

APPENDIX A

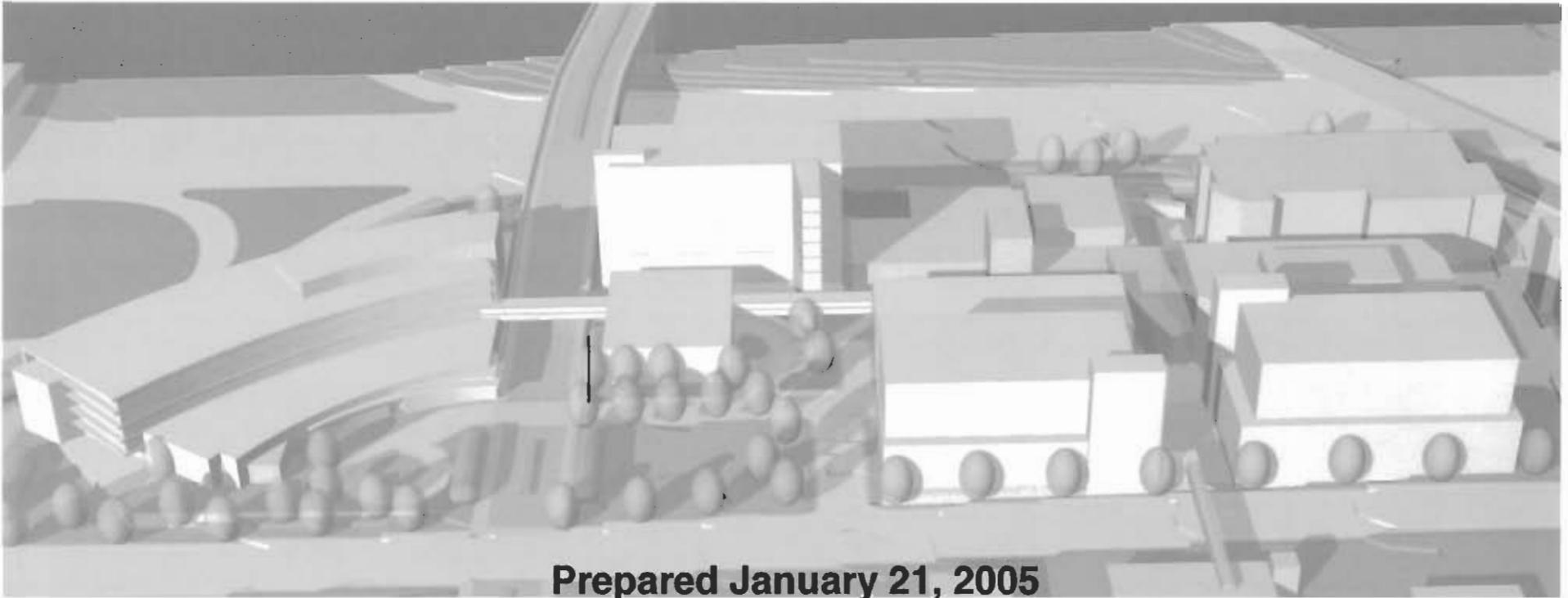
# Overlake Hospital Medical Center Master Plan

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# Overlake Hospital Medical Center

## 2005 Master Development Plan Amendment



# Introduction

The 2005 Overlake Hospital Master Development Plan amendments are intended to provide for the development of the Overlake Hospital campus over the next 25 years. The amendments provide for location of hospital uses and ancillary uses to the primary hospital located on the same site. The purpose of the district is to encourage comprehensive long-term master development planning for the site and to allow flexible dimensional standards to facilitate development of major medical institutions and provision of the vital public services offered by these institutions. Specific development areas have been established in order to implement the objectives of the Medical Institution District.

# Changing Needs of Healthcare Delivery

As medical centers continue to evolve, specialty clinics and specialty physician's office areas are being constructed in direct proximity to hospital facilities to allow direct access for physicians and patients. However, the development of additional medical office space and other facilities is constrained by the limited available land area of the hospital campus.

Furthermore, setbacks under the existing Land Use Code – which would ultimately consume a significant portion of the entire campus area – will make it impossible to accommodate Overlake's evolutionary growth needs on the campus. Health care delivery in the coming generation will require an increased concentration of services directly joined through indoor spaces rather than connected by vehicular routes. This concentration of activities generates a need for additional building area to accommodate technologically advanced equipment, single patient rooms rather than multiple bed rooms, increased provisions for building systems (data, elevators, HVAC systems).

# Changing Needs of Healthcare Delivery (*Cont'd*)

Further increase in allowable lot coverage is also required by the changing functional dynamics and operational requirements of health care in the 21st century. Floor areas required for modern health care centers - both inpatient and outpatients areas - have increased significantly over the last decade. The factors driving the growth of inpatient activities are increased use of technologically advanced equipment in operating rooms, patient rooms, imaging and other diagnostic areas; shift to private bed rooms from multi-bed rooms and increased support areas for building systems to allow for critically controlled air systems, increased data /communications system usage and accessibility requirements. For example, the building area per bed for a new modern hospital has increased to 2200 to 2500 gsf per bed from the current Overlake Hospital average of approximately 1500 gsf per bed.

# Changing Needs of Healthcare Delivery (*Cont'd*)

The only solution is to allow development of remaining campus areas to occur more intensively. In part, this means an increase in allowable height, which is acceptable for the development of room floors and medical clinic space. Further, the patient room floors and higher intensity clinic space will have a 'floor-to-floor' height of between 14 and 16'. This exceeds the 11-13' floor-to-floor height of a typical office building. This additional height is required to allow the critical HVAC systems required by critically ill patients. Both the quantity of air and the requirement for ducted return air lead to the increase in floor-to-floor height. Thus a hospital would have a maximum of 10 floors in a 150' height whereas an office building could have 13 or 14 in the same zoning envelope.

# Changing Needs of Healthcare Delivery (Cont'd)

As mentioned above, the construction of inpatient room floors and medical clinic space can and will need to occur in buildings of taller height. To allow the replacement of all of the inpatient beds currently in the older wings of the hospital (prior to the demolition of those older wings), additional floors will be needed atop the proposed new south wing, bringing this area to as much as 200'.

# 2005 Land Use Code Amendments

These goals were reflected in the Land Use Code Amendments (LUCA) adopted by the City of Bellevue in March 2005. The LUCA includes two development districts within the Overlake campus: the Hospital Center Development Area and the Medical Office Perimeter Development Area. The purpose of the Hospital Center Development Area (DA-1) is to provide an area for the primary hospital use and the most intensive ambulatory health care uses to be located within close proximity. The tallest heights and largest floorplates in the district are appropriate in this area. The Hospital Center Development area is located on the topographically lowest portion of the district adjacent to the freeway where pedestrian orientation is low and heights of the tallest campus structures and largest floor plates are most appropriate. Taller heights are necessary for the primary hospital towers to accommodate patient bed demand in the region within floorplates that are sized appropriately for patient care delivery.

# 2005 Land Use Code Amendments (*Cont'd*)

Large floor plates are necessary for hospital diagnostic and treatment uses and ambulatory health care uses to accommodate adjacencies of multiple major surgery operating rooms, interventional radiology rooms and urgent care. The Hospital Center Development Area provides the dimensional flexibility necessary to allow the primary hospital and ambulatory care uses to be located in close proximity and benefit from the co-location of complimentary uses. Medical office uses may also be appropriate for this area.. Gateways on 116th Avenue NE at NE 8th Street and NE 10th Street will help to identify the entry into the district and provide wayfinding cues for identification of individual institutions located within the district. These elements are incorporated in the 2005 Master Development Plan amendments.

# 2005 Land Use Code Amendments (*Cont'd*)

The purpose of the Medical Office Perimeter Development Area (DA-2) is to provide an area for medical office and hospital related uses that are less dependent on immediate access to the primary hospital emergency rooms and patient beds. Taller buildings are appropriate in this area. Building mass variations (i.e., stepbacks, floor plate limitations) create transitions to less intense land use districts. Appropriate sidewalk widths, pedestrian sensitive design and amenities and gateways ensure pedestrian orientation to perimeter sidewalks located on 116th Avenue NE and NE 12th Street. A gateway on 116th Avenue NE at NE 12th Street identifies the northern corner of the district. These elements are also incorporated in the 2005 Master Development Plan amendments.

# Relationship to Previous Master Plans

# 2000 Master Development Plan

The Overlake Hospital site was reclassified as “Institutional” by Ordinance No. 5174, dated November 1, 1999 (the “1999 Rezone Ordinance”). The Rezone Ordinance an approved Master Plan for development of the Overlake Hospital campus (also adopted the “Master Plan”). The Master Plan, the 1999 Rezone Ordinance and an associated EIS were intended to provide the hospital with additional development potential and increased flexibility in how the site development occurs. This was intended to enable the hospital to better respond to changes in technology, methods of service delivery, new programs, shifting priorities and healthcare reform initiatives. The Master Plan recognized this additional development area would also allow the hospital to develop more cost effective and responsive health related facilities to meet the changing health needs of the community.

# 2000 Master Development Plan (*Cont'd*)

Among other provisions, the 2000 Master Plan provided for development of an additional 544,500 square feet of space which included 525,000 square feet of medical office space and 19,500 square feet of hospital space. Such additional development anticipated the demolition of 15 buildings totaling approximately 222,400 square feet. To support this increased development, the Master Plan contemplated construction of 1,953 stalls.

# Discussion of SEPA Compliance

In February 2005 the City of Bellevue published a final environmental impact statement (EIS) for the Comprehensive Plan Amendment and Land Use Code Amendment (LUCA) associated with the future development of the Overlake Hospital campus under this revised Master Development Plan. The EIS included a review of all impacts associated with the proposed actions associated with the revised Master Development Plan. The 2005 EIS was intended to satisfy the procedural requirements of SEPA review for adoption of the Master Development Plan and its future implementation.

# Statement of Additional Goals & Precepts

# Goals and Precepts of 2005 Master Development Plan Amendments

The 2000 Master Development Plan identified several Major Precepts, including the following:

- Support the growth of all major hospital functional areas for the foreseeable future in a manner that is appropriate to anticipated demand, flexible, cost-effective and responsive.
- Create physical adjacencies within the campus that allow for the greatest flexibility of use over time of expensive hospital facilities and that supports cost-effective operation of these same facilities.
- Improve clarity of campus circulation and wayfinding, both on the overall campus and within the physical buildings themselves.

# Goals and Precepts of 2005 Master Development Plan Amendments (*Cont'd*)

The 2000 Master Development Plan identified several Major Precepts, including the following:

- Create a physical setting that reinforces the nature of the “healing campus.” This is accomplished by creating landscaped resources that act either as buffers to major development zones or as courtyards enhancing the internal views from campus buildings, and by retaining access to the regional views of the Cascades, Mount Rainier, and the Bellevue CBD from the maximum area of the new and existing buildings.
- Strengthen the physical image of the campus from the surrounding community and the major traffic arterials that surround the hospital site.

# Goals and Precepts of 2005 Master Development Plan Amendments (*Cont'd*)

The 2005 Master Development Plan amendments build on these precepts and add the following additional goals:

- Permit additional building heights to accommodate hospital and related uses in a more urban form, while providing necessary additional space for increased patient bed demand, state-of-the-art infrastructure and utility systems, and technologically advanced equipment.
- Allow larger building floor plates with reduced setbacks and increased lot coverage, to accommodate needed adjacency of patient care uses, technologically advanced equipment, single patient rooms rather than multiple bed rooms, and increased provisions for building systems (data, elevators, HVAC systems).
- Provide gateway elements and pedestrian enhancements at key locations on the perimeter of the campus to promote an urban form and improve wayfinding and accessibility for pedestrians and vehicles.

# Existing Masterplan Elements and Physical Descriptions



## EXISTING AERIAL PHOTOGRAPH



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AERIAL PHOTO OF EXISTING  
CONDITION

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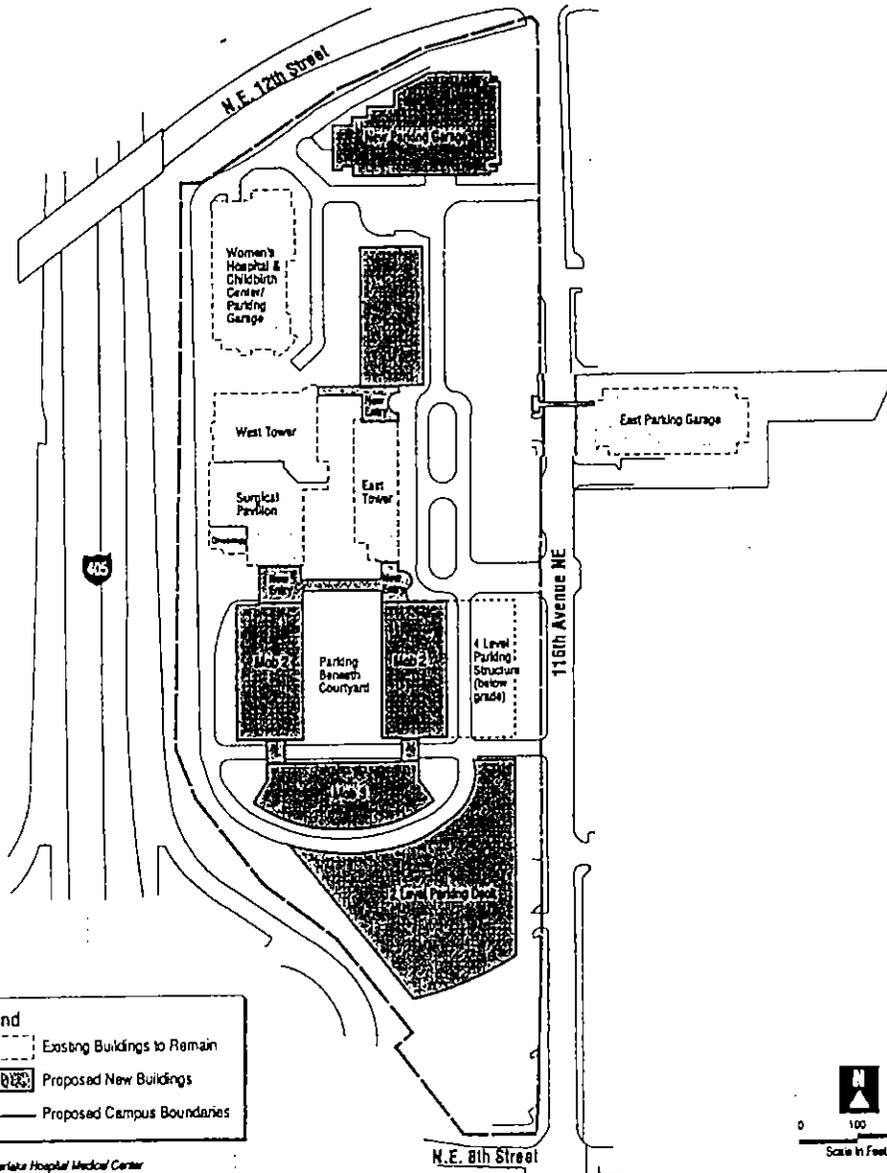
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# MASTER PLAN (2000)



**Legend**

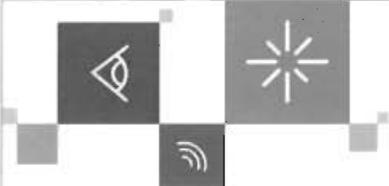
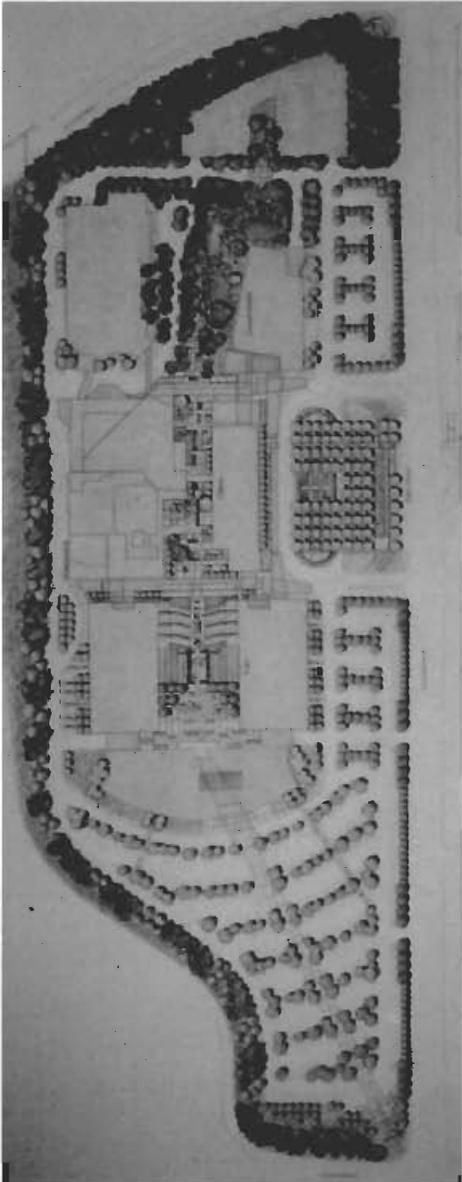
- Existing Buildings to Remain
- Proposed New Buildings
- Proposed Campus Boundaries



Source: Overlake Hospital Medical Center

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# LANDSCAPE PLAN (2000)



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LANDSCAPE CONCEPT PLAN

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# Elements of 2005 Master Development Plan Amendments

# Elements of 2005 Master Development Plan Amendments

The purpose of the proposed amendment to the Master Plan is as follows:

- Provide for the future development of a new 150,000 square foot hospital tower, including:
  - 80 new beds and 24 replacement beds
  - Six new surgery operating rooms
  - New emergency department
  - 315 parking stalls below-grade parking
  - Pedestrian connections between new building and existing campus
- Provide for the future development of a new 300,000 s.f. ambulatory care center (ACC), including 1,500 parking stalls above and below grade

# Elements of 2005 Master Development Plan Amendments (*Cont'd*)

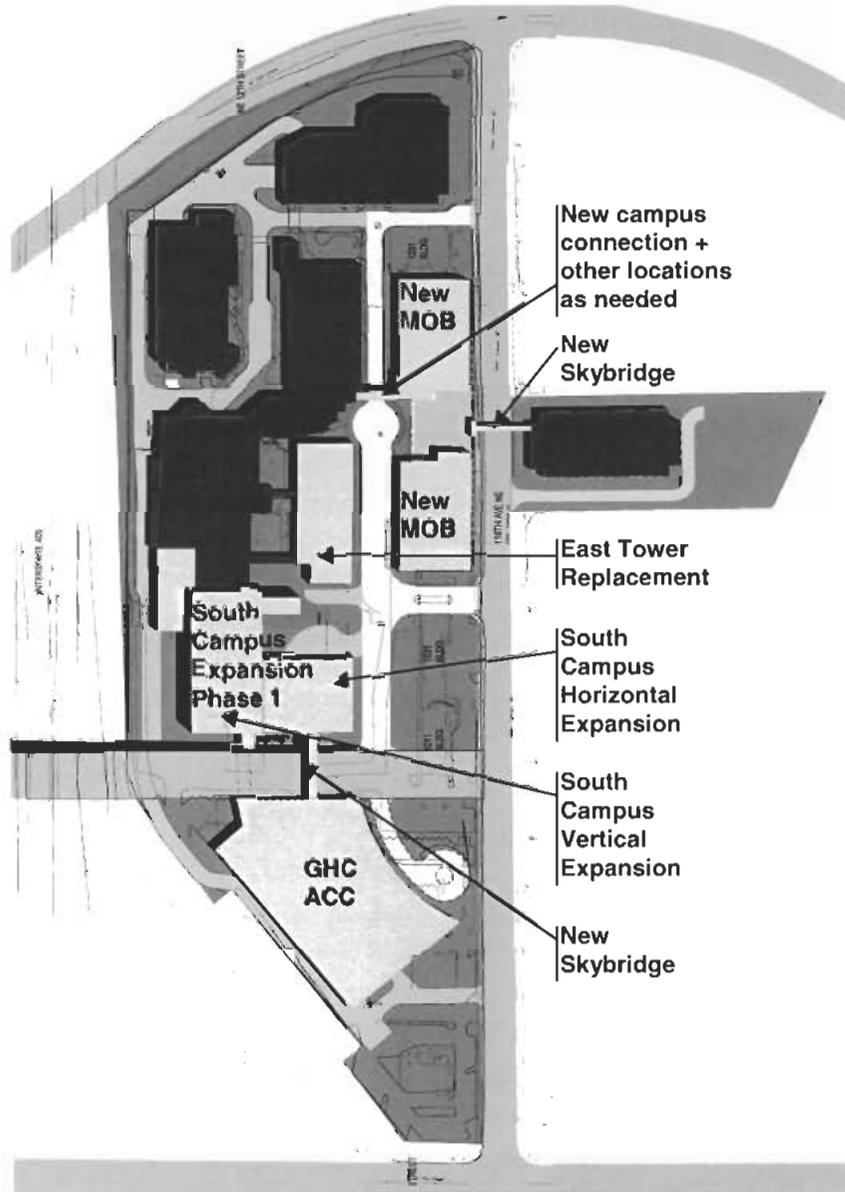
The purpose of the proposed amendment to the Master Plan is as follows:

- Provide for the future development of two new medical office building facilities on 116th Avenue NE, totaling approximately 400,000 s.f., together with accessory parking.
- Provide for at-grade and sky bridge connections between the new Hospital and ACC facilities and across 116th Avenue NE.
- Such development shall be enabled by the demolition of approximately 131,000 square feet of existing hospital and medical office structures, as previously approved under the 2000 Master Development Plan.
- Provide for future-phase redevelopment of the hospital complex for up to 400 patient beds and 1 million s.f. of hospital use, together with additional accessory parking.

# Elements of 2005 Master Development Plan Amendments (*Cont'd*)

The Master Development Plan has been prepared based on a generalized program of future development; thus, the Plan recognizes the need to maintain maximum flexibility in the implementation of the Plan. The healthcare environment is rapidly and constantly changing with advances in technology, varying methods of service delivery, new programs, shifting priorities and healthcare reform initiatives. It is expected that the Master Development Plan projects will have to change within the established framework to continue to be responsive to the healthcare needs and demands of the communities served by Overlake Hospital. Therefore, the Master Development Plan is structured as a general conceptual guide to enable accommodation of this ever-changing environment. The Medical Institution District establishes property zoning and the basis for the flexible master plan.

# REVISED MASTER DEVELOPMENT PLAN



New campus connection + other locations as needed

New Skybridge

New MOB

New MOB

East Tower Replacement

South Campus Expansion Phase 1

South Campus Horizontal Expansion

South Campus Vertical Expansion

GHC ACC

New Skybridge



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MASTER DEVELOPMENT PLAN

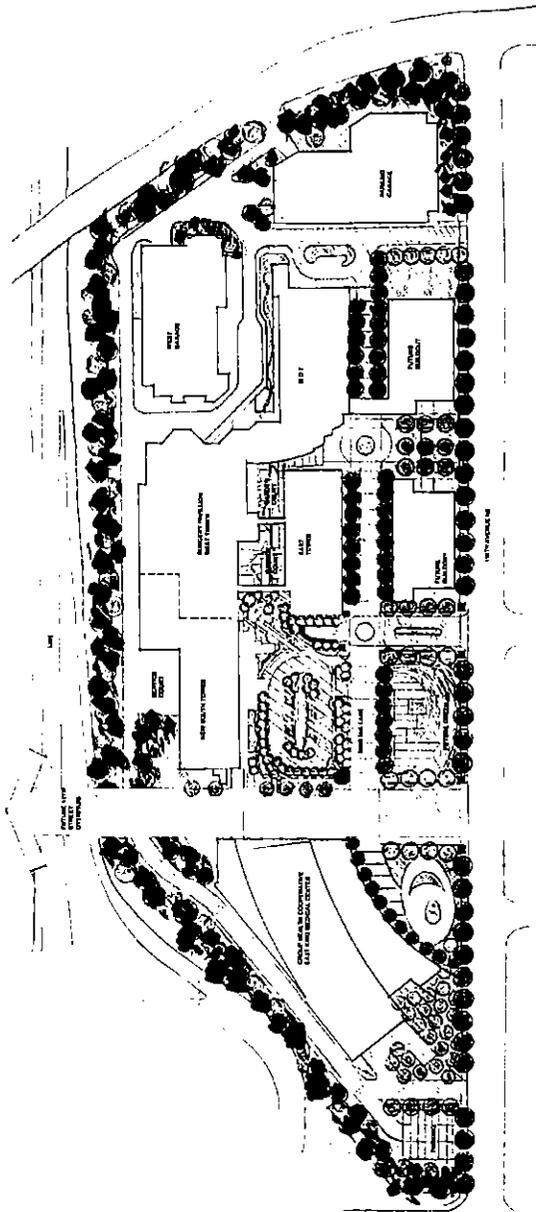
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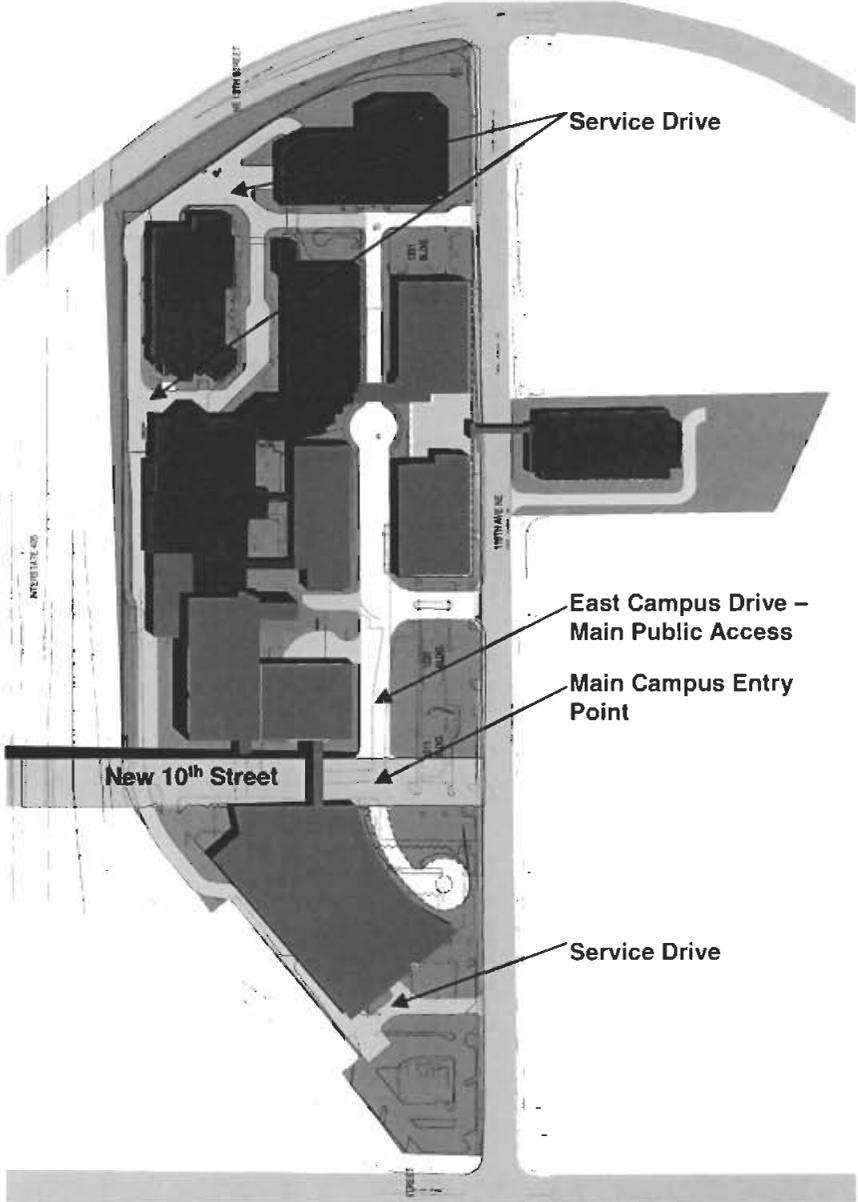


## CONCEPTUAL LANDSCAPE PLAN

### Elements:

- Sidewalk treatment
- Landscaping adjacent to sidewalk provides a softening element and contrast to the hardscape of the tower building behind
- Courtyards
- Good sun exposure

# VEHICULAR CIRCULATION AND ACCESS POINTS



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VEHICULAR CIRCULATION

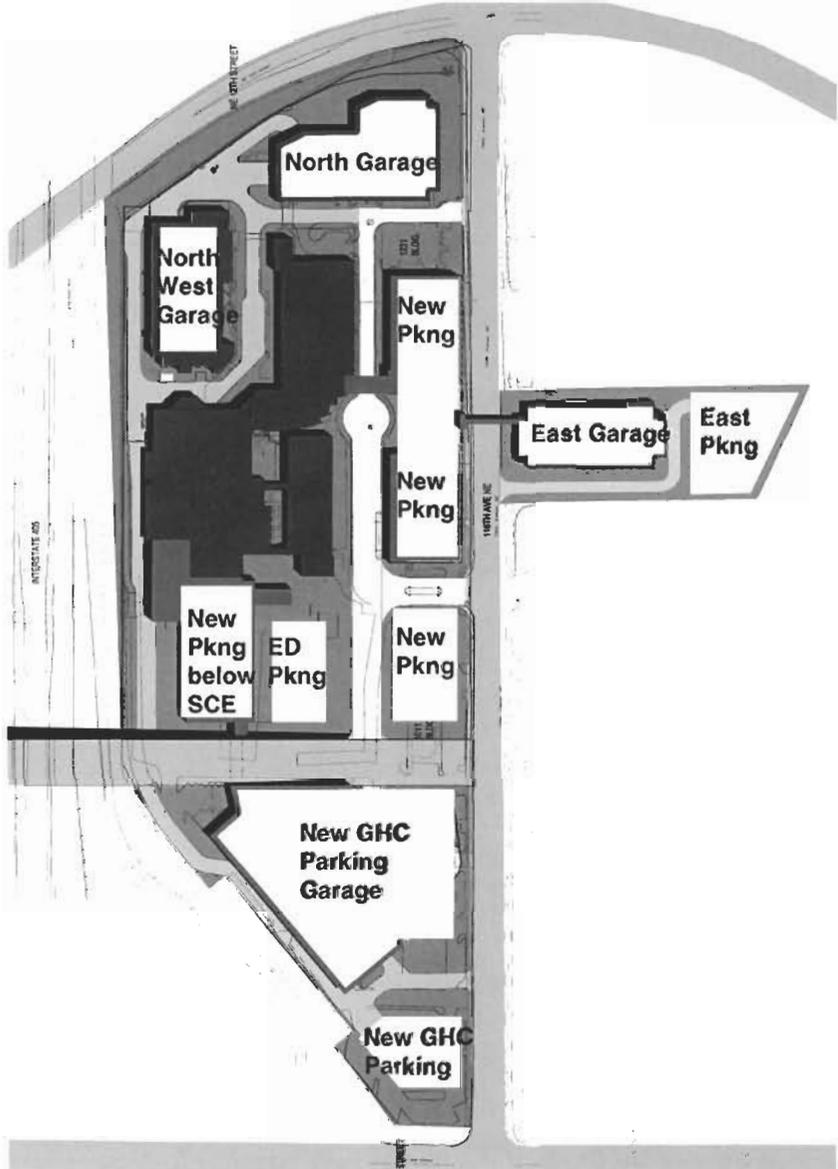
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# PARKING



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PARKING DIAGRAM

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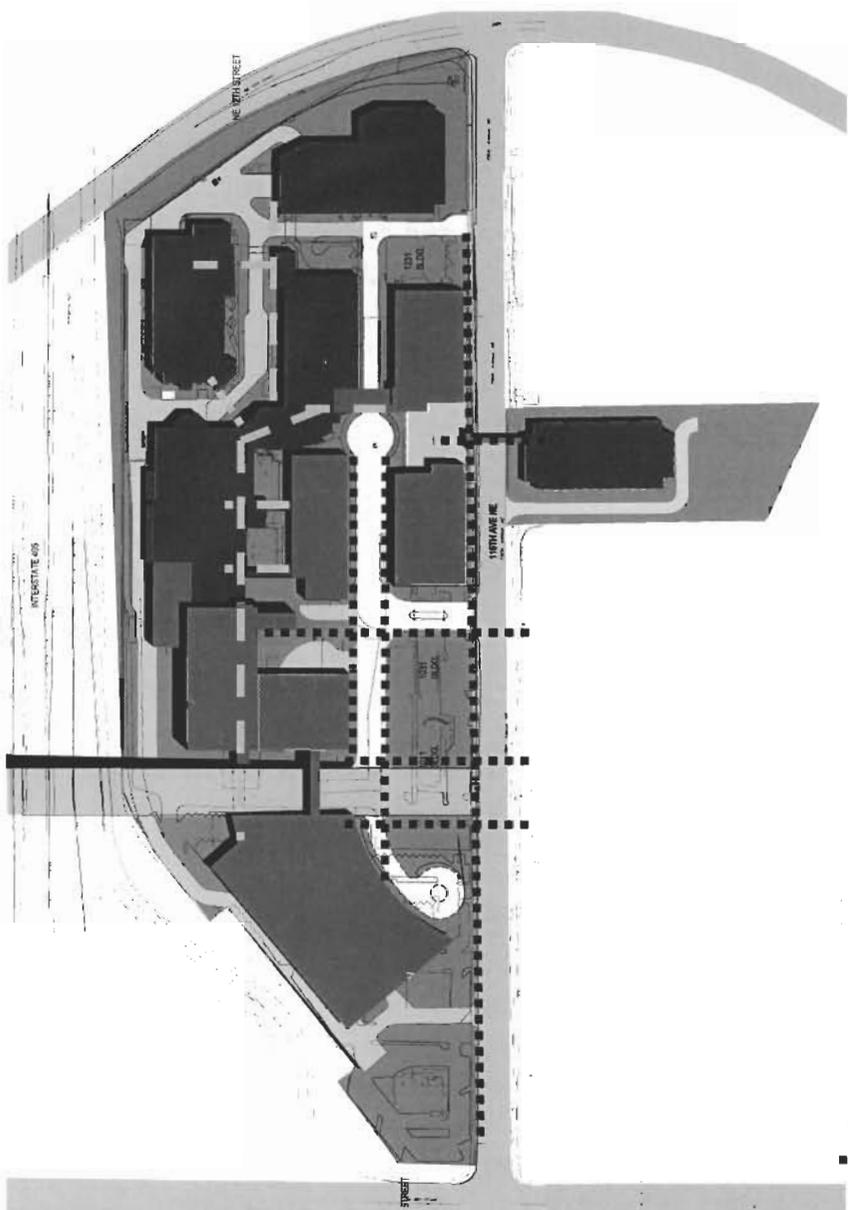
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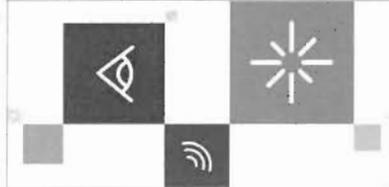
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This plan is preliminary in nature. Finaling is shown on design, all "shaded" items and elements are conceptual. Final building locations, site design, circulation areas and other elements may vary from that shown here, as approved per the Design Review process. If 10th Street improvements will be constructed by others, additional office buildings may be located anywhere in DA-7.

