Appendix to:

Final
Harbor/Naito Concept Plan

Portland, Oregon

ODOT-DLCD, TGM-Quick Response
Portland Development Commission
Oregon Department of Transportation
Portland Office of Transporation

Urban Advisors Ltd. ▪ Crandall Arambula PC ▪ Nelson/Nygaard

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Market Overview for the Harbor-Naito Sites

Summary

The site between Naito Parkway and Harbor Drive is the perhaps unintended result of the needs and priorities of automobile infrastructure as opposed to neighborhood planning. Since the era in which the traffic connections were designed, much has changed in the Portland region, in planning practice and particularly, in the areas near this site. While it was a leftover piece resulting from road alignments, now, because of the rising popularity of the urban lifestyle, it has become a potentially valuable piece of land that is under-utilized. In order to plan for the future, this study was undertaken by the Portland Development Commission to gain an overview of the urban design and market factors necessary to produce change.

The net result of this study[1] is that there is potential on this site for both urban living and employment, *if the urban design measures called for in the plan are undertaken*. This site is currently isolated with the feel of a leftover parcel, but that is precisely because the quality of the streets surrounding are auto oriented without good pedestrian connections to the east and west. In short, the site does not feel a part of either neighborhood that adjoins it. By connecting the site to the adjoining areas, the urban design incorporates the site as part of an exciting area of rising residential values, with an increasing number of amenities that lure new residents to the area.

Given the impact of urban design, the site should be a successful location for living and working that will reinforce the edge of downtown and create a living, high-quality pedestrian connection between RiverPlace and the neighborhoods to the west. The following market overview outlines the potential for the site contingent upon implementation of the urban design recommendations.

The Site and Its Constraints

Markets differ depending upon the use contemplated. For these sites we considered mixed-use housing with retail, housing alone (both for-sale and rental), office use, retail use and hotel use. Information to understand the site potential for these uses came from a variety of sources including ESRI Business Information Services, Torto Wheaton Research, previous market studies performed for the Portland Development Commission, planning for the area by the Portland Department of Transportation, the Oregon Department of Transportation, and other sources.

[1] This study is a LCDC Transit Growth Management Quick Response study intended not as an in-depth detailed analysis, but as an overview to enable the process of decision making for further action.

A significant constraining factor for the site is its relative isolation (due to the surrounding street configuration), its shape and access for both vehicles and pedestrians. The shape of the site and the surrounding street patterns do not lend themselves to efficient solutions for parking, either surface or structured. In their current configuration, the streets act as barriers to pedestrian access onto and off of the site and lack the characteristics of good pedestrian street sections. Because the site is near access from the proposed streetcar in thee short term, and light rail lines in the long term, access for employment use is expected to be good, and the necessity for high parking ratios may be lessened.

A review of existing market information reveals a series of issues for development. First, the current office market in Portland is unlikely to support new speculative construction in the short term (three to five years). If the Portland Development Commission is willing to wait for markets to build more demand, office use may be feasible. Second, while there may be minor demand for retail, existing retail development and opportunities with better downtown locations, site configurations and access will limit the extent of retail use on this site.

The markets do indicate potential for housing. A review of demographics and recent PDC studies for the area indicate demand for housing, both rental and sale units. If the significant changes recommended in the design for Naito Parkway and the proposed site amenities can be accomplished, access to RiverPlace, the surrounding parks, and views can make this a desirable site for residential development.

Portland Metropolitan Office Market

Employment is the principal demand factor in the use of office space. Employment in the Portland metropolitan region has lagged behind national trends. The downtown office market comprises approximately 38 percent of the metropolitan office supply. According to Torto Wheaton Research, total employment in the region is not expected to rebound to 1999 levels until somewhere between 2005 and 2006 and will then post gains through 2009. Total employment in 1999 was approximately 954,000 and hit a low point of 930,000 in 2003. By 2006 it is expected to rise to 966,000, and by 2009 to 1,006,000.

Office use since 1999 has risen slightly in financial services, but has lagged in office-using services at the same time that the inventory of supply has been expanding. Financial offices use approximately 30 percent of office space, with the other 70 percent in office-using services. In 1999, office-using services used 1,324,000 square feet, declining to 1,260,000 square feet by 2003, while 6,366,000 square feet were added to supply. The decline of the office-using services sector and overbuilding have thus had a large impact upon office vacancy. The result is that vacancy rates have risen while rental rates have declined. The vacancy as of the end of 2003 for the metro region stood at 18.7 percent. Because of an improving employment outlook, the Torto Wheaton forecast projects a metro-area vacancy rate of 16.5 percent for 2005.

The downtown Portland fundamentals are better than those for the region. The Central Business District posted a first quarter vacancy of 12.8 percent, a positive change in occupancy

of 40 basis points over 2003. By first quarter 2006 vacancy is projected to decline to 12.1 percent in the CBD, with the CBD capturing approximately 10.5 percent of total metro area absorption. Rent growth for the CBD is expected to outperform the region, but completions of new space are expected to be minor at 28,000 square feet.

The implications for the Harbor-Naito site suggest a longer-term strategy for office as a site use. First, the installation of the streetcar enhances prospects for producing office use at this location. Second, the traffic at the northern point of the site that makes the site less suitable for residential is not a significant factor for office. The urban design proposes approximately 100,000 square feet of office at the northern point of the site, with approximately 300 parking spaces beneath the building. Unlike residential use, the parking for office can be in a paid lot that may even have ownership independent of the building.

Hotel

Prospects for hotel need to be considered for this site, as it will be located on transit with access to the airport and within walking distance of the downtown. The ability for a traveler to go to and from a hotel without any expenses or need for car rentals, and having access to the amenities of downtown could be a significant advantage for hotel operators if the market supports future hotel expansion in the downtown. Given the current and future projections for hotel occupancy and revenue, however, this will not a viable option until after 2009 or later.

Hotels are driven by two markets: either business and leisure air travel, or auto travel. Full service hotels depend more upon airline travel while limited service hotels depend more upon auto travelers whether business or leisure. In Portland, between 1999 and 2003, demand for rooms rose from 9,561 rooms to 11,020 rooms while supply outpaced demand, rising from 15,728 to 19,580 rooms. In addition, the events of September 11, 2001, reduced travel. Occupancy in this period decreased from 61 percent to 56 percent while rooms available increased. The result is that revenue per available room (RevPAR) decreased from approximately $48 to $42 per room. Nevertheless, Torto Wheaton forecasts a steady occupancy rate of 57 percent from 2004 through 2009 based upon an increase of approximately 2,440 rooms, with an increase in RevPAR to $47 per room showing a rebound to 1999 levels. The implication for development on the Harbor-Naito site is that market trends could allow use for a small hotel in place in the future, but not until there is a significant recovery that does more than recapture 1999 levels of revenue. For this reason, the urban design concentrates on the more feasible, and more needed, use of the site for housing and employment.

Housing Markets

To better understand the existing conditions of the downtown residential market, demographic information was obtained from ESRI Business Information Services (ESRIBIS) for the area shown in Map 1 on the following page. According to ESRIBIS, the area shown has a 2003

population of 10,039 persons in 6,426 households at a household size of 1.3 persons per household. Family households comprise only 13.8 percent of all households in the area. The housing stock in the area is mostly rental, with only 9.6 percent of units owned.

Because of the presence of Portland State University there is a student population in the area of approximately 2,136 or 21 percent of persons and 18 percent of households. Single renters who are not students, with a median age in the range of 25 years, who may live with an unrelated person, make up approximately 43 percent of the population at 4,326 persons, and 50 percent of households. Persons over 65 comprise approximately 14.5 percent of the population. Children under 15 comprise only two percent of the population.

Median income in the area mapped is low, at $20,615 per household, while average household income is much higher at $40,512, and per capita income is over $28,000. The difference between median and average incomes is caused by a large number of households (56.8 percent of all households) with income below $25,000 per annum. If one examines the area of downtown between Burnside and Morrison, one finds that the median household income is $11,600 and the average is $16,270.

