSDOT/City	$15,000
54	SR 240/Swift Blvd			Right-In/Right-Out Access	DKS/City	$330
55	SR 240/Duportail St			Grade Separated Overpass (Long term)	DKS/City	$8,000
56*	Intersection Improvement	Queensgate Dr	Duportail St	Add East and West Bound Through Lane	DKS	$2,640
57	Intersection Improvement	Keene Rd	Queensgate Dr	Add East, South and North Bound Left Lanes	DKS	$1,980
58	Intersection Improvement	Gage Blvd	Leslie Rd	Add East Bound Through Lane	DKS	$1,320
59	Intersection Improvement	SR 240	Duportail St	Add North and South Bound Through Lanes (Short term)	DKS	$2,640
60	Intersection Improvement	Lee Blvd	Stevens Dr	Add North and South Bound Lanes	DKS	$2,640
61	Intersection Improvement	SR 240	Aaron Dr	Add West Bound Right Lane	DKS	$330

Source:

RTP=BFCG Regional Transportation Plan, DKS = Identified in the Transportation Plan, TIP=City of Richland's 2003-2008 Transportation Improvement Program, WSDOT = State project on Highway System Plan.

* Project completed, State funded or no longer planned

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Table 8-13: Recommended Intersection Traffic Control Improvements

Street	Cross-Street	Source	Project	Cost ($1,000's)
GWW**	Knight	RTP	Traffic Signal	$200
Gage	Bellerive	RTP/TIP	Traffic Signal	$150
GWW	First	RTP/DKS/TIP	Traffic Signal	$150
Keene	Shockely	RTP/TIP	Traffic Signal	$200
Van Giesen	Thayer	RTP/TIP	Traffic Signal	$150
Swift	Goethals	RTP/TIP	Traffic Signal	$200
Steptoe	Tapteal	RTP/TIP	Traffic Signal	$200
Leslie**	Reata	RTP	Traffic Signal	$200
SR240	Logston	RTP/TIP	Traffic Signal	$200
Leslie	Columbia Park Trail	DKS	Traffic Signal	$200
SR 240	Hagen/Robertson	DKS/TIP	Traffic Signal	$200
SR 240	Kingsgate	DKS/TIP	Traffic Signal	$200
Stevens**	Batelle	DKS	Traffic Signal	$200
Stevens	Knight	DKS/TIP	Traffic Signal	$200
Wellsian	Aaron	DKS	Traffic Signal	$200
SR 240	Twin Bridges Rd	TIP	Traffic Signal	$200
SR 240	Blanchard Blvd	TIP	Traffic Signal	$200
George Washington Way	Hanford St	TIP	Traffic Signal	$200
Goethals Dr	Knight St	TIP	Traffic Signal	$200
Wellsian Way (re-aligned to Stevens)	Lee Blvd	TIP	Traffic Signal	$200
Duportail	Keene Rd	TIP	Traffic Signal	$200
Englewood Dr	Keene Rd	TIP	Traffic Signal	$200
Center Pkwy	Tapteal Dr	TIP	Traffic Signal	$200

* Source: RTP=BFCG Regional Transportation Plan, DKS= Identified in the Transportation Plan, TIP=City of Richland's 2003-2008 Transportation Improvement Program.

** - Project completed or no longer planned.

Table 8-14: State Facility Improvement Projects in Richland

ID	Location	From	To	Project	Cost ($Millions)
A	I-182	Queensgate Interchange	Queensgate Interchange	Add loop ramps to interchange, widen under crossing to five lanes	0.98 – 1.32
B	I-182	Queensgate Interchange	Columbia River Bridge	Widen to 6 Lanes	40.23 – 54.43
C	I-182	Wellsian Way/Aaron Dr/Thayer Ramp		Improve Westbound ramp and Thayer Intersection South configuration	1.56 – 2.10
D	SR 240	I-182	Columbia Center Blvd	Construct additional lane each direction to provide 6 general-purpose lanes and bridge	41.09 – 55.59
E	SR 240	Columbia Center Blvd	US 395	Construct additional lane each direction to provide 6 general-purpose lanes	24.08 – 32.58
F	SR 240	SR 225 Intersection	Snively Road Vicinity	Widen to four lanes	3.64 – 4.92
G	SR 240	Snively Road	Stevens Drive	Widen to four lanes	15.3 – 20.70
H*	I-182	SR 240 Bypass	Queensgate Drive	Widen to three lanes	Richland TIP

Source: WSDOT *Highway System Plan,* 2002.
* - Project completed or no longer planned.