# PEDESTRIAN CIRCULATION



Hospital Public Circulation  
 Pedestrian Circulation



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PEDESTRIAN CIRCULATION

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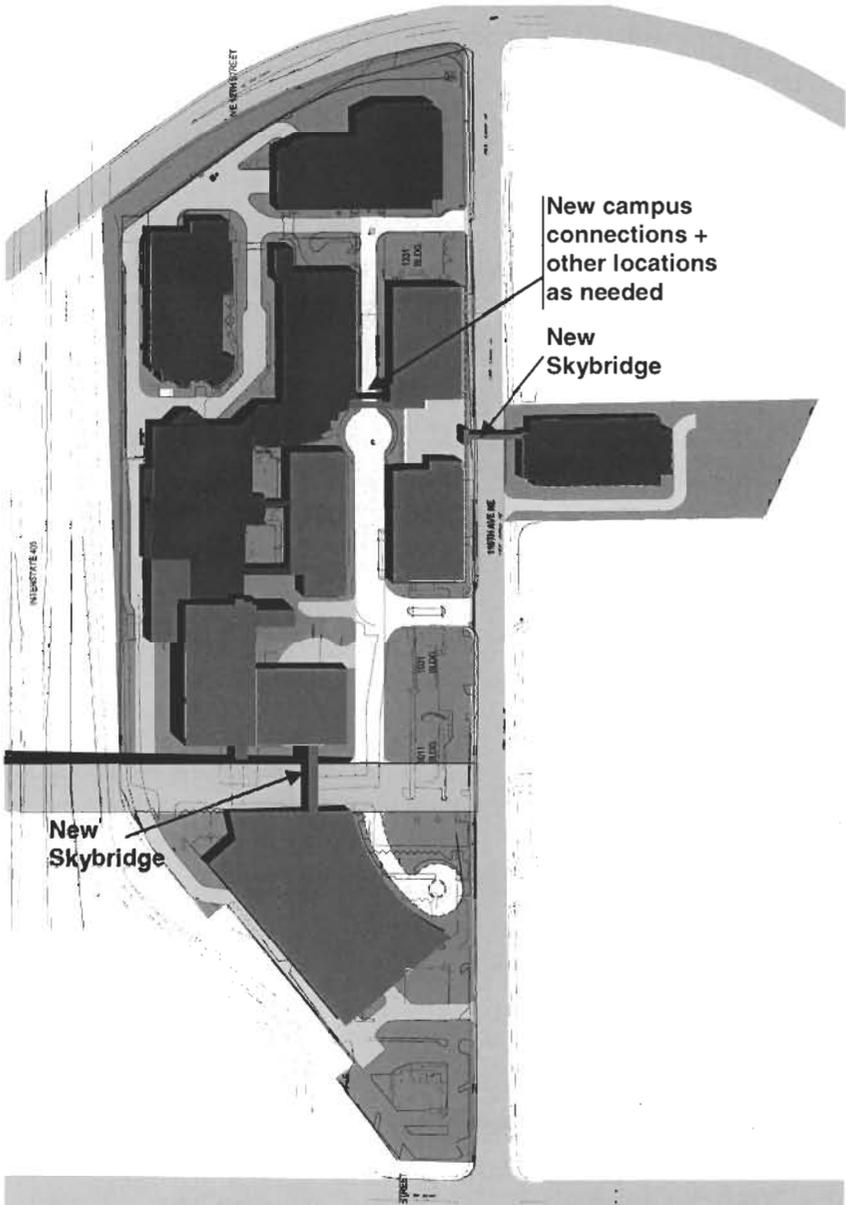
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# SKYBRIDGE LOCATIONS



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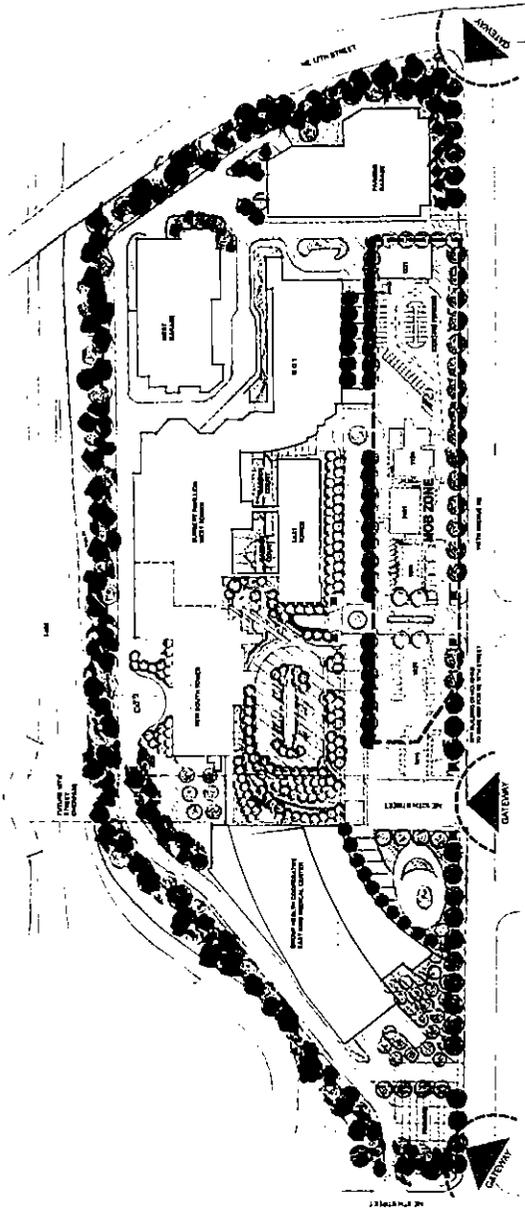


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SKYBRIDGE LOCATIONS

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116th Avenue NE & NE 12th Street  
Looking South



NE 10th Street - Entry

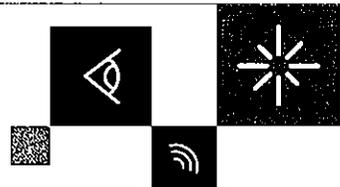


116th Avenue NE & NE 8th Street  
Looking North

## GATEWAYS

### Elements:

- District gateways are provided as part of campus redevelopment, they:
- Convey an image of public use
- Identify the medical institutional district and each major institution within it
- Provide a prominent landmark with enhanced landscaping and monument signage
- Provide good physical and visual access to the campus from the sidewalk



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GATEWAYS

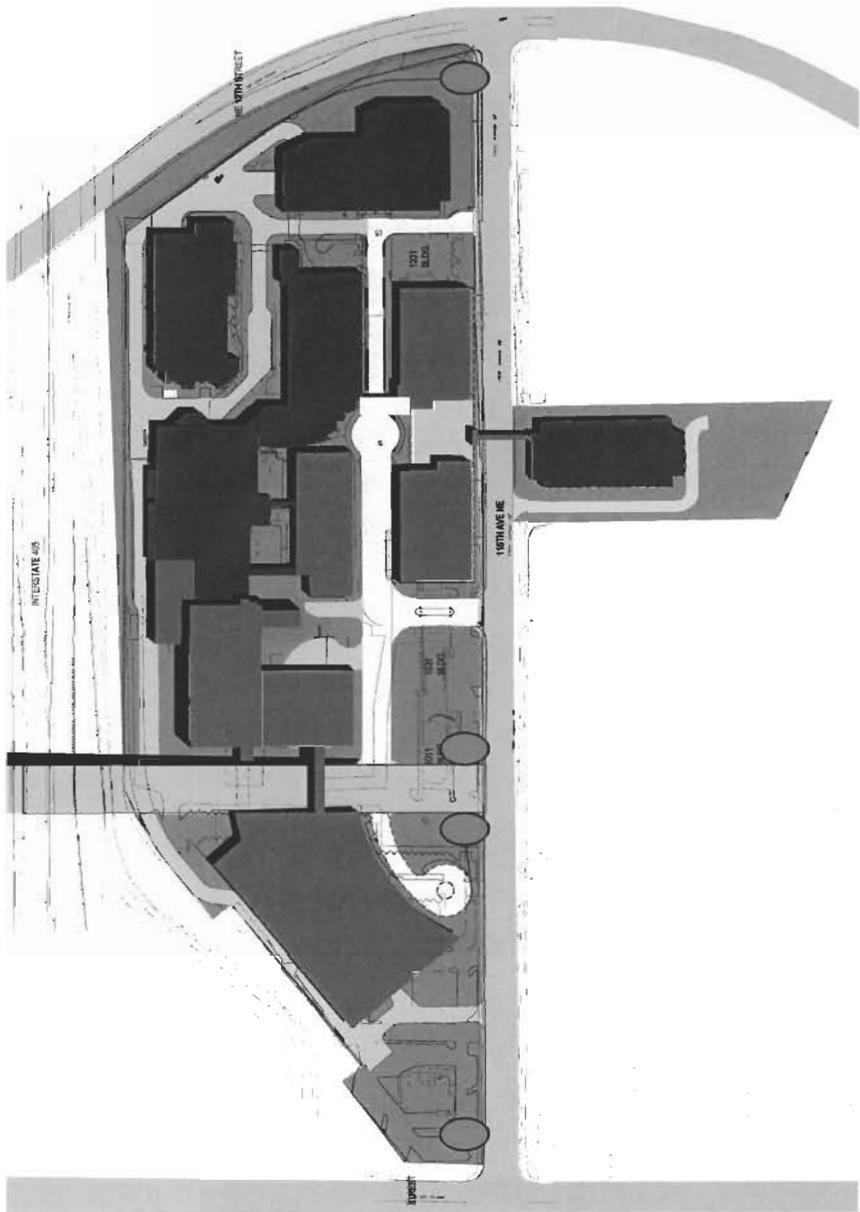
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# GATEWAY LOCATIONS



116th Avenue NE - Sidewalk

## 116<sup>TH</sup> ST FRONTAGE

### Elements:

- Blank facades are minimized
- Buildings at the back of sidewalk
- Differentiation of ground level and lower floors for pedestrian orientation
- Where windowless area are necessary for functional reasons, they will be visually diminished with planting, modulation, material variation, artwork or other features
- Perimeter sidewalks will include a four-foot planting strip
- Trees and landscaping are used to define and enclose pedestrian connections

# VIEW STUDIES FROM EIS



Figure 3-1  
View Point Locations

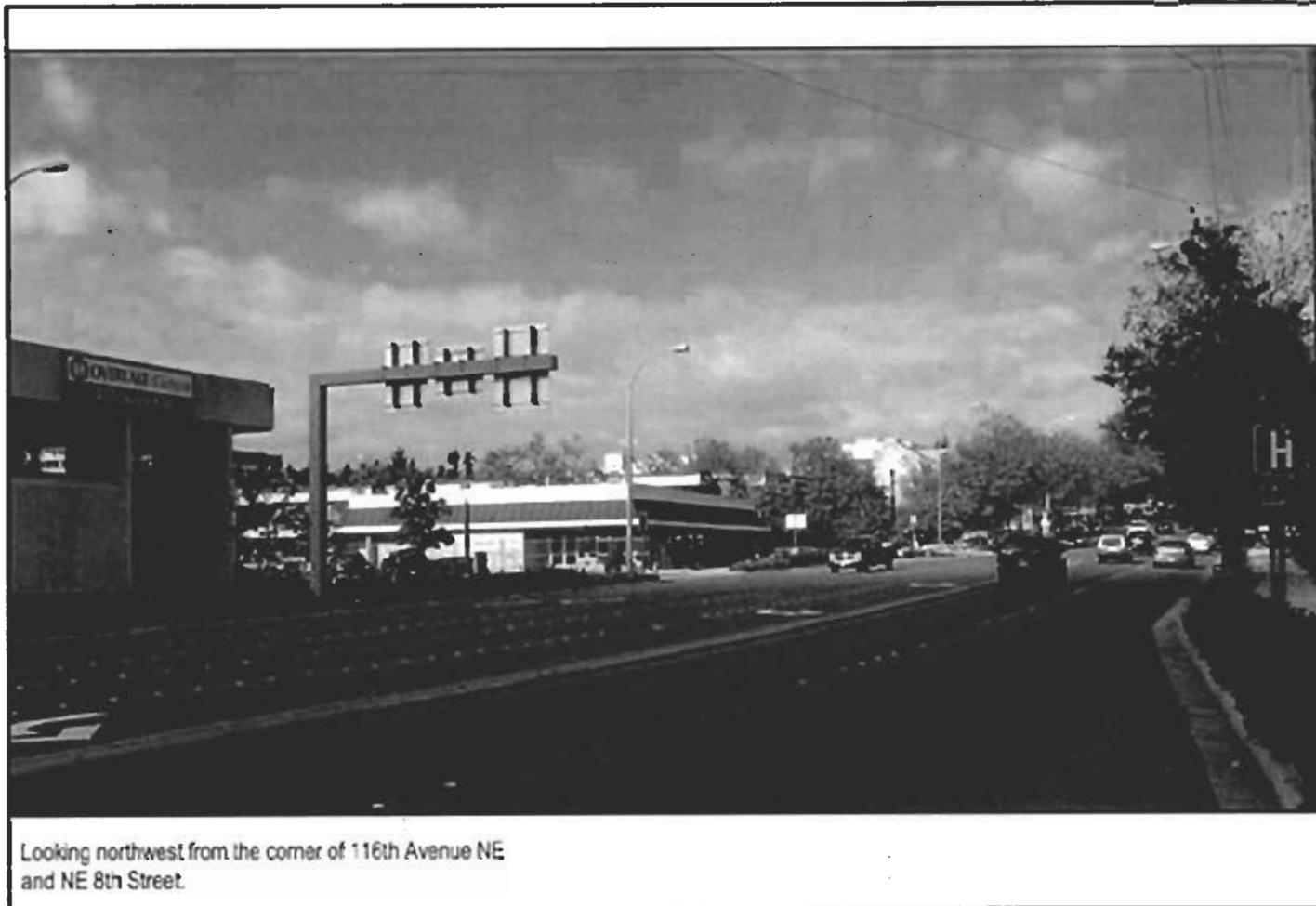


Figure 9-2  
View Location 1

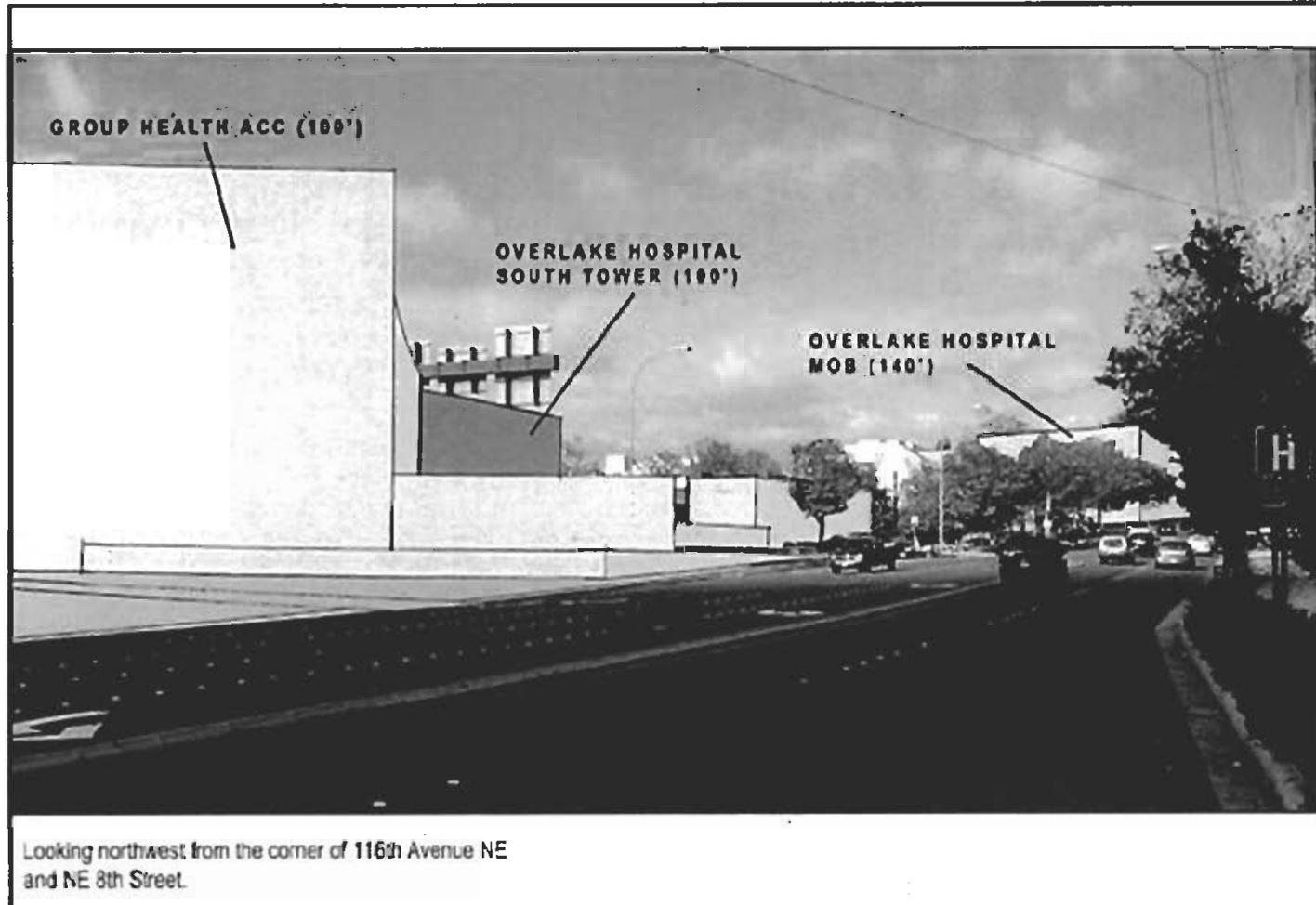


Figure 9-2.a  
View Location 1 - 2007

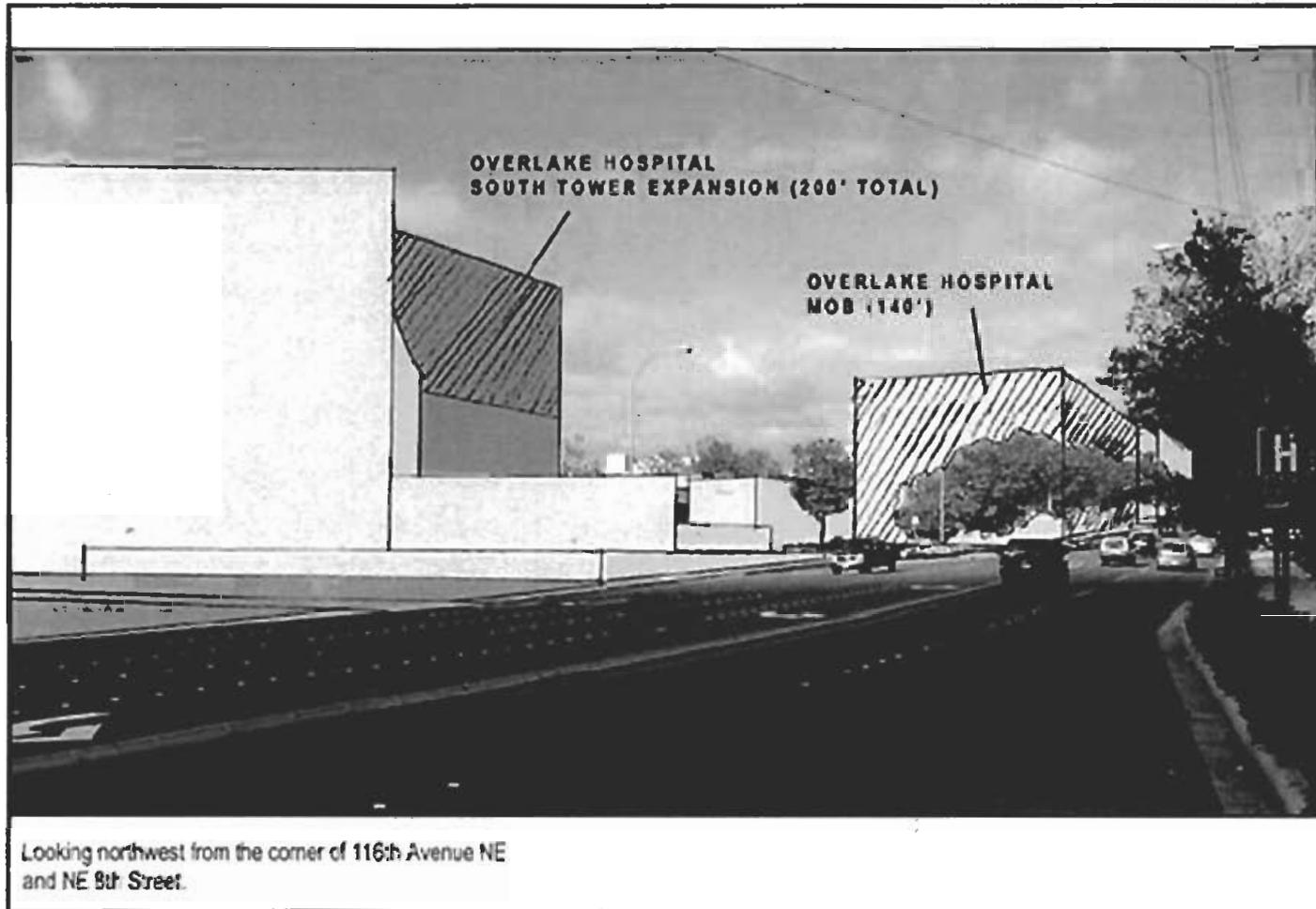
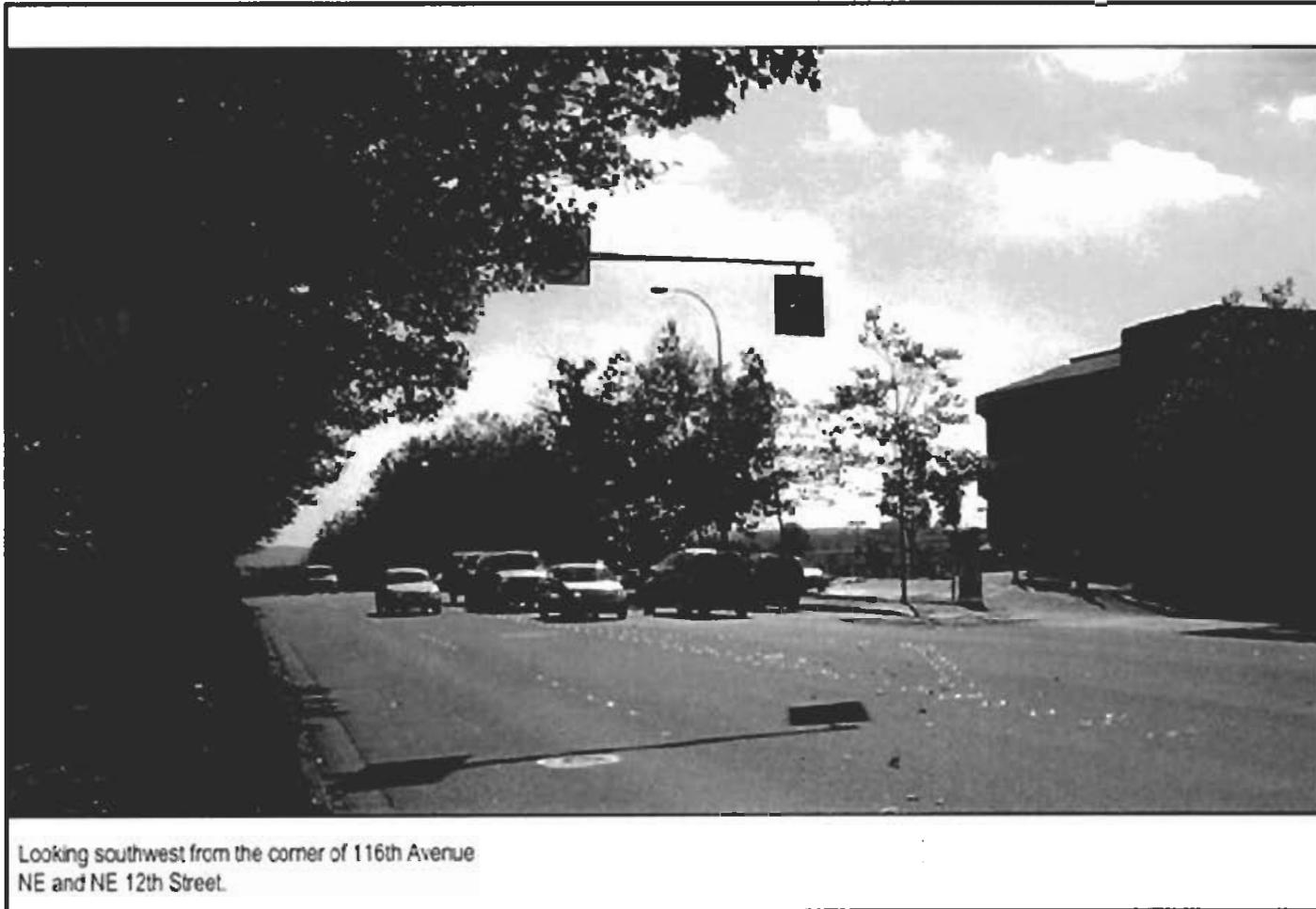


Figure 9-2 b  
View Location 1 - 2030



Looking southwest from the corner of 116th Avenue NE and NE 12th Street.