Downtown Area Housing Trended from Census Data

	2003	2008
Total Housing Units	7,179	7,622
Occupied Units	6,426	6,769
Owner	616	684
Renter	5810	6,085
Vacant	656	452
Median Value Owned	$318,263	$448,621
Average Value Owned	$377,311	$514,004

Source: ESRI BIS

The area directly adjoining the site is quite different. Within a quarter mile of the site, the median household income is $54,000 and the average is $85,500, with per capita income at $59,800. This is an indicator that the southern part of downtown is a submarket distinct from areas to the north. Of all the owner units located in the downtown area mapped, over half, 368 units, are located within a quarter mile of the site. The average gross rent near the site is just over $1000 per month compared to an average gross rent of $374 for the area between Burnside and Morrison. Approximately 37 percent of rental units in the site area rent for over $1,000 per month not including utilities. The high ownership rate and high rental costs indicate that as a neighborhood, the site is located in an area that can attract upper-end market rate units, if the urban design issues can be resolved.

A comprehensive report by Johnson Gardner[2] outlines the prospects for downtown housing, both rental and for-sale units. According to the report, housing in this area appeals to a wide segment of owners and renters seeking a downtown lifestyle. The report projects a demand for x,xxx units by 2009, with x,xxx in market rate and x,xxx needed for workforce housing. There are slightly over 3,900 projected for-sale units being planned or built in the next five years that will cater to this market, but virtually all are at the upper income level (households with incomes over $75,000 per year). Because of the cost of high-quality urban construction, most units would be beyond the means of prospective low and middle-income owners or renters. Thus the report notes that unmet demand for units will total over 1,800 units in that same time period. PSU also plans to expand its student housing, possibly by as much as 1,500 units, relieving some of the pressure on the lower end of the market.

At the same time, rent levels for high-quality downtown construction are less than competitive with regional home-ownership opportunities available at current interest rates. The super-premium rental rate in downtown is $1.65 per square foot of rentable area. Premium projects on the eastside are between $1.00 to $1.30 per square foot. According to analysis by the Red Capital Group, this combination of factors makes it likely that the rental market will capture only ten percent of new household formations. Should interest rates rise as rental rates rise, the potential for rental units will increase.

The current investment market for developing new super-premium rental properties is restrained by local trends. The difficulty is that rents have been dropping, not rising. Investors are willing to buy investment grade buildings, but the average price regionally is around $72 per square foot, lower than the production cost of a downtown building with structured parking. The average rent in the Portland Region declined from around $720 in 2002 to $705 in 2003. While the decline is minor, it is not an indicator for a robust market. The rent levels are expected to rise by second quarter 2005. At some point after that rental housing may support the land and construction costs associated with urban quality development.

[2] Market Feasibility Analysis for Residential and Retail Development in North Macadam URA/RiverPlace, Johnson Gardner, April 14, 2004

Map 1: Downtown Area Used for Housing and Demographic Comparison
Source: ESRI Business Information Services

The implications for the Harbor-Naito site are several. Fist, because of its isolation and its context, unless the urban design changes proposed are made, it is likely to be less competitive as a residential development site than other existing opportunities. If the urban design changes are made, this will be a very attractive site as it will then be a connector between RiverPlace and the upper income district adjoining the site to the west. Combined with the proposed amenities and the views on-site, upper floor units here should capture as much value and any of the surrounding locations. At the same time, there will be a growing need for units priced for middle and lower income groups that are priced out of the current premium market. A mixture of upper and middle-income housing is possible for the site if parking costs can be ameliorated. According to John Carroll, a parking ratio of 1.3 spaces per unit is now acceptable for market rate upper income units. It is suggested that the units on this site be created with fewer spaces, and that spaces should either be sold or rented so that parking cost does not prevent the production of units at a more affordable range.

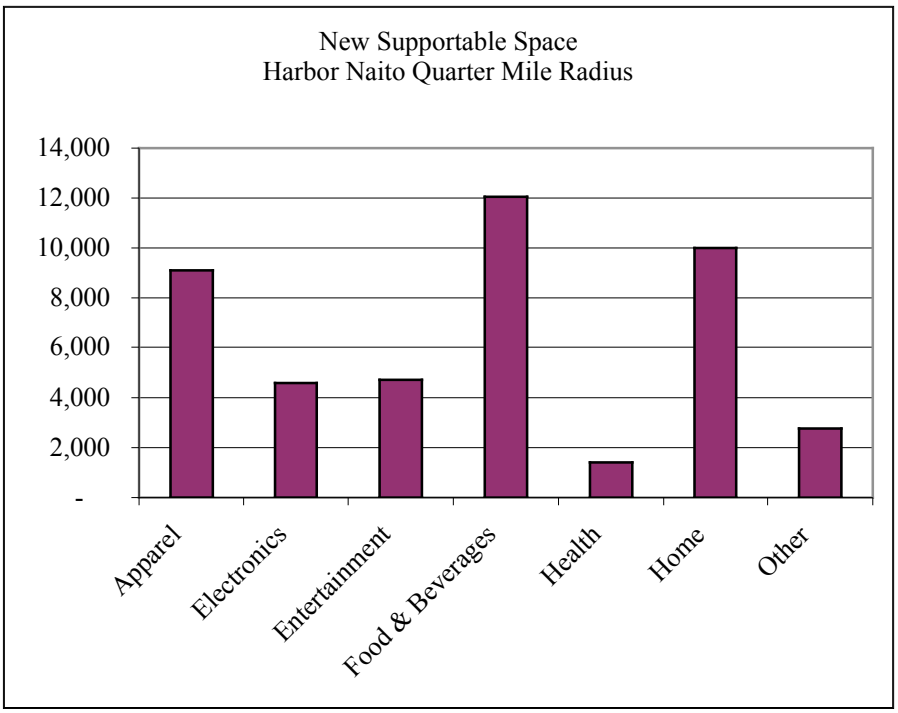
Retail

Retail is dictated by market demand but also by the requirements of retail establishments in meeting competition. These requirements include parking, site size, store size, and mix of categories that vary depending on the type of center and the expected mode of sales capture. There are two basic models of capture—auto-oriented (strip or big-box development), and downtown or neighborhood shopping districts with public or on-street parking.

Strips and big-box rely upon freeway or arterial access (with large numbers of cars passing by), and typically need higher parking ratios because their business is based exclusively upon automobile access. This type of retail is difficult for the Harbor-Naito site because the site does not allow for the creation of large amounts of surface parking, and has no municipal lots in the immediate area to support such parking demand. In addition, for many chains, the site is too small for their typical store area.

Mixed-use retail depends upon surrounding residential density, reasonable auto access and parking, a “main street” configuration that aggregates uses on two sides of the street, and excellent pedestrian access. In both cases, the success of the retail depends upon having a strong local market, high economic utility (the ability for consumers to meet their needs efficiently in the same trip), and convenient access.

If the site must rely upon a market that is highly pedestrian oriented then it makes sense to examine the expected retail spending in a walkable radius. What this reveals (see the chart below) is that there is support for some small amount of retail space on the site.



In order to make this sort of small retail viable, the pedestrian environment must be improved to and there will be a need to create a retail context: some portion of the area that has pedestrian amenities and shops on both sides of the street. Absent those physical requirements, the retail that is possible would be restricted to small, very local serving establishments that are part of a larger mixed use development.

Site Programs and Feasibility

The site program has a series of alternative uses for which outline financial feasibility has been considered. These are summarized in the table on the following page. The basic options, arrived at through site analysis and public involvement include uses for office and housing. To examine potential for such uses, housing was evaluated as both rental and ownership units. Sites 1 was deemed most suitable for office due to its location at the main turn for freeway access, the relative lack of depth of the site, and the more difficult pedestrian connections at that end of the site. Site 5 was evaluated for housing only. Sites 2,3,4 and 6 were evaluated as office parcels and housing parcels.

Because of the relative parking ratios, higher site density is achievable with housing than with office. Office requires three spaces per thousand square feet of building, and the difficulty of creating parking on-site thus limits the number of square feet of building.

To judge feasibility, since there is no way of knowing the financial structure or inclinations of future development teams, or future interest rates, a simple measure of feasibility was used. The created net value of the development to investors or developers was compared to the production cost. Where the net value created is greater than the cost the project was deemed feasible. For buildings that will be held as investment, this meant that any project that created a higher value than cost was feasible. In the case of for-sale units, the surplus created needed to be sufficient to provide a return on project cost that made development worthwhile.

Three different land cost scenarios were run for evaluation with land at $40, $60, and $80 per square foot. Sales prices for the scenarios were run at $240, $260, and $275 respectively.

On sites 2, 3, 6, and 7, rental housing failed to create value that was the same or greater than the cost of production in the low land cost scenario. Rentals at premium rents appear feasible on Sites 4 and 5 when land is $40 per square foot. In the medium land cost scenario, only Site 5 is feasible as rental housing. In the high land cost scenario, rentals were not feasible. There are several reasons for this: the cost of parking, the high land cost, and, in the case of buildings over four stories, the cost of construction. Office use created value greater than the production cost except on Site 6 where the constraints produce a building too small to offset the land cost.