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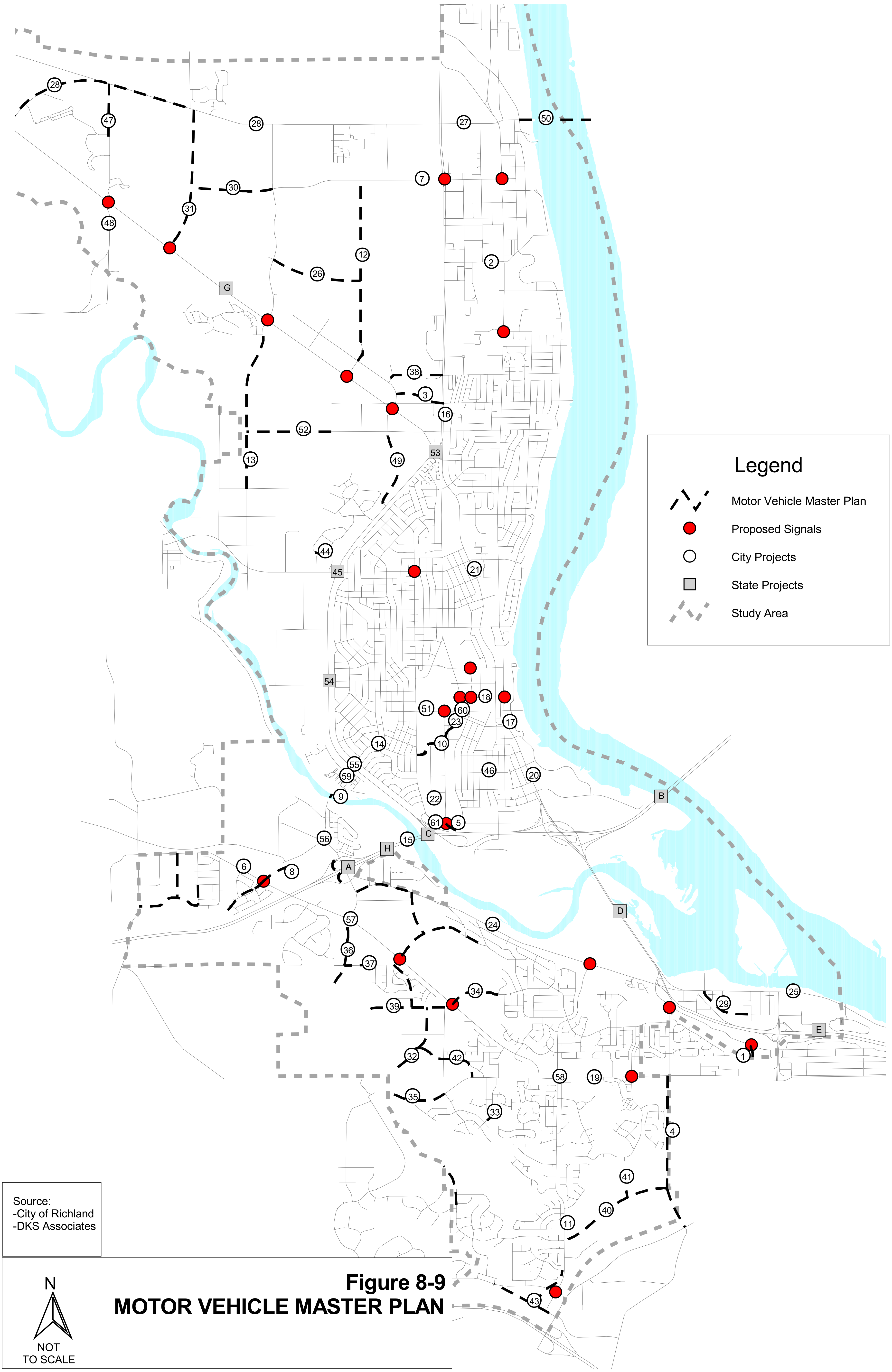
Transportation Plan