Figure 9-3  
View Location 2

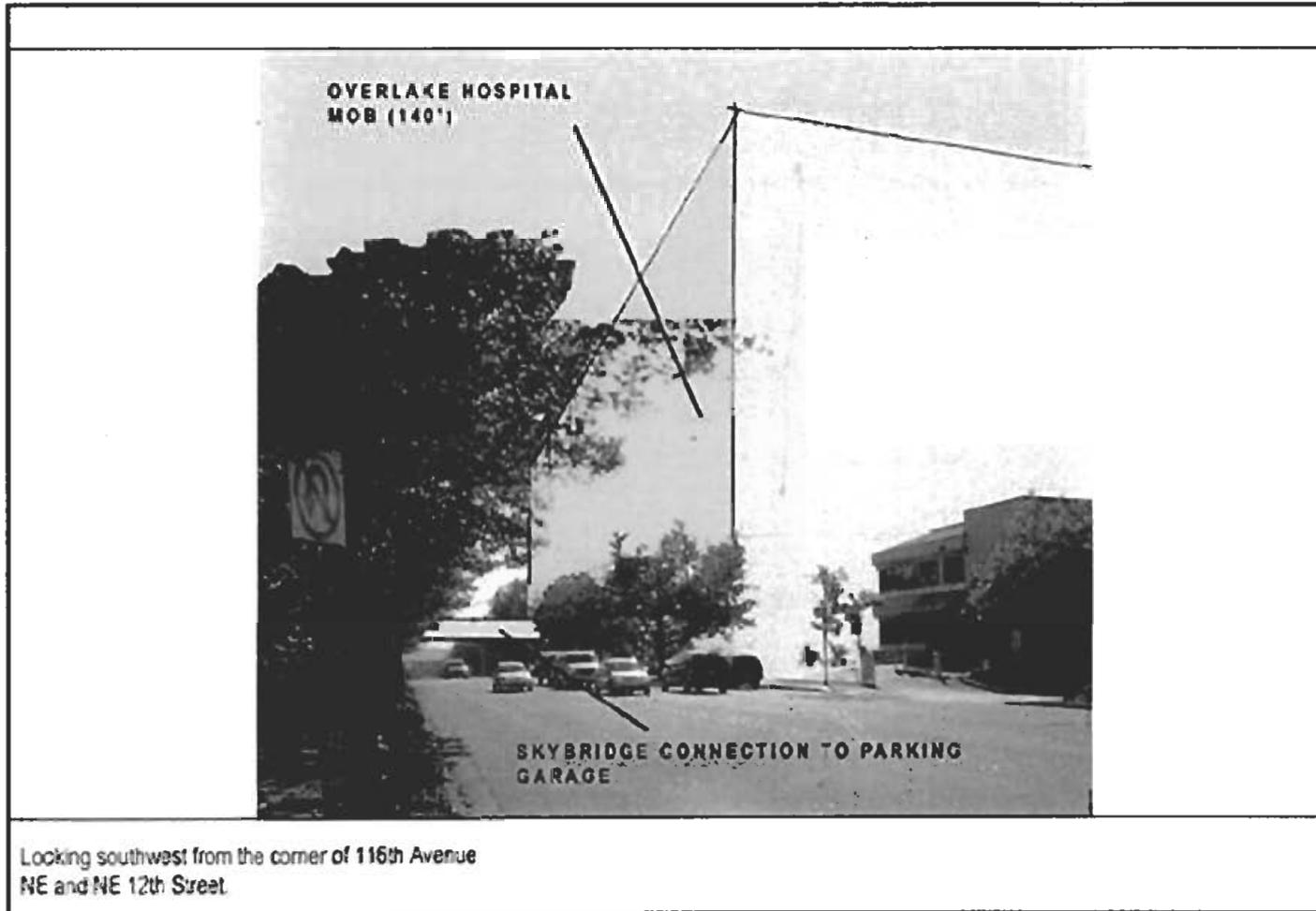


Figure 9-3 a  
View Location 2- 2007

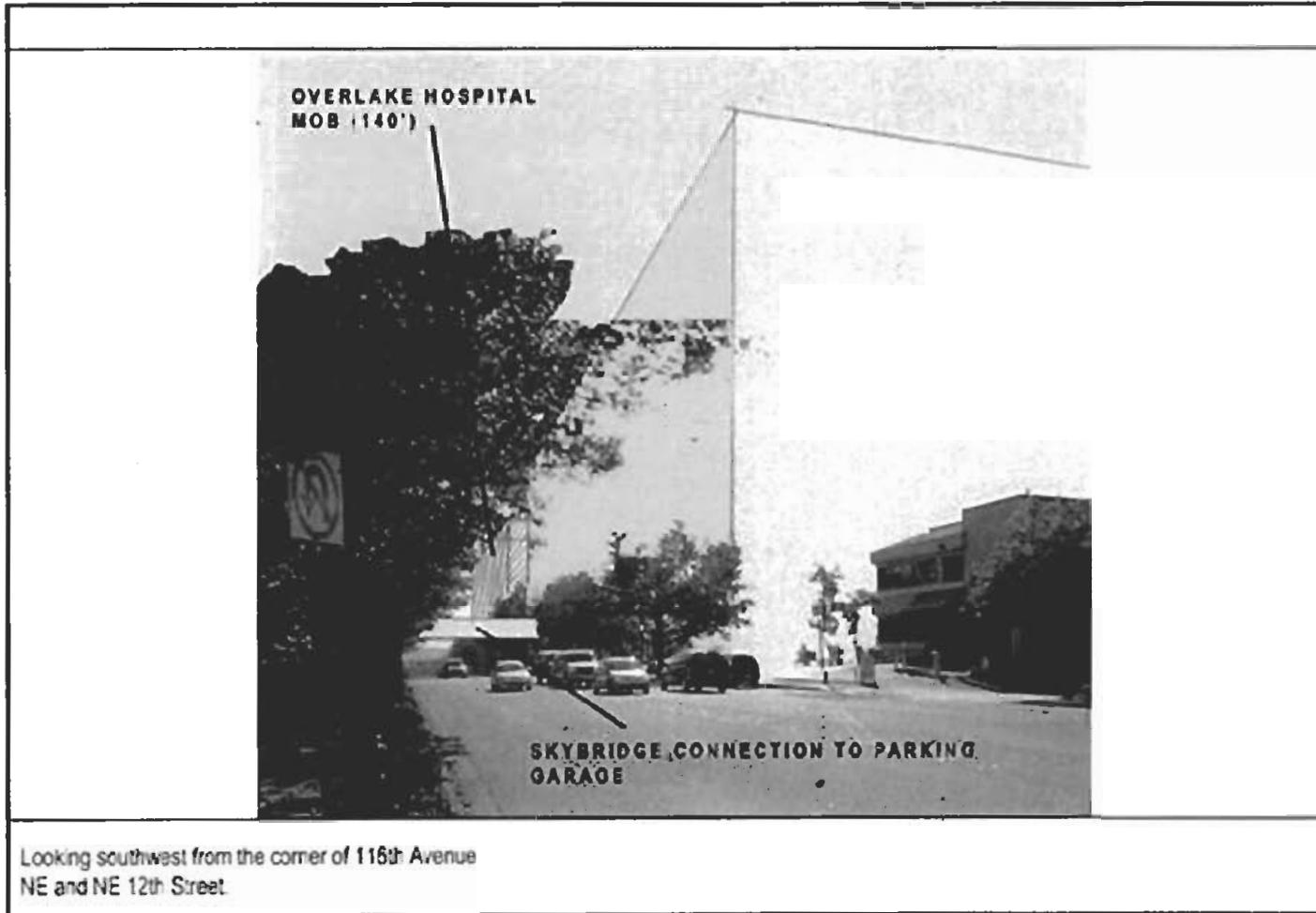
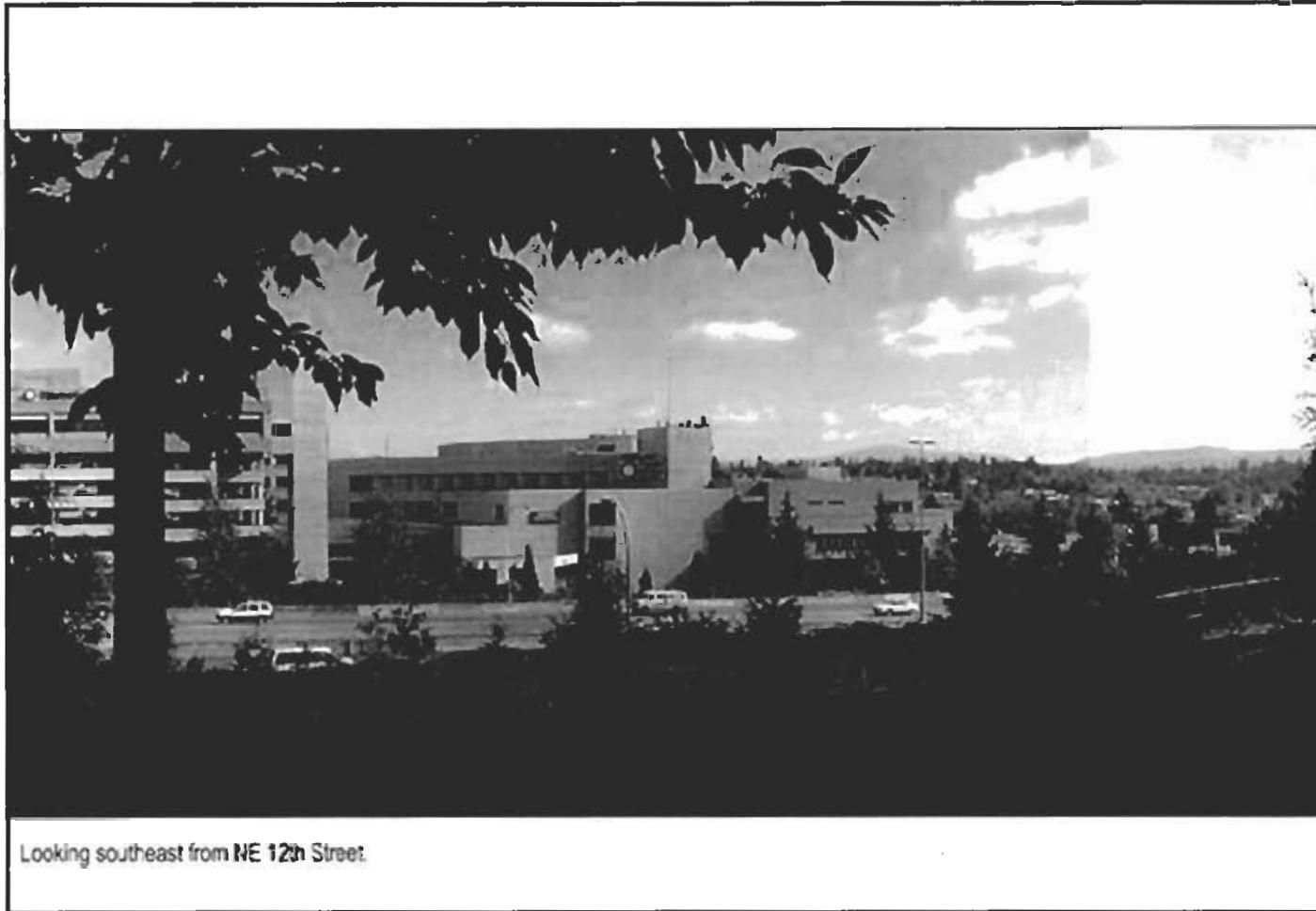
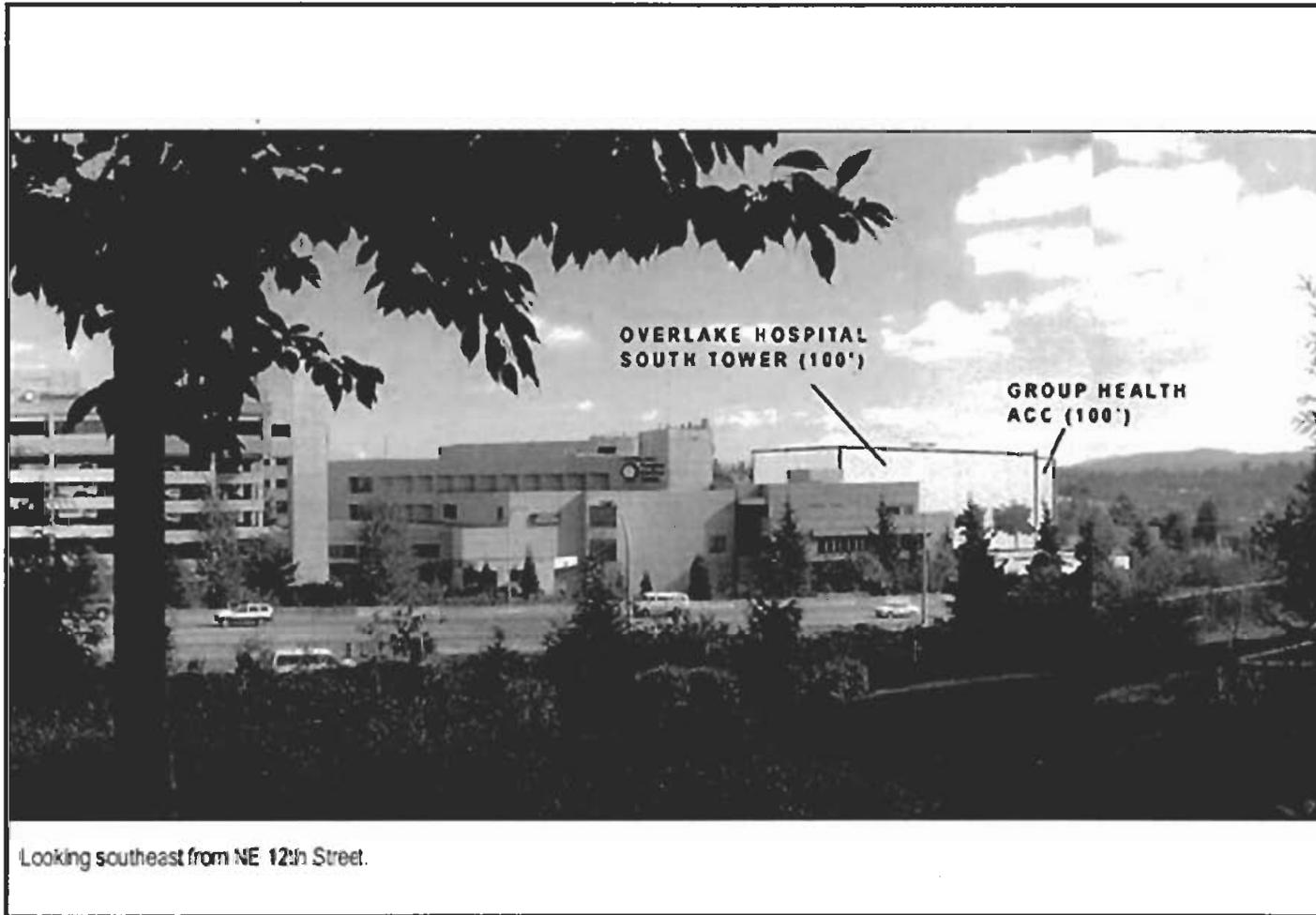


Figure 9-3.5  
View Location 2- 2030



Looking southeast from NE 12th Street.

Figure 9-4  
View Location 3



Looking southeast from NE 12th Street.

Figure 9-4.a  
View Location 3 - 2007



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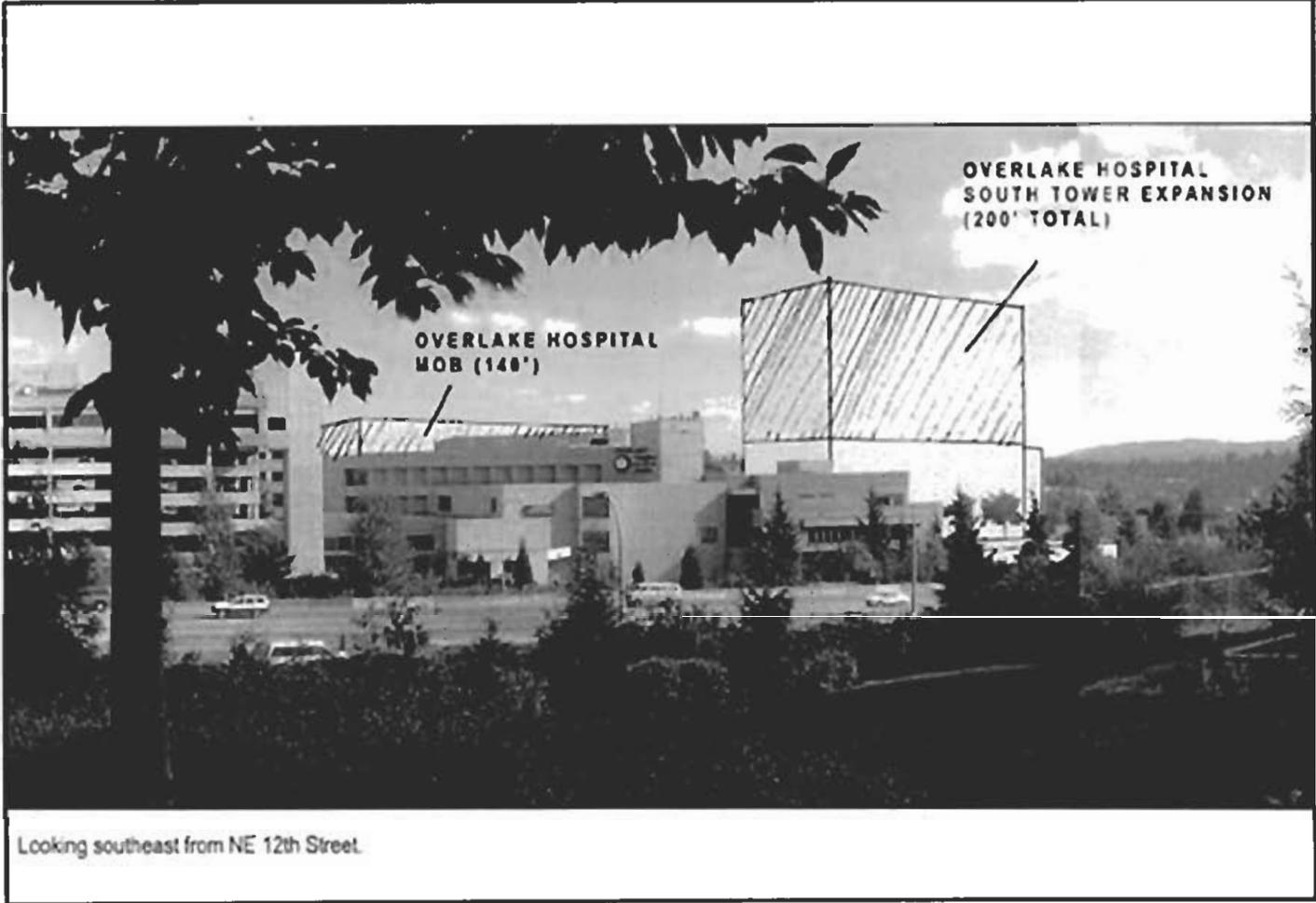
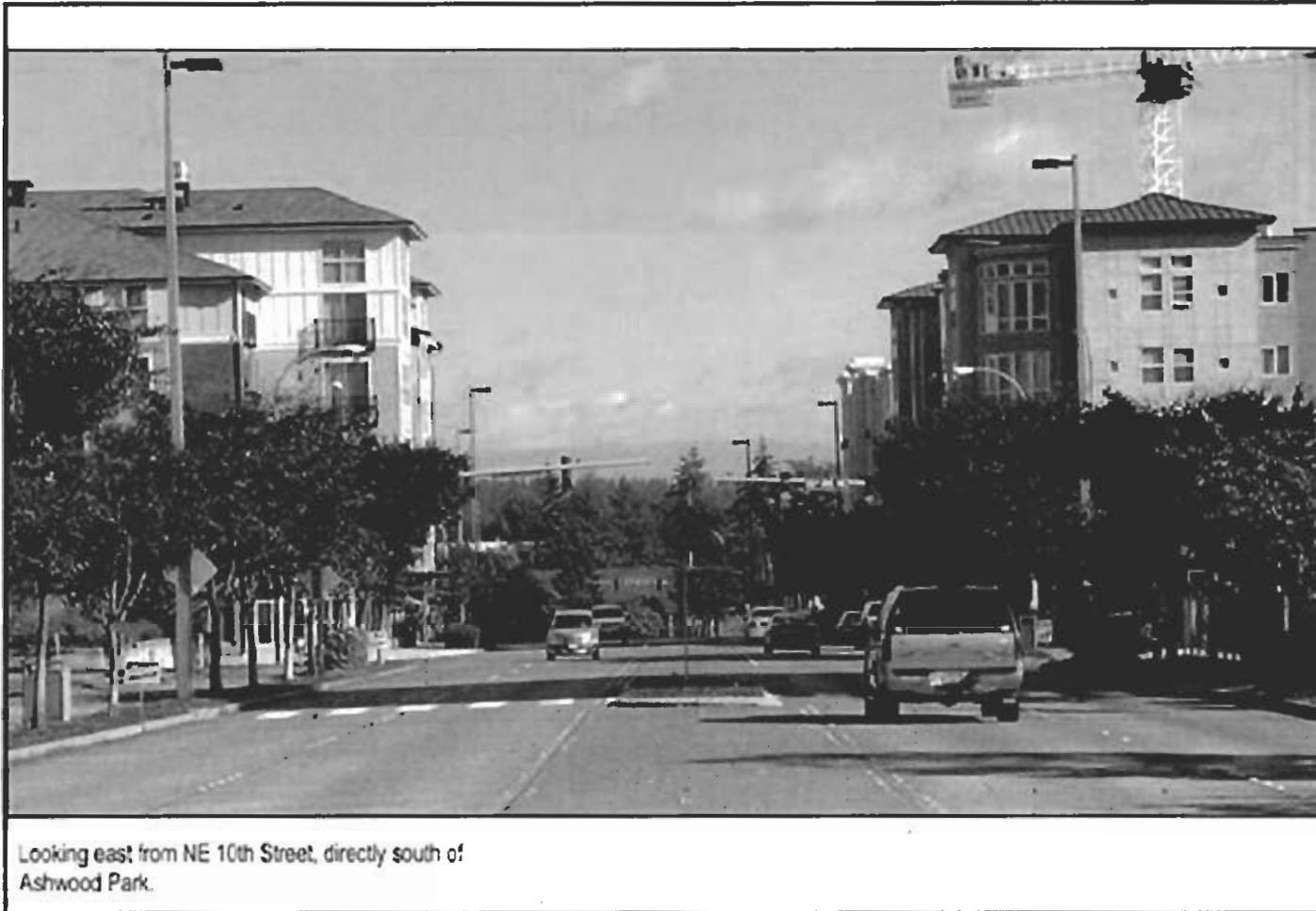


Figure 9-4 b  
View Location 3 - 2030



Looking east from NE 10th Street, directly south of Ashwood Park.

Figure 9-5  
View Location 4



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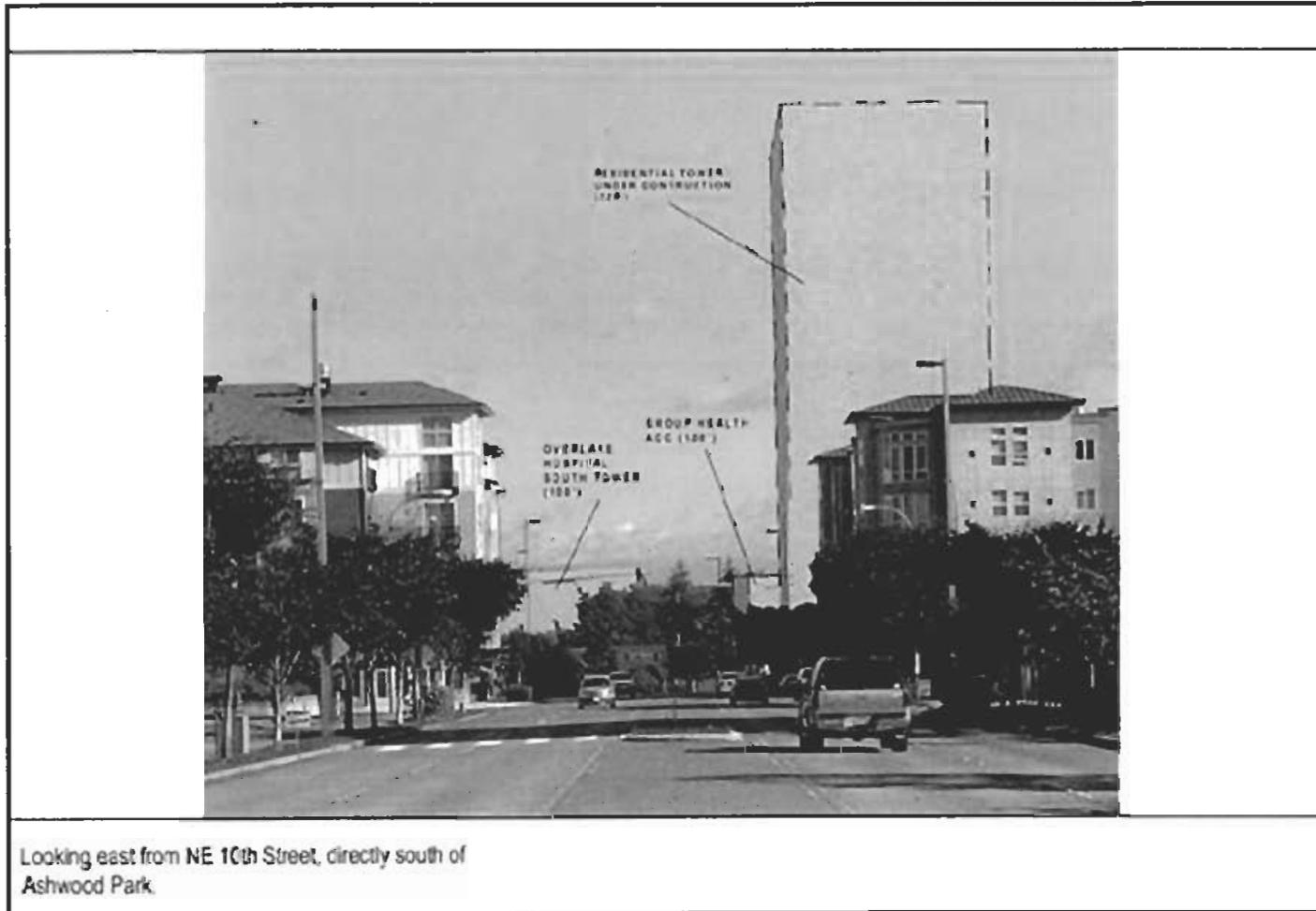
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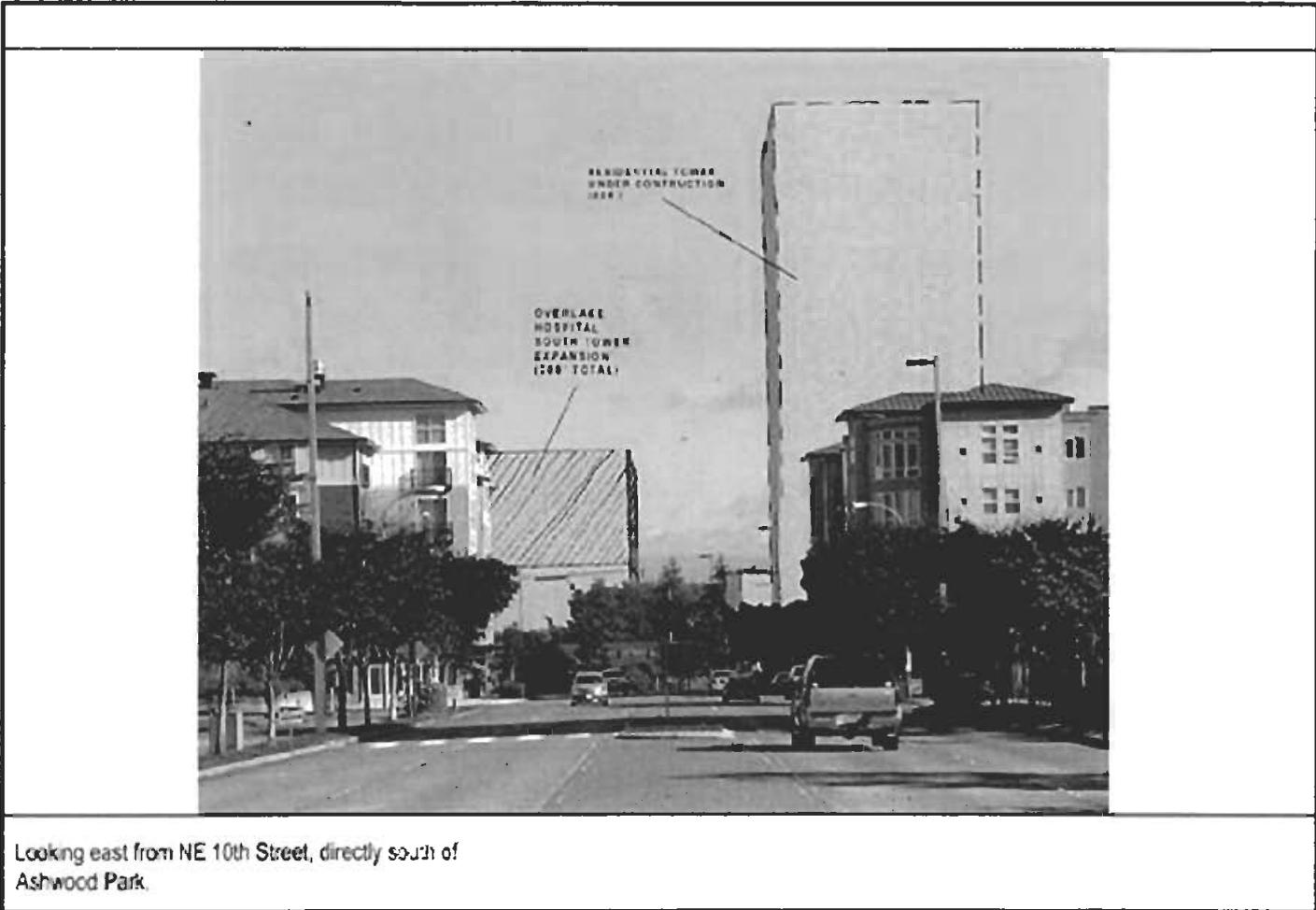
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Looking east from NE 10th Street, directly south of Ashwood Park.

Figure 9-5.a  
View Location 4 - 2007



Looking east from NE 10th Street, directly south of Ashwood Park.

Figure 9-5.b  
View Location 4 - 2030



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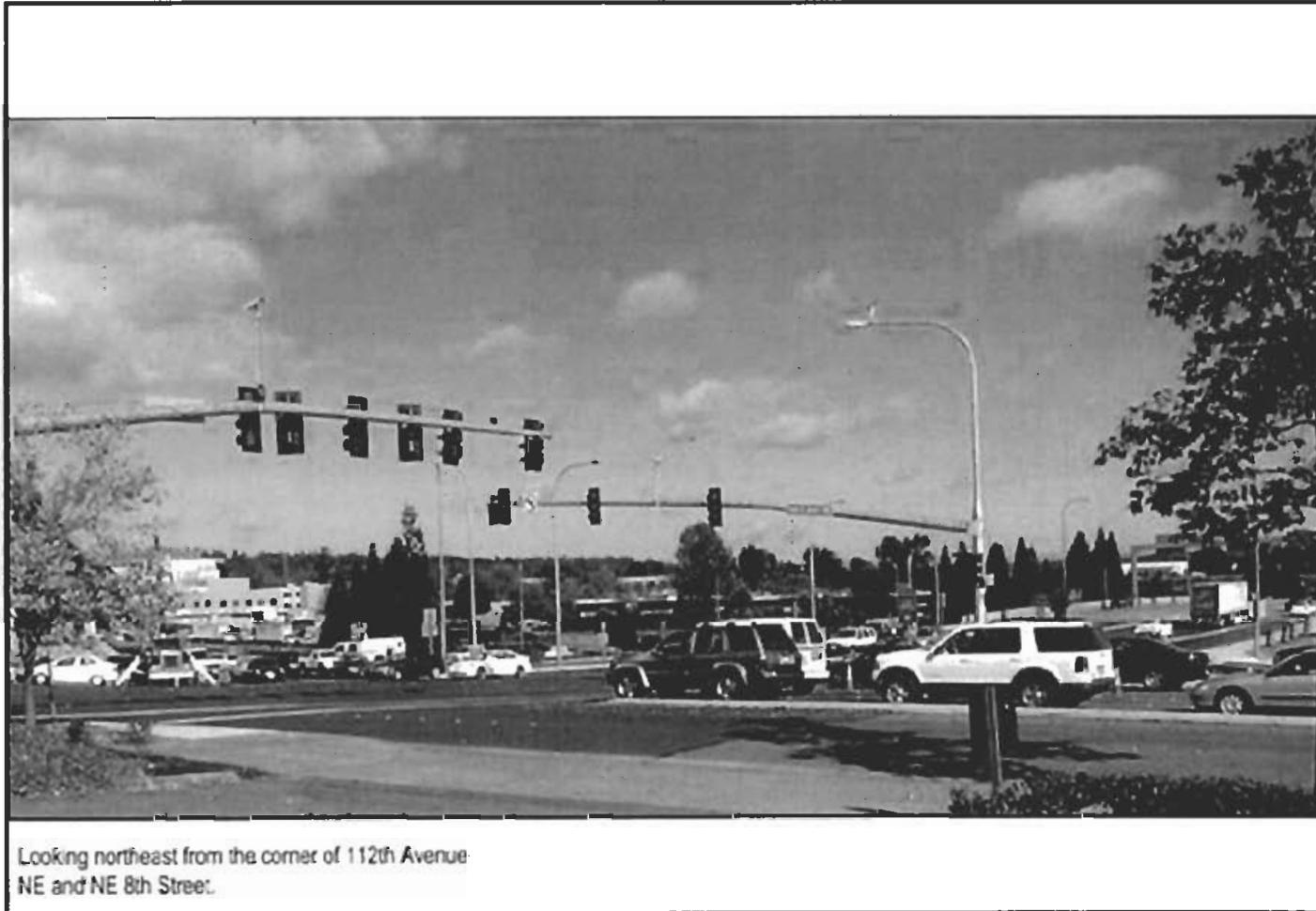


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Looking northeast from the corner of 112th Avenue  
NE and NE 8th Street.

Figure 9-6  
View Location 5

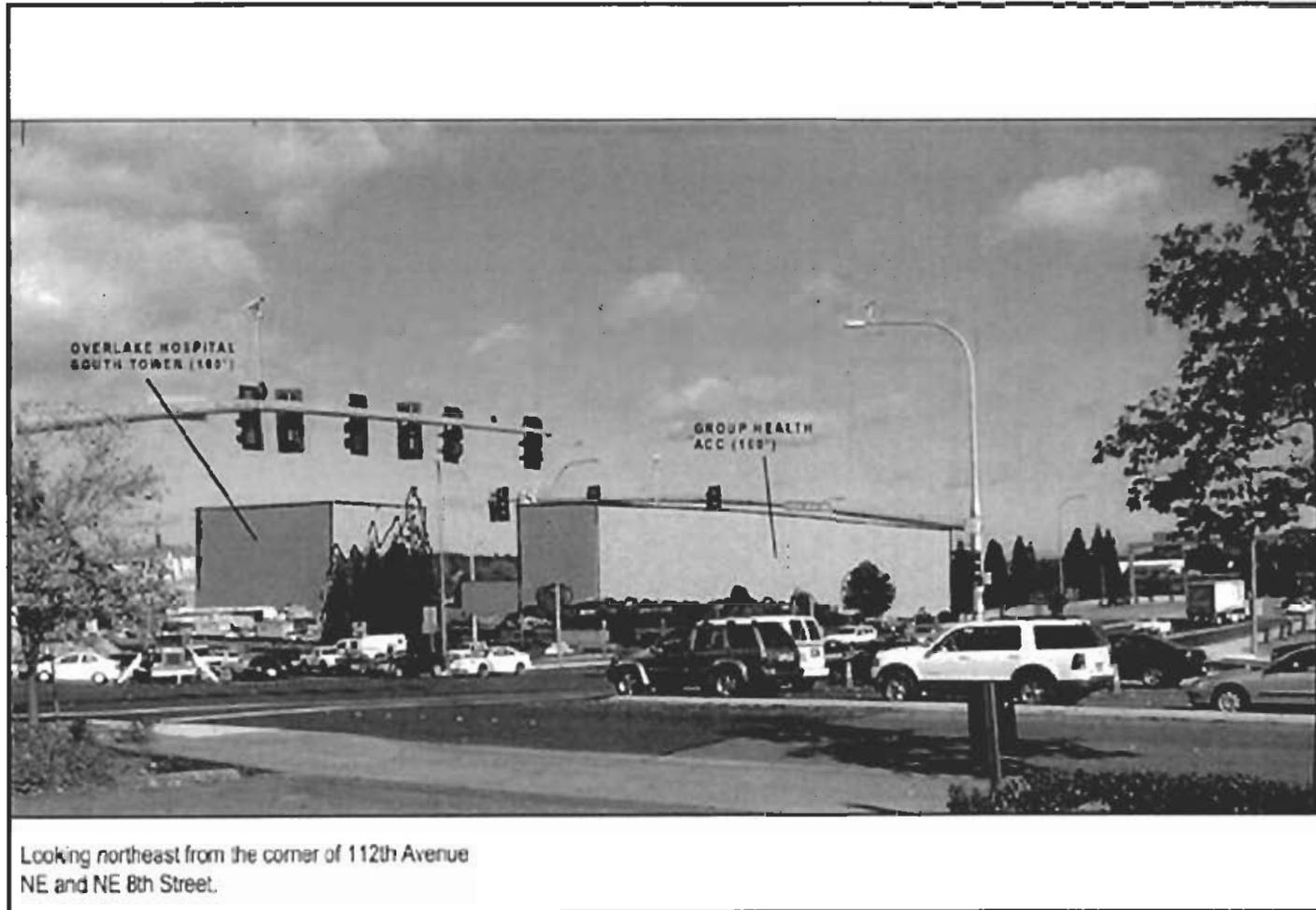


Figure 9-6.a  
View Location 5 - 2007

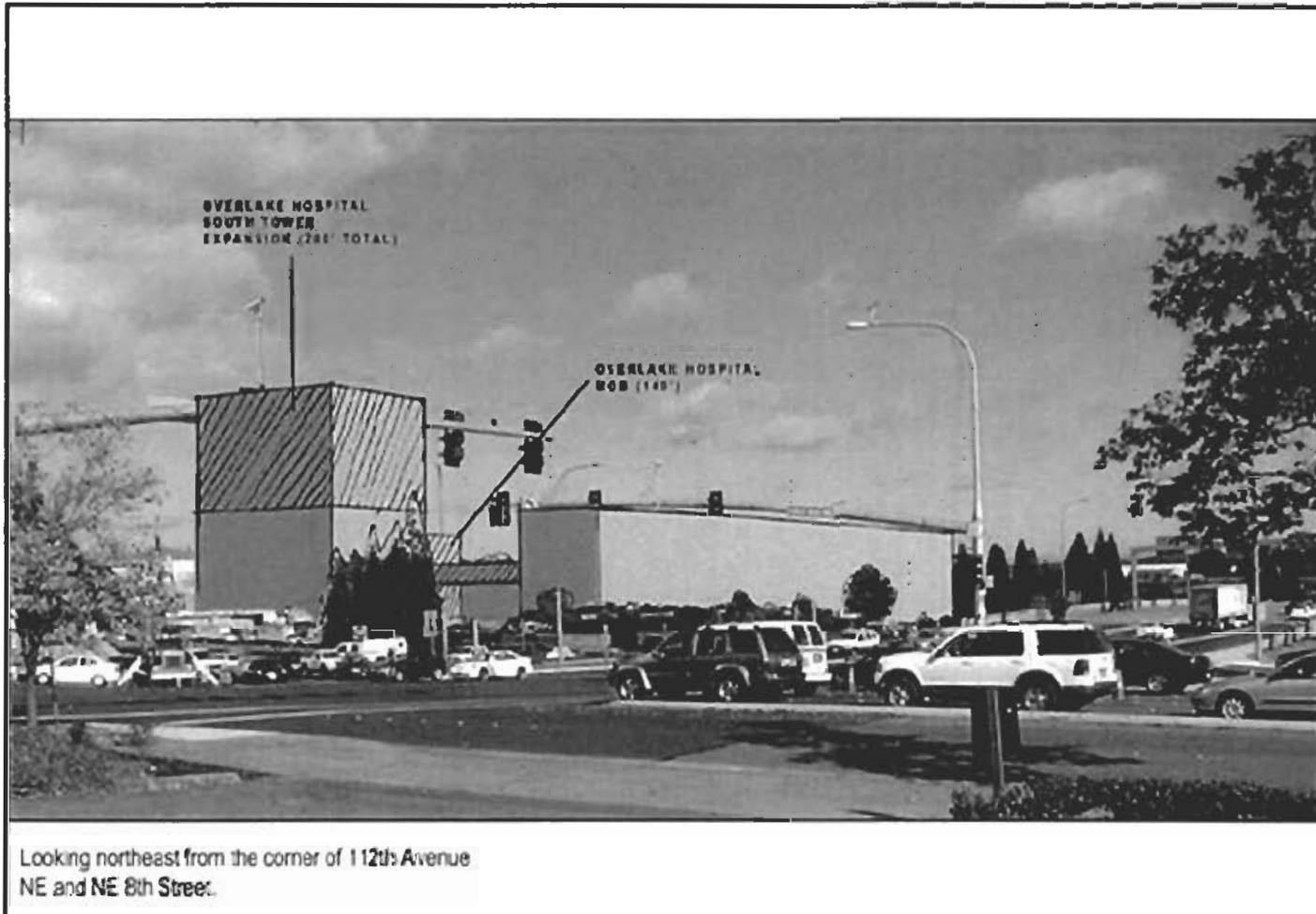
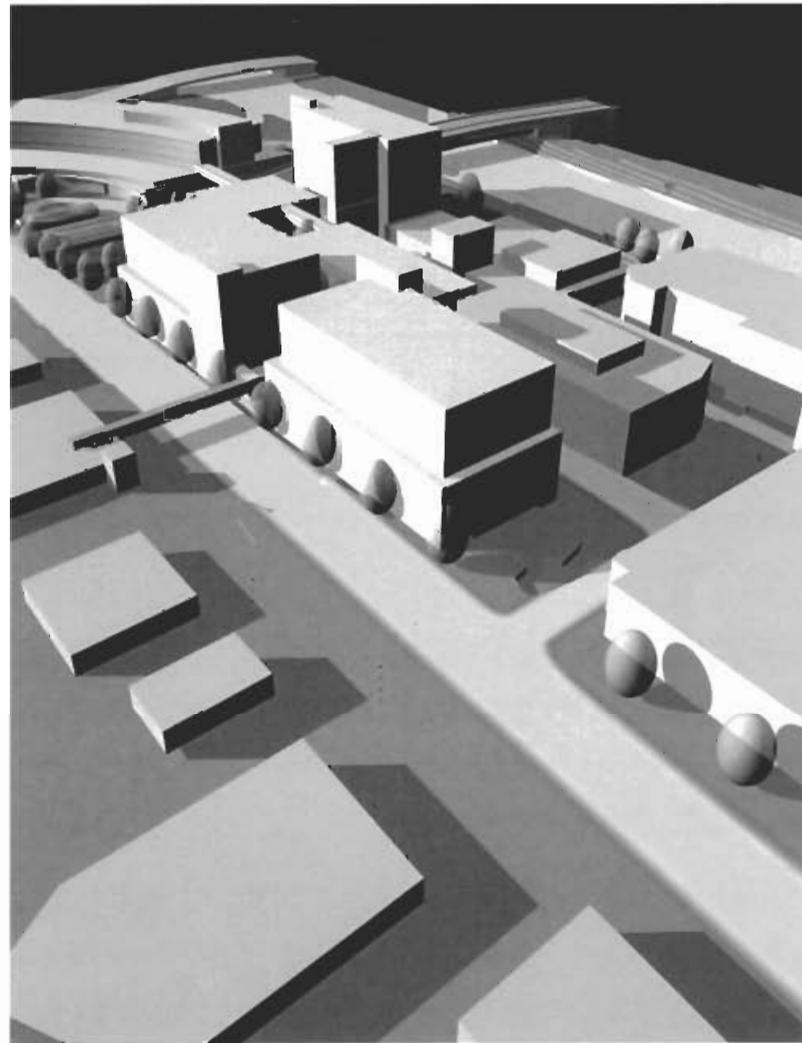