Project Surplus or (Gap) with Residential Options
Land at $40/SF, Sales at $245

	Residential Units	Office Space	Project Cost	Net Value Rental Units	Net Value Owner Units	Rental Surplus / (Gap)	Owned Surplus / (Gap)
Site 1 Office	-	103,000	$ 22,726,600	$ 22,950,410	$ 22,950,410	$ 223,810	$ 223,810
Site 2 Housing	67	-	$ 12,830,616	$ 12,624,167	$ 15,062,083	$ (206,450)	$ 2,231,467
Site 3 Housing	175	-	$ 33,230,002	$ 33,159,478	$ 39,563,072	$ (70,524)	$ 6,333,070
Site 4 Housing	240	-	$ 45,020,280	$ 45,447,000	$ 54,223,500	$ 426,720	$ 9,203,220
Site 5 Housing	145	-	$ 26,966,501	$ 27,436,522	$ 32,734,928	$ 470,021	$ 5,768,427
Site 6 Housing	140	-	$ 26,753,474	$ 26,426,589	$ 31,529,961	$ (326,886)	$ 4,776,487
Site 7 Housing	40	-	$ 7,366,460	$ 6,035,500	$ 9,037,250	$ (1,330,960)	$ 1,670,790
Project Total	806	103,000	174,893,934	174,079,665	205,101,204	(814,269)	30,207,270

Project Surplus or (Gap) with Office Options

	Residential Units	Office Space	Project Cost	Net Value Rental Units	Net Value Owner Units	Rental Surplus / (Gap)	Owned Surplus / (Gap)
Site 1 Office	-	103,000	$ 22,726,600	$ 22,950,410	$ 22,950,410	$ 223,810	$ 223,810
Site 2 Office	-	50,000	$ 10,858,890	$ 10,858,890	$ 10,858,890	$ 311,075	$ 311,075
Site 3 Office	-	82,000	$ 18,110,280	$ 18,278,930	$ 18,278,930	$ 168,650	$ 168,650
Site 4 Office	-	112,000	$ 24,195,280	$ 25,020,721	$ 25,020,721	$ 825,441	$ 825,441
Site 5 Housing	145	-	$ 26,966,501	$ 27,436,522	$ 32,734,928	$ 470,021	$ 5,768,427
Site 6 Office	-	36,000	$ 8,877,780	$ 8,042,375	$ 8,042,375	$ (835,405)	$ (835,405)
Site 7 Housing	40	-	$ 7,366,460	$ 6,035,500	$ 9,037,250	$ (1,330,960)	$ 1,670,790
Project Total	185	383,000	119,101,791	118,623,348	126,923,503	(167,369)	8,132,787

Ownership housing created surpluses that justified development. Pricing for ownership units on a per unit basis is below market averages for the area and may allow for middle income housing, making the projects very competitive in this market area. In all cases, ownership

housing provided enough residual surplus to make development feasible by for-profit developers.

Because of the issue of unmet demand for middle-income housing in the downtown area, another set of scenarios was examined for housing in which inclusionary housing of below market rate rentals were combined with market rate for sale units. The results indicate the potential for providing approximately 5 percent to 13 percent of units at below market rental rates of approximately $750 per month for a 2-bedroom unit. There are a number of means that the public sector can use other than inclusionary housing to increase this proportion if it is deemed desirable, including lower cost financing, bridge financing, construction loan guarantees, mortgage guarantees, provision of site infrastructure and site preparation prior to site disposition, and assistance with environmental impact issues and permitting for those willing to provide below market units.

Gross Value Created Land at $40/SF	Residential Rental	Residential Owned	Residential Alternate	Office
Site 1 Office	$ -	$ -	$ -	$ 22,950,410
Site 2	$ 12,624,167	$ 16,283,333	$ 15,344,481	$ 11,169,965
Site 3	$ 33,159,478	$ 42,770,889	$ 40,304,836	$ 18,278,930
Site 4	$ 45,447,000	$ 58,620,000	$ 55,240,131	$ 25,020,721
Site 5 Housing	$ 27,436,522	$ 35,389,111	$ 30,902,637	$ -
Site 6	$ 26,426,589	$ 34,086,444	$ 32,121,113	$ 8,042,375
Site 7 Housing	$ 6,035,500	$ 9,770,000	$ 9,206,688	$ -
			Tax at 1.6%	
Total Value Sites 1-7 w/Rental Residential		$ 174,079,665	$ 2,785,275	
Total Value Sites 1-7 w/Owner Residential		$ 219,870,187	$ 3,517,923	
Total Value Sites 1-7 w/Residential Alternate		$ 206,070,296	$ 3,297,125	
Total Value Sites 1-7 as Office (5 & 7 as Rental)		$ 118,934,422	$ 1,902,951	
Total Value Sites 1-7 as Office (5 & 7 as Owner)		$ 130,621,511	$ 2,089,944	

The implications for the redevelopment area are shown in the table below. All options create significant taxable value for the redevelopment district, with the for-sale housing options creating the most value. Because all of the options rely upon significant changes in the urban design of the surrounding streets, and upon the provision of on-site amenities it is important to create sufficient value to allow tax increment funding of improvements to enable development.

Phasing

The most immediate action to prepare the area for housing is the implementation of changes to the street configurations and the pedestrian network around the site. These3 actions will serve to unite the site with its surroundings and create the connections between RiverPlace, the site, and the neighborhoods and parks to the west.

Because the short-term market for housing is positive, it is suggested that housing be considered for short-term development, within the next five years, and office after that. In the public meetings, preferences of participants were that the market could dictate use as long as the urban fabric was enhanced. Lacking a crystal ball, housing nevertheless appears to have a shorter timeline than office use. Past recoveries in the office market have taken five to seven years from the low point. At that rate, there should be renewed interest in office somewhere between 2009 and 2011.

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M E M O R A N D U M

Date: June 22, 2004

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From: Thomas Brennan, Nelson\Nygaard Consulting
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Subject: Harbor-Naito Redevelopment Transportation Memo

This memorandum evaluates existing transportation conditions for the Harbor-Naito redevelopment site and analyzes proposed circulation plans for automobiles, pedestrians, cyclists and transit. On-street parking and private parking access are also discussed in the memo. Proposed development will include a mix of residential, office, open space, and the expansion of the Portland International School. The plan proposes up to 383,000 square feet of office development, as many as 895 new housing units, and minimal supporting retail. The final development would include some combination of these figures, and not the total amount. Much of the area is slated to support *either* housing or office development depending on market conditions and specific development proposals to drive the final mix. This memo examines various scenarios of housing and commercial development within the proposed sites and impacts on auto, bicycle and pedestrian circulation.

The illustration on the following page shows the proposed development sites within the Harbor Naito Study area.

Current Conditions

The study area is made up of a number of parcels in various ownerships by the City of Portland, Oregon Department of Transportation and the Portland International School. The area is bounded by Interstate 405 to the south, Naito Parkway to the west, Clay to the north and Harbor Way to the east. Auto circulation through the site has a linear north-south focus. The limited east-west bicycle and pedestrian access through the study area currently represents a significant barrier to circulation between downtown and RiverPlace. The site has significant potential to serve as a gateway site for people traveling by all modes into the downtown.

Proposed Study Area Development Sites

The Roadway Network

The current auto circulation pattern is dominated by north-south travel via Naito Parkway and Harbor Drive. Naito is a four-lane, two-way arterial designated as a Traffic Access Route. Harbor Drive is a four-lane arterial, providing access to I-5, also designated as a Traffic Access Route. There are currently no east-west through streets in the study area, although the planned Harrison Street extension will be completed in 2004, connecting the current termination of Harrison at Naito through the site to SW River Parkway. Grant Street, Sherman Street, and Caruthers Street are local east-west cul-de-sacs. These three streets feed Water Avenue, a local north-south cul-de-sac that runs parallel to Harbor Drive in the southeast portion of the study area. Water is currently the primary route for accessing the International School.

On-Street Parking

No on-street parking is available on Naito Parkway or Harbor Drive in the study area. On-street parking is available on the local roadways (Grant, Sherman, and Caruthers Street, and Water Avenue). Harbor Way has metered on-street parking serving the adjacent commercial developments.