Source:
-City of Richland
-DKS Associates

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Figure 8-9
MOTOR VEHICLE MASTER PLAN

Neighborhood Traffic Management

Neighborhood Traffic Management (NTM) is a term that has been used to describe traffic control devices typically used in residential neighborhoods to slow traffic or possibly reduce the volume of traffic. NTM is descriptively called traffic calming due to its ability to improve neighborhood livability. The following are examples of neighborhood traffic management strategies:

- speed wagon (reader board that displays vehicle speed)
- speed humps
- traffic circles
- medians
- landscaping
- curb extensions
- chokers (narrows roadway at spots in street)
- narrow streets
- closing streets
- photo radar
- on-street parking
- selective enforcement
- neighborhood watch

Typically, NTM can receive a favorable reception by residents adjacent to streets where vehicles travel at speeds above 30 MPH. However, NTM can also be a very contentious issue within and between neighborhoods, being viewed as moving the problem rather than solving it, impacting emergency travel or raising liability issues. A number of streets in Richland have been identified in the draft functional classification as neighborhood routes. These streets are typically longer than the average local street and would be appropriate locations for discussion of NTM applications. A wide range of traffic control devices is being tested throughout the region, including such devices as chokers, medians, traffic circles and speed humps. NTM traffic control devices should be tested within the confines of Richland before guidelines are developed for implementation criteria and applicability. Also, NTM may be considered in an area wide manner to avoid shifting impacts between areas and should only be applied where a majority of neighborhood residents agree that it should be done. Strategies for NTM seek to reduce traffic speeds on neighborhood routes, thereby improving livability. Research of traffic calming measures demonstrates their effectiveness in reducing vehicle speeds. Table 8-16 summarizes nationwide research of over 120 agencies in North America.

The City could consider adopting a neighborhood traffic management program. This program would help prioritize implementation and address issues on a systematic basis rather than a reactive basis. Criteria should be established for the appropriate application of NTM in the City. This would address warrants, standards for design, funding, the required public process, use on collectors/arterials (fewer acceptable measures – medians) and how to integrate NTM into all new development design.

Table 8-15: Neighborhood Traffic Management Effectiveness

Measures		Speed Reduction (MPH)			Volume Change (ADT)			Public Satisfaction
	No. of Studies	Low	High	Average	Low	High	Ave.	
Speed Humps	262	1	11.3	7.3	0	2922	328	79%
Speed Trailer	63	1.8	5.5	4.2	0	0	0	90%
Diverters	39	-	-	.4	85	3000	1102	72%
Circles	26	2.2	15	5.7	50	2000	280	72%
Enforcement	16	0	2	2	0	0	0	71%
Traffic Watch	85	.5	8.5	3.3	0	0	0	98%
Chokers	32	2.2	4.6	3.3	45	4100	597	79%
Narrow Streets	4	5	7	4.5	0	0	0	83%

SOURCE: Survey of Neighborhood Traffic Management Performance and Results, ITE District 6 Annual Meeting by R S. McCourt, July 1997.

Transportation System Management

Transportation System Management (TSM) focuses on low cost strategies to enhance operational performance of the transportation system. Measures that can optimize performance of the transportation system include signal improvements, intersection channelization, access management (noted in prior section), rapid incident response, and programs that smooth transit operation. The most significant measure that can provide tangible benefits to the traveling public is traffic signal coordination and systems. Traffic signal system improvements can reduce the number of stops by 35 percent, delay by 20 to 30 percent, fuel consumption by 12.5 percent and emissions by 10 percent[1]. This can be done without the major cost of roadway widening.