Figure 9-6.b  
View Location 5 - 2030



VIEW LOOKING SOUTH

## BUILDING MASSING



VIEW LOOKING SOUTHWEST



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BUILDING MASSING

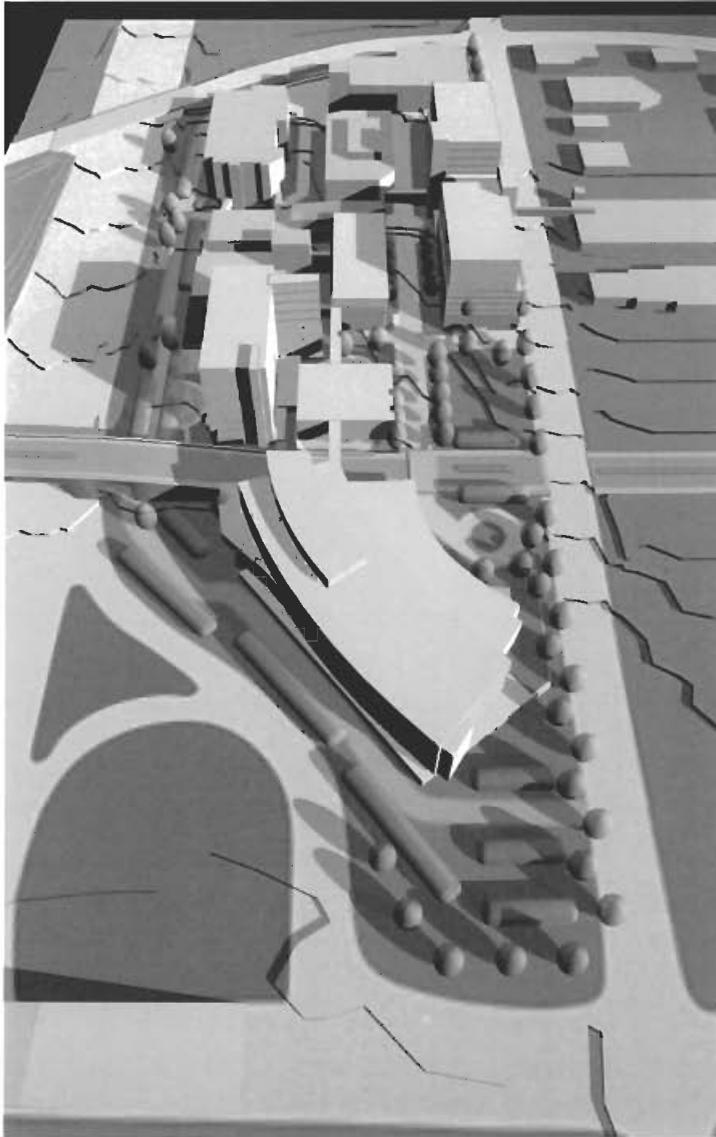
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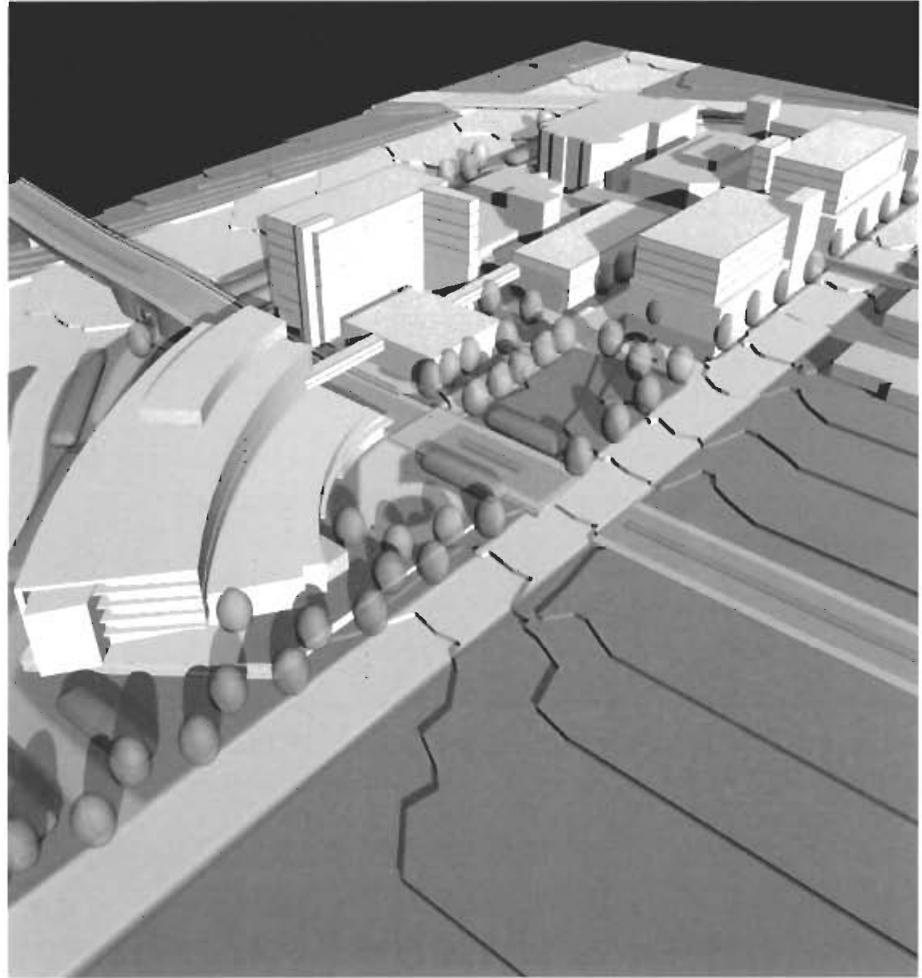
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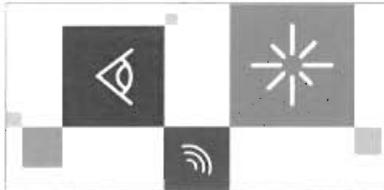


VIEW LOOKING NORTH

## BUILDING MASSING



VIEW LOOKING NORTHWEST



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BUILDING MASSING

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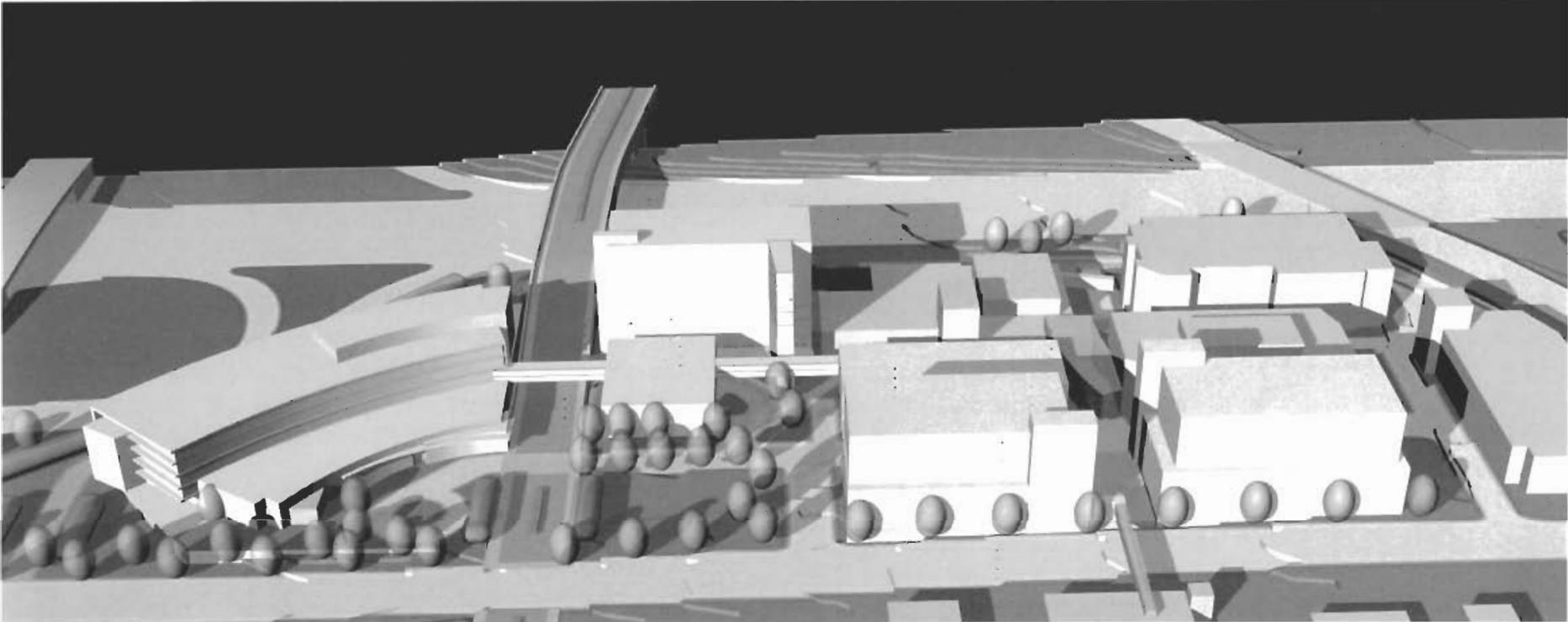
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# BUILDING MASSING



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BUILDING MASSING

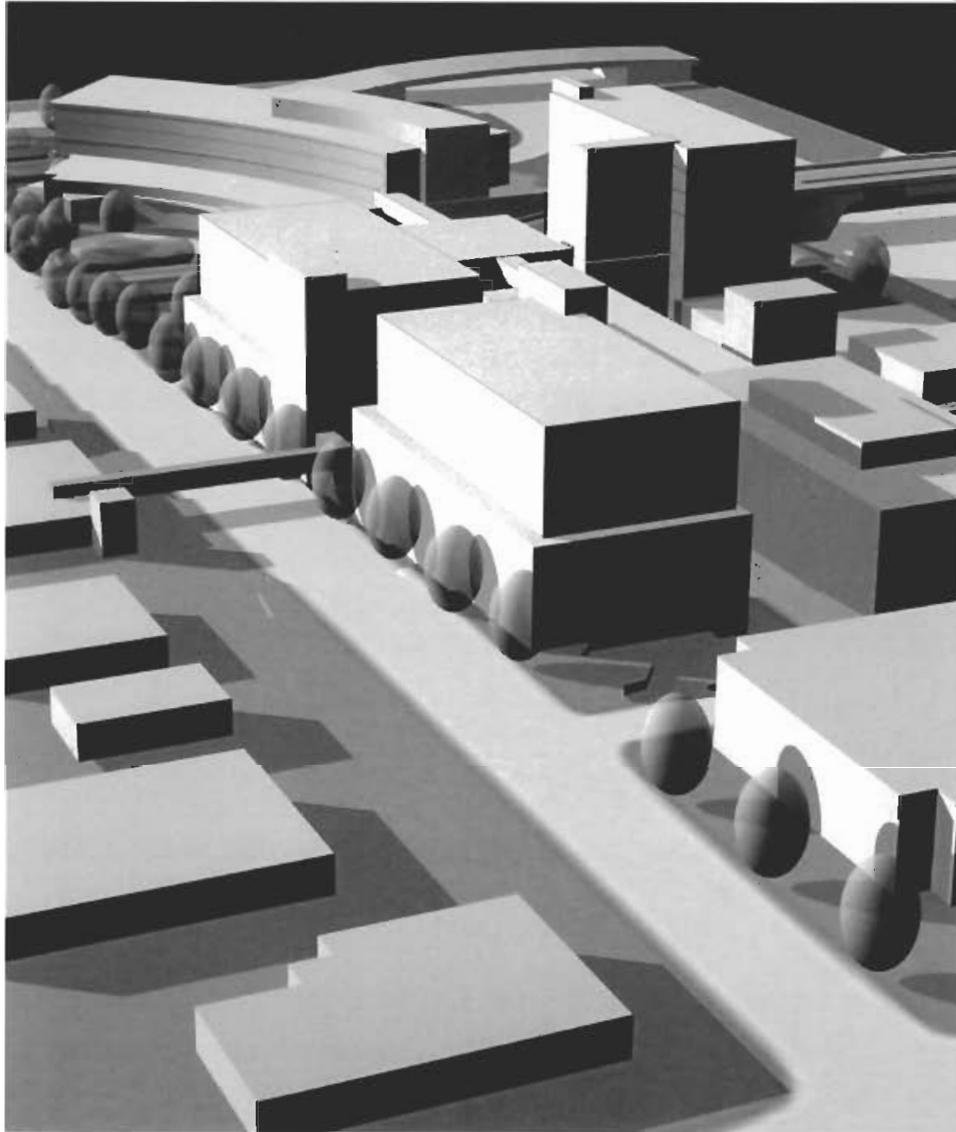
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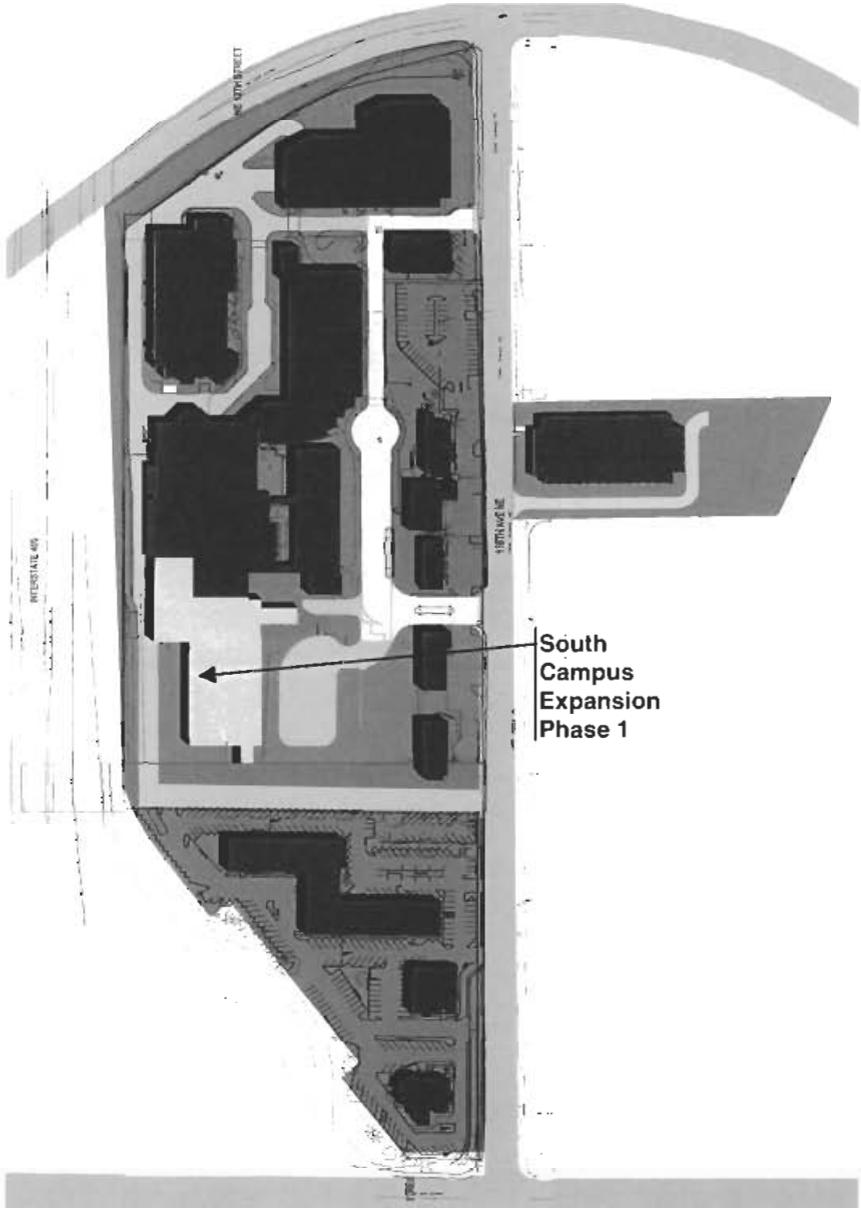


## BUILDING MASSING

### Elements:

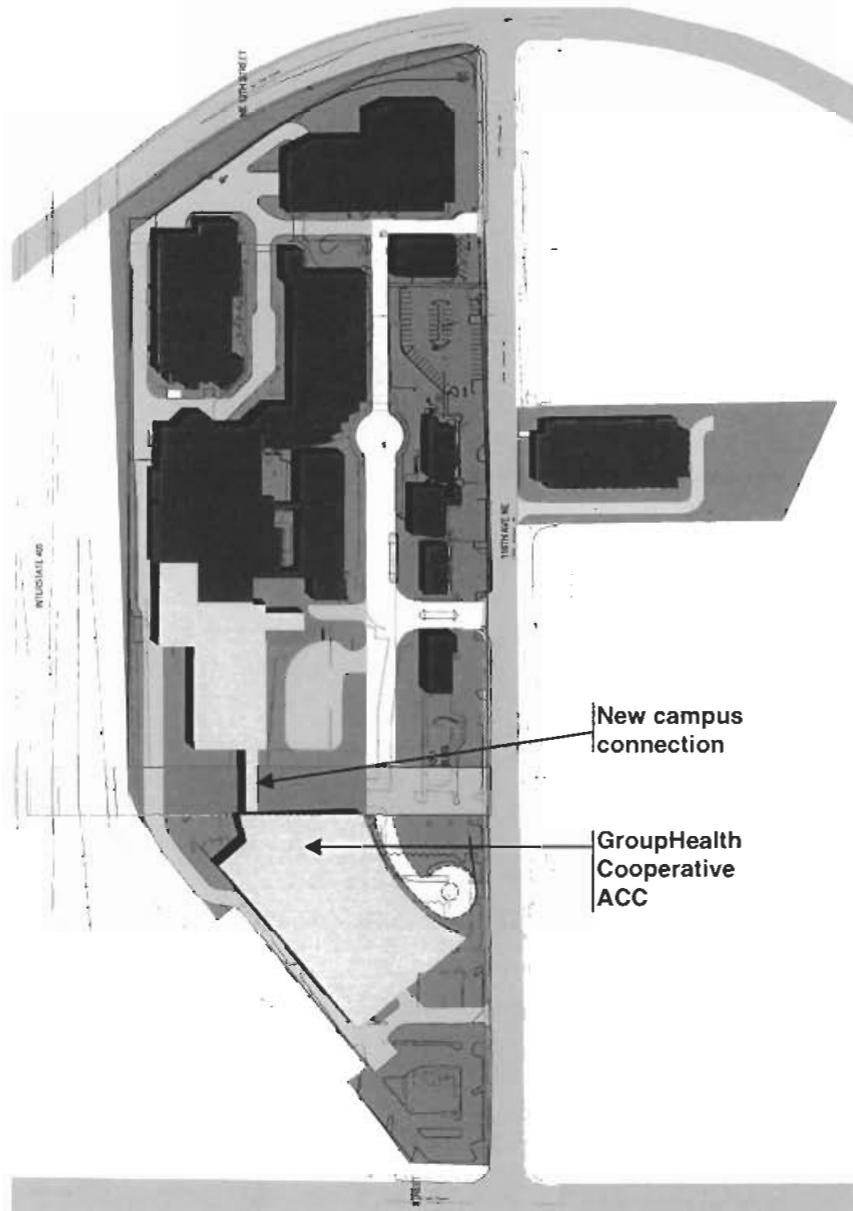
- Stepbacks
- Building form above the podium
- Diminishing floor plates
- Fenestration/Glazing
- Public entrances into buildings
- Outdoor public waiting areas

# PHASING PLAN – PHASE 1



South  
Campus  
Expansion  
Phase 1

# PHASING PLAN – PHASE 2



New campus connection

GroupHealth Cooperative ACC



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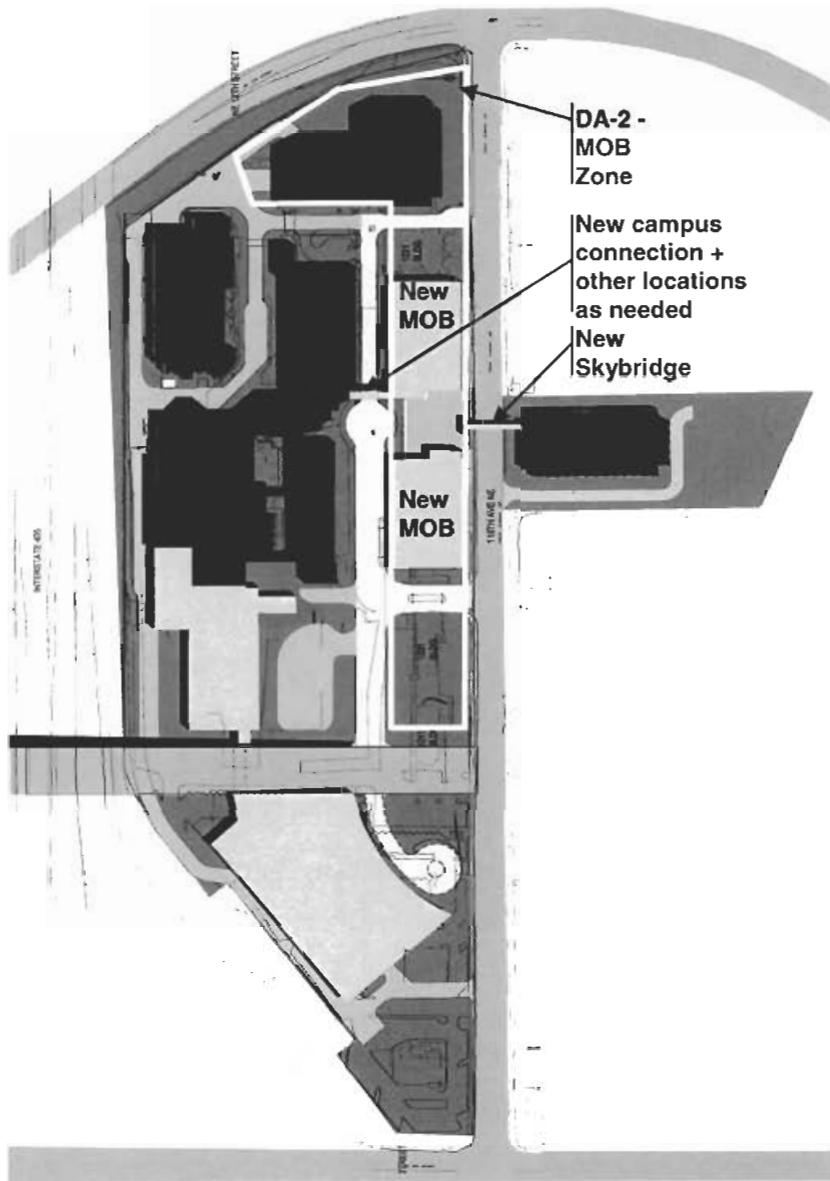
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# PHASING PLAN – PHASE 3



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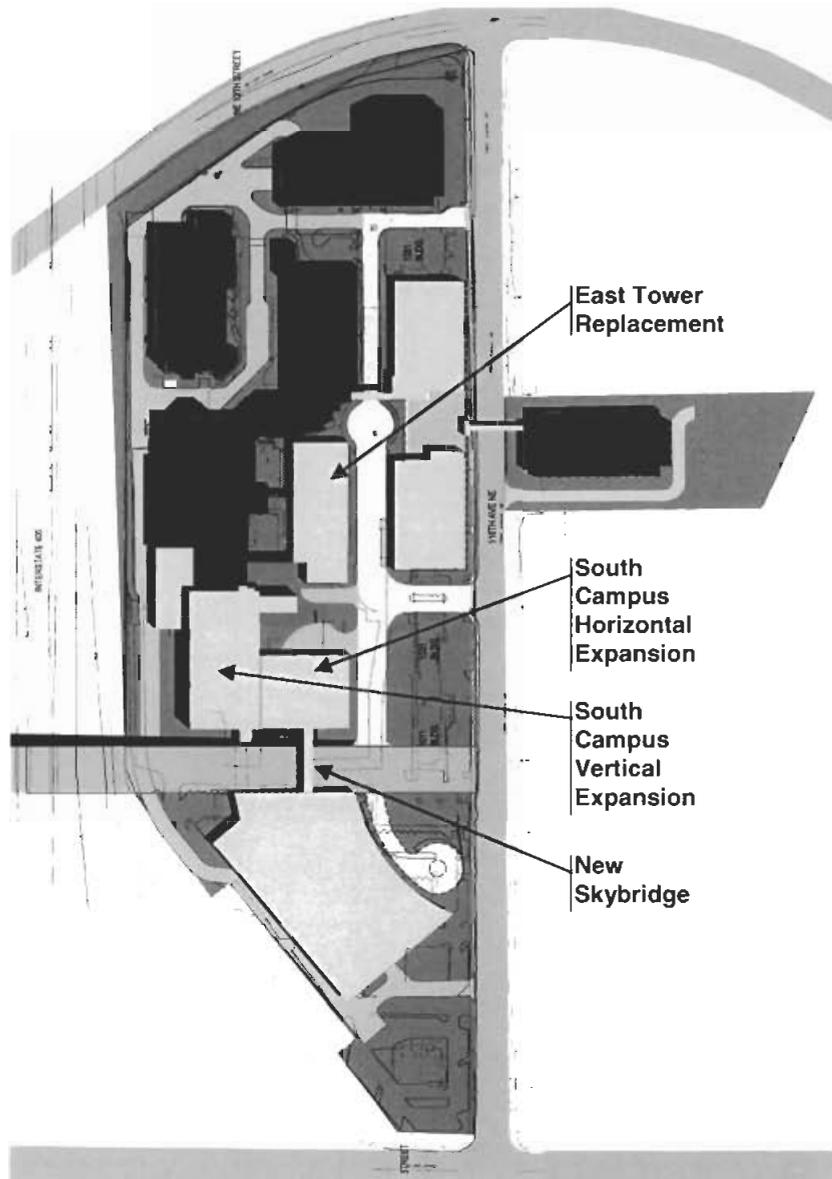
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# PHASING PLAN – PHASE 4



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PHASING PLAN – PHASE 2

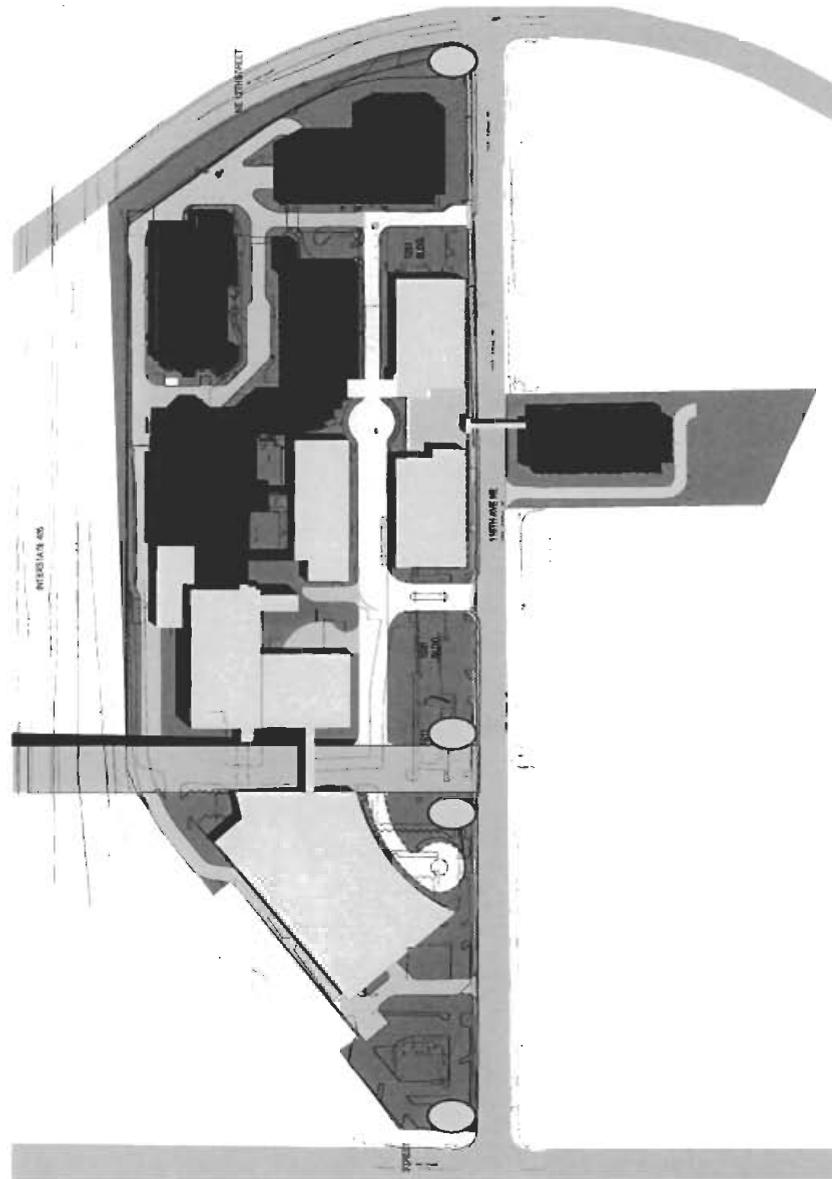
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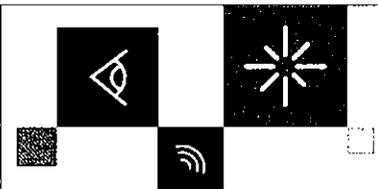
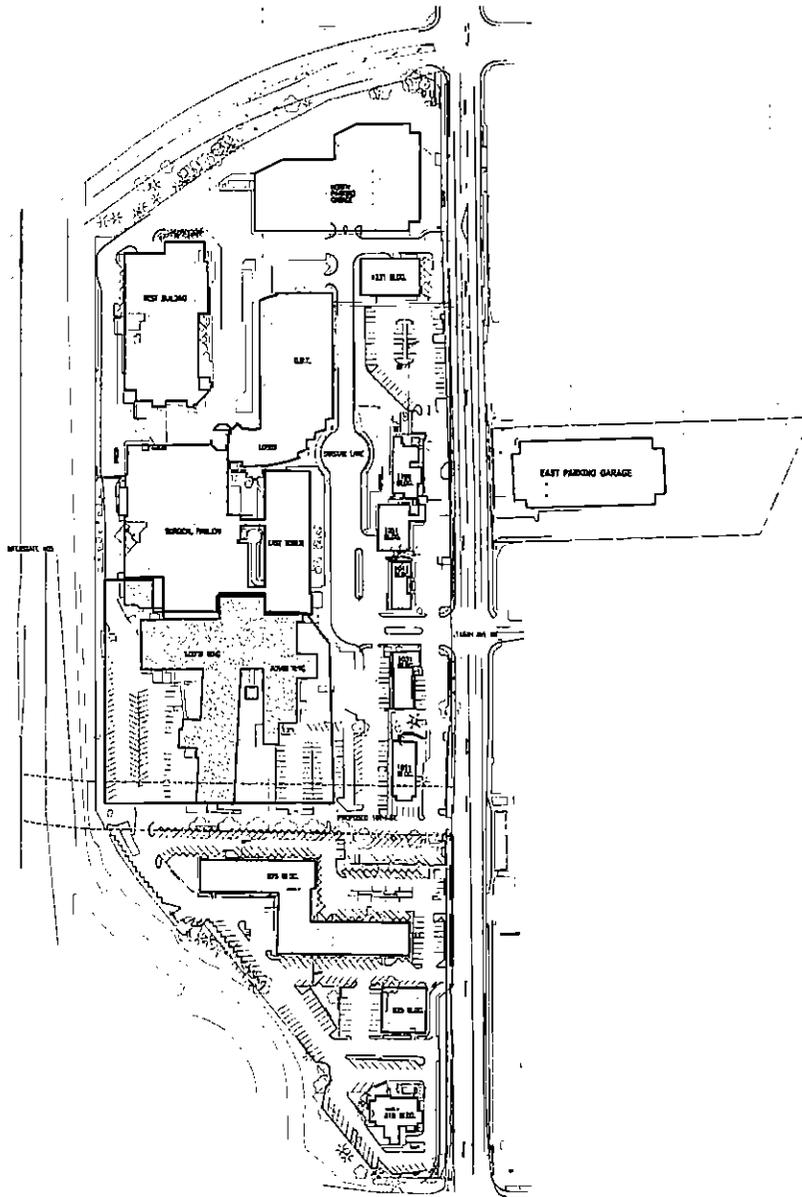


## GATEWAY LOCATIONS AND PHASING

### Elements:

- Gateways will be developed as adjacent parcels are redeveloped
- Interim gateway improvements will be developed pending final completion of NE10<sup>th</sup> street

# PROJECT IMPACT AREA – PHASE 1



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AREAS OF DEMOLITION – PHASE 1