Off-Street Parking

The study area includes one public off-street parking lot, located on Parcel J between Naito and Harbor Drive. The lot, which contains approximately 95 parking stalls, is used by office workers during weekdays and is a popular parking destination for people accessing RiverPlace or the waterfront during the evenings and weekends. The parking lot includes:

- 17 spaces reserved for official use;
- 35 un-metered spaces reserved for carpools from 7:00 am to 6:00 pm, Monday through Friday;
- 23 metered (5-hour limit) spaces reserved for carpools from 6:00 am to 10:00 am, Monday through Friday;
- 15 metered spaces with a 5-hour limit; and
- 5 metered spaces with a 3-hour limit.

Pedestrian/Bicycle

The study area currently creates a barrier for pedestrian and bicycle traffic between the Auditorium District, Portland State University, and the broader downtown area to the west and the waterfront area to the east. Harbor Drive is a very busy roadway carrying in excess of 25,000 vehicle trips per day that has limited sidewalks and is generally not pedestrian or bicycle friendly. Sidewalks are present on Harbor Drive only at the signed intersection at Montgomery where the ADA ramp for the existing Montgomery steps terminates. The short pedestrian corridor between Naito and Harbor at (Montgomery Steps) is

designated by the Central City Plan as a pedestrian Walkway. Naito Parkway is also busy, but has sidewalks on the east and west side of the roadway between Harrison and Market, and on the west side of the roadway south of Harrison. These sidewalks have no buffers from the adjacent passing traffic. The local side streets – Water Avenue, Grant Street, Sherman Street, and Caruthers Street – have sidewalks, but are terminal streets that do not provide through passage. In some areas pedestrians have created informal paths to connect the streets to Naito.

Transit

Eight transit routes currently operate on study area roadways. Routes 92, 95 and 96 are express routes that pass through, but do not make local stops in the study area. Route 35, 36, 38, 56 and 54 provide local service on Naito Parkway as far north as the Market/Clay couplet. The following is a summary of local and express transit services that pass through study area roadways:

Figure 1: Study Area Transit Services

Route	Name	Service to:	Service From:	Midday Headway
35	Macadam	Oregon City	Portland City Center	30 minutes
36	South Shore	Tualatin P&R	Portland City Center	30 minutes
38	Boones Ferry	Tualatin	Portland City Center	30 minutes
54	Beaverton/Hillsdale Hwy	Beaverton TC	Portland City Center	15 minutes
56	Sholls Ferry Road	Washington Square	Portland City Center	15 minutes
92	South Beaverton Express	Murray Hill	Portland City Center	Peak Only
95	Tigard/I-5 Express	Sherwood	Lloyd District via Portland CC	Peak Only
96	Tualatin/I-5	Commerce Circle	Portland City Center	Peak Only

The Phase IV extension of the Portland Streetcar, which will serve RiverPlace via the new Harrison Street extension, is currently under construction and due to be complete in 2005. This line is part of Tri-Met's planned High Capacity Transit Network as detailed in the 2004 Transit Improvement Plan (TIP). According to the TIP, service on lines 35 (Macadam) and 54 (Beaverton/Hillsdale Hwy) will be integrated into Tri-Met's high frequency network by 2011. A minimum frequency of 15-minute service and a series of amenities improvements are required for a line to meet all elements of the system's "Frequent Bus" network. Frequency increases on line 54 have been implemented and amenity improvements, such as unique signage, new shelters and traveler information, are due to be complete

in 2005. Comparable improvements are expected for line 35 by 2011, as funding becomes available.

Transportation Policy

Metro Regional Transportation Plan

Metro's Regional Transportation Plan (RTP) is the transportation blueprint for the region, based largely on the 2040 Growth Concept Plan. The 2040 plan envisions a shift in emphasis from a regional transportation structure based on road capacity to a truly multi-modal system, supported by efficient land use policy. In the study area, the RTP designates Naito as a Regional Street and Harbor Drive as a Regional Boulevard.[1] Recommendations made by the South Portland Circulation Study to downgrade Naito to a local neighborhood collector/main street are in conflict with the RTP designation. However, the study indicates that Metro is accepting of the downgrade designed for this segment of Naito, given the broader land use implications and positive impacts on the Lair Hill neighborhood. The improvements proposed in this study as well as those planned north of the study area (between Market and Glisan) are in line with the RTP designation as described below.

The RTP Regional Bicycle System Map designates Market and Clay as regional access bikeways. River Drive and River Parkway to the east of the study area are designated off-street regional corridor bikeways and Moody Avenue is a regional access bikeway.

The RTP Regional Pedestrian System Map depicts the study area primarily as a transit/mixed-use corridor, bordered by pedestrian districts. An important regional pedestrian and bicycle trail passes close to the district along the west bank of the Willamette River.

Central City Transportation Management Plan

The Central City Transportation Management Plan (CCTMP) is the latest step in Portland's continuous planning process intended to promote economic vitality, livability and environmental quality in Portland's central core, including promoting a compact urban form and increased use of alternative transportation modes.

The CCTMP designates Harbor Drive and Harrison as Major Transit Priority Streets, which are to "provide exclusive transit lanes and/or transit priority measures on streets to facilitate operations for bus and light rail over an identified

[1] Regional Boulevard as defined by the Metro RTP – "serve major centers of urban activity and emphasize public transportation, bicycle and pedestrian travel while balancing the many travel demands of intensely developed areas.
Regional Street as defined by the Metro RTP – "serve transit corridors, main streets and neighborhoods with designs that integrate many modes of travel and provide easy pedestrian, bicycle and public transportation travel.

corridor." The planned Harrison Street Connector is designated as a Transit Access Street, whose function is to "provide bus access to and circulation within a district."

The CCTMP seeks to ensure that all public streets and public ways within the Central City, except freeways, expressways, and exclusive transitways, are accessible to bicycles. The plan also specifies that the bicycle network should, at a minimum, provide for bicycle access to the Central City from all areas of the City and also provide for connections between major attractions. The bicycle network should also accommodate commuting and other trips by bicycle with safe, direct, and continuous bikeways free of unnecessary delays along all urban arterial and major collector routes.

Montgomery and the planned Harrison Street Connector are designated as Central City Walkways in the CCTMP. These walkways are to provide direct connections to the Central City, between Central City Districts, and major destinations within each district.

Trip Generation

Figure 2 provides trip generation rates associated with proposed development capacity for each site within the study area. A maximum of 5,375 daily trips could be generated at build-out, given an equal mix of office and housing was constructed. If all sites were developed as office, 5,351 daily trips would be created. A scenario where all sites available for housing development were constructed as such would produce 4,893 daily trips.

Figure 3 provides AM and PM peak trip generation rates for each proposed development site. Where more than one potential use is proposed, trip generation rates for both uses are provided. Because the trip generation rates used in the ITE Trip Generation Manual are drawn from suburban data, they do not account for the impact of transit that would typically occur in an urban mixed-use development. Figure 4 depicts adjusted trip generation rates for the PM peak-hour. The maximum number of PM peak hour trips that would be generated by a build-out scenario that is primarily office development is 629. An all-housing alternative would generate 408 PM peak hour trips and a mixed scenario an estimated 561 trips. Current land uses associated with the site generate less than 50 trips in the PM peak hour based on rates used in the ITE Trip Generation Manual for a private elementary school with the student population of the Portland International School.