Intelligent Transportation Systems

Several of the motor vehicle strategies include facilities and programs that involve Intelligent Transportation Systems (ITS). ITS focuses on a coordinated, systematic approach toward managing the region's transportation multi-modal infrastructure. ITS is the application of new technologies with proven management techniques to reduce congestion, increase safety, reduce fuel consumption and improve air quality. One ITS element is Advanced Traffic Management Systems (ATMS). ATMS collects, processes and disseminates real-time data on congestion alerting travelers and operating agencies, allowing them to make better transportation decisions. Examples of future ITS applications include routine measures such as "smart" ramp meters, automated vehicle performance (tested recently in San Diego), improved traffic signal systems, improved transit priority options and better trip information prior to making a vehicle trip (condition of roads - weather or congestion, alternative mode options - a current "real time" schedule status, availability/pricing of retail goods). Some of

[1] *Portland Regionwide Advanced Traffic Management System Plan,* ODOT, by DKS Associates, October 1993.

this information will be produced by Richland, but most will be developed by WSDOT or other ITS partners (private and public). The information will be available to drivers in vehicles, people at home, at work, at events or shopping.

The Tri-Cities area has not yet entered development of a regional ITS Plan. This type of plan should be pursued by the regional partners as a part of the next cycle of transportation plan periodic reviews.

Incident Management

It is recommended that an Incident Management program be established within the Tri-Cities to address the need for better management of traffic crashes on regional facilities. Research by the Texas Transportation Institute reports indicate that a major portion of recurring congestion on regional facilities is associated with vehicle crashes and breakdowns (up to 40 percent). Addressing this issue with a specific management program will enable the most effective use of the city, county and state infrastructure system. This type of program is especially important in the Tri-Cities where so many of the regional highway routes are constrained by river crossings. A vehicle breakdown on or approaching a river bridge can dramatically impact regional traffic operations.

Trucks

Efficient truck movement plays a vital role in maintaining and developing Richland's economic base. Well planned truck routes can provide for the economical movement of raw materials, finished products and services. Trucks moving from industrial areas to regional highways or traveling through Richland are different than trucks making local deliveries. The transportation system should be planned to accommodate this goods movement need. The establishment of through truck routes provides for this efficient movement while at the same time maintaining neighborhood livability, public safety and minimizing maintenance costs of the roadway system. A map of proposed through truck routes in Richland were developed (Figure 8-10). This map is built from the Regional Transportation Plan Freight System Map (2001) and this plan.

The plan is aimed at addressing the through movement of trucks, not local deliveries. The objective of this route designation is to allow these routes to focus on design criteria that is "truck friendly", i.e., 12 foot travel lanes, longer access spacing, 35 foot (or larger) curb returns and pavement design that accommodates a larger share of trucks. Because these routes are through routes and relate to regional movement, they should relate to the regional freight system. The Regional Transportation Plan[2] includes the following routes in the regional freight system in Richland, which is consistent with the city map:

- SR 240
- I-182
- SR 224

The recommended truck route plan for the city is consistent with the RTP designations. No additional routes are recommended.