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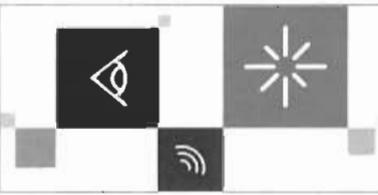
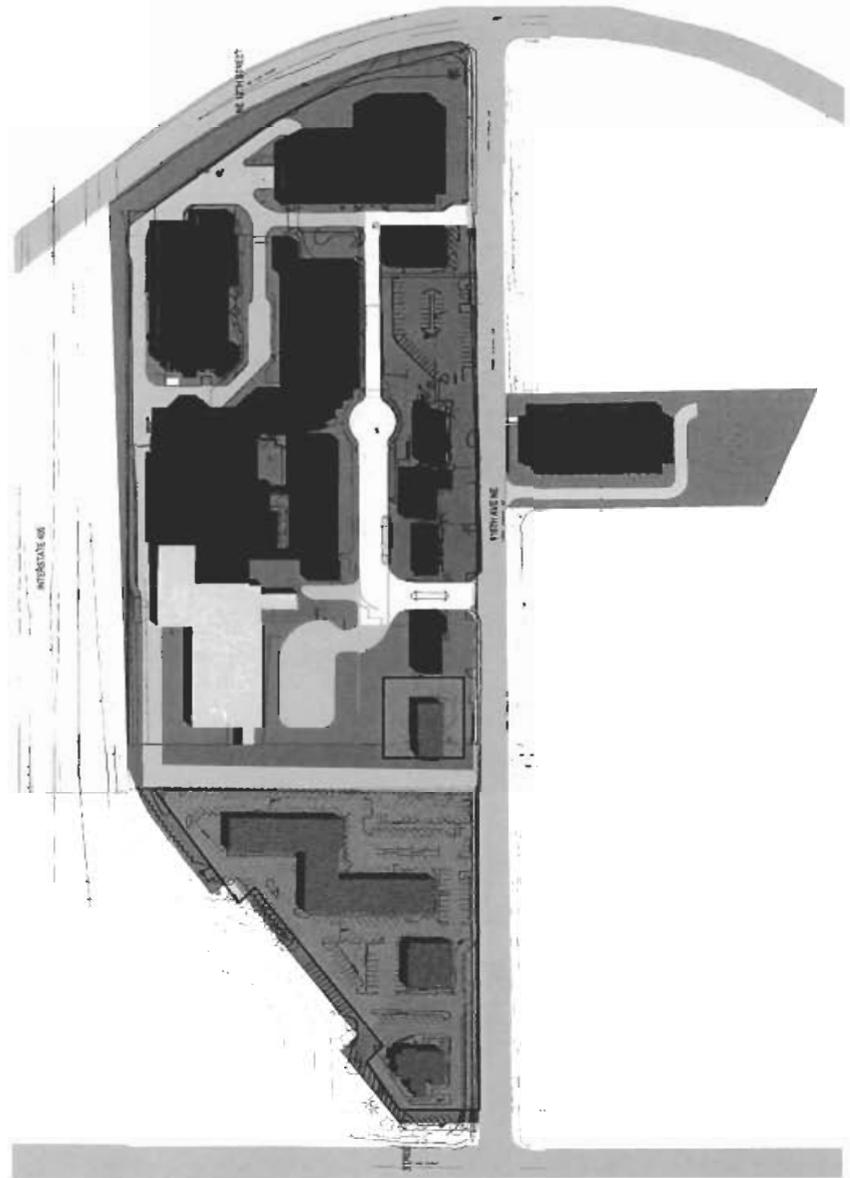
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# PROJECT IMPACT AREA – PHASE 2



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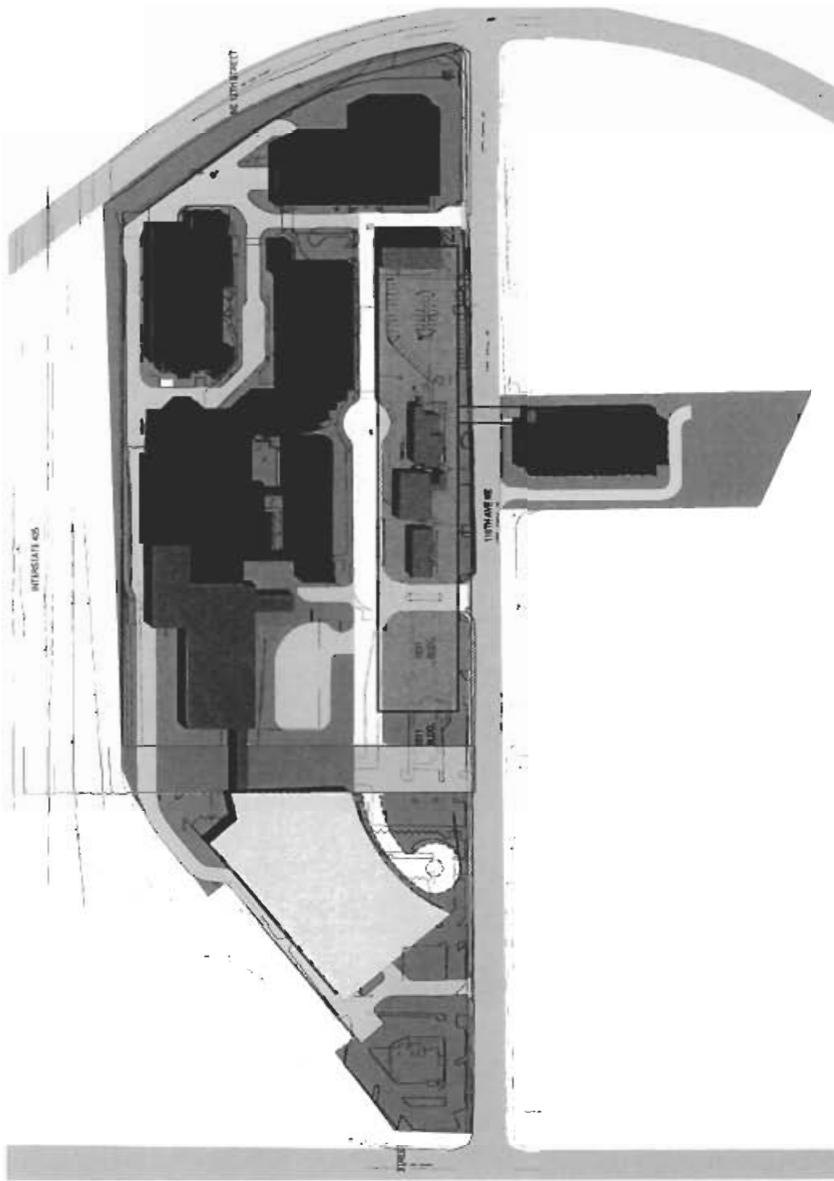


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AREAS OF DEMOLITION - PHASE 2

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# PROJECT IMPACT AREA – PHASE 3



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AREAS OF DEMOLITION – PHASE 3

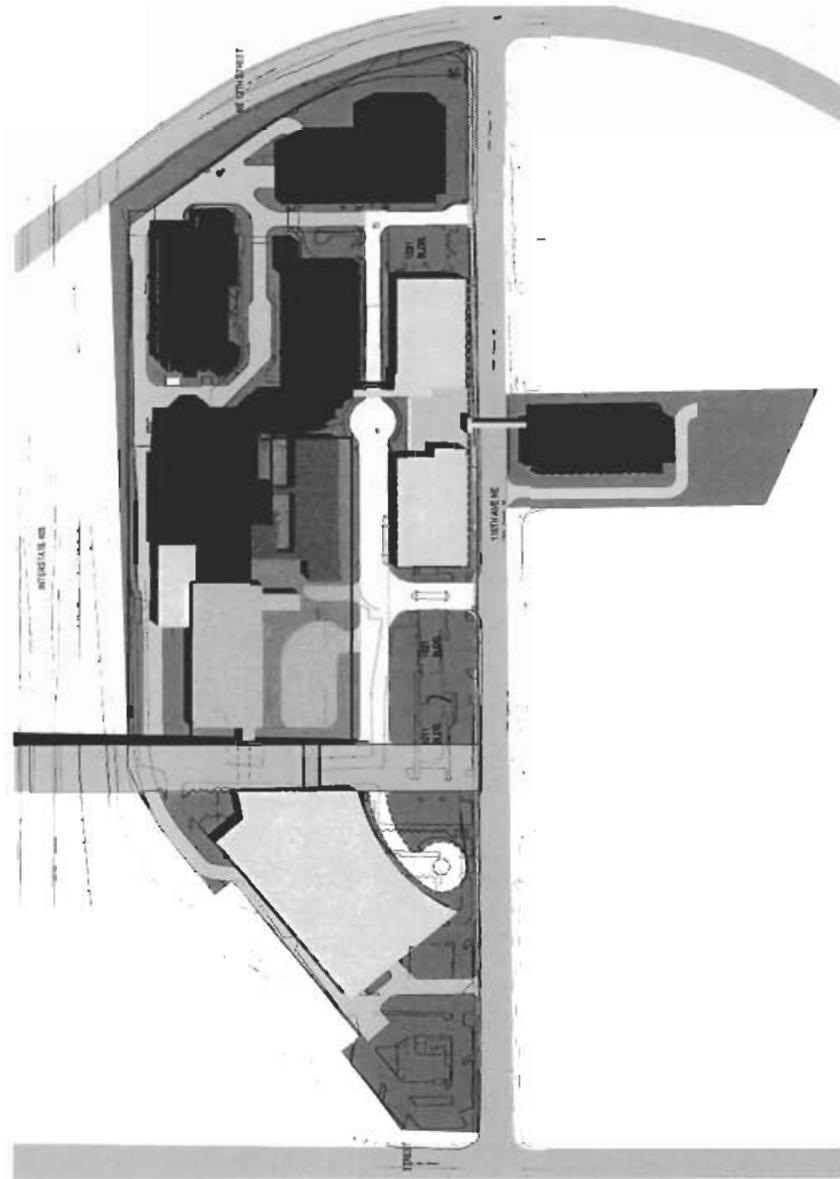
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# PROJECT IMPACT AREA – PHASE 4

	<p>see   hear   feel the difference.</p> <p>OVERLAKE HOSPITAL MEDICAL CENTER CAMPUS EXPANSION PROJECT</p>	<p><b>OVERLAKE</b> Hospital Medical Center</p> <p>Medical excellence every day™</p>	<p>2005 MASTER PLAN</p> <p>AREAS OF DEMOLITION – PHASE 3</p> <p>copyright © NBBJ 2004</p> <p>• 01.21.05</p>	<p><b>nbbj</b></p> <p>NBBJ 111 SOUTH JACKSON STREET SEATTLE WA 98104</p> <p><small>This phasing plan is conceptual in nature. Timing and order of phases, building locations, site design, circulation areas and other elements may vary from that shown here, and will be approved through the Design Review process. NE 150th Street improvements will be constructed by others. Medical office buildings may be located anywhere in DA-2. Phases may proceed in an order different from that shown here.</small></p>
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# Statement of Compliance to Master Plan Amendment Criteria

# Statement of Compliance to Master Plan Amendment Criteria

Pursuant to LUC 20.25J.050.E.2, the proposed modifications to the Master Plan must ensure that the following criteria are met:

- a. *The proposed Master Development Plan is consistent with the Comprehensive Plan*

The Comprehensive Plan provides as follows:

**Policy S-WI-2.** Provide for medical institution development within the area bounded by NE 8th and NE 12th Streets, 116th Avenue NE and I-405.

*The medical institution use in this area provides a vital public service for the Eastside community. The City should facilitate development of a long-term master plan that addresses the continued evolution and updating of this facility. Special dimensional standards are appropriate to accommodate the needs of the major medical institution and related uses, provided the facility provides a high quality of design that recognizes this site as a prominent community landmark. Building and site design should create a visual identity for the facility that contributes to the streetscape, is compatible with adjacent and nearby neighborhoods, and is sensitive to views from the freeway and views of the skyline. Design should also create a visually pleasing and safe environment for the public, incorporating features such as public spaces, gateways, streetscape improvements, and safe pedestrian linkages.*

# Statement of Compliance to Master Plan Amendment Criteria (*Cont'd*)

Pursuant to LUC 20.25J.050.E.2, the proposed modifications to the Master Plan must ensure that the following criteria are met:

a. *The proposed Master Development Plan is consistent with the Comprehensive Plan, cont'd*

The proposed Master Development Plan is consistent with Policy S-WI-2. The Plan is intended to provide for medical institutional development within the identified Medical Institutional District boundaries, and an updating of hospital and related facilities within this area. Future development under the Plan will conform to the Design Guidelines of the Medical Institutional District, thereby ensuring a high level of site and building design, consistent with this Comprehensive Plan policy.

# Statement of Compliance to Master Plan Amendment Criteria (*Cont'd*)

The other Comprehensive Plan policies with which the 2005 Master Development Plan is consistent include:

**Policy LU-11.** Encourage the master planning of large developments which emphasize aesthetics and community compatibility. Include circulation, landscaping, open space, storm drainage, utilities, and building location and design in the master plan.

*Comment: Applying the MI designation to this site encourages master planning of the entire hospital site to ensure compatibility with nearby neighborhoods.*

**Policy LU-12.** Retain land availability for specific commercial uses which are important to the community.

*Comment: Though not a commercial use, the hospital use is important to the city and community, and by allowing additional development on the hospital site, the hospital will continue to remain vital.*

**Policy LU-13.** Reduce the regional consumption of undeveloped land by facilitating redevelopment of existing developed land when appropriate.

*Comment: Given the impacts of hospital and institution uses, it is appropriate to accommodate increased intensity on the existing Overlake Hospital campus site that is relatively separated from residential uses.*

# Statement of Compliance to Master Plan Amendment Criteria (*Cont'd*)

The other Comprehensive Plan policies with which the 2005 Master Development Plan is consistent include:

**Policy S-WI-12.** Development should not interfere with Lake Bellevue as a drainage storage area identified the city's Storm Drainage plan.

*Comment: Because of its proximity to Lake Bellevue, redevelopment of the Overlake Hospital site provides an opportunity to address any storm drainage issues that might arise.*

**Policy S-WI-30.** Improve the appearance of public streets by completing the sidewalk system and adding pedestrian amenities such as benches, bus shelters, public art, and landscape barriers where appropriate.

*Comment: The proposal will provide the opportunity to improve the corridor appearance of 116th Ave. NE through the new development regulations which require wider sidewalks (8 feet wide), street trees and landscaping buffers (4 feet wide) to provide a separation between vehicles and pedestrians.*

**Policy S-WI-34.** Develop an entrance in the NE 8th street corridor to create a sense of entry to the corridor.

*Comment: Redevelopment of the site will provide an opportunity to develop a gateway to the District and improve the appearance of the public street.*

# Statement of Compliance to Master Plan Amendment Criteria (*Cont'd*)

Pursuant to LUC 20.25J.050.E.2, the proposed modifications to the Master Plan must ensure that the following criteria are met:

- b. *The proposed Master Development Plan complies with the applicable requirements of the Bellevue City Code specifically including the Purpose and Intent of the Medical Institution District and this Part 20.25J of the Land Use Code; and*

Section 20.10.390 of the Land Use Code identifies the purpose of the Medical Institution District:

*The purpose of the district is to encourage comprehensive long-term master development planning for the site and to allow flexible dimensional standards to facilitate development of major medical institutions and provision of the vital public services offered by these institutions. Specific development areas have been established in order to implement the objectives of the Medical Institution District.*

As explained above in the Introduction to the 2005 Master Development Plan amendment, the Plan will properly comply with and facilitate the purpose of the MI District by providing for development of the Overlake Hospital campus in a way that accommodates hospital and related uses in a more urban form, while providing necessary additional space for increased patient bed demand, state-of-the-art infrastructure and utility systems, and technologically advanced equipment.

# Statement of Compliance to Master Plan Amendment Criteria (*Cont'd*)

Pursuant to LUC 20.25J.050.E.2, the proposed modifications to the Master Plan must ensure that the following criteria are met:

The 2005 Master Development Plan further complies with Part 20.25J of the Land Use Code:

- Design Review: Each structure developed under the Master Development Plan will receive prior Design Review approval before construction permits are issued. Such structures will comply with the Design Review Guidelines for the MI District, including site design guidelines, gateways and interior open space guidelines, building design guidelines and street frontage design guidelines.
- Permitted Uses: Permitted uses are detailed in the “Medical Institution District Land Use Chart.” The chart includes uses permitted in the DA1 and DA2 Development Areas. Classifications include Services, Transportation and Utilities, and Retail uses that support the MI District. Uses under the amended Master Development Plan will comply with these regulations.
- Dimensional Requirements: Dimensional requirements are detailed for each of the Development Areas, DA1 and DA2. Structures developed under the amended Master Development Plan will comply with these regulations.

# Statement of Compliance to Master Plan Amendment Criteria (*Cont'd*)

Pursuant to LUC 20.25J.050.E.2, the proposed modifications to the Master Plan must ensure that the following criteria are met:

The 2005 Master Development Plan further complies with Part 20.25J of the Land Use Code:

- Development Intensity: The Master Development Plan provides for a maximum of 400 hospital beds, a maximum of one (1) million gross square feet of hospital structure(s); and a maximum of one (1) million gross square feet of non-hospital structure(s).
- Landscaping: The 2005 Master Development Plan includes a conceptual landscaping plan consistent with Part 20.25J of the Land Use Code.
- Phasing Plan: The 2005 Master Development plan includes a phasing plan for installation of site improvements, landscaping and amenities necessary to support full Medical Institution District Development Intensity.
- Other Requirements: The 2005 Master Development Plan includes requirements for parking, transportation management and commute trip reduction.

# Statement of Compliance to Master Plan Amendment Criteria (*Cont'd*)

Pursuant to LUC 20.25J.050.E.2, the proposed modifications to the Master Plan must ensure that the following criteria are met:

- c. The proposed Master Development Plan addresses all applicable guidelines or criteria of this Code in a manner which fulfills their purpose and intent; and

See discussion under subsection (b) above.

- d. The Master Development Plan depicts features of and relationships between landscaping, streetscape, urban frontages, gateways, building zones and campus access points within the Medical Institution District at full Development Intensity as defined in LUC section 20.25J.050.

The 2005 Master Development Plan includes depictions and descriptions of landscaping, streetscape, urban frontages, gateways, building zones and campus access points within the MI District at full Development Intensity.

# MI District Map



## Legend

DA1 = Development Area 1, Hospital Center Development Area

DA2 = Development Area 2, Medical Office Perimeter Development Area



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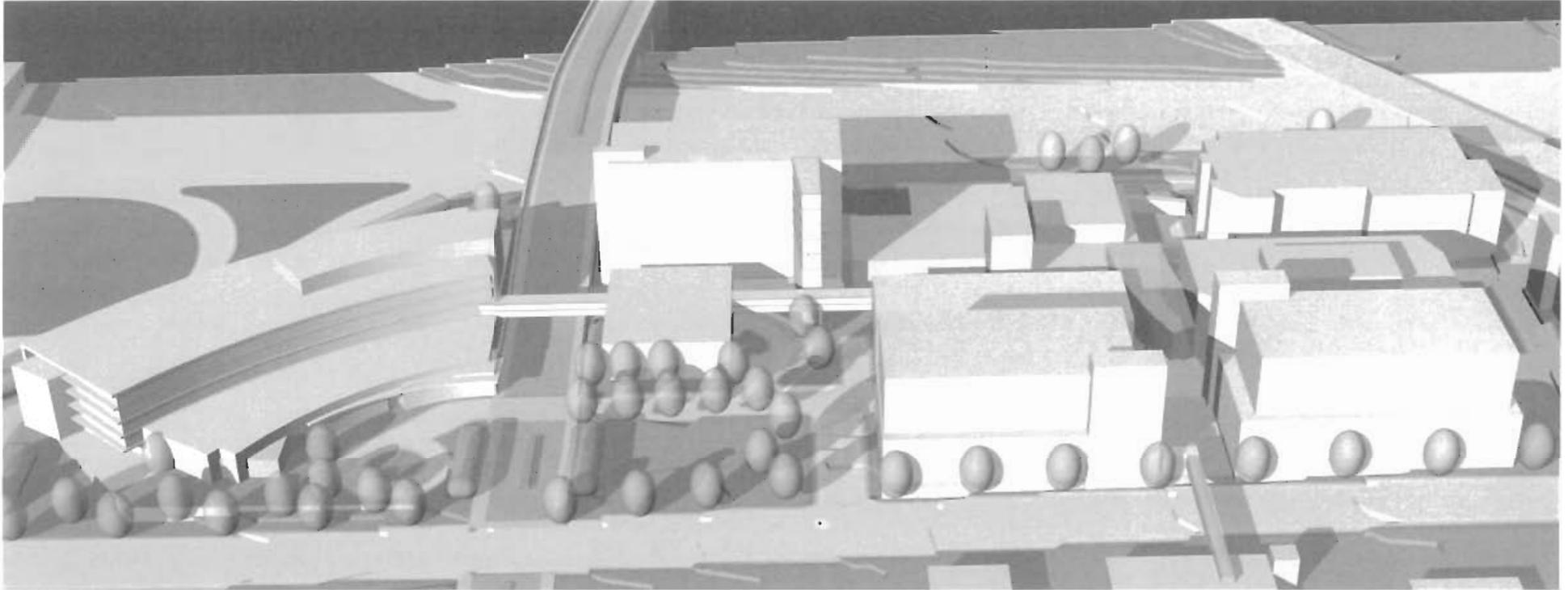
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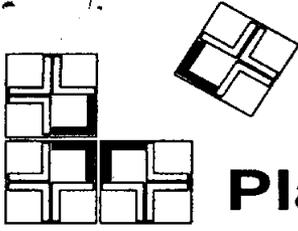
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APPENDIX B

**Medical Institution Comprehensive Plan  
Amendment and Land Use Code Amendment  
(Bellevue File Nos. 04-133562-AC and 04-133561-AD)**

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## Planning Commission

# TRANSMITTAL

DATE: February 9, 2005

TO: Bellevue City Council

FROM: Marcelle Lynde, Chair *Marcelle Lynde*  
Members of the Bellevue Planning Commission

SUBJECT: Medical Institution Comprehensive Plan Amendment and Land Use Code  
Amendment (Bellevue File Nos. 04-133562-AC and 04-133561-AD)

With this transmittal the Planning Commission recommends the City Council:

- APPROVE the Medical Institution Comprehensive Plan Amendment (CPA) and Land Use Amendment (LUCA). The Commission vote was 6 - 0 (Commissioner Orrico recused) on January 19, 2005.

This transmittal contains several sections. The first two summarize the background issues. The Summary of Proposal describes the recommended changes. The remaining sections contain descriptions of the Commission recommendations, public notice, public process and public testimony.

The detailed proposal is described in the staff report and Ordinance, see Attachments A and B.

### I. OVERVIEW

The proposal amends both the Comprehensive Plan and the Land Use Code. Its purpose is to recognize the community importance of medical institutions and encourage expansion on sites designated appropriate for medical institution and ancillary uses. The CPA and LUCA will permit additional height if an area is master planned for medical institution use. The LUCA defines parameters of development and requirements for design review and pedestrian connections as requested by the City Council in Resolution No. 7099, adopted in November 2004.

## **II. BACKGROUND**

The current Overlake Hospital Master Plan was adopted in 1999. It envisioned expansion of the campus on its current site, and was intended to be a 20-30 year plan. Since the plan was adopted, a number of circumstances have changed, resulting in a need to change the Master Plan. These include: an agreement between Group Health Cooperative (Group Health) and Overlake Hospital Medical Center (Overlake Hospital) to have many Group Health functions co-locate on the Overlake Hospital campus, the need for a NE 10th extension to tie 112th Avenue NE and 116th Avenue NE and establish an east-west connection across the freeway, and the proposed expansion of I-405. Both of the latter actions would reduce the buildable portion of the existing Overlake Hospital campus.

In late 2004, the City Council adopted Resolution No. 7099 that set forth guidance on the CPA and LUCA provisions to support efforts to develop the NE 10<sup>th</sup> Street Extension, widen I-405 and facilitate Overlake Hospital and Group Health plans to expand in a manner consistent with the City commitment to high quality development, community compatibility and economic development. Council guidance, per Resolution No. 7099, is to:

- 1) Provide adequate additional development intensity;
- 2) Facilitate the campus redevelopment;
- 3) Encourage development of an open, accessible and public campus; and
- 4) Convey a sense of permanence and quality.

Staff worked with representatives from Overlake Hospital, Group Health, and the Washington State Department of Transportation (WSDOT) to develop regulations that respond to the Council's direction.

## **III. SUMMARY OF PROPOSAL**

The new Medical Institution (MI) Comprehensive Plan designation is based on the guidance contained in the Council resolution. The proposed definition of the Medical Institution designation is:

A land use designation that provides for the location of hospital uses and ancillary uses to the primary hospital use located on the same site. The purpose of the district is to encourage master development planning for the site, allow flexible dimensional standards to facilitate development of major medical institutions, and promote high quality urban design that is pedestrian- and transit-friendly and compatible with nearby neighborhoods.

The site specific changes proposed for the Wilburton Subarea Plan apply the new MI designation to the current Overlake Medical Hospital campus, west of 116th Avenue NE. The proposed modification to Wilburton Subarea Plan Policy S-WI-2 adds further guidance to the proposed zoning designation, and the modification to the Wilburton Plan Map applies the designation to a

specific site, the Overlake Hospital campus.

The LUCA responds to the Council direction in the following ways:

- 1) Provides adequate additional development intensity: The proposed LUCA allows for a maximum of 400 hospital beds, a maximum of one (1) million gross square feet of hospital structure(s); and a maximum of one (1) million gross square feet of non-hospital structure(s).
- 2) Facilitates the campus redevelopment: The proposed LUCA provides relaxed dimensional requirements, including some zero-foot setbacks, and additional permitted uses, such as general office uses, personal services, research services, and finance/insurance services. The uses are detailed for each of the Development Areas, DA1 and DA2.
- 3) Encourages development of an open accessible and public campus; The proposed LUCA includes landscape requirements, streetscape design requirements, gateways and open space interior guidelines, building design guidelines and street frontage design guidelines. These LUCA amendments further the development of an open accessible and public hospital campus.
- 4) Conveys a sense of permanence and quality: The proposed LUCA includes specific streetscape and building design guidelines which when implemented will produce a street frontage and campus development that conveys a sense of permanence and quality.

#### **IV. PLANNING COMMISSION RECOMMENDATION**

The Planning Commission recommends 6 – 0 (Commissioner Orrico recused herself) that the City Council approve proposed amendments to the Comprehensive Plan and the changes to the Land Use Code as presented in Attachment 1.

The proposed Comprehensive Plan Amendment merits approval based on the Decision Criteria for a Comprehensive Plan Amendment as set forth in the Land Use Code, Section 20.30I.150. The proposed Land Use Code Amendments merit approval based on the Decision Criteria for a Land Use Code Amendment as set forth in Land Use Code, Section 20.30J.135. These conclusions are based on the analysis of these decision criteria in the staff report prepared for the public hearing dated January 19, 2005. The following is a summary of Planning Commission findings:

### Citywide CPA that creates the Medical Institution District

#### The amendment:

- Is consistent with the GMA, Countywide Planning Policies and City Comprehensive Plan policies that encourage master planning of large developments and retaining land for specific uses which are important to the community, specifically Policies LU-11, 12, and 13. The amendment establishes changed circumstances in the need to use land more efficiently to accommodate the NE 10th Street extension in a way that is pedestrian friendly and compatible with nearby neighborhoods.
- Addresses the changed needs of the city in that the new designation will permit hospitals to expand vertically and allows them to operate more efficiently and serve the public better.

### Site-specific CPA that modifies Plan Map and Policy S-WI-2

#### The amendments:

- Are consistent with the GMA, Countywide Planning Policies and City Comprehensive Plan.
- Establish changed circumstances due to the Council decision to move City Hall downtown (and removing the need for a generic Institutional District). Also, Group Health decided to co-locate with Overlake on the existing Overlake campus, and extension of NE 10th across I-405 and expansion of I-405 requires the acquisition of right-of-way on the current hospital site, thereby reducing the development potential on the site.
- Address changed needs of the entire city in that design flexibility permitted by the new policy will allow expansion and efficiencies of scale necessary in the changing world of health care delivery.

In addition, the site is suitable for the proposed development in that the amendments do not modify the development potential that could have been achieved under the existing Institutional District regulations applicable to the campus.

### Land Use Code Amendment

#### The amendment is:

- In accord with the Comprehensive Plan in that it implements the proposed designation and is supported by several Comprehensive Plan policies.
- Bears a relation to the public health, safety, or welfare by ensuring consistency between the Comprehensive Plan and development regulations required by GMA.
- Will permit Overlake Hospital and Group Health to provide enhanced health care services and delivery to the community.
- Not contrary to the best interests of citizens and property owners in that it will reduce the need to travel so far for new health care services which will be provided at the campus.

- Intended to mitigate impacts of development analyzed in the Overlake Hospital Master Plan/NE10th Street Extension DEIS.

### **Future Regulatory Actions Needed to Implement the Master Plan**

Overlake Hospital must submit a new Master Development Plan to reflect the 2030 full campus build-out plan. Design Review, including any environmental review that was not undertaken as part of the EIS, will be conducted for each new application and for the NE 10th Street Extension. Subsequent clearing & grading permits and building permits will be issued for new buildings proposed on the campus.

### **V. PUBLIC NOTICE**

Notice of the Application and Public Hearing before the Planning Commission was published in the Weekly Permit Bulletin on December 30, 2004.

Pursuant to the requirements of the Growth Management Act, state agencies must be given 60 days to review and comment on proposed amendments to the Comprehensive Plan. State agencies were notified of the CPA and LUCA on December 30, 2004.

### **VI. PUBLIC PROCESS & PUBLIC TESTIMONY**

The Planning Commission held three study sessions on this topic. At the public hearing, five (5) people testified. Their comments included:

- The changes at the Overlake Hospital campus will benefit the residents of Bellevue by providing expanded and cutting-edge health care.
- The campus development will provide new jobs.
- With the aging population, there will be increased demand on health care services in the future. The campus plan will help satisfy the increased future demand.
- A partnership was created between Overlake Hospital and Group Health. This will provide better patient care in the future.

In addition, two written comments were received. Their comments included:

- James Eder of the EBCC, commenting on the need for safety precautions on pedestrian bridges so that people cannot be trapped in them at night. The City's Building Code addresses this concern.
- The Bellevue Chamber of Commerce supports the amendments because they will allow the continued expansion of health care facilities on the Overlake Hospital campus and support the NE 10th Extension project.

On February 1, 2005, staff presented this proposal to the East Bellevue Community Council for its Courtesy Hearing. The EBCC offered its strong support for the concepts contained in the proposed CPAs and LUCA.

The Planning Commission did not recommend substantive changes as a result of public testimony. Some definitional changes and clarifications were provided by staff on January 19 and were incorporated into the Planning Commission recommendation.

## **ATTACHMENT**

1. Ordinance Text of CPA and LUCA changes and Map

### **Available in Council Library:**

Notebook containing PCD public hearing staff reports (including the SEPA Threshold Determinations), all Planning Commission agenda packet materials, and minutes.

## **Proposed Medical Institution Comprehensive Plan Amendments**

Section 1. The Glossary of the Comprehensive Plan is amended as follows:

Medical Institution (MI): A land use designation that provides for the location of hospital uses and ancillary uses to the primary hospital use located on the same site. The purpose of the district is to encourage master development planning for the site, allow flexible dimensional standards to facilitate development of major medical institutions, and promote high quality urban design that is pedestrian- and transit-friendly and compatible with nearby neighborhoods.

Section 2. Policy S-WI-2 in the Wilburton/NE 8<sup>th</sup> Street Subarea Plan is deleted (as shown) and a new Policy S-WI-2 is adopted as follows:

~~**POLICY S-WI-2.** Consolidate hospital and government uses within their existing areas. Develop design criteria that instill design features representative of public facilities.~~

### **Discussion**

~~*As these institutions expand or redevelop, encourage consolidated development through cohesive site design and provide pedestrian connections through design and function to adjacent development. These developments should have a public "face" that focuses on a public entrance and ties the entire facility together, accessible public spaces, and design features including landscaping of a scale to distinguish it from surrounding commercial development. Height limits for institutional uses should not be so restrictive as to force needed expansion to sprawl outside existing areas.*~~

**POLICY S-WI-2.** Provide for medical institution development within the area bounded by NE 8<sup>th</sup> and NE 12<sup>th</sup> Streets, 116<sup>th</sup> Avenue NE and I-405.

### **Discussion**

*The medical institution use in this area provides a vital public service for the Eastside community. The City should facilitate development of a long-term master plan that addresses the continued evolution and updating of this facility. Special dimensional standards are appropriate to accommodate the needs of the major medical institution and related uses, provided the facility provides a high quality of design that recognizes this site as a prominent community landmark. Building and site design should create a visual identity for the facility that contributes to the streetscape, is compatible with adjacent and nearby neighborhoods, and is sensitive to views from the freeway and views of the skyline. Design should also create a visually pleasing and safe environment for the public, incorporating features such as public spaces, gateways, streetscape improvements, and safe pedestrian linkages.*



CITY OF BELLEVUE, WASHINGTON

ORDINANCE NO. \_\_\_\_\_

**AN ORDINANCE amending the Bellevue Land Use Code to repeal the Institutional District overlay regulations and replace them with new Medical Institution District overlay regulations and amending the Bellevue Land Use Code throughout to provide necessary cross references and to ensure consistent use of new terminology; repealing and replacing Section 20.10.390 and Part 20.25J of the Bellevue Land Use Code; amending Sections 20.10.440, 20.20.005, 20.20.195A, 20.20.520F.2, 20.20.590K.8.a, 20.25B.020B, 20.25L.020, 20.35.015, 20.35.020, 20.35.210, 20.50.010, 20.50.024, 20.50.034, 20.50.040, 20.50.046 of the Bellevue Land Use Code; and establishing an effective date.**

**WHEREAS, the City Council adopted the Downtown Implementation Plan (DIP) which included a recommendation to extend NE 10<sup>th</sup> Street from 112<sup>th</sup> Avenue NE to 116<sup>th</sup> Avenue NE across the Overlake Hospital Medical Center campus; and**

**WHEREAS, Overlake Hospital Medical Center (Overlake Hospital) has received a Certificate of Need from the State Department of Health to build 80 additional inpatient hospital beds on its existing campus; and**

**WHEREAS, Overlake Hospital and Group Health Cooperative (Group Health) have proposed to expand the Overlake campus to support the 80 additional inpatient beds by constructing a new hospital tower, a 300,000 sf Ambulatory Health Care Center and a 200,000 sf medical office building; and**

**WHEREAS, construction of the proposed projects located on the Overlake campus must be undertaken together with the construction of NE 10<sup>th</sup> Street as contemplated in the DIP and must be ready to support opening of the new Overlake Hospital bed tower and the Ambulatory Health Care Center by the end of 2007; and**

**WHEREAS, successful completion of the proposed and recommended projects is of great importance to the City because Bellevue citizens will benefit from a wider range of health care choices and a significant economic development opportunity that will result in new jobs, induced development surrounding the campus and sales tax revenue; and**

**WHEREAS, barriers to successful completion of the proposed and recommended projects may be removed or minimized through amendments to Comprehensive Plan policies and Land Use Code regulations relating to the Institutional Land Use District that were initiated by emergency declaration of the City Council in Resolution No. 7099; and**

**WHEREAS, the Planning Commission held a public hearing on January 19, 2005 with regard to such proposed Comprehensive Plan and Land Use Code amendments; and**

WHEREAS, the Planning Commission recommends that the City Council approve such proposed amendments; and

WHEREAS, the City of Bellevue has complied with the State Environmental Policy Act (SEPA), Chapter 43.21C RCW, and the City's Environmental Procedures Code, BCC 22.02; now, therefore,

**THE CITY COUNCIL OF THE CITY OF BELLEVUE, WASHINGTON, DOES ORDAIN AS FOLLOWS:**

Section 1. Section 20.10.390 of the Bellevue Land Use Code is hereby repealed and replaced with a new Section 20.10.390 as follows:

**20.10.390 Medical Institution District**

The Medical Institution (MI) District provides for the location of hospital uses and ancillary uses to the primary hospital use located on the same site. The purpose of the district is to encourage comprehensive long-term master development planning for the site and to allow flexible dimensional standards to facilitate development of major medical institutions and provision of the vital public services offered by these institutions. Specific development areas have been established in order to implement the objectives of the Medical Institution District.