Figure 2: Trip Generation for Proposed Development Sites

Site Location	Proposed Land Use Designation	ITE Land Use Designation	ITE Code	Floors	Size	Daily Rate	Daily Total
Residential							
Site 2 - Option A	Housing	Mid-Rise Apartment*	233	7	70 units	4.20	294
Site 3 - Option A	Housing	Mid-Rise Apartment	233	9	175 units	4.20	735
Site 4 - Option A	Housing	High-Rise Apartment	232	15	240 units	4.20	1008
Site 5	Housing	Mid-Rise Apartment	233	10	145 units	4.20	609
Site 6 - Option A	Housing	Mid-Rise Apartment	233	7	140 units	4.20	588
Site 7	Housing	Mid-Rise Apartment	233	5	125 units	4.20	525
Commercial							
Site 1	Office	Office Building, General	710	4	103,000 sq feet	11.01	1134
Site 2 - Option B	Office	Office Building, General	710	3	50,000 sq feet	11.01	551
Site 3 - Option B	Office	Office Building, General	710	4	82,000 sq feet	11.01	903
Site 4 - Option B	Office	Office Building, General	710	5	112,000 sq feet	11.01	1233
Site 6 - Option B	Office	Office Building, General	710	3	36,000 sq feet	11.01	396
Totals							
Total Possible Residential					895 units		**3,759**
Total Possible Commercial					383,000 sq ft		**4,217**
Alternatives					**Residential**	**Commercial**	
Alternative A: All Commerical (Option B)					145 units	383,000 sqft	**5,351**
Alternative B: All Housing (Option A)					895 units	103,000 sqft	**4,893**
Alternative C: Half Option A (Sites 3,6), Half Option B (Sites 2,4)					315 units	265,000sqft	**5,375**

* No Daily Trip Generation Rates are given for Mid-rise apartments. Daily averages for High-Rise apartments are used in this case; AM and PM peak values are specific to mid-ride apartment uses

Figure 3: AM and PM Peak Hour Trip Generation by Site

Site Location	AM Peak Hour				PM Peak Hour			
	Rate	Total	In	Out	Rate	Total	In	Out
Residential								
Site 2 - Option A	0.30	21	7	17	0.39	27	16	11
Site 3 - Option A	0.30	53	16	42	0.39	68	40	29
Site 4 - Option A	0.30	72	18	54	0.35	84	51	33
Site 5	0.30	44	13	35	0.39	57	33	24
Site 6 - Option A	0.30	42	13	34	0.39	55	32	23
Site 7	0.30	38	12	30	0.39	49	28	20
Commercial								
Site 1	1.56	161	141	19	1.49	153	26	127
Site 2 - Option B	1.56	78	69	9	1.49	75	13	62
Site 3 - Option B	1.56	128	113	15	1.49	122	21	101
Site 4 - Option B	1.56	175	154	21	1.49	167	28	139
Site 6 - Option B	1.56	56	49	7	1.49	54	9	45
Totals								
Total Possible Residential		**269**	**79**	**211**		**339**	**199**	**140**
Total Possible Commercial		**597**	**526**	**72**		**571**	**97**	**474**
Alternatives								
Alternative A: All Office (Option B)		**678**	**551**	**136**		**676**	**158**	**518**
Alternative B: All Housing (Option A)		**429**	**220**	**230**		**493**	**225**	**267**
Alternative C: Half Option A (Sites 3,6), Half Option B (Sites 2,4)		**589**	**418**	**190**		**623**	**199**	**424**

Figure 4: Adjusted PM Peak Hour Trip Generation

	PM Peak Hour Total	Transit Discount Factor*	Transit Share Trips	Total Vehicle Trips (Adjusted)
Existing Development	50	N/A	-	50
Alternative A: All Office (Option B)	676	7%	47	629
Alternative B: All Housing (Option A)	429	5%	21	408
Alternative C: Half Option A, Half Option B	623	10%	62	561

* Source: Oregon Department of Transportation (ODOT) and Department of Land Conservation and Development (DLCD) Transportation and Growth Management Program, *ITE Traditional Neighborhood Development Street Design Guidelines*, 1999.; and John Holtzclaw, Natural Resources Defense Council (www.nrdc.org), *Using Residential Patterns and Transit to Decrease Auto Dependence and Costs*, 1994.

Circulation Concepts

Auto

Major transportation facilities designed primarily for auto traffic, specifically Harbor Drive and Naito Parkway, have created a major barrier between downtown (the Auditorium District) and the developing River Place area. Both roadways carry in excess of 21,000 vehicle trips each day. Auto circulation concepts maintain current capacity for north-south vehicular throughput, while improving connectivity between study area parcels and the districts they separate.

Naito Concept

The plan adopts an enhanced street concept for Naito Parkway between I-405 to the south and Clay to the north. Plans are already in place for similar improvements to Naito to the north along Waterfront Park and to the south through the Lair Hill Neighborhood. The 2001 South Portland Circulation Study calls for the redesign of Naito south of I-405 as a two-lane local street redesigned at a narrower 72' right-of-way, including new sidewalks, bike lanes, and on-street parking. While the enhanced street concept proposed from I-405 to Clay maintains four travel lanes, it provides significant improvements to bike and pedestrian facilities that "fill the gap" between improvements to the south proposed in the South Portland Circulation Study and those proposed to the north between Market and Glisan. The addition of on street parking and narrowing of traffic lanes will calm traffic speeds and improve pedestrian safety. The proposed 92' right-of-way includes the following facilities in both directions:

- 12' sidewalks;
- 7' 6" on-street parking lanes;
- 5' bicycle lanes;
- 10' 6" outside auto lanes; and
- 11' inside auto lanes.

Harbor Drive

Harbor Drive remains largely unchanged, with the exception of redesigned intersections at Montgomery, to allow access to proposed Sites 1 and 2 and at the new Harrison Street connector. Improved pedestrian facilities are required for pedestrian crossings at both the Montgomery and the Harrison/SW River Parkway intersections.

Internal Circulation

The concept proposes to improve internal circulation within the site by connecting Water Avenue to the new Harrison Street Connector provides access to development sites 5 and 7. A 6% grade on Harrison at the point of intersection

and the proximity to the signalized intersection at Harrison and Harbor make a right-in, right-out configuration necessary.

Our analysis demonstrates that the Water/Harrison intersection will function as anticipated from a traffic circulation perspective, although peak hour queues on Harrison could back up past the Water Avenue intersection. This is not a fatal flaw given the assumption that Water will be a minor street designed for local assess, not to provide a major diversion for north – south traffic. Future engineering analysis should be conducted to assess potential site distance constraints and other engineering issues as appropriate.

Sherman Connection

Three local streets run east-west through the southern study area, but do not connect to Naito at their western termini. The proposed circulation concept offers a new connection to Naito via Sherman. Steep grades make connections at Grant and Caruthers impossible according to PDOT engineers. While grades at Sherman are significant, a through street design will be possible. With the inclusion of a 100-foot deceleration apron east of Naito, the street will require a significant 13 percent grade.

We modeled intersection level of service at Naito and Sherman to assess whether this proposed intersection would negatively impact the network. The model shows no negative impacts. Traffic Level of Service is A and Intersection Capacity Utilization is B. The model assumes that this street would be used to provide local access, not to divert trips. As such, no signal is currently warranted for auto traffic purposes at this intersection. However, a pedestrian signal should be considered to ensure pedestrian safety at this high volume intersection, which connects the study area with Auditorium District pedestrian and park system. Were the model to assume any significant diversion of north – south traffic between downtown and the Lair Hill neighborhood onto Sherman/Water, traffic would need to be re-distributed and a new signal warrant analysis completed.

Pedestrian

Pedestrian circulation concepts look to strengthen north-south pedestrian travel and access to the Streetcar stop on Harrison, but more importantly to increase the ease of movement for pedestrians traveling to the site from the east or west or simply crossing the site en route between downtown and RiverPlace. Pedestrian circulation concepts are also intended to improve connectivity with the regional pedestrian corridors identified in the RTP and to improve local access to a number of attractive adjacent pedestrian ways, including Waterfront Park and RiverPlace pedestrian paths and the Auditorium District park and walkway system.

Naito

New sidewalk facilities on Naito combined with the traffic calming impacts of the overall street design, improve pedestrian travel along this currently inhospitable street. The proposed street design includes 12' sidewalks with 4' planting strips and on-street parking on both sides of the street. The planting strips and parking will buffer pedestrians from traffic and greatly improve the quality of the pedestrian experience.

Primary

Two primary routes are planned. The main route traverses Harrison, with a pedestrian bridge over Harbor Drive, connecting the route from Naito to Harbor Way/Montgomery on the east. The other is Sherman Street, connecting with Water Avenue to the south, which improves access from the South Auditorium Towers to the North Macadam District. To the west of Naito, Harrison is a boulevard style street with good pedestrian facilities. The pedestrian traffic and comfort on this street should be improved by the increased activity and improved amenities related to the streetcar. The proposed concept includes a 50' wide pedestrian bridge with landscaping that extends to the Harrison corridor east of Naito, crossing Harbor Drive. Stairways and an elevator will bring pedestrians back to street level at Harbor Way and Montgomery. Not only does this offer pedestrians an opportunity to cross Harbor Drive above traffic, it extends the sightline of Harrison further toward the waterfront and RiverPlace. The pedestrian bridge will also improve access to the Harrison Streetcar stop from the east, west and development sites 1, 2, and 3.