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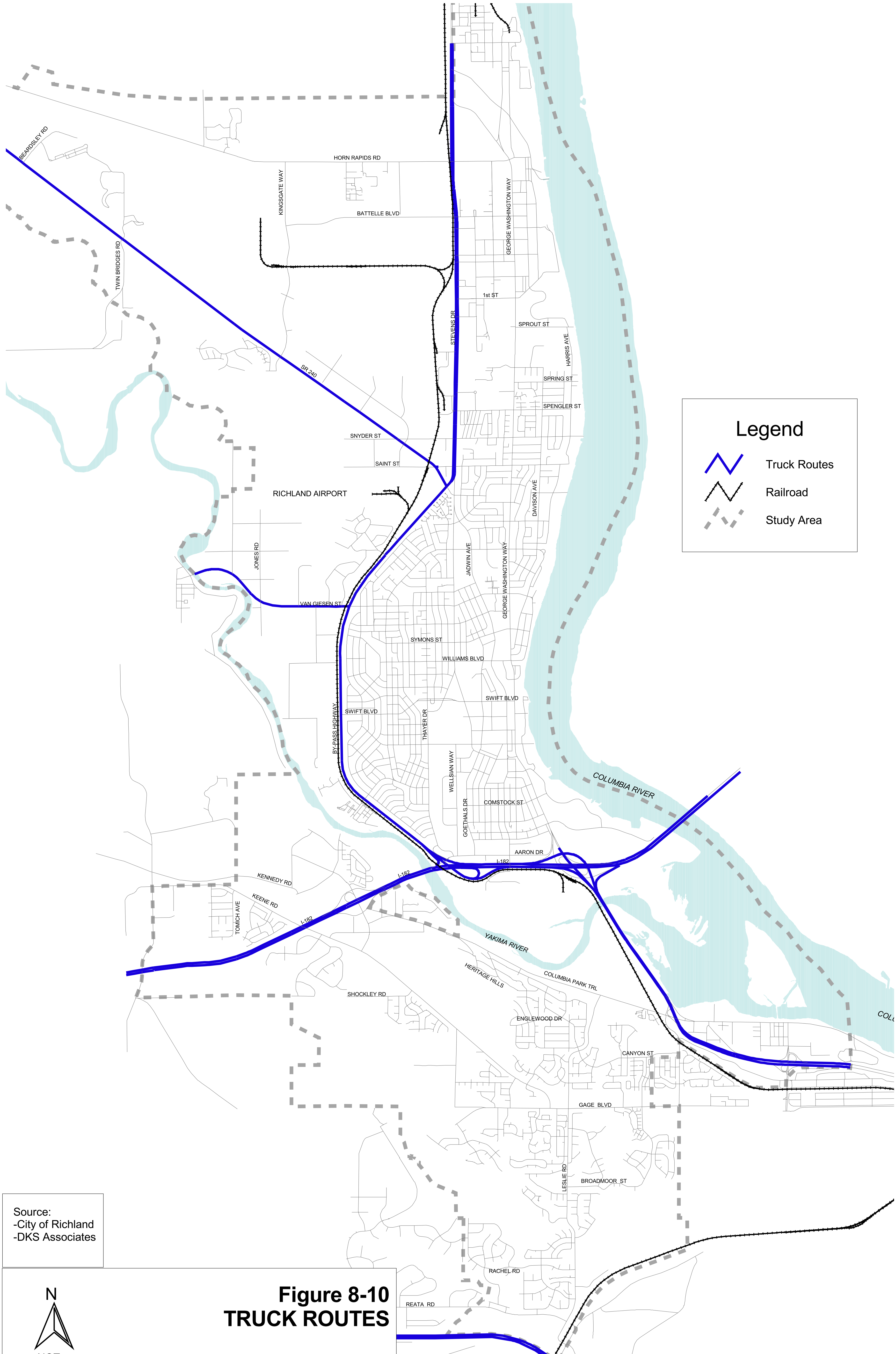
[2] *Regional Transportation Plan*, Benton-Franklin Council of Governments, 2001. Chapter 4, Figure 4.12, Freight and Goods Transportation System.

Criteria

Richland's TSP Advisory Committee created a set of goals and policies to guide transportation system development in Richland (see Chapter 2). Several of these policies pertain specifically to trucks:

Goal 7: The City will work to ensure efficient and effective freight transportation needed to support local and regional economic expansion and diversification.

- Policy 1 – The City will collaborate with federal, state and neighboring local governments and private business to ensure the provision of transportation infrastructure investments and services deemed necessary by the City to meet current and future demand for industrial and commercial freight movement by way of roadway and truck, rail, air and marine transport.
- Policy 2 – The City will work with the Benton-Franklin Regional Council, Port of Benton, Benton County, and other agencies to develop intermodal connectivity facilities deemed by the City to be needed to facilitate seamless freight transfer between all transport modes.
- Policy 3 – The City will ensure that plan Transportation Element goals and policies are implemented in a manner that reinforces the goals and policies of the Economic Development Element.



Source:
-City of Richland
-DKS Associates

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Figure 8-10
TRUCK ROUTES