1. **Hospital Center Development Area (DA1).** The purpose of the Hospital Center Development Area is to provide an area for the primary hospital and the most intensive ambulatory health care uses to be located within close proximity. The tallest heights and largest floorplates in the district are appropriate in this area. The Hospital Center Development area is located on the topographically lowest portion of the district adjacent to the freeway where pedestrian orientation is low and heights of the tallest campus structures and largest floor plates are most appropriate. The tallest heights are necessary for the primary hospital towers to accommodate patient bed demand in the region within floorplates that are sized appropriately for patient care delivery. Large floor plates are necessary for hospital diagnostic and treatment uses and ambulatory health care uses to accommodate adjacencies of multiple operating rooms, interventional radiology rooms and urgent care. The Hospital Center Development Area provides the dimensional flexibility necessary to allow the primary hospital and ambulatory health care uses to be located in close proximity and benefit from the co-location of complementary uses. Medical office uses may also be appropriate for this area, but do not have the same proximity needs as the ambulatory health care uses. Gateways on 116<sup>th</sup> Avenue NE at NE 8<sup>th</sup> Street and NE 10<sup>th</sup> Street identify the entry into the district and provide wayfinding cues for identification of individual institutions located within the district.

2. **Medical Office Perimeter Development Area (DA2).** The purpose of the Medical Office Perimeter Development Area is to provide an area for medical office and hospital related uses that are less dependent on immediate access to the primary hospital emergency rooms and patient beds. Taller buildings are appropriate in this area. Building mass variations (i.e., stepbacks, floor plate limitations) create transitions to less intense land use districts. Appropriate sidewalk widths, pedestrian sensitive design and amenities and gateways ensure pedestrian orientation to perimeter

sidewalks located on 116<sup>th</sup> Avenue NE and NE 12<sup>th</sup> Street. A gateway on 116<sup>th</sup> Avenue NE at NE 12<sup>th</sup> Street identifies the entry into the district.

Section 2. Part 20.25J of the Bellevue Land Use Code is hereby repealed and replaced with a new Part 20.25J as follows:

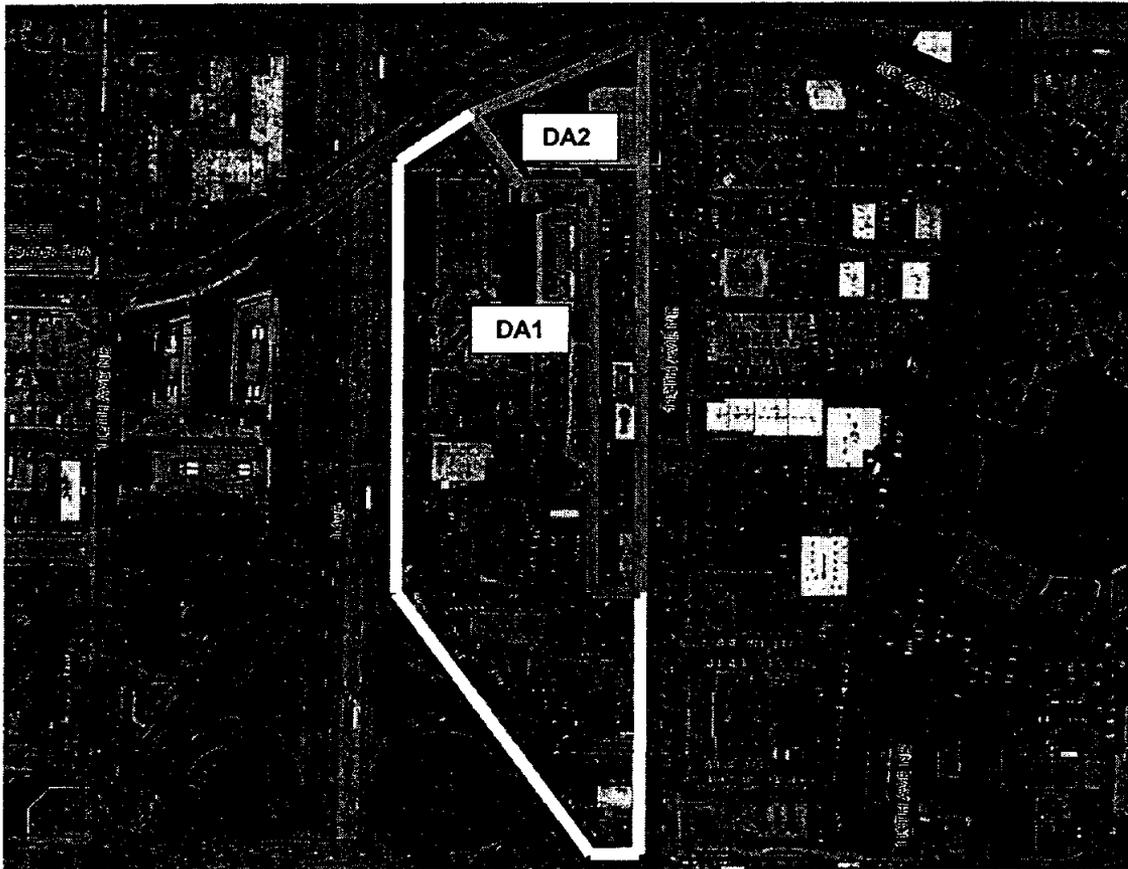
**Part 20.25J Medical Institution District**

**20.25J.010 General**

- A. **Applicability.** This part 20.25J, Medical Institution (MI) District, contains standards and guidelines that apply to development and activity within the Medical Institution District.
- B. **Description of Development Areas.** The district is divided into two Development Areas that have been established in order to implement the objectives of the Medical Institution District as follows:
  - 1. **Hospital Center Development Area (DA1)**
  - 2. **Medical Office Perimeter Development Area (DA2)**

The Purpose and Intent of the Development Areas is described in LUC section 20.10.390. The location of the Development Areas is depicted on the map entitled "Medical Institution District Development Areas."

# Medical Institution District Development Areas



## Legend

**DA1 = Development Area 1, Hospital Center Development Area**

**DA2 = Development Area 2, Medical Office Perimeter Development Area**

## **20.25J.015 Review Required**

### **A. Master Development Plan**

1. All development within the Medical Institution District shall be governed by a Master Development Plan. The City will process an application for a Master Development Plan through Process II, LUC 20.35.200 et seq.

a. Phasing Plan. A phasing plan for installation of site improvements, landscaping and amenities necessary to support full Medical Institution District Development Intensity as defined in LUC section 20.25J.040 must be approved as part of the Master Development Plan.

#### **b. Binding Site Plan.**

i. General. The applicant may request that the Master Development Plan constitute a Binding Site Plan pursuant to Chapter 58.17 RCW.

ii. Survey and Recording Required. If a Master Development Plan is approved as a Binding Site Plan, the applicant shall provide a recorded survey depicting all lot lines and shall record that Binding Site Plan and survey with the King County Department of Records and Elections. No document may be recorded without the signature of each owner of the subject property.

iii. Effect of Binding Site Plan. Upon the approval and recording of a Binding Site Plan the applicant may develop the subject property in conformance with the Binding Site Plan and without regard to lot lines internal to the subject property. The applicant may sell or lease parcels subject to the Binding Site Plan.

### **2. Decision Criteria**

The Director may approve or approve with modifications an application for a Master Development Plan Permit if:

a. The proposed Master Development Plan is consistent with the Comprehensive Plan; and

b. The proposed Master Development Plan complies with the applicable requirements of the Bellevue City Code specifically including the Purpose and Intent of the Medical Institution District and this Part 20.25J of the Land Use Code; and

- c. The proposed Master Development Plan addresses all applicable guidelines or criteria of this Code in a manner which fulfills their purpose and intent; and
- d. The Master Development Plan depicts features of and relationships between landscaping, streetscape, urban frontages, gateways, general building locations, campus access points and circulation within the Medical Insitution District at full Development Intensity as defined in LUC section 20.25J.040, and

### **3. Modification or Addition to an Approved Master Development Plan**

There are two ways in which to modify or add to an approved Master Development Plan: process as a new Master Development Plan or process as a Land Use Exemption.

#### **a. New Master Development Plan**

Except as provided in subsection A.3.b of this section, an amendment to a previously approved Master Development Plan is treated as a new application.

#### **b. Land Use Exemption to an Existing Master Plan**

The Director may determine that a modification to a previously approved Master Development Plan is exempt from further review as a new application, provided the following criteria are met:

- i. The modification is exempt from SEPA review; and
- ii. The modification is within the general scope of the purpose and intent of the original approval; and
- iii. The modification complies with all applicable Land Use Code requirements, and all applicable development standards and is compatible with all applicable design criteria; and
- iv. The modification does not add more than 20 percent of the square footage assigned to any single building in the original Master Development Plan and in no event may the modification process be

used to exceed the Development Intensity limitations of section 20.25J.040.

**4. Recording Required**

Following approval of the the Master Development Plan or a modification, the applicant shall record the plans and conditions which constitute the approved Master Development Plan with King County Division of Records and Elections. The Master Development Plan is binding on and runs with the land.

**B. Design Review**

Each structure located within the Medical Institution District and approved as part of a Master Development Plan must be reviewed by the Director of the Department of Planning and Community Development through Design Review, Part 20.30F LUC. The design guidelines contained in this part 20.25J apply in addition to the decision criteria of LUC 20.30F.145.

**20.25J.020 Permitted Uses**

The following chart indicates the permitted land uses within the MI Land Use District and the required review process for each use within each Development Area.

## Medical District Land Use Chart

Land Use	Hospital Center Development Area <sup>1</sup>	Medical Office Perimeter Development Area <sup>2</sup>
<b>Services</b>		
Hospital	P	--
Ambulatory Health Care Center <sup>3</sup>	P	--
Professional Services: Medical Clinics and other health care-related services	P	P
Medical-related administrative offices	P	P
Research, Development and Testing Services	S	S
Other administrative offices (non-medically related)	S	S
Childcare and adultcare services	P	P
Social Service providers (for profit and nonprofit), including Medic 1 services and other emergency services	P	P
Medical Helicopter Landing Pad <sup>4</sup>	P	P
Personal Services: Laundry, Dry Cleaning, barber and beauty shops, shoe repair, massage therapy/health spa (non-medically related) and other services ancillary to a hospital	S	P
Finance and Insurance institutions	--	S
Business Services, Duplicating and blue printing	--	S
Religious Activities	S	S
<b>Transportation and Utilities</b>		
Accessory Parking <sup>5</sup>	P	P
Commercial Parking	P	P
Wireless facilities <sup>6</sup>	A/P	A/P
Utility Facility	A	C
Local Utility System	P	P
Regional Utility System	A	C
Essential Public Facilities <sup>7</sup>	A	A
Transit Facilities <sup>8</sup>	P	P
Highway and Street Right of Way	P	P
<b>Retail</b>		
Eating and drinking establishments <sup>9</sup>	P	P
Health-care related retail (i.e. pharmacy, crutches, etc.)	P	P
Misc. Retail Trade: Drug stores, gift stores, book stores, news stands, florist, jewelry, clothing, photo supplies, video sales/rental and other retail ancillary to a hospital	S	P

**P** = Permitted.  
**A** = Administrative Conditional Use  
**S** = Subordinate Use  
-- = Not Permitted.

**Footnotes:**

- <sup>1</sup> See LUC sections 20.10.390 and 20.50.034 for definition of Medical Institution District Hospital Center Development Area (DA1).
- <sup>2</sup> See LUC section 20.10.390 and 20.50.034 for definition of Medical Institution District Medical Office Perimeter Development Area (DA2).
- <sup>3</sup> See LUC Section 20.50.010 for definition of Ambulatory Health Care Center.
- <sup>4</sup> Medical Helicopter Landing Pad: Must be located within 200 feet of the right-of-way of I-405. Permitted only for emergency patient-related helicopter landings. Only one helicopter landing pad is permitted within the Medical Institution District. There may not be re-fueling tanks, re-fueling services, storage of helicopters, or any other storage-related activities. The helicopter landing pad must meet Federal Aviation Administration (FAA) requirements and applicable licenses. The helicopter landing pad must also meet City of Bellevue Fire code requirements and any other applicable City codes and standards. LUC section 20.20.450 does not apply within the Medical Institution District.
- <sup>5</sup> Accessory parking is permitted to serve only the uses located within the Medical Institution District pursuant to an approved Master Development Permit and requires approval through the review process required for the primary land use which it serves.
- <sup>6</sup> Wireless facilities must meet the requirements of LUC 20.20.195. Prior Administrative Conditional Use approval is required for freestanding monopole facilities and wireless facilities integrated on existing parking lot light poles and/or adjacent street poles (within the right-of-way) to the campus. Building-mounted wireless facilities are permitted outright. Any ground-mounted equipment must be adequately screened per LUC 20.20.195.
- <sup>7</sup> Refer to LUC 20.20.350 for general requirements applicable to Essential Public Facilities.
- <sup>8</sup> Transit Facilities includes transit stops and high-capacity transit stops.
- <sup>9</sup> Eating and Drinking establishments are not permitted to include liquor sales within the Medical Institution District.

**20.25J.030 Dimensional requirements**

**Dimensional Requirements in Medical Institution District**

Medical Institution (MI) District Development Area	Minimum Setback (1)(2)				Max. Bldg Floor Area per floor above 40' stepback	Max. Lot Coverage District Wide (5)	Building Height (8)	Separation between towers above 40' stepback	Floor Area Ratio (FAR)
	I-405 Access Ramps NE 8 <sup>th</sup> Street	NE 10 <sup>th</sup> Street	116 <sup>th</sup> Ave NE/ NE 12 <sup>th</sup> Street	I-405					
Hospital Center (DA1)	30'	0'(3)	0'	50' (7)	N/A	75%	75' 100'(9) 200'(10)	N/A	N/A
Medical Office Perimeter (DA2)	N/A	30'	0' (4)(6) (8)	N/A	24,000	75%	60' 140'(11)	40' (11)	N/A

(1) Minimum setbacks are subject to required landscape development. Refer to LUC 20.25J.060.

(2) Measured from the property line where the Medical Institution District abuts I-405 or the access ramps to I-405. Measured from inside edge of the required sidewalks on 116<sup>th</sup> Ave NE, NE 8<sup>th</sup> Street and NE 12<sup>th</sup> Street. If existing utilities that cannot be reasonably relocated require the planting of street trees on the property side of the sidewalk as provided for in LUC 20.25J.070A.2.b, four feet is added to the required setback.

(3) Reciprocal maintenance agreements will be required between the City and the property owner of any structure abutting NE 10<sup>th</sup> Street.

(4) No parking or vehicle access lane is permitted between the required sidewalks on 116<sup>th</sup> Ave NE and NE 12<sup>th</sup> Street and pedestrian entrances and building frontages located in the Medical Office Perimeter Development Area.

(5) Exceptions to Lot Coverage

a. Underground buildings as defined in LUC 20.50.050 are not structures for the purpose of calculating lot coverage.

- b. Buildings constructed partially below grade and not higher than 30 inches above average finished grade are not structures for the purpose of calculating lot coverage; provided, that the rooftop of the building shall be landscaped consistent with the planting requirements for the specific use that is proposed for the building roof area and for the Medical Institution District, or shall be development with pedestrian improvements, such as plazas and walkways, as approved by the Director through the Design Review Process, LUC 20.30F.
- 
- (6) Buildings or portions of buildings that provide a setback of less than 20 feet are required to meet the Streetscape Design Requirements and Urban Frontage Design Guidelines of this Part 20.25J. A minimum setback of 20 feet with required landscape development may be approved by the Director in lieu of required Streetscape Design and Urban Frontage.
  
  - (7) If the Medical Institution District Property line is modified as a result of expansion associated with widening of I-405 and/or associated access ramps, the setback from I-405 and I-405 access ramps will continue to be measured from the property line established as of the effective date of the Master Development Plan that pre-dated the freeway widening. Development complying with this footnote is conforming as to the I-405 setback and is not subject to the nonconforming provisions of LUC 20.20.560.
  
  - (8) Stepback. A building façade facing 116<sup>th</sup> Avenue NE or NE 12<sup>th</sup> Street must incorporate a 10-foot deep stepback in all floors located 40 feet above 116<sup>th</sup> Ave NE or NE 12<sup>th</sup> Street as measured from the average finished grade of the regulated façade. The Director of the Department of Planning and Community Development may allow modifications to the stepback required above 40 feet if the applicant can demonstrate that the resulting design will be more consistent with the Design Review Guidelines of LUC 20.25J.080.
  
  - (9) The maximum building height of an ambulatory health care center is 100 feet.
  
  - (10) The maximum building height of a hospital is 200 feet.
  
  - (11) The maximum building height of a Medical Office Building is 140 feet. A single building is considered a Medical Office Building if more than 75 percent of the gross floor area is devoted to medical clinics and medical-related administrative offices (Refer to LUC section 20.25J.020).

#### **20.25J.040 Development Intensity**

1. **Hospital Beds and Maximum Square Footage.** The total number of hospital beds permitted in the Medical Institution District is limited to 400. These beds and ancillary uses that support the 400 beds must be accommodated within hospital structure(s) that do not exceed one (1) million gross square feet. Modification to this provision can only be processed through an amendment to the Land Use Code.
2. **Non-Hospital Medical Institution District Square Footage.** The total gross square feet associated with non-hospital Medical Institution District uses may not exceed one (1) million gross square feet. Refer to the permitted uses chart in LUC section 20.25J.020.
3. The limitation on development intensity may be exceeded on a temporary basis to accommodate development phasing and tenant relocation identified in a Phasing Plan approved through the Master Development Plan.

#### **20.25J.050 Parking, Transportation Management and Commute Trip Reduction Requirements**

##### **A. Parking**

1. The provisions of LUC 20.20.590, except as they conflict with this section, apply to development in the Medical Institution District.
2. **Performance Standards for Parking Structures.** The Director of Planning and Community Development may approve a proposal for a parking structure through the Design Review process of LUC 20.25J.015B. The Director of Planning and Community Development may approve the parking structure only if:
  - a. Driveway openings from public rights-of-way are limited and the number of access lanes in each opening are minimized.
  - b. The structure exhibits a horizontal, rather than sloping building line, as viewed from 116<sup>th</sup> Avenue NE and NE 12<sup>th</sup> Street.
  - c. The dimension of the parking structure abutting pedestrian areas is minimized. If parking structure abutting pedestrian areas is necessary for functional reasons, mitigation shall be provided through the addition of planting, modulation, materials variation, artwork or other features that would cover at least 50 percent of the parking structure façade area unless a smaller coverage area is approved through a Master Development Plan approval.

- d. The parking structure complies with the requirements of the Design Review Guidelines of LUC 20.25J.080.
- e. A wall or other screening of sufficient height to screen parked vehicles from views from adjoining rights-of-way and which exhibits a visually pleasing character is provided at all above-ground levels of the structure.
- f. Safe pedestrian connection between the parking structure and the principal use exists.
- g. Loading areas are provided for vanpools/carpools.
- h. Vehicle height clearances for structured parking must be at least seven and one-half feet for the entry level to accommodate vanpool parking.
- i. For all uses, no more than 25 percent of the required parking spaces may be designed and constructed in accordance with the dimensions for compact stalls provided in 20.20.590K.12.

**B. Transportation Management Program.** The requirements of BCC 14.60.070 (Transportation Management Program) must be met as part of the Master Development Plan. An alternative TMP may be required by the City and/or proposed by the applicant, whereby a performance standard is designated and program features to attain this performance standard are established. Such program features may include special site design features, annual promotion events, contracted parking enforcement, shuttle services, financial incentives to employees, and a guaranteed ride home program.

**C. Commute Trip Reduction.** The requirements of Chapter 14.40 BCC must be met as part of the Master Development Plan.

**20.25J.060 Landscape requirements**

**A.** The provisions of LUC 20.20.520, except as they conflict with this section, apply to development within the Medical Institution Land Use District. The following landscaping provisions are required:

Street Frontage	Landscaping Requirement (1)
I-405 Access Ramps (2)	Vertical landscape features, terraced planters or a combination of these features must be proposed and approved through the Design Review Process to mitigate the mass of building wall adjacent to the access ramps.
I-405 Right of Way (2)	20' wide Type II, using minimum 3" caliper deciduous and minimum 10' high coniferous.

NE 8 <sup>th</sup> Street	Gateway location and conceptual design approval required through the Master Development Plan review process. Gateway Design detail approval required through the Design Review process.
NE 10 <sup>th</sup> Street east of East Campus Drive	Gateway location and conceptual design approval required through the Master Development Plan review process. Gateway Design detail approval required through the Design Review process.
NE 10 <sup>th</sup> Street west of East Campus Drive	Corridor Design approval through Transportation Department Corridor Design Planning Study.
NE 12 <sup>th</sup> Street	20' wide Type II, using minimum 3" caliper deciduous and minimum 10' high coniferous. (3) (4)
116 <sup>th</sup> Ave NE	20' wide Type II, using minimum 3" caliper deciduous and minimum 10' high coniferous. (3) (4)

(1)The tree retention provisions of LUC section 20.20.520E do not apply in the Medical Institution District.

(2)Required landscaping displaced as a result of expansion associated with widening of I-405 and/or associated access ramps is not subject to the nonconforming provisions of LUC 20.20.560.

(3)Street Frontage Landscaping will be reviewed through the Design Review process described in 20.25J.020B and is required only if a minimum 20 foot setback is provided in lieu of Streetscape Design Requirements (LUC 20.25J.080) and Street Frontage Design Guidelines (LUC 20.25J.090D).

(4) Street Frontage Landscaping in vicinity of required Gateways will be reviewed through the Design Review process described in 20.25J.015B and must comply with the Streetscape Design Requirements (LUC 20.25J.070) and Street Frontage Design Guidelines (LUC 20.25J.080D).

B. The Director of the Department of Planning and Community Development may approve alternative landscaping requirement in accordance with the criteria in LUC 20.20.520J.

#### **20.25J.070 Streetscape Design Requirements**

##### **A. Sidewalks**

- 1. Minimum Width.** The minimum width of sidewalks located on NE 8<sup>th</sup> Street, NE 12<sup>th</sup> Street, 116<sup>th</sup> Avenue NE and NE 10<sup>th</sup> Street east of East Campus Drive, is eight feet plus four feet in which street plantings are to be installed plus six inches of curb along any street.

## **2. Street Trees and Plantings**

- a. The property owner shall install street trees and plantings, in addition to any landscaping required by LUC 20.25J.060. Appropriate tree species will be determined through the Master Development Plan Process.
- b. The area in which street plantings are installed must be located between the street and the sidewalk unless precluded by existing utilities which cannot reasonably be relocated. Required street trees together with shrubbery, groundcover and other approved plantings must be placed in a planter strip along the length of the frontage. The planter strip must be at least 4 feet wide unless a smaller strip is approved by the Director. Vegetation included in the planter strip shall be urban in character, shall be compatible with other plantings within the property and along the same street, and shall reflect the character of the area in which they are planted.
- c. Street trees, at least three inches in caliper or as approved by the Director, must be planted at least three feet from the street curb, and a maximum of 25 feet on center, unless upon request of the applicant minor modification of this requirement is approved by the Director, and conforms to the sight distance requirements of BCC 14.60.240. A street tree planting area may also include decorative paving and other plant materials except turf.
- d. Street tree and plantings shall be irrigated.

3. Corridor Design Planning Study. Sidewalk width and street planting requirements for the segment of NE 10<sup>th</sup> Street located west of East Campus Drive will be determined through a Corridor Planning Study prepared by the Bellevue Transportation Department.

### **B. Gateways**

1. Number and Location. Three gateways are required for the Medical Institution District: on 116<sup>th</sup> Avenue NE at NE 8<sup>th</sup> Street, NE 10<sup>th</sup> Street and NE 12<sup>th</sup> Street. The gateways must be visually and physically accessible from the abutting sidewalk and located at or near grade.
2. Purpose. The gateways on 116<sup>th</sup> Avenue NE and NE 8<sup>th</sup> Street and NE 12<sup>th</sup> Street identify the entry into the district. The gateway on 116<sup>th</sup> Avenue NE at NE 10<sup>th</sup> Street identifies the entrance to hospital and ambulatory health care uses that have a presence in the Medical Institution District. All gateways should serve as a focal point and visual landmark.
3. Gateway location, conceptual design and installation phasing will be approved through the Master Development Plan process. Gateway design details will be

approved through the Design Review process (refer to LUC section 20.25J.080B for applicable Design Guidelines).

**C. Pedestrian Bridges**

1. **Where Permitted.** Pedestrian bridges over the public right-of-way may be allowed at the following locations:

- a. One on 116<sup>th</sup> Avenue NE between NE 10<sup>th</sup> Street and 12<sup>th</sup> Street;
- b. One on 116<sup>th</sup> Avenue NE between NE 8<sup>th</sup> Street and 10<sup>th</sup> Street;
- c. One on NE 10<sup>th</sup> Street between 116<sup>th</sup> Avenue NE and I-405.

2. **Location and Design Plan.** The City Council shall review any Medical Institution District Pedestrian Bridge Location and Design Plan, and may amend any approved Medical Institution District Pedestrian Bridge Location and Design Plan, using the City Council Design Review Process, LUC 20.30F.116.

- a. Prior to issuance of any permits for a proposed Medical Institution District pedestrian bridge, a Medical Institution District Pedestrian Bridge Location and Design Plan must be submitted to and approved by the City Council.
- b. A Medical Institution District Pedestrian Bridge Location and Design Plan shall identify the location of the Medical Institution District pedestrian bridge, include a finding by Council that the proposal satisfies the public benefit test set forth in paragraph C.3 of this section, be consistent with the development standards of paragraphs C.4 and C.5 of this section, and be consistent with the Comprehensive Plan.
- c. The Director shall ensure that the approved Medical Institution District pedestrian bridge is constructed consistent with the Design Plan. Modification to the location of the Medical Institution District pedestrian bridge, or to the articulated public benefits requires approval by the City Council pursuant to this section. Modifications to the design of the crossing that do not modify the location or public benefits, and that are consistent with the intent of the Design Plan may be approved by the Director through the process set forth in Part 20.30F LUC.

d. The property owners shall record the approved Design Plan with the King County Division of Records and Elections and Bellevue City Clerk

3. **Public Benefit Process and Criteria.** The Council may approve or approve with modifications a proposed Medical Institution District Pedestrian Bridge if it finds that the bridge provides a public benefit. For the purposes of this section, a Medical Institution District Pedestrian Bridge shall be determined to provide a public benefit when it meets all of the following criteria:

- a. The bridge improves pedestrian mobility;
- b. The bridge provides a safe crossing alternative to the at-grade street crosswalks;
- c. The bridge will increase the number of people able to cross from one side of the street to another at any one time;
- d. The bridge improves circulation for employees and/or users of the hospital campus; and
- e. The bridge functions as part of the public street system, except if the bridge is used for the transport of patients between hospital buildings or between a hospital building and an ambulatory health care center the bridge is not required to function as part of the public street system.

4. **Development Standards for all pedestrian bridges (including those utilized for the transport of patients).** Each proposed pedestrian bridge must be developed in compliance with the following standards:

- a. The bridge provides a graceful connection between buildings on each side of the street. The bridge may be unenclosed; however if the bridge is fully enclosed or partially enclosed, the applicant shall demonstrate that it is necessary for weather protection and that 80% of the linear feet of the bridge has windows for visual access for bridge users to the streetscape below;
- b. The bridge may not diverge from a perpendicular angle to the right-of-way by more than 30 degrees;

- c. The interior width of the bridge, measured from inside face to inside face shall be no less than 10 feet and no more than 14 feet unless functional need is demonstrated, other applicable decision criteria are met and departure from the width standard is approved through the Master Development Plan review process;
  - d. The bridge shall be located at an upper building level, with a minimum clearance of 16 feet above the grade of the public right-of-way and a maximum clearance of 30 feet from the sidewalk grade unless functional need is demonstrated, other applicable decision criteria are met and departure from the clearance standard is approved through the Master Development Plan review process; and
  - e. Impacts on the function of City infrastructure, including but not limited to utilities, lighting, traffic signals, etc., shall be avoided or mitigated. Lighting shall be consistent with public safety standards;
5. Development Standards for pedestrian bridges that are not utilized for the transport of patients between hospital buildings or between a hospital and an ambulatory health care center must be developed in compliance with the following standards in addition to the standards in 20.25J.070.C.4:
- a. The bridge must be open during hours when the adjoining buildings are open to the public. Signs shall be posted in clear view stating the hours that the pedestrian bridge is open to the public.
  - b. Vertical circulation elements must be designed to indicate the bridge is a clear path for crossing the public right of way.
  - c. Directional signage shall identify circulation routes for all users. Signage on the exterior of the bridge, or on the interior of the bridge that is visible from a public sidewalk or street is not permitted;
  - d. Public Access – Legal Agreement.
    - i. Owners of property that is used for pedestrian bridge circulation and access between the bridge and public sidewalk shall execute a legal agreement providing that such property is subject to a nonexclusive right of pedestrian use and access by the public during hours of bridge operation.

- ii. The agreement shall provide that the public right for pedestrian use shall be enforceable by the City of Bellevue, and the City shall have full rights of access for the pedestrian bridge and associated circulation routes for purposes of enforcing the rights of the public under this agreement.
- iii. Owners of property subject to this legal agreement will maintain the pedestrian access route and may adopt reasonable rules and regulations for the use of this space; provided, that the rules and regulations are not in conflict with the right of pedestrian use and access and consistent with this section.
- iv. The agreement shall be recorded with the King County Division of Records and Elections and Bellevue City Clerk.

#### **20.25J.080 Design Review Guidelines**

In addition to the decision criteria in LUC 20.30F.145, the following criteria apply:

A. **General Guidelines.** Each structure and all proposed site development must comply with the approved Master Development Plan. If the application for Design Review contains elements inconsistent with the approved Master Development Plan, the Director may not approve the Design Review until the Master Development Plan is amended to include those elements; and

#### **B. Site Design Guidelines**

1. Develop site improvements and amenities consistent with the phasing approved in the Master Development Plan;
2. Provide visual and functional connections between uses within the District by incorporating areas of vegetation, outdoor spaces and pedestrian connections;
3. Provide outdoor spaces to promote visually pleasing, safe and healing/calming environments for workers, patients and visitors. Solar access to and from the open space areas should be considered and maximized to the extent feasible;
4. Enhance the buildings and site with landscaping which includes living plant material as well as special pavements, trellises, screen wall planters, water, rock features and site furniture;

5. Convey an image of public use and identify each major medical institution within the Medical Institution District as a prominent landmark in the community through the location and configuration of major structures, gateways and landscaping;
6. Functionally relate the structures and site layout, including landscaping, gateways, internal circulation patterns, pedestrian connections, plazas and seating areas and provide physical connections to adjacent site development;
7. Locate vehicle entry points in safe, obvious and convenient locations to promote simple way-finding for new visitors;
8. Provide obvious and inviting pedestrian routes. Design connections to form logical routes from origins to destinations. Use trees and landscaping to provide definition and enclosure for pedestrian connections;
9. Coordinate vehicular and pedestrian access which minimizes interaction and avoids creation of unsafe crossings. Maximize the separation of vehicular traffic from pedestrian areas by means of level changes, space and distance or landscaping;
10. Locate vehicle drop-off areas in close proximity to building entries;
11. Gateways and Outdoor Spaces Interior to the Site
  - a. Design and locate outdoor spaces and gateways, as part of a comprehensive system of spaces in the Medical Institution District;
  - b. Design outdoor spaces to be handicapped accessible;
  - c. Design outdoor spaces and gateways to include landscape features, seasonal color planting areas, sculptures and/or water features;
  - d. In designing outdoor spaces and gateways, consider the following:
    - i. Orientation. Orient to sunlight to the maximum extent feasible and provide good physical and visual access to the sidewalk or walkway, so that the space is perceived as an extension of the sidewalk.
    - ii. Dimensions. Size is adequate for seating, planting, etc., but not so large as to appear barren and uninviting.

- iii. Seating. Provide seating at comfortable height and depth, and appropriate arrangement appropriate for both single and group users.
- iv. Pavement. Use nonglare, nonslip, and safe surface materials.
- v. Trees and Planting. Consider provision for shade and sun. Use to create space and define human scale. Provide protection from wind.
- vi. Amenities. Use pedestrian scaled lighting, fountains or other water features, litter receptacles and sheltered waiting areas.
- viii. Physical access. Ensure ready physical as well as visual access with special attention to elevational difference.
- ix. Enclosure. Use landscaping or structure to provide a sense of enclosure, while ensuring visual access for safety.

### **C. Building Design Guidelines**

1. Each structure must promote quality design and enhance the coordination of development within the Master Development Plan. Materials, finishes, and details should be superior in quality;
2. Design roof forms and building massing that create a visual identity for the institution through interesting and unique shapes. In the Medical Office Perimeter Development Area, buildings above 75 feet should provide a distinctive identity and sculptural effect on the campus skyline by shaping the upper floors through stepbacks and by utilizing distinctive and integrated roof top appurtenances;
3. Ensure that vegetation, unique architectural forms and materials are the predominant image from the freeway by giving special attention to the structures facing freeway corridors;
4. Avoid blank facades on buildings facing I-405 and associated access ramps. Generally, a blank façade would consist of predominantly windowless areas. If such facades are necessary for functional reasons, they should be mitigated by the addition of planting, modulation, materials variation, artwork or other features;
5. Minimize the visual impacts of parking by integrating parking facilities into the site and with surrounding development;
6. Locate service areas for trash dumpsters, loading docks and mechanical equipment away from public rights-of-way where possible. Screen views of those elements if they cannot be located away from public frontages; and
7. Incorporate weather protection and pedestrian amenities for transit facilities.

**D. Street Frontage Design Guidelines Applicable to Medical Officer Perimeter Development Area Sidewalks**

1. Avoid blank facades on buildings located on the perimeter of the Medical Institution District or on buildings that are highly visible from public rights-of-way. Generally, a blank façade would consist of a windowless area that is larger than 1,000 SF. If such facades are necessary for functional reasons, mitigation shall be provided through addition of planting, modulation, materials variation, artwork or other features that would cover at least 50 percent of the blank façade area unless a smaller coverage area is permitted through a Master Development Plan approval;
2. Provide ground floor building elements that are accessible and comfortable to pedestrians through use of human scale design elements, such as recessed entries, entrance canopies, planters, benches, variations in paving materials and lighting features;
3. Provide weather protection through use of sheltered walkways or sidewalks, canopies, multiple building entrances, lobbies and entries of sufficient size and accessibility; and
4. Design entries to be clearly identifiable from the public rights-of-way adjacent to the Medical Institution District.