Secondary

While it is assumed that the proposed Harrison pedestrian bridge would accommodate much of the east-west pedestrian traffic, if built, the site design concepts offers a number of other pedestrian improvements. The current Montgomery Steps corridor is maintained as an important pedestrian connection between downtown and the main entrance to RiverPlace at Harbor Way and Montgomery. Access to the Auditorium District via pedestrian ways north and south of Harrison is also improved. The Montgomery steps are retained and improved to provide a connection to Naito and the north Auditorium District. A new pedestrian connection is also formed between the proposed Harrison Park and the Auditorium District walkway one block south of Harrison.

A new pedestrian pathway connects Waterfront Park to the North Macadam area via Harbor Way and the abandoned Willamette Shore Trolley right-of-way. The planned 8' pedestrian trail is separate from traffic on the west and a separate bike facility on the east by 4' landscaping strips. The separation of bike and pedestrian facilities through this area should benefit those traveling on foot in this corridor as well as along the waterfront path.

Tertiary

Two new pedestrian stairways are proposed in the south of the study area to connect existing streets through to Naito. The Grant cul-de-sac will have steps continuing west from their existing terminus to provide pedestrians a through route to Naito. Another stairway is proposed to connect two parallel streets, Naito and Water. This stairway would be located in the Lincoln street right-of-way between development sites 3 and 4.

The proposed Water Street connection to Harrison will also improve pedestrian connectivity from the Portland International School and the Lair Hill neighborhood to the Harrison Streetcar stop.

Bicycle

Currently cyclists traveling east-west through the study area are forced to use an ADA ramp that connects Harbor Drive at Montgomery to the public parking lot to the west. This facility is inadequate for connecting RiverPlace and the South Waterfront area to downtown. Cyclists traveling north-south use either the downtown street grid to the west or the waterfront pedestrian path. The waterfront path in the RiverPlace area, while designated as a regional Off-Street Bicycle corridor (METRO RTP), is not designed well for through bike traffic or cyclists traveling at high speeds. The path can be very congested with pedestrians, diners and shoppers. The concept plan vastly improves bicycle circulation through the study area as well as creating important bike-only facilities for cyclists traveling to downtown from RiverPlace and points south.

Naito

Naito is not designated as an On-Street Bicycle Corridor in the RTP. The City of Portland Bicycle Master Plan has identified improvements to adjacent segments of Naito. In fact, planning is complete and construction expected to begin in 2005 to construct bicycle lanes in both directions on Naito between Harrison and Davis. This is in line with the concept design for the study area, which includes 5’ bicycle lanes in both directions. These lanes will connect planned bicycles lanes north of Market and south of I-405, creating a continuous corridor between the Lair Hill neighborhood and downtown.

Harrison Street Connector

The planned Harrison Street connector will improve east-west bicycle circulation between RiverPlace and downtown. Five-foot bicycle lanes will be constructed in both directions on this road segment. This represents the primary bicycle access through the study area. This street will provide grades most conducive to cycling of any street in the area and it will connect to planned bicycle lane facilities on Harrison Street, providing safe access to the downtown grid.

Harbor Way – Trolley Right-Of-Way Bike Path

The redesign of Harbor Way includes a two-way bike-only trail (10 ft) extending south on the abandoned Willamette Shore Trolley right-of-way. Ultimately this facility will need to be connected to the South Waterfront road network, as a future Streetcar extension to Lake Oswego will utilize the Trolley right-of-way south of River Parkway. This facility allows cyclists to bypass the congested RiverPlace waterfront and to access downtown via bike lanes on Harrison or to access Waterfront Park, where there are connections to the Eastside Esplanade and several points of entry to the established city bike network.

Transit

Access to the study area via public transportation will improve dramatically over the next five to ten years. The addition of high capacity streetcar service, upgrades to existing bus lines, and new bus transit service between North Macadam and downtown (on River/Harrison) will bring prime transit access and improve the appeal of study area development sites.

Streetcar

The Portland Streetcar RiverPlace extension, due to be completed in winter 2005, bisects the study area via an extension of Harrison Street. The Streetcar project is a major impetus for the extension of Harrison Street from Naito to Harbor Drive, where it will connect with SW River Parkway. One station stop is planned within the study area, a center platform stop at the top of the Harrison Street grade. Additional stops will be located east of Naito on Harrison and 1st Avenue and in RiverPlace on SW River Parkway at SW River Drive. Pedestrian connectivity to future development in the study area, to RiverPlace and to other adjacent land uses is an important element of the Pedestrian Circulation Concept.

Future Light Rail

Participants in the three public workshops associated with the Harbor Naito Study generally agreed that the proposed LRT alignment, which meets the western border of the study area at Lincoln and flies over Harbor to River Parkway, is not the optimal alignment. Several alternatives using the right-of-way along the I-405 corridor were discussed. The design team also has concerns with the impacts of the flyway and north-side track alignment where the proposed line meets River Parkway. While the design concept retains the proposed right-of-way at Lincoln, it will be important for Tri-Met to reconsider future LRT alignment between downtown and the proposed Caruthers Crossing.

Bus

The Tri-Met 20 Year Plan calls for future local bus service on the Harrison Street extension. As the North Macadam area develops, Tri-Met plans to move local bus routes serving southwest to an alignment traveling on Portland to Macadam, SW River Parkway and entering the Downtown Transit Mall via Harrison Street.

Tri-Met projects that up to 8 buses per hour will be in service on Harrison by the year 2020.

Better pedestrian access to and across Naito will allow for greater accessibility of transit services on this street. Additionally, pedestrian connections to future local bus and streetcar services on Harrison will be vastly improved by proposed pedestrian improvements.

Traffic Model

Intersection Level of Service (LOS) and capacity for the study area were analyzed based on a model developed for this study. The model was constructed based on an existing syncho model developed for the Streetcar Extension to RiverPlace. This model takes into consideration streetcar operations and trip reassignment resulting from the streetcar project. Additional intersections and traffic projections were added based on the study area boundaries. Trip generation by site (described above) and driveway locations were used to distribute traffic within the model.

Since buildout of the study area will take a number of years to unfold, the model was developed based on 2020 projected traffic counts, which will more accurately reflect traffic levels at a future buildout year. The model assumes a buildout scenario in which all sites with potential for housing develop as such. Given current market conditions this appears to be the most likely development scenario, although this could change if demand for central city office space increases.

The 2020 syncho model establishes a planning level model that will allow more detailed analysis of traffic impacts to be conducted in response to specific site development proposals.

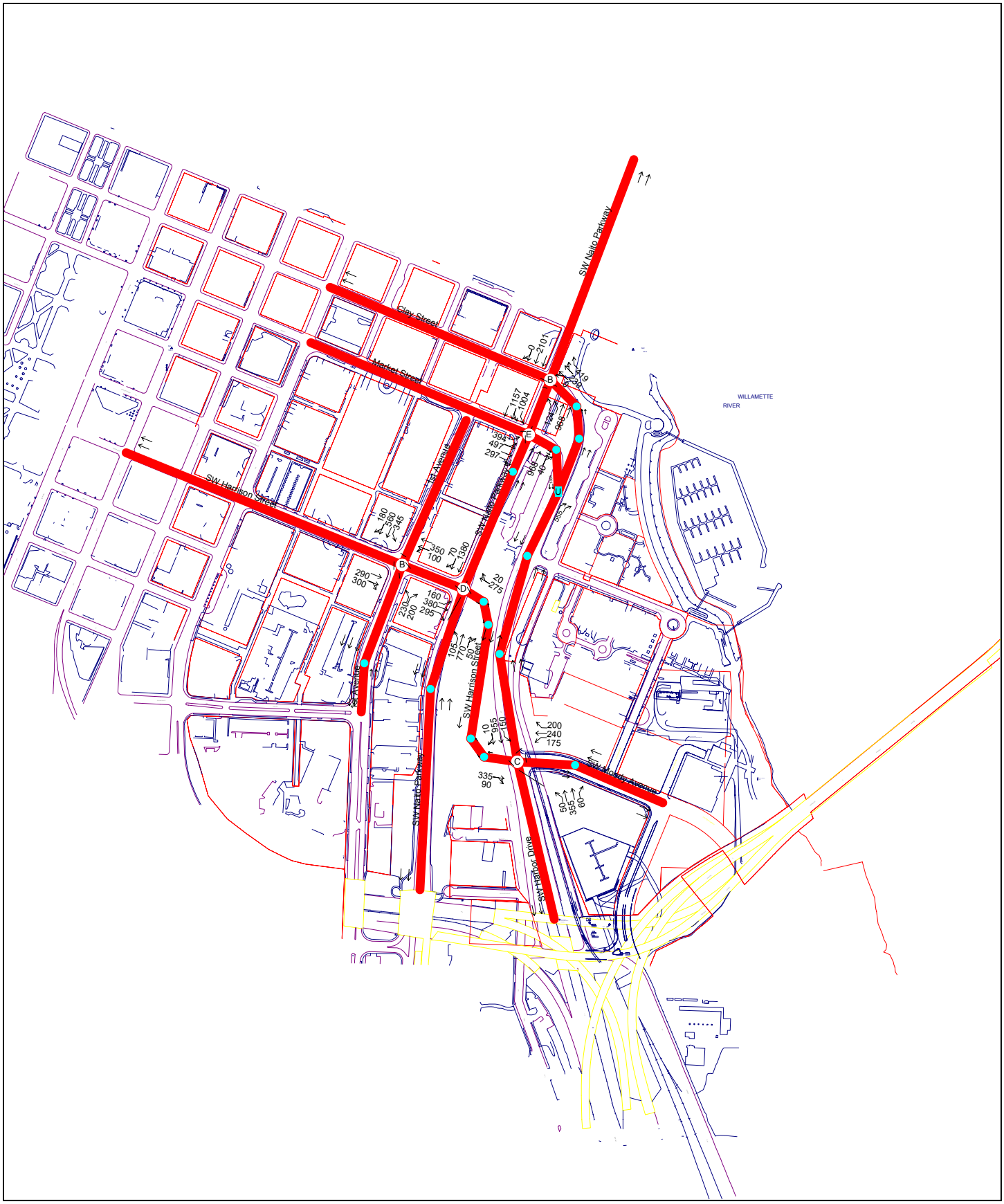
Intersection Level of Service

The levels of service for study area intersections were calculated based on 2020 PM Peak Hour vehicle trip projections from the synchro model. Projected trip generation from proposed study area development was added to the 2020 base model and redistributed based on road redesigns and parking access points. As describe above, the model assumes that housing is developed on all sites designated as dual use (housing or commercial).

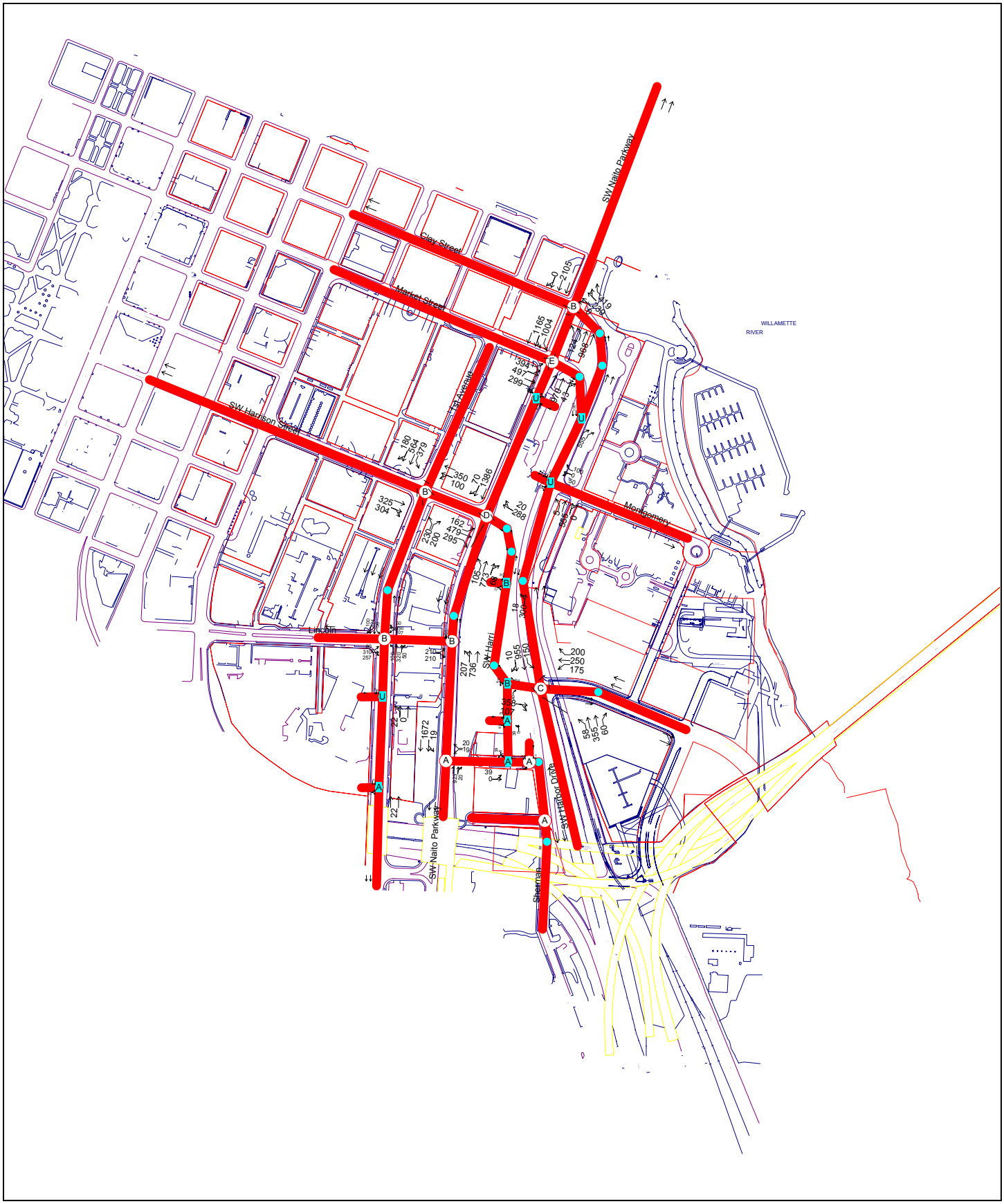
Our analysis suggests that the proposed development plan will have a minimal impact on intersection LOS on adjacent roadways. The following two pages illustrate 2020 intersection LOS without the project and with full buildout out of the proposed development. As illustrated, none of the major intersections experience a degradation of LOS based on the modeled distribution of trips generated by proposed study area development. The Naito and Market

intersection experiences the lowest LOS at level E; Naito and Harrison is rated as LOS D.