Section 3. Note (14) of the Uses in land use district - Wholesale and Retail chart located in Section 20.10.440 of the Bellevue Land Use Code is hereby amended as follows:

...

(14) Eating and Drinking Establishments are permitted in the OLB, F2 and F3 Districts subject to the following criteria:

- (a) Such uses are physically integrated within a structure primarily used as a hotel or motel, office building, charitable, social, professional and labor organization, fraternal lodge, recreational facility or institution such as a hospital or public assembly (indoor).
- (b) Such uses do not exceed 20 percent of the gross floor area of the structure or structures.
- (c) The entire site complex has a unity of design in terms of wall and roof materials, roof slopes and window patterns.

...

Section 4. Section 20.20.005 of the Bellevue Land Use Code is hereby amended as follows:

20.20.005 Chart of dimensional requirements described.

Chart 20.20.010 sets forth the dimensional requirements for each land use district except: the Downtown Land Use Districts, the Evergreen Highlands Design District, the Evergreen Highlands Subarea Transportation Improvement Overlay District, Institutional District, and the OLB-OS Land Use District. All structures and activities in the City not located in the above districts shall conform to the dimensional requirements in Chart 20.20.010. Dimensional requirements for the Downtown Land Use Districts are found in LUC 20.25A.020. Dimensional requirements for the Evergreen Highlands Design District are found in Part 20.25F. Dimensional requirements for the Evergreen Highlands Subarea Transportation Improvement Overlay District are found in Part 20.25G. Dimensional requirements for the Medical Institutional District are found in Part 20.25J. Dimensional requirements for the OLB-OS Land Use District are found in LUC 20.25L.030. Additional special dimensional requirements for designated areas of the City are contained in other parts of the Code as follows:

- A. Part 20.25B LUC – Transition Areas;
- B. Part 20.25C LUC – OLB Districts;
- C. Part 20.25E LUC – Shoreline Overlay District;
- D. Part 20.25H LUC – Sensitive Area Overlay District.

Section 5. Section 20.20.195A of the Bellevue Land Use Code is hereby amended as follows:

20.20.195 Communication, broadcast and relay facilities.

A. Definitions.

The following definitions apply to this section:

1. "Flush mounted" shall mean attached to the face of the support structure or building such that no portion of the antenna extends above the height of the support structure or building. Where a maximum flush mounting distance is given, that distance shall be measured from the outside edge of the support structure or building to the inside edge of the antenna.
2. "Gateway intersection" shall mean those intersections identified on Figure UD-1 in the Comprehensive Plan, now or as hereafter amended.

3. "Nonresidential land use districts" shall mean PO, O, OLB, OLB-OS, LI, GC, NB, CB, F1, F2, F3, EH, MI and all Downtown land use districts.
4. "Residential land use districts" shall mean R-1, R-1.8, R-2.5, R-3.5, R-4, R-5, R-7.5, R-10, R-15, R-20 and R-30.
5. "Utility support structure" shall mean street or pedestrian light standards, guy poles, traffic signal standards, and poles or towers supporting electrical, telephone, cable or other similar facilities.

...

Section 6. Section 20.20.520F.2 of the Bellevue Land Use Code is hereby amended as follows:

...

2. **Planting Requirements for Specific Uses.** Notwithstanding the provisions of paragraph F.1 of this section, the uses listed in this paragraph require specific landscaping as follows:

- a. Subject to paragraph F.6 of this section, the following uses require 15 feet of Type I landscaping on all sides when located above ground and not housed within a building or accessory to another use; and if located outside of a public right-of-way:
  - i. Utility sub-station;
  - ii. Sewage pumping station;
  - iii. Water distribution facility.

Alternative landscaping may be approved by the Director of Planning and Community Development if the requirements of subsection J of this section are met, and if visibility is essential to safety, security, or maintenance access.

- b. Subject to paragraph F.6 of this section, the following uses require 10 feet of Type II landscaping along the street frontage, and 10 feet of Type III landscaping along interior property lines unless a more stringent requirement is specified in paragraph F.1 of this section:
  - i. Church;
  - ii. Commercial or public parking lot not serving a primary use;
  - iii. Mobile home park;
  - iv. Government service building;
  - v. Community club;
  - vi. Charitable or fraternal organization;
  - vii. Hospital not located in the Medical Insitution District;
  - viii. Solid waste disposal facility.

Alternative landscaping may be approved by the Director of Planning and Community Development if the requirements of subsection J of this section are met.

- c. Subject to paragraph F.6 of this section, equipment and vehicle storage yards require 15 feet of Type I landscaping on all sides if in a Transition Area, or visible from a public right-of-way. Alternative landscaping may be approved by the Director of Planning and Community Development if the requirements of subsection J of this section are met.
- d. Subject to paragraph F.6 of this section, the perimeter landscaping requirements for schools are set forth in LUC 20.20.740. Alternative landscaping may be approved by the Director of Planning and Community Development if the requirements of subsection J of this section are met.

Section 7. Section 20.20.590K.8.a of the Bellevue Land Use Code is hereby amended as follows:

...

#### 8. Internal Walkways.

- a. **When Required.** The property owner shall install internal walkways in each new development or substantial remodel of existing development in R-10, R-15, R-20, R-30, NB, PO, O, OLB, OLB-OS, CB, LI, GC, MI or Downtown Land Use Districts. In addition, schools in all land use districts shall install internal walkways in each new facility or substantial remodel of an existing facility.
- b. **Location.** The property owner shall provide internal walkways around the building to the extent necessary to assure safe access to the building from parking areas, adjacent properties, and public sidewalks or street rights-of-way and to assure consistency with the requirements of Part 20.25A LUC. All required internal walkways must be located and constructed as an integrated part of existing sidewalks and pedestrian trails, and must coordinate with City plans for pedestrian circulation, including, but not limited to the Comprehensive Plan, formed or planned Local Improvement Districts, and approved Capital Improvement Projects.
- c. **Design Criteria.** Except as otherwise specified in Part 20.25A LUC, internal walkways provided pursuant to this section must be designed and installed in conformance with the following:
  - i. **Surface Materials.** Internal walkways must be paved with hard-surfaced material such as concrete, asphalt, stone, brick, tile, etc. Only nonskid paving may be used in walkway construction.

- ii. **Walkway Marking.** Internal walkways must be curbed and raised at least six inches above the parking lot grade except where they cross driveways or aisles or where necessary to meet handicap requirements. Alternatively, the Director of Planning and Community Development may approve walkways delineated by distinctive paving material or marking when adequate pedestrian safety is provided.
- iii. **Width.** Internal walkways must be a minimum of four feet wide, exclusive of parked car overhangs. Where necessary to ensure four feet of unobstructed walkway, wheel stops are required.
- iv. **Stairs.**
  - (1) **General.** Within any continuous exterior flight of stairs that is part of an internal walkway system, the largest riser height must not exceed the smallest by more than three-eighths of an inch and the largest tread run must not exceed the smallest by more than three-eighths of an inch.
  - (2) **Adjacent Flights of Stairs.** A flight of stairs that is connected with any other flight of stairs may have different rise and tread dimensions only if the flights of stairs are separated by at least eight horizontal feet of walkway that is constructed at a constant elevation.
- v. **Lighting.** Night lighting must be provided where stairs, curbs, ramps or abrupt changes in walk direction occur.
- vi. **Markings.** Where pedestrian walks cross parking areas or automobile circulation lanes, the pedestrian walk must be defined by use of a contrasting material or marking, including but not limited to white concrete in an asphalt area, visually obvious paint stripes or other clearly defined pattern.
- vii. **Handrails.** The Director of Planning and Community Development may require handrails where more than two risers exist and the use of such stairs warrants handrails for safety reasons.

...

Section 8. Section 20.25B.020B of the Bellevue Land Use Code is hereby amended as follows:

...

**B. Limitations.**

1. Where a transition area abuts a portion of I-90, I-405, SR 520, Burlington Northern Railroad right-of-way, or power transmission line, which is located in a single-family or multifamily district, the City shall include that portion as part of the required width of the transition area.
2. If the applicant establishes that a minimum 150 feet width greenbelt or native growth protection easement is permanently dedicated for nonbuildable purposes and is located in a single-family or multifamily district, the City shall include that portion as part of required width of the transition area.

3. Development within any Downtown Land Use District is not subject to Transition Area Design District requirements (refer to LUC 20.25A.090, Perimeter Design District).
4. Development within the F1 Land Use District is not subject to Transition Area Design District requirements.
5. Development within the OLB-OS Land Use District is not subject to Transition Area Design District requirements where that property receiving transition is developed in a nonresidential use.
6. Development of a wireless communications facility is not subject to Transition Area Design District requirements.
7. Development within the Medical Institution Land Use District is not subject to Transition Area Design District requirements.

...

Section 9. Note (9) in Section 20.25L.020 of the Bellevue Land Use Code is hereby amended as follows:

- ...
- (9) Eating and Drinking Establishments are permitted in the OLB-OS District subject to the following criteria:
    - (a) Such uses are physically integrated within a structure primarily used as a hotel or motel, office building, charitable, social, professional and labor organization, fraternal lodge, recreational facility or institution such as a ~~hospital or~~ public assembly (indoor).
    - (b) Such uses do not exceed 20 percent of the gross floor area of the structure or structures.
    - (c) The entire site complex has a unity of design in terms of wall and roof materials, roof slopes and window patterns.

Section 10. Section 20.35.015 of the Bellevue Land Use Code is hereby amended as follows:

20.35.015 Framework for decisions.

A. Land use decisions are classified into four processes based on who makes the decision, the amount of discretion exercised by the decisionmaker, the level of impact associated with the decision, the amount and type of public input sought, and the type of appeal opportunity.

B. Process I decisions are quasi-judicial decisions made by the Hearing Examiner on project applications. The following types of applications require a Process I decision:

1. Conditional Use Permits (CUPs) and Shoreline Conditional Use Permits;
2. Preliminary Subdivision Approval (Plat);
3. Planned Unit Development (PUD) Approval; and
4. Protected Area Development Exception (PADE);

provided, that applications for CUPs, shoreline CUPs, preliminary plats, PUDs, and PADEs within the jurisdiction of a Community Council pursuant to RCW 35.14.040 shall require a Process III decision.

C. Process II decisions are administrative land use decisions made by the Director. Threshold determinations under the State Environmental Policy Act (SEPA) made by the Environmental Coordinator and Sign Code variances are also Process II decisions. (See the Environmental Procedures Code, BCC 22.02.034 and Sign Code, BCC 22B.10.180.) The following types of applications require a Process II decision:

1. Administrative Amendments;
2. Administrative Conditional Use;
3. Design Review;
4. Home Occupation Permit;
5. Interpretation of the Land Use Code;
6. Preliminary Short Plat;

7. Shoreline Substantial Development Permit;
8. Variance and Shoreline Variance;
9. Small Lot Protected Area Development Exception; and
10. Master Development Plans for the Medical Institution District; and
11. Review under State Environment Policy Act (SEPA) when not consolidated with another permit.

D. Process III decisions are quasi-judicial decisions made by the City Council. The following types of applications require a Process III decision:

1. Site-specific or project-specific rezone;
2. Conditional Use, Shoreline Conditional Use, Preliminary Plat, Planned Unit Development, and Protected Area Development Exception projects subject to the jurisdiction of a Community Council pursuant to RCW 35.14.040; and
3. ~~Master Development Plans for Institutional Uses; and~~
4. ~~A rezone of any property to the OLB-OS Land Use District designation.~~

E. Process IV decisions are legislative nonproject decisions made by the City Council under its authority to establish policies and regulations regarding future private and public development and management of public lands. The following are Process IV decisions:

1. Consideration of suggestions for amendments to the Comprehensive Plan (Annual Docket Adoption);
2. Amendments to the text of the Land Use Code or Comprehensive Plan;
3. Amendments to the Comprehensive Plan Map;
4. Amendments to the Zoning Map (rezones) on a citywide or areawide basis.

F. Other types of land use applications and decisions made by the Director, including those set forth below, are minor or ministerial administrative decisions, exempt from the above land use processes. Notice and an administrative appeal opportunity are not provided. LUC 20.35.020 through 20.35.070, however, apply to all land use applications.

1. Boundary Line Adjustment;
2. Final Plat (also requires Hearing Examiner approval prior to recording);
3. Final Short Plat;
4. Land Use Exemption;
5. Temporary Use Permit;
6. Vendor Cart Permit;
7. Requests for Reasonable Accommodation as defined by Part 20.30T LUC.\*

*\*Not effective within the jurisdiction of the East Bellevue Community Council.*

Section 11. Section 20.35.020 of the Bellevue Land Use Code is hereby amended as follows:

**20.35.020 Pre-application conferences.**

A pre-application conference is required prior to submitting an application for Conditional Use or Shoreline Conditional Use Permits, preliminary subdivision approval, planned unit developments, Master Development Plans and Design Review projects, unless waived by the Director.

Section 12. Table 20.35.210A of Section 20.35.210 of the Bellevue Land Use Code is hereby amended as follows:

**Table 20.35.210.A**

Application Type	Publish	Mail	Sign
Administrative Amendment	X	X	X
Administrative Conditional Use	X	X	X
Design Review	X	X	X
Home Occupation Permit	X	X	
Interpretation of Land Use Code	X		
Preliminary Short Plat	X	X	X
Shoreline Substantial Development Permit	X	X	
Variance, Shoreline Variance	X	X	
Small Lot Protected Area Development Exception	X	X	
Master Development Plan	X	X	X
SEPA Review (when not consolidated with another permit)	X		

Section 13. Ambulatory Health Care Center definition is hereby added to Section 20.50.010 of the Bellevue Land Use Code as follows:

**20.50.010 A Definitions**

**Ambulatory Health Care Center.** A medical institution building which is designed for delivery of a range of health care and high acuity specialty care services and is not licensed as a hospital.

Section 14. Hospital definition in Section 20.50.024 of the Bellevue Land Use Code is hereby amended as follows:

**20.50.024 H Definitions**

**Hospital.** A building requiring a license pursuant to Ch. 70.41 RCW and designed and used for the medical, surgical diagnosis, treatment and housing of persons under the care of doctors and nurses and including ancillary uses such as cafeterias, florists and patient and visitor-related services. Rest homes, nursing homes, convalescent homes and clinics are not included.

Section 15. A new definition of Medical Institution District is hereby added to section 20.50.034 of the Bellevue Land Use Code as follows:

**20.50.034 M Definitions**

**Medical Institution District.** The area of the City located generally from I-405 on the west to 116<sup>th</sup> Avenue NE on the east and from NE 12<sup>th</sup> Street on the north to NE 8<sup>th</sup> Street on the south, specifically:

That portion of the East half of the Southeast quarter of Section 29, Township 25 North, Range 5 East, W.M., in King County, Washington, described as follows: **Beginning** at the Southeast corner of said subdivision; thence Westerly along the South line thereof 156.65 feet; thence Northerly at right angles to the South line of said subdivision a distance of 75.00 feet to an angle point on the Easterly margin of Interstate 405, as shown on Primary State Highway No. 1(SR 405) Mid Lakes to Kirkland, Right of Way Plans, sheets 3 and 15 of 27, dated July 1, 1952; thence Northwesterly and Northerly along said Easterly margin to the centerline of N.E. 12th Street, as shown on N.E. 12th Street Right of Way Plans, filed at the City of Bellevue Transportation Department, sheet 3 of 5, dated August 1968; thence Northeasterly along said centerline to the East line of the Southeast quarter of said Section 29; thence Southerly along said East line to the **Point of Beginning.**

**Hospital Center Development Area (DA1):** That portion of the East half of the Southeast quarter of Section 29, Township 25 North, Range 5 East, W.M., in King County, Washington, described as follows: **Beginning** at the Southeast corner of said subdivision; thence North 00°54'18" East along the East line thereof 699.78 feet; thence North 88°04'23" West 190.69 feet; thence North 00°54'18" East 977.28 feet to the South line of Tract G, Overlake Hospital Medical Center Binding Site Plan, as filed under Recording No. 9904011437; thence North 89°05'42" West along said South line to the Southwest corner of said Tract G; thence continuing North 89°05'42" West along the Westerly extension of said South line 16.60 feet; thence North 27°50'09" West to the centerline of N.E. 12th Street, as shown on N.E. 12th Street Right of Way Plans, filed at the City of Bellevue Transportation Department, sheet 3 of 5, dated August 1968; thence Southwesterly along said centerline to the Easterly margin of Interstate 405, as shown on Primary State Highway No. 1(SR 405) Mid Lakes to Kirkland, Right of Way Plans, sheets 3 and 15 of 27, dated July 1, 1952; thence Southerly and Southeasterly along said Easterly margin to the intersection of the North margin of N.E. 8th Street; thence Southerly at right angles to the South line of the Southeast quarter of said Section 29 a distance of 75.00 feet to the South line of said Southeast quarter; thence Easterly along said South line 156.65 feet to the **Point of Beginning.**

**Medical Office Perimeter Development Area (DA2):** That portion of the East half of the Southeast quarter of Section 29, Township 25 North, Range 5 East, W.M., in King County, Washington, described as follows: Commencing at the Southeast corner of said subdivision; thence North 00°54'18" East along the East line thereof 699.78 feet to the **True Point of Beginning;** thence North 88°04'23" West 190.69 feet; thence North 00°54'18" East 977.28 feet to the South line of Tract G, Overlake Hospital Medical Center Binding Site Plan, as filed under Recording No. 9904011437; thence North 89°05'42" West along said South line to the Southwest corner of said Tract G; thence continuing North 89°05'42" West along the Westerly extension of said South line 16.60 feet; thence North 27°50'09" West to the centerline of N.E. 12th Street, as shown on N.E. 12th Street Right of Way Plans, filed at the City of Bellevue Transportation Department, sheet 3 of 5, dated August 1968; thence Northeasterly along said centerline to the East line of the Southeast quarter of said Section 29; thence Southerly along said East line to the **True Point of Beginning.**

Section 16. A new definition of Pedestrian Bridge, Medical Institution is hereby added to section 20.50.040 of the Bellevue Land Use Code as follows:

**20.50.040 P Definitions**

**Pedestrian Bridge, Medical Institution.** A pedestrian connection above the public right-of-way within the Medical Institution District or between the Medical Institution District and an adjacent land use district in conformance with 20.25J.070C.

Section 17. A new definition of Stepback is hereby added to section 20.50.046 of the Bellevue Land Use Code as follows:

**20.50.046 S Definitions**

**Stepback.** The roof or deck area that is unoccupied by structure resulting when an upper level or portion of a building is set back from the floor(s) below.

PASSED by the City Council this \_\_\_\_\_ day of \_\_\_\_\_, 2005,  
and signed in authentication of its passage this \_\_\_\_\_ day of \_\_\_\_\_, 2005.

(SEAL)

\_\_\_\_\_  
Connie B. Marshall, Mayor

Approved as to form:

Lori M. Riordan, City Attorney

\_\_\_\_\_  
Attest:

\_\_\_\_\_  
Myrna L. Basich, City Clerk

Published \_\_\_\_\_



APPENDIX C

# Additional Traffic Analyses

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## Additional Traffic Analyses

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This appendix provides the results of two additional traffic analyses that were performed after publication of the DEIS. The first was prepared by the Bellevue Transportation Department to: 1) extend the geographic area of the transportation analysis for the Overlake Hospital Master Plan/NE 10th Street Extension DEIS to include Downtown Bellevue, and 2) document for future use all the transportation analyses conducted in relation to this project. The second analysis is the Washington State Department of Transportation's (WSDOT) preliminary evaluations of the 2030 freeway connection alternatives that were included in the Draft Environmental Impact Statement (DEIS). This initial analysis evaluates the consistency of the DEIS alternatives with Federal Highway Administration (FHWA) standards for new freeway access, and identifies fatal flaws in two of the alternatives. At some time after the final feasible alternatives are identified for ramp connections from the hospital area to the regional highway system, WSDOT and FHWA will prepare an Access Point Decision Report (APDR) to further evaluate issues associated with a new interchange.





# MEMORANDUM

**DATE:** February 18, 2005

**TO:** Carol Helland, Environmental Coordinator and SEPA Responsible Official

**FROM:** Kris Liljeblad, Assistant Transportation Director  
Steve Sindiong, Senior Transportation Planner  
Jin Ren, Transportation Modeling and Analysis Manager

**SUBJECT:** Overlake Hospital Master Plan/NE 10<sup>th</sup> Street Extension FEIS,  
Supplemental Transportation Analysis

## Introduction

This Memorandum describes supplemental transportation analysis prepared by Bellevue Transportation Department staff to satisfy the following objectives:

1. Extend the geographic area of the transportation analysis for the *Overlake Hospital Master Plan/NE 10<sup>th</sup> Street Extension Draft Environmental Impact Statement (DEIS)* to include Downtown Bellevue.
2. Document all the transportation analysis conducted for future use.

In the process of satisfying these objectives, the document will help answer the following questions:

- How will the downtown area street network operate in 2007 and 2030 under scenarios with/without hospital campus expansion; with/without the NE 10<sup>th</sup> Street extension, or with/without freeway ramp construction?
- How does traffic circulation change from 2020 (DIP planning horizon) to 2030 under the various scenarios?
- How do the long term (2030) finalist implementation scenarios compare relative to principles for improving traffic circulation and regional accessibility for the downtown and the hospital?

## Background

The proposed project includes two related components: 1) redevelopment of the Overlake Hospital Medical Center campus in Bellevue under a new Master Plan, and 2) the extension of NE 10<sup>th</sup> Street across I-405 creating a new public right of way that will pass through the hospital campus. A DEIS for the project was published on November 4, 2004. The City received a number of comments during the DEIS comment period regarding the traffic related impacts to downtown streets, especially in the Ashwood neighborhood. The transportation chapter of the DEIS (Chapter 11) did not include information for the entire Bellevue downtown because the study area was bounded by 112th Avenue NE on the west, NE 4th Street on the south, 116th Avenue on the east, and NE 12th Street on the north. Bellevue Transportation Department staff prepared this Memorandum to assist with addressing comments on the DEIS, and to provide a record for subsequent inquiries.

## Analysis Timeframes

The transportation analysis for the project included four different time periods, 2003 or existing conditions, 2007 or year of opening, 2020 consistent with the *Downtown Implementation Plan* (DIP), and 2030 consistent with the Puget Sound Regional Council's (PSRC) long range planning horizon. The existing, 2007, and 2030 information was published in the DEIS, while the 2020 analysis period was used for the initial screening of alternatives prior to initiation of the environmental review.

The socioeconomic data for each of these time periods is documented in Table 1 for the Downtown and Bel-Red subareas (called Mobility Management Areas). The area east of I-405, including Overlake Hospital, is included in the Bel-Red MMA. Downtown area households are predicted to increase threefold by 2020 and fourfold by 2030, while no growth in households is expected in the Bel-Red area. Employment is expected to grow dramatically in both areas by 2030. Further information on the land use and transportation assumptions for the 2007 and 2030 analyses is included in Attachment A.

**Table 1 – Household and Employment Forecasts for the Downtown and Bel-Red Mobility Management Areas (MMAs)**

Downtown MMA	2003	2007	2020 (DIP)	2030 (PSRC)
Households	3,550	6,620	10,600	14,300
Employees	35,000	38,030	63,000	80,400

Bel-Red MMA	2003	2007	2020 (DIP)*	2030 (PSRC)
Households	1,150	1,210	1,300	1,320
Employees	24,700	26,540	25,000	34,700

*\*The DIP did not analyze any changes in Bel-Red area land use*

## Methodology

Supplemental traffic analyses were prepared for both 2007 project level alternatives (A and B) and the finalist 2030 programmatic alternatives described in the DEIS. Prior to the supplemental analysis, the Washington State Department of Transportation (WSDOT) completed geometric and operational analysis of the four 2030 DEIS build alternatives. The analysis showed that Alternatives 1 (Partial NE 10<sup>th</sup> Extension) and 4 (NE 10<sup>th</sup> Extension with ramps at NE 10<sup>th</sup> and NE 12<sup>th</sup>) are fatally flawed due to geometric, operational and right-of-way issues. Therefore, the supplemental analysis focused on the remaining two 2030 build alternatives described in the DEIS: Alternative 2 (NE 10<sup>th</sup> extension with ramps at NE 10<sup>th</sup> St.) and Alternative 3 (NE 10<sup>th</sup> extension with ramps at NE 12<sup>th</sup> St.). In addition, the analysis considered what would happen in 2030 if only Alternatives A (10<sup>th</sup> Segment) or B (10<sup>th</sup> Extension across I-405) are built by that timeframe. These scenarios were not evaluated in the DEIS.

The City used the Bellevue-Kirkland-Redmond (BKR) EMME/2 computer model to forecast PM peak hour traffic volumes on study area streets for the selected 2007 and 2030 scenarios based on

the future land use assumptions shown in Table 1. The future volumes were compared against the existing (2003) volumes, the 2020 volumes predicted previously for the DIP, and the No Action scenario for 2030. Intersection level of service analysis was conducted for each forecast year using the Highway Capacity Manual (209) methodology for the PM peak hour.

The 2007 analysis evaluated the following alternatives:

- No Action (same as DEIS No Action for 2007)
- Overlake campus expansion and initial NE 10<sup>th</sup> Segment (same as Alternative A in DEIS)
- Overlake campus expansion and NE 10<sup>th</sup> extension across I-405 (from 112<sup>th</sup> Ave NE to 116<sup>th</sup> Ave NE, same as Alternative B in DEIS)

The 2030 analysis evaluated the following implementation scenarios:

- No Action (no hospital expansion and no 10th extension – same as DEIS No Action)
- Overlake campus expansion and initial 10th segment (not a DEIS alternative)
- Overlake campus expansion and 10th extension over I-405 (not a DEIS alternative)
- Overlake campus expansion and 10th extension with ramps at 10<sup>th</sup> (same as DEIS Alternative 2)
- Overlake campus expansion and 10th extension with ramps at 12<sup>th</sup> (same as DEIS Alternative 3)

***Question 1: How will the downtown area street network operate in 2007 under various conditions; with/without the hospital campus expansion, and with/without the NE 10<sup>th</sup> Street extension?***

Transportation Department staff analyzed traffic volumes for the 2007 scenarios (see Table 2), and compared them to existing (2003) volumes and No Action conditions in order to answer this question.

**Table 2 – 2007 PM Peak Hour Volume Forecasts by Key Locations**

<b>Modeling Scenarios:</b>	<b>116th Ave NE (S of 12th St)</b>	<b>NE 8th St. (Over I-405)</b>	<b>NE 10th St. (108th-110th)</b>	<b>NE 12th St. (Over I-405)</b>
<b>2003 Existing Condition</b>	1,630	4,620	1,580	2,620
<b>2007 No Action or Baseline</b>	1,500	5,690	2,200	3,000
<b>2007 w/OHMC + 10th Segment</b>	1,800	5,870	2,190	3,040
<b>2007 w/OHMC + 10th Extension</b>	1,530	5,250	2,470	2,440

*2007 Traffic Volume on Downtown Streets*

2007 No Action: The projected east-west traffic on downtown streets crossing I-405 will increase substantially compared to 2003 without the hospital expansion or NE 10<sup>th</sup> extension. Volume on NE 8<sup>th</sup> Street is expected to increase by 23%, and NE 12<sup>th</sup> Street will increase by 15% from 2003 to the 2007 No Action.

Hospital Expansion and 10<sup>th</sup> Extension: Despite the increased travel demand due to hospital expansion, the east-west volumes crossing I-405 are projected to decrease over the No Action, by

8% on NE 8<sup>th</sup>, and by 23% on NE 12<sup>th</sup> over I-405. This is due to traffic shifting to the new NE 10<sup>th</sup> Street extension.

2007 Traffic Volume on NE 10<sup>th</sup> in Ashwood Neighborhood

No Action: The traffic forecasts show that by 2007, even without hospital expansion or NE 10<sup>th</sup> Street extension (No Action), 2,200 vehicles will use NE 10<sup>th</sup> Street between 108<sup>th</sup> and 110<sup>th</sup> Avenues NE during the PM peak hour, compared to 1,580 in 2003. This is a 39% increase, primarily due to new development that is expected to occur within downtown over the next two to three years.

NE 10<sup>th</sup> Segment (DEIS Alternative A): With assumed hospital campus expansion and only a short segment of NE 10<sup>th</sup> Street from 116<sup>th</sup> Avenue to serve it, the projected volumes on NE 10<sup>th</sup> Street between 108<sup>th</sup> and 110<sup>th</sup> Avenues NE are roughly the same as the No Action (2,190 vehicles).

NE 10<sup>th</sup> Extension (DEIS Alternative B): The hospital expansion and street extension across I-405 would increase traffic volume on NE 10<sup>th</sup> between 108<sup>th</sup> and 110<sup>th</sup> Avenues NE by 12% (or 270 additional vehicles over the 2,200 No Action volume).

**Question 2: How will the downtown and Bel-Red area street networks operate in 2030 under scenarios with/without hospital campus expansion; with/without the NE 10<sup>th</sup> Street extension, or with/without freeway ramp construction?**

Transportation Department staff evaluated the projected 2030 PM peak hour traffic volumes, shown in Table 3, for the long range alternatives. A summary of findings follows for Downtown streets and for the Ashwood neighborhood.

**Table 3 – 2030 PM Peak Hour Volume Forecasts at Key Locations**

<b>Modeling Scenarios:</b>	<b>116th Ave NE (S of 12th St)</b>	<b>NE 8th St. (Over I-405)</b>	<b>NE 10th St. (108th-110th)</b>	<b>NE 12th St. (Over I-405)</b>
<b>2003 Existing Condition</b>	1,630	4,620	1,580	2,620
<b>2030 No Action or Baseline</b>	1,900	5,910	2,960	3,590
<b>2030 w/OHMC + 10th Segment</b>	2,450	6,120	2,950	3,590
<b>2030 w/OHMC + 10th Extension</b>	2,580	5,220	3,240	2,820
<b>2030 w/OHMC + 10th Ext.+ Ramps @ 10th</b>	2,000	4,510	3,380	2,930
<b>2030 w/OHMC + 10th Ext.+ Ramps @ 12th</b>	3,260	5,200	3,350	3,670

2030 Traffic Volume on Downtown Streets

2030 No Action: The 2030 volumes show that east-west traffic on NE 8<sup>th</sup> and NE 12<sup>th</sup> Streets will increase by 8% and 37% respectively as compared to existing 2003 volumes.

2030 NE 10<sup>th</sup> Extension Across I-405 (DEIS Alternative B): If NE 10<sup>th</sup> Street is extended across I-405, but ramps are not built by 2030, the most significant impact to the local street network would occur on 116<sup>th</sup> Avenue NE (see Table 3). With ramps built at NE 10<sup>th</sup> (DEIS Alternative 2), the volumes on 116<sup>th</sup> would decrease by 29%, comparable to the No Action.

2030 Hospital Expansion, 10<sup>th</sup> Extension and Ramps at 10<sup>th</sup> (DEIS Alternative 2): Despite the added travel demand of hospital campus expansion, this alternative would spread the east-west volumes crossing I-405 more evenly, resulting in volume decreases (as compared to No Action) of 8% on NE 8<sup>th</sup> and 23% on NE 12<sup>th</sup>. Also, the volume on 116<sup>th</sup> Avenue south of NE 12<sup>th</sup> would increase by only 5% compared to No Action despite the hospital expansion because much of the demand would use the 10<sup>th</sup> extension.

2030 Hospital Expansion, 10<sup>th</sup> Extension and Ramps at 12<sup>th</sup> (DEIS Alternative 3): Volumes on NE 12<sup>th</sup> over I-405 would increase by only 2 percent over the No Action scenario. However, traffic volume would increase by 72% on 116<sup>th</sup> Avenue NE between 10<sup>th</sup> and 12<sup>th</sup> Streets as compared to No Action. Comparing the volume on 116<sup>th</sup> south of 12<sup>th</sup> between Alternatives 2 and 3 indicates that it would be 63% lower with the ramps located at NE 10<sup>th</sup> Street. Similarly, given that Alternative 3 volumes would also be higher than Alternative 2 crossing I-405, on NE 8<sup>th</sup> by 15% and on NE 12<sup>th</sup> by 25%, it can be concluded that ramps at NE 12<sup>th</sup> would result in more circuitous travel patterns.

#### 2030 Traffic Volume on NE 10<sup>th</sup> Street in Ashwood Neighborhood

2030 No Action: The forecast volume for NE 10<sup>th</sup> Street between 108<sup>th</sup> Ave. NE and 110<sup>th</sup> Ave is 3,000 vehicles during the PM peak hour. This constitutes a 90 percent increase compared with 1,580 vehicles in 2003. The most significant change in traffic volume on NE 10<sup>th</sup> Street would result from downtown Bellevue's land use change between today and 2030, even without the NE 10<sup>th</sup> extension or the addition of ramps. The relative change in volume attributed to the full roadway extension and ramps is minor compared with the background growth.

2030 NE 10<sup>th</sup> Extension across I-405 (Not an EIS alternative): With the hospital expansion and 10<sup>th</sup> extension, but without freeway ramps, the forecast volume on 10<sup>th</sup> Street between 108<sup>th</sup> and 110<sup>th</sup> Avenues would increase 8% over No Action to 3,240 vehicles. This indicates that most of the projected increase by 2030 in traffic volume on NE 10<sup>th</sup> in the Ashwood District will happen regardless of whether NE 10<sup>th</sup> is extended across I-405.

2030 NE 10<sup>th</sup> Extension and Ramps at 10<sup>th</sup> (DEIS Alternative 2): The addition of freeway ramps at NE 10<sup>th</sup> Street would add another 140 vehicles, or a 14 % increase over the No Action Alternative.

2030 NE 10<sup>th</sup> Extension and Ramps at 12<sup>th</sup> (DEIS Alternative 3): Projected volumes on NE 10<sup>th</sup> between 108<sup>th</sup> and 110<sup>th</sup> Avenues in the Ashwood neighborhood would be nearly the same as with ramps at NE 10<sup>th</sup> Street.

#### 2030 Level of Service (LOS) Analysis

Transportation Department staff conducted intersection LOS analysis for the 2030 scenarios for all signalized intersections within downtown Bellevue (Mobility Management Area 3) and for the Bel-Red area (MMA 4). For each of these areas, LOS data is provided to allow comparison of the 2030 alternatives to existing conditions (2003) and the previously developed LOS for the DIP Preferred Alternative in 2020. The DIP Preferred Alternative included the NE 10<sup>th</sup> Street extension and ramps to I-405 at NE 10<sup>th</sup> Street, but did not assume the hospital campus expansion.