Map - 2020 PM Peak Hour
Levels of Service **6/22/2004**



Map - 2020 PM Peak Hour w/ Naito-Harbor Project
Levels of Service **6/22/2004**



Intersection Capacity

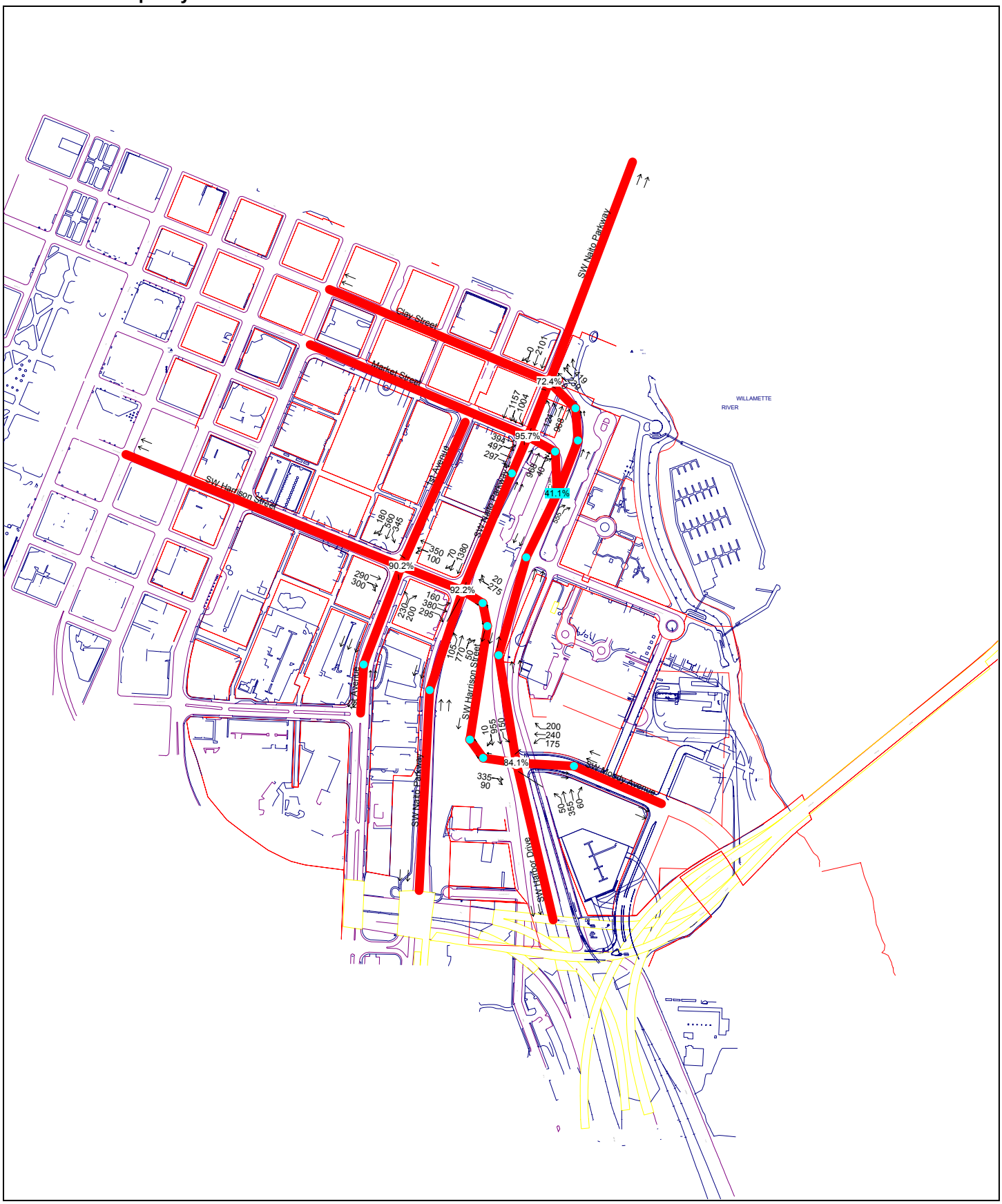
Capacity utilization for study area intersections were calculated based on 2020 PM Peak Hour vehicle trip projections from the synchro model. Intersection Capacity Utilization (ICU) calculations were projected for existing land use conditions and for existing plus calculated buildout trip generation.

This analysis suggests that street and intersection design proposed in the project area design concept will have no significant impact on Intersection Capacity Utilization. ICU projections for 2020 put the Harrison and Market intersections on Naito over 90% capacity; however, projected traffic impacts from site development raise capacity less than 1% in both cases. No other study area intersection exceeds 90% capacity in 2020.

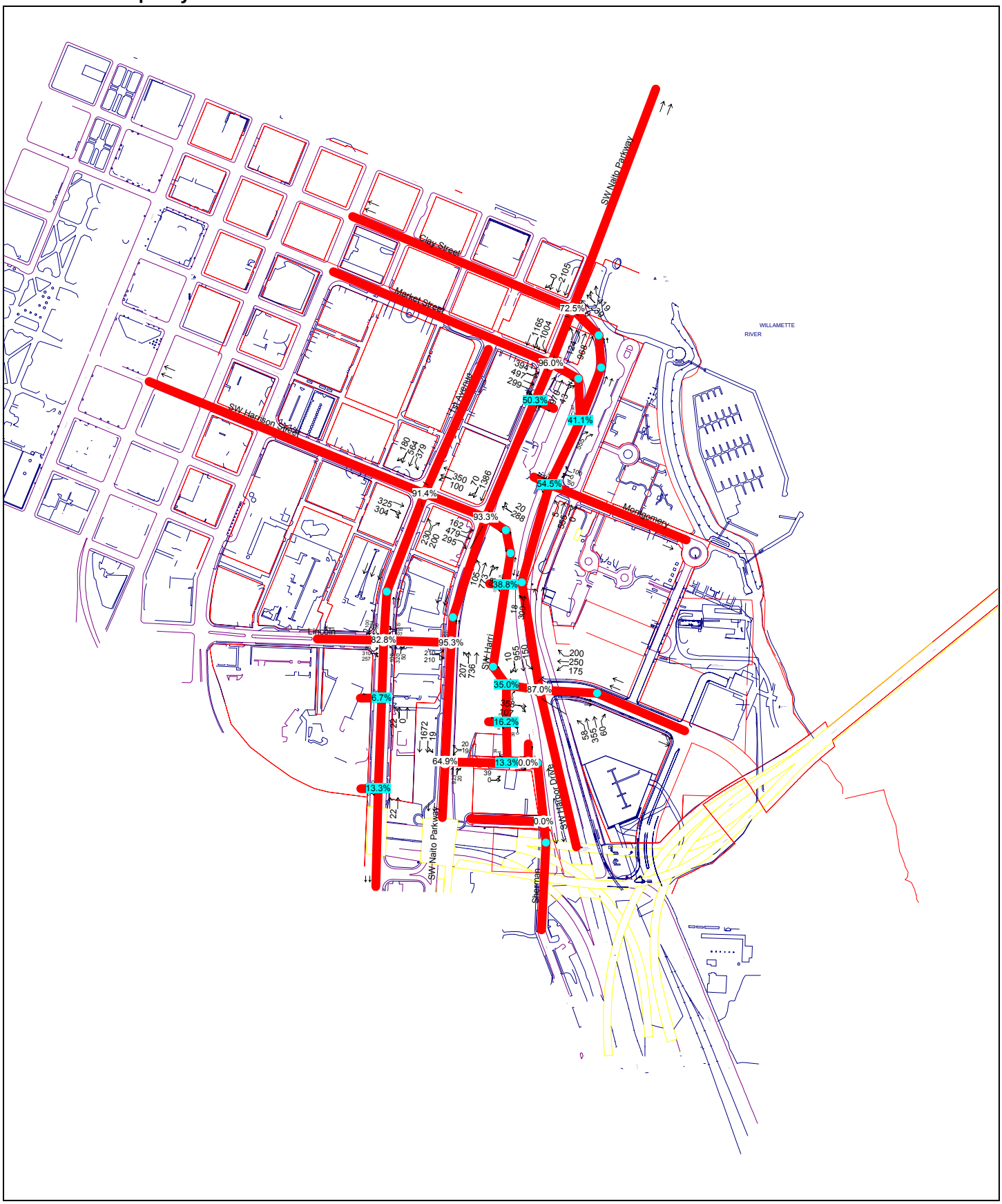
A queue analysis was also conducted based on intersection capacity utilization. The model showed no instances of existing or proposed intersection queues backing up into other intersections. The right-turn lane on Harrison at Harbor is likely to create queues extending west beyond the Water Avenue intersection at the PM peak, although this is not a fatal flaw design issue since Water is a minor local street.

The following pages show 2020 Intersection Capacity Utilization for the study area without the project and with the completed project.

Map - 2020 PM Peak Hour
Intersection Capacity Utilization **6/22/2004**



Map - 2020 PM Peak Hour w/ Naito-Harbor Project
Intersection Capacity Utilization **6/22/2004**



Conclusions

In general, traffic generated by the proposed development concepts can be handled by the expected 2020 roadway network. The following summary conclusions can be drawn regarding auto circulation:

- The proposed Harrison Street Connection appears to function as proposed. The proposed Water Street connection to Harrison does not create excessive queues based on the 2020 traffic model developed for this study.
- Harrison/Naito intersection operates at LOS D & ICU LOS E (93.3%). (Pedestrians have been included in the Naito/Harrison intersection analysis.)
- Market/Naito intersection operates at LOS E & ICU LOS E (96.0%).
- All other new or existing Naito intersections operate at LOS B or better.
- There appear to be adequate storage at each of the study intersections.
- Naito boulevard concept does not seem to have an impact on LOS or traffic flows.

Transit service to the site will improve dramatically in the next 10 years, starting with the opening of the RiverPlace Streetcar Extension in 2005. Additional bus capacity to be added to connect North Macadam to downtown will also improve through transit access to the study area. The proposed development concept preserves the Lincoln right-of-way for the proposed Light Rail extension, but suggest that Tri-Met review the potential for an alternative alignment adjacent to I-405.

Pedestrian and bicycle circulation concepts for the study are expected to improve overall circulation to and through the study area. Existing barriers to east – west pedestrian travel created by the current site are improved by a hierarchical network of pedestrian improvements, including a pedestrian bridge extending east of the Harrison/Naito intersection across Harbor. Improvements are in line with adjacent neighborhood and central city transportation planning documents and capital improvement priorities.