2030 Downtown Area LOS -- Downtown intersection LOS results are summarized in Table 4.

**Table 4 - Level of Service for 2030 Scenarios compared with 2003 and 2020 DIP  
MMA 3 (Downtown Bellevue)**

INT #	Bellevue Downtown Mobility Mgmt Area ADDRESS	2003 Existing*		2020 DIP Preferred Alt. (S704)		2030 No Action		2030 OHMC Expansion NE 10th Segment		2030 OHMC Expansion NE 10th Ext. to 116th		2030 OHMC Exp. NE 10th Ext. Ramps at 10th		2030 OHMC Exp. NE 10th Ext. Ramps at 12th	
		V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
3	100th Ave NE - NE 8th Street	0.619	B	0.985	E-	0.865	D-	0.880	D-	0.909	E+	0.875	D-	0.873	D-
5	Bellevue Way NE - NE 12th Street	0.779	C	0.875	D-	1.129	F	1.145	F	1.202	F	1.057	F	1.031	F
6	Bellevue Way NE - NE 10th Street	0.487	A	0.949	E+	0.786	C	0.794	C	0.814	D+	0.787	C	0.822	D+
7	Bellevue Way NE - NE 8th Street	0.774	C	1.206	F	1.021	F	1.016	F	1.049	F	1.046	F	1.055	F
8	Bellevue Way NE - NE 4th Street	0.608	B	0.990	E-	1.055	F	1.058	F	1.059	F	1.046	F	1.046	F
9	Bellevue Way - Main Street	0.799	C	0.938	E+	1.058	F	1.064	F	1.060	F	1.040	F	1.044	F
15	106th Ave NE - NE 12th Street	0.330	A	0.447	A	0.574	A	0.595	A	0.602	B	0.571	A	0.605	B
16	106th Ave NE - NE 8th Street	0.711	C	0.810	D+	0.851	D-	0.851	D-	0.948	E+	1.091	F	1.076	F
17	106th Ave NE - NE 4th Street	0.391	A	0.701	C	0.931	E+	0.939	E+	0.928	E+	0.922	E+	0.919	E+
18	106th Ave NE - NE 2nd Street	0.392	A	0.699	B	0.625	B	0.624	B	0.648	B	0.665	B	0.661	B
19	106th Ave NE - Main Street	0.498	A	0.418	A	0.538	A	0.548	A	0.532	A	0.527	A	0.531	A
20	108th Ave NE - NE 12th Street	0.432	A	0.717	C	0.822	D+	0.851	D-	0.816	D+	0.797	C	0.825	D+
21	108th Ave NE - NE 8th Street	0.666	B	0.961	E-	1.361	F	1.366	F	1.366	F	1.434	F	1.423	F
22	108th Ave NE - NE 4th Street	0.571	A	1.073	F	1.159	F	1.166	F	1.184	F	1.179	F	1.176	F
23	108th Ave NE - NE 2nd Street	0.403	A	0.938	E+	1.369	F	1.401	F	1.379	F	1.368	F	1.410	F
24	108th Ave NE - Main Street	0.555	A	0.821	D+	1.023	F	1.036	F	0.973	E-	0.957	E-	0.965	E-
25	112th Ave NE - NE 12th Street	0.675	B	0.846	D+	1.069	F	1.092	F	1.056	F	1.016	F	1.124	F
26	112th Ave NE - NE 8th Street	1.415	F	1.116	F	1.605	F	1.612	F	1.656	F	1.631	F	1.643	F
27	110th Ave NE - NE 8th Street	0.738	C	1.169	F	1.564	F	1.583	F	1.416	F	1.649	F	1.635	F
31	Bellevue Way - NE 2nd Street	0.541	A	0.980	E-	1.071	F	1.073	F	1.068	F	0.989	E-	0.984	E-
36	112th Ave NE - Main Street	0.809	D+	0.776	C	1.089	F	1.088	F	1.055	F	1.037	F	1.023	F
72	112th Ave NE - NE 4th Street	0.585	A	0.822	D+	1.205	F	1.208	F	1.170	F	1.157	F	1.149	F
107	112th Ave NE - NE 6th Street	0.845	D+	0.599	A	1.254	F	1.270	F	1.229	F	1.159	F	1.181	F
128	112th Ave NE - NE 2nd Street	0.393	A	0.962	E-	1.648	F	1.652	F	1.617	F	1.546	F	1.554	F
154	106th Ave NE - NE 10th Street	0.292	A	0.836	D+	0.651	B	0.651	B	0.791	C	0.857	D-	0.852	D-
157	110th Ave NE - Main Street	0.429	A	0.590	A	0.861	D-	0.858	D-	0.835	D+	0.822	D+	0.816	D+
158	110th Ave NE - NE 2nd Street	0.431	A	0.761	C	1.408	F	1.398	F	1.641	F	1.620	F	1.631	F
159	110th Ave NE - NE 4th Street	0.386	A	1.082	F	1.363	F	1.391	F	1.373	F	1.422	F	1.545	F
162	110th Ave NE - NE 12th Street	0.470	A	0.593	A	0.603	B	0.726	C	0.666	B	0.887	D-	0.690	B
190	108th Ave NE - NE 10th Street	0.330	A	0.686	B	0.760	C	0.753	C	0.826	D+	0.839	D+	1.033	F
234	112th Ave NE - NE 10th Street	0.354	A	0.990	E-	0.831	D+	0.844	D+	1.309	F	1.337	F	1.116	F
235	110th Ave NE - NE 10th Street	0.261	A	0.810	D+	0.855	D-	0.869	D-	0.968	E-	1.046	F	1.057	F
<b>Downtown MMA Average</b>															
<b>Volume/Capacity Ratios and LOS</b>		<b>0.562</b>	<b>A</b>	<b>0.848</b>	<b>D+</b>	<b>1.031</b>	<b>F</b>	<b>1.044</b>	<b>F</b>	<b>1.067</b>	<b>F</b>	<b>1.074</b>	<b>F</b>	<b>1.078</b>	<b>F</b>
<b>Number of LOS-F Intersections</b>		<b>LOS F= 1</b>		<b>LOS F= 5</b>		<b>LOS F= 18</b>		<b>LOS F= 18</b>		<b>LOS F= 18</b>		<b>LOS F= 19</b>		<b>LOS F= 20</b>	

2030 No Action: Assuming no hospital expansion and no NE 10<sup>th</sup> extension, by 2030, 18 intersections are forecast to operate at LOS F compared to only 1 LOS F intersection in 2003, and 5 LOS F intersections in 2020 under the Preferred Alternative of the DIP. This can be explained by significant projected downtown growth from 2020 to 2030, and the fact that 8 intersections were already forecast to operate at LOS E conditions in 2020 (5 of which were projected as LOS E minus). Table 1 above shows that between 2020 and 2030 the number of households within the downtown MMA would increase by 35%, and employment would increase by 28%. The 2030 household and employment figures and trip generation rates were obtained from Puget Sound Regional Council (PSRC).

2030 NE 10<sup>th</sup> extension and ramps at NE 10<sup>th</sup> (DEIS Alternative 2): The number of LOS F intersections would increase from 18 under No Action to 19. There are two primary reasons for the increase in the number of LOS F intersections: a) the substantial land use growth introduced by the hospital campus expansion will add over 1,700 trips in the PM peak hour (see DEIS page

11-7), most out-bound, and b) the increased regional freeway accessibility provided by new ramps would attract 2,600 new trips to the area (see DEIS page 11-25) as motorists would seek quicker travel times. These traffic impacts are considered consistent with the function of I-405 and the major streets linking to it as they provide a regional gateway to downtown Bellevue and the hospital campus.

2030 10<sup>th</sup> extension with ramps at 12<sup>th</sup> Street (DEIS Alternative 3): LOS F intersections would increase from 18 under No Action to 20, one more than Alternative 2. The reasons for the increase in number of LOS Fs is the same as described for Alternative 2 above, however the number of additional trips attracted to the area because of the ramps at NE 12<sup>th</sup> would be 1,000 vehicles lower than Alternative 2 (see DEIS page 11-26). The intersection of NE 10<sup>th</sup> Street/108<sup>th</sup> Avenue would operate at LOS F with Alternative 3 as compared to LOS D+ with Alternative 2. It can be concluded that Alternative 2 would handle a greater volume of traffic with better LOS conditions within downtown Bellevue.

### 2030 Bel-Red/Northup Area LOS

The intersection LOS analysis for the Bel-Red/Northup Area (MMA 4) is shown in Table 5.

2030 No Action: There would be 7 LOS F intersections in the Bel-Red area by the year 2030, assuming no hospital expansion and no NE 10<sup>th</sup> extension. This is compared with none in 2003, and 3 LOS F intersections in 2020. The change can be attributed to employment growth, which is projected to increase by 39% between 2020 and 2030, as forecasted by PSRC. It is also important to note that the 2020 forecasts for the Bel-Red MMA were not revised during the DIP process, since that project focused on the downtown area. The 2020 forecasts also did not include the hospital campus expansion as currently envisioned.

2030 NE 10<sup>th</sup> extension with ramps at 10<sup>th</sup> Street (Alternative 2): The number of LOS F intersections within MMA 4 would increase from 7 under No Action to 9 with Alternative 2. Alternative 2 would cause the least LOS F intersections of the action alternatives in 2030, since the NE 10<sup>th</sup> Segment (2007 Alternative A) would yield 12 LOS Fs, the NE 10<sup>th</sup> Extension (2007 Alternative B) would yield 11 LOS Fs, and the NE 10<sup>th</sup> Extension with ramps at 12<sup>th</sup> (Alternative 3) would also yield 11 LOS Fs.

### ***Question 3: How do the long term (2030) implementation scenarios compare against established principles for improving Downtown's network capacity and access to the hospital?***

Transportation Department staff compared the 2030 scenarios using principles consistent with the objectives of the DIP, which recommended the extension of NE 10<sup>th</sup> Street across I-405 and new freeway ramp access. The principles include:

- Provide adequate capacity on 116<sup>th</sup> Avenue NE for hospital and emergency access
- Provide adequate capacity for east-west travel through downtown
- Maximize the flexibility of the system to accommodate unforeseen disruptions
- Provide reasonable intersection LOS downtown and the hospital vicinity
- Provide convenient access to the freeway system for downtown and the hospital

Table 6 summarizes the comparative analysis. Since the previous sections have already summarized the LOS results, this section will focus on the remaining principles. In the summary, each principle compares the 2030 build scenarios against the No Action scenario. The results of the analysis are described below.

**Table 5 - Level of Service for 2030 Scenarios compared with 2003 and 2020 DIP  
MMA 4 (Bel-Red/Northup)**

INT #	Bel-Red/Northup Mobility Mgmt Area	2003 Existing*		2020 DIP Preferred Alt.		2030 No Action		2030 OHMC Expansion NE 10th Segment		2030 OHMC Expansion NE 10th Ext. to 116th		2030 OHMC Exp. NE 10th Ext. Ramps at 10th		2030 OHMC Exp. NE 10th Ext. Ramps at 12th	
		V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
29	116th Ave NE - NE 12th Street	0.647	B	0.930	E+	1.082	F	1.209	F	1.401	F	0.954	E-	1.183	F
30	116th Ave NE - NE 8th Street	0.778	C	0.832	D+	1.263	F	1.228	F	1.558	F	1.150	F	1.206	F
32	120th Ave NE - NE 12th Street	0.502	A	0.870	D-	0.967	E-	1.032	F	1.080	F	0.877	D-	0.905	E+
34	124th Ave NE - Bel-Red Road	0.742	C	0.775	C	0.816	D+	0.867	D-	0.909	E+	0.781	C	0.775	C
35	124th Ave NE - NE 8th Street	0.696	B	0.771	C	1.081	F	1.113	F	1.050	F	1.002	F	1.059	F
37	130th Ave NE - Bel-Red Road	0.582	A	0.939	E+	0.857	D-	0.848	D+	0.851	D-	0.860	D-	0.860	D-
68	130th Ave NE - NE 20th Street	0.562	A	0.889	D-	0.889	D-	0.897	D-	0.891	D-	0.859	D-	0.873	D-
73	116th Ave NE - Main Street	0.646	B	0.862	D-	1.017	F	1.049	F	0.971	E-	0.978	E-	0.975	E-
88	124th Ave NE - Northup Way	0.669	B	1.288	F	0.919	E+	0.936	E+	0.908	E+	0.975	E-	1.010	F
114	116th Ave NE - Northup Way NE	0.711	C	1.588	F	1.225	F	1.294	F	1.284	F	1.366	F	1.324	F
116	115th Place NE - Northup Way	0.641	B	0.804	D+	0.662	B	0.675	B	0.732	C	0.684	B	0.676	B
117	120th Ave NE - NE 20th Street	0.387	A	0.820	D+	0.647	B	0.669	B	0.685	B	0.706	C	0.672	B
131	116th Ave NE - SE 1st Street	0.729	C	0.930	E+	0.991	E-	0.996	E-	0.974	E-	0.961	E-	0.964	E-
139	116th Ave NE - NE 4th Street	0.584	A	0.680	B	0.974	E-	1.030	F	0.886	D-	0.882	D-	0.869	D-
164	OHMC S DrWay - NE 10th Street		N/A		N/A	0.447	A	1.000	E-	1.144	F	1.047	F	1.162	F
165	116th Ave NE - OHMC S Driveway		N/A		N/A	0.003	A	1.193	F	1.054	F	0.664	B	1.047	F
167	OHMC Internal Rd. - NE 11th Street		N/A		N/A	0.665	B	1.181	F	1.279	F	1.213	F	1.325	F
180	116th Ave NE -OHMC Entrance 10th	0.409	A	0.420	A	0.939	E+	1.166	F	1.225	F	1.045	F	1.454	F
224	I-405 SB Ramps - NE 4th Street	0.445	A	1.223	F	1.212	F	1.225	F	1.201	F	1.187	F	1.179	F
225	I-405 NB On-Ramps - NE 4th Street	0.455	A	0.839	D+	0.526	A	0.534	A	0.488	A	0.485	A	0.480	A
233	120th Ave NE - NE 8th Street	0.659	B	0.687	B	0.966	E-	0.973	E-	0.998	E-	0.965	E-	0.981	E-
258	I-405 SB Off-Ramp - NE 10th Street		N/A		N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.990	E-	0.000	N/A
259	I-405 NB On-Ramps - NE 10th Street		N/A		N/A	0.000	N/A	0.000	N/A	0.000	N/A	1.003	F	0.000	N/A
292	116th Ave NE - NE 2nd Street	0.465	A		N/A	0.865	D-	0.893	D-	0.849	D+	0.807	D+	0.819	D+
294	I-405 SB Off-Ramps - NE 12th Street	0.318	A		N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.838	D+
295	I-405 NB On-Ramps - NE 12th Street	0.365	A		N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.948	E+
296	I-405 SB On-Ramps - NE 2nd Street	0.000	N/A		N/A	1.578	F	1.582	F	1.531	F	1.487	F	1.494	F
297	I-405 NB Off-Ramps - NE 2nd Street	0.000	N/A		N/A	0.884	D-	0.888	D-	0.883	D-	0.886	D-	0.882	D-
<b>Northup/Bel-Red MMA Average</b>		<b>0.521</b>	<b>A</b>	<b>0.897</b>	<b>D-</b>	<b>0.895</b>	<b>D-</b>	<b>1.020</b>	<b>F</b>	<b>1.035</b>	<b>F</b>	<b>0.954</b>	<b>E-</b>	<b>0.998</b>	<b>E-</b>
<b>Volume/Capacity Ratios and LOS</b>															
<b>Number of LOS-F Intersections</b>		<b>LOS F= 0</b>		<b>LOS F= 3</b>		<b>LOS F= 7</b>		<b>LOS F= 12</b>		<b>LOS F= 11</b>		<b>LOS F= 9</b>		<b>LOS F= 11</b>	

*Provide Adequate Capacity on 116<sup>th</sup> for Hospital and Emergency Access* – see Table 6.

Low forecast volumes on 116<sup>th</sup> Avenue would be preferred to satisfy this principle. In 2030, assuming no hospital expansion or roadway extension, there will be approximately 1,900 vehicles during the PM peak hour on 116<sup>th</sup> north of NE 10<sup>th</sup>, and 2,470 south of NE 10<sup>th</sup>. These numbers are comparable to today's (2003) peak volume, especially north of NE 10<sup>th</sup>. South of NE 10<sup>th</sup>, the 2030 No Action volume is about 20% higher than the existing (2003) volume. The 2030 No Action volume provides a baseline with which to compare the other "build" scenarios. The results of the analysis give an indication of hospital and emergency access. The more congested the roadway, the more difficult it will be for general and emergency vehicles to access the campus.

With the hospital expansion and only a NE 10<sup>th</sup> segment to serve the hospital campus, the volumes would increase by approximately 29% over No Action both north and south of NE 10<sup>th</sup> Street. This is due to the trips added by the hospital expansion. With the full NE 10<sup>th</sup> extension across I-405, there would be a larger increase (36% north of 10<sup>th</sup>, 38% south of 10<sup>th</sup>) over the No Action. This can be explained by both the hospital related trips, and the new trips that would use

**Table 6 - 2030 DEIS Action Alternatives vs. No Action, PM Peak Hour Traffic Analysis**

<b>Principles</b>	<b>Plot 1: 2030 No Action</b>	<b>Plot 2: 2030 OHMC Expansion/NE 10th Segment</b>	<b>Plot 3: 2030 OHMC Expansion/ NE 10th Extension across I-405</b>	<b>Plot 4: 2030 OHMC Expansion/ NE 10th Extension across I-405/ Ramps at 10th</b>	<b>Plot 5: 2030 OHMC Expansion/NE 10th Extension across I-405/Ramps at 12th</b>
<b>Provide adequate capacity on 116th for Hospital and Emergency Access</b> - North of NE 10th Street - South of NE 10th Street	Auto Volumes: 1,900 2,470	Auto Volume Increase: +550 (+29%) +700 (+28%)	Auto Volume Increase: +680 (+36%) +950 (+38%)	Auto Volume Increase: +106 (+6%) +750 (+30%)	Auto Volume Increase: +1,360 (+72%) +730 (+30%)
<b>Provide adequate capacity for E-W thru downtown (all streets but 10th)</b> - Traffic relief on NE 12th, 8th, 6th, 4th, 2nd & Main Streets over I-405	Total E-W Auto Traffic Volumes: 19,130	Total E-W Auto Traffic Increase: +290 (+2%)	Total E-W Auto Traffic Decrease: -2,080 (-11%)	Total E-W Auto Traffic Decrease: -2,020 (-11%)	Total E-W Auto Traffic Decrease: -1,380 (-7%)
<b>Maximize flexibility of available system</b> - Screenline (no 10th) Traffic flow during disrupted conditions	Total Auto Traffic Throughput: 56,890	Total Traffic Throughput Increase: +1,970 (+4%)	Total Traffic Throughput Increase: +140 (0%)	Total Traffic Throughput Decrease: -950 (-2%)	Total Traffic Throughput Increase: +1190 (+2%)
<b>Reasonable level of service in downtown and hospital vicinity</b> - Downtown MMA - Bel-Red/Northup MMA	Average V/C ratio and LOS: 1.031 & 18 F 0.895 & 7 F	Average V/C ratio and LOS: 1.044 & 18 F 1.020 & 12 F	Average V/C ratio and LOS: 1.067 & 18 F 1.035 & 11 F	Average V/C ratio and LOS: 1.074 & 19 F 0.954 & 9 F	Average V/C ratio and LOS: 1.078 & 20 F 0.998 & 11 F
<b>Convenient access to freeway system for regional trips</b> - NE 10th Street Extension Volume - NE 12th Street Volume - NB On-Ramp Vol	N/A 12th:3,590 N/A N/A	N/A 12th: Same N/A N/A	10th: +3,660 12th: -770 (-21%) N/A N/A	10th: +4,510 12th: -670 (-18%) NB: +2,190 SB: +360	10th: +3,870 12th: +80 (+2%) NB: +2,210 SB: +260

116<sup>th</sup> to access the new direct connection to and from the downtown.

The NE 10<sup>th</sup> extension with freeway ramps at NE 10<sup>th</sup> shows the smallest increase in volumes on 116<sup>th</sup> of the 2030 alternatives, with a 100 vehicle or 6% increase over No Action north of 10<sup>th</sup> Street, and a 750 vehicle or 30% increase south of 10<sup>th</sup> Street. This indicates that the ramps at 10<sup>th</sup> would provide the most direct route to the freeway for trips from the hospital, which can exit directly onto NE 10<sup>th</sup> Street to access the freeway, rather than using 116<sup>th</sup> to access either NE 8<sup>th</sup> or NE 12<sup>th</sup> Street. Also, it suggests that the ramps at 10<sup>th</sup> would provide a more direct route for trips from downtown that might have otherwise used 116<sup>th</sup> Avenue.

Putting the ramps at NE 12<sup>th</sup> Street would have the most severe impact to volumes on 116<sup>th</sup> Avenue NE. Compared to No Action, the volume would increase by 72% north of NE 10<sup>th</sup>, and

30% south of NE 10<sup>th</sup>. This is because trips from the hospital and other land uses east of I-405 would have to use 116<sup>th</sup> Avenue to access NE 12<sup>th</sup> Street to reach the freeway ramps.

*Provide Adequate Capacity For East-West Travel Through Downtown Bellevue*

Low forecast volumes on the east-west streets crossing I-405 would be preferred to satisfy this principle. The analysis compares the forecast volumes on the east-west streets over I-405, not including NE 10<sup>th</sup> Street. The streets included were Main, NE 2<sup>nd</sup>, NE 4<sup>th</sup>, NE 6<sup>th</sup>, NE 8<sup>th</sup>, and NE 12<sup>th</sup> Streets. The NE 2<sup>nd</sup> extension (as recommended in the DIP) was included because it was assumed to be completed by 2030.

The analysis shows that the NE 10<sup>th</sup> extension would reduce volumes on all of the other east-west streets as compared to No Action. With an assumed extension of NE 10<sup>th</sup> across I-405, an 11% decrease in volume would result on the parallel east-west streets. This same 11% decrease would remain as a result of adding freeway ramps at 10<sup>th</sup> Street. If ramps are located at NE 12<sup>th</sup> Street, an overall decrease would remain, but slightly less, at 7%.

*Maximize the Flexibility of the System to Accommodate Unforeseen Disruptions*

The purpose of this analysis is to identify the overall volume change by the 2030 scenarios on the study area roadway network. A reduction in volume as compared to the No Action condition would be the preferred outcome. The study area assumed for this analysis is the same as that shown in Attachment B.

Table 6 indicates the change in volumes on streets within the study area for each scenario at a screenline surrounding the area. The analysis did not include added volumes on the NE 10<sup>th</sup> Street extension in order to indicate the differences in volume on existing streets.

The results show that the hospital expansion (and NE 10<sup>th</sup> segment) would add 1,970 new trips to the existing street network. The extension of NE 10<sup>th</sup> Street across I-405 would capture 1,830 of those trips (1,970-140), so the volumes on the existing streets would remain comparable to No Action conditions (0% change).

The scenario with ramps at NE 10<sup>th</sup> Street would reduce the volumes on existing streets by 950 vehicles, or 2%. This is due to hospital related trips using NE 10<sup>th</sup> Street directly to access the freeway, rather than other streets such as 116<sup>th</sup> or NE 8<sup>th</sup> Street. By comparison, the scenario with ramps at NE 12<sup>th</sup> Street would add 1,190 vehicles to the network compared to No Action, constituting a 2% increase. This is attributed to vehicles needing to use 116<sup>th</sup> Avenue NE to access the freeway ramps at NE 12<sup>th</sup> Street.

*Provide Reasonable Intersection LOS in Downtown and the Hospital Vicinity*

Refer to Tables 4 and 5.

*Provide Convenient Access to the Freeway System*

The objective of constructing new ramps to the freeway is to provide the needed access into and out of downtown to meet the projected residential and employment growth, and to provide better access for regional trips to the regional roadway system. The I-405 Master Plan assumes that future freeway access will be revised. Access to I-405 would be from NE 4<sup>th</sup> and NE 8<sup>th</sup> Streets, while access to SR 520 would be from NE 4<sup>th</sup> and NE 10<sup>th</sup> or NE 12<sup>th</sup> Streets. Additional freeway

access to and from the south on I-405 would be added at a new NE 2<sup>nd</sup> ramp, as recommended in the DIP. These new ramps would add capacity to the system, attracting more regional trips to the freeway network, consistent with the city's objectives to relieve congestion on local streets.

As seen in Table 6, the scenario with ramps at NE 10<sup>th</sup> Street would result in a PM peak hour volume of 2,190 on the northbound ramp to SR 520, while at the same time, reducing the overall volume on NE 12<sup>th</sup> Street by 18 percent (as compared to the No Action). The scenario with ramps at NE 12<sup>th</sup> Street would result in a similar volume on the northbound ramp (2,210), but would increase the volume on NE 12<sup>th</sup> Street by 2 percent (compared to No Action).

## **Attachment A**

### **Description of Alternatives for Supplemental Traffic Analysis Transportation and Land Use Assumptions**

#### **2007 Project Level Alternatives**

##### **Land Use Assumptions**

The No Action alternative assumed neither any hospital expansion or roadway expansion. The two build alternatives assumed the near term hospital campus expansion, including a new 200,000 s.f. South Tower, a new 200,000 s.f. medical office building, and a new 300,000 s.f. Group Health Ambulatory Care Center.

##### **Transportation Assumptions**

The traffic modeling for all 2007 alternatives included all background transportation network projects, including projects currently listed in the City's 2003-09 6-year Capital Investment Program (CIP), as well as all currently permitted development projects, such as the Lincoln Square, Ashwood Commons, and Meydenbauer Center developments. In addition, as part of the level of service analysis, using HCM (209), there were additional projects added to the network for each of the alternatives, that are consistent with those assumed with the correlating alternatives in the Draft EIS. The section below describes the projects added to the network associated with the 2007 alternatives.

- Overlake campus expansion and initial NE 10<sup>th</sup> Segment - Assumed a NE 10<sup>th</sup> segment off of 116<sup>th</sup> Avenue NE to serve the campus.
- Overlake campus expansion and NE 10<sup>th</sup> extension between 112<sup>th</sup> Ave NE and 116<sup>th</sup> Ave NE - Assumed the extension of NE 10<sup>th</sup> Street across I-405 to 116<sup>th</sup> Avenue NE. Also assumed that dual northbound left turn lanes would be needed at 116<sup>th</sup> Avenue NE at NE 10<sup>th</sup> Street.

#### **2030 Programmatic Level Alternatives**

##### **Land Use Assumptions**

The No Action alternative assumed neither any hospital expansion or roadway expansion. The four build alternatives assumed the longer term hospital expansion, which includes an additional 147,200 s.f. expansion to the South Tower, and another 200,000 s.f. medical office building, in addition to the near term 2007 campus improvements.

##### **Transportation Assumptions**

The traffic modeling for all 2030 alternatives included all background transportation network projects, including projects currently listed in the City's 6-year CIP, all projects currently listed in the City's 2004-15 Transportation Facilities Plan, all projects identified in the Downtown Implementation Plan (DIP), all currently permitted development projects, all regional projects that are currently planned, such as the I-405 widening, an extension of NE 2<sup>nd</sup> Street with ramps to and from I-405, and the completion of an interchange at 124<sup>th</sup> Avenue NE at SR 520. In addition, as part of the level of service analysis, using HCM (209), there were additional projects added to the network for each of the alternatives, that are consistent with those assumed with the correlating alternatives in the Draft EIS. The section below describes the projects added to the network associated with the 2030 alternatives.

- Overlake campus expansion and initial 10th segment - This alternative assumed that a NE 10<sup>th</sup> Street segment would be constructed off of 116<sup>th</sup> Avenue NE to serve the Overlake campus.
- Overlake campus expansion and 10th Extension between 112<sup>th</sup> and 116<sup>th</sup> - Assumed the extension of NE 10<sup>th</sup> Street across I-405 to 116<sup>th</sup> Avenue NE. Also assumed that dual northbound left turn lanes would be needed at 116<sup>th</sup> Avenue NE at NE 10<sup>th</sup> Street.
- Overlake campus expansion and 10th Extension with ramps at 10<sup>th</sup> - Assumes that NE 10<sup>th</sup> Street would be extended from 112<sup>th</sup> Avenue NE to 116<sup>th</sup> Avenue NE, and that ramps to and from SR 520 (using the I-405 right-of-way) would be built at NE 10<sup>th</sup>. This alternative also assumed other roadway improvements including dual northbound left turn lanes at 116<sup>th</sup> / NE 10<sup>th</sup> St., dual southbound left turn lanes at 116<sup>th</sup> / NE 8<sup>th</sup> St., and an extension of the southbound right turn lane at 116<sup>th</sup> / NE 8<sup>th</sup> St. It also assumed a separate northbound left turn lane and a right turn lane at 112<sup>th</sup> Ave NE / NE 10<sup>th</sup> St.
- Overlake campus expansion and 10th Extension with ramps at 12<sup>th</sup> - Assumes that NE 10<sup>th</sup> Street would be extended from 112<sup>th</sup> Avenue NE to 116<sup>th</sup> Avenue NE, and that ramps to and from SR 520 (using the I-405 right-of-way) would be built at NE 12<sup>th</sup>. This alternative also assumed other roadway improvements including dual northbound left turn lanes at 116<sup>th</sup> / NE 10<sup>th</sup> St., dual southbound left turn lanes at 116<sup>th</sup> / NE 8<sup>th</sup> St., and an extension of the southbound right turn lane at 116<sup>th</sup> / NE 8<sup>th</sup> St. It also assumed a separate northbound left turn lane and a right turn lane at 112<sup>th</sup> Ave NE / NE 10<sup>th</sup> St.

#### Land Use Assumptions for Overlake Hospital Expansion

Alternative/Land Use	Area (GSF)
<b>2007 No Action</b>	
Overlake Hospital	371,000
MOB	340,300
Restaurant	3800
<b>2007 Master Plan</b>	
	<b>Added GSF</b>
Hospital Tower <sup>a</sup>	150,000
Group Health ACC	300,000
MOB <sup>a</sup>	200,000
Restaurant	(3800)
<b>2030 Development</b>	
	<b>Added GSF</b>
Hospital <sup>b</sup>	147,200
MOB <sup>a</sup>	200,000
<b>2030 Net Added</b>	
	<b>Net GSF</b>
Hospital	297,200
Group Health ACC	300,000
MOB	400,000
Restaurant	(3800)

Note: Net square footages reflect the demolition of existing structures on the Overlake campus.



# Attachment A

## Description of Alternatives for Supplemental Traffic Analysis Transportation and Land Use Assumptions

### 2007 Project Level Alternatives

#### Land Use Assumptions

The No Action alternative assumed neither any hospital expansion or roadway expansion. The two build alternatives assumed the near term hospital campus expansion, including a new 200,000 s.f. South Tower, a new 200,000 s.f. medical office building, and a new 300,000 s.f. Group Health Ambulatory Care Center.

#### Transportation Assumptions

The traffic modeling for all 2007 alternatives included all background transportation network projects, including projects currently listed in the City's 2003-09 6-year Capital Investment Program (CIP), as well as all currently permitted development projects, such as the Lincoln Square, Ashwood Commons, and Meydenbauer Center developments. In addition, as part of the level of service analysis, using HCM (209), there were additional projects added to the network for each of the alternatives that are consistent with those assumed with the correlating alternatives in the Draft EIS. The section below describes the projects added to the network associated with the 2007 alternatives.

- Overlake campus expansion and initial NE 10<sup>th</sup> Segment - Assumed a NE 10<sup>th</sup> segment off of 116<sup>th</sup> Avenue NE to serve the campus.
- Overlake campus expansion and NE 10<sup>th</sup> extension between 112<sup>th</sup> Ave NE and 116<sup>th</sup> Ave NE - Assumed the extension of NE 10<sup>th</sup> Street across I-405 to 116<sup>th</sup> Avenue NE. Also assumed that dual northbound left turn lanes would be needed at 116<sup>th</sup> Avenue NE at NE 10<sup>th</sup> Street.

### 2030 Programmatic Level Alternatives

#### Land Use Assumptions

The No Action alternative assumed neither any hospital expansion or roadway expansion. The four build alternatives assumed the longer term hospital expansion, which includes an additional 147,200 s.f. expansion to the South Tower, and another 200,000 s.f. medical office building, in addition to the near term 2007 campus improvements.

#### Transportation Assumptions

The traffic modeling for all 2030 alternatives included all background transportation network projects, including projects currently listed in the City's 6-year CIP, all projects currently listed in the City's 2004-15 Transportation Facilities Plan, all projects identified in the Downtown Implementation Plan (DIP), all currently permitted development projects, all regional projects

that are currently planned, such as the I-405 widening, an extension of NE 2<sup>nd</sup> Street with ramps to and from I-405, and the completion of an interchange at 124<sup>th</sup> Avenue NE at SR 520. In addition, as part of the level of service analysis, using HCM (209), there were additional projects added to the network for each of the alternatives that are consistent with those assumed with the correlating alternatives in the Draft EIS. The section below describes the projects added to the network associated with the 2030 alternatives.

- Overlake campus expansion and initial 10th segment - This alternative assumed that a NE 10<sup>th</sup> Street segment would be constructed off of 116<sup>th</sup> Avenue NE to serve the Overlake campus.
- Overlake campus expansion and 10th Extension between 112<sup>th</sup> and 116<sup>th</sup> - Assumed the extension of NE 10<sup>th</sup> Street across I-405 to 116<sup>th</sup> Avenue NE. Also assumed that dual northbound left turn lanes would be needed at 116<sup>th</sup> Avenue NE at NE 10<sup>th</sup> Street.
- Overlake campus expansion and 10th Extension with ramps at 10<sup>th</sup> - Assumes that NE 10<sup>th</sup> Street would be extended from 112<sup>th</sup> Avenue NE to 116<sup>th</sup> Avenue NE, and that ramps to and from SR 520 (using the I-405 right-of-way) would be built at NE 10<sup>th</sup>. This alternative also assumed other roadway improvements including dual northbound left turn lanes at 116<sup>th</sup> / NE 10<sup>th</sup> St., dual southbound left turn lanes at 116<sup>th</sup> / NE 8<sup>th</sup> St., and an extension of the southbound right turn lane at 116<sup>th</sup> / NE 8<sup>th</sup> St. It also assumed a separate northbound left turn lane and a right turn lane at 112<sup>th</sup> Ave NE / NE 10<sup>th</sup> St.
- Overlake campus expansion and 10th Extension with ramps at 12<sup>th</sup> - Assumes that NE 10<sup>th</sup> Street would be extended from 112<sup>th</sup> Avenue NE to 116<sup>th</sup> Avenue NE, and that ramps to and from SR 520 (using the I-405 right-of-way) would be built at NE 12<sup>th</sup>. This alternative also assumed other roadway improvements including dual northbound left turn lanes at 116<sup>th</sup> / NE 10<sup>th</sup> St., dual southbound left turn lanes at 116<sup>th</sup> / NE 8<sup>th</sup> St., and an extension of the southbound right turn lane at 116<sup>th</sup> / NE 8<sup>th</sup> St. It also assumed a separate northbound left turn lane and a right turn lane at 112<sup>th</sup> Ave NE / NE 10<sup>th</sup> St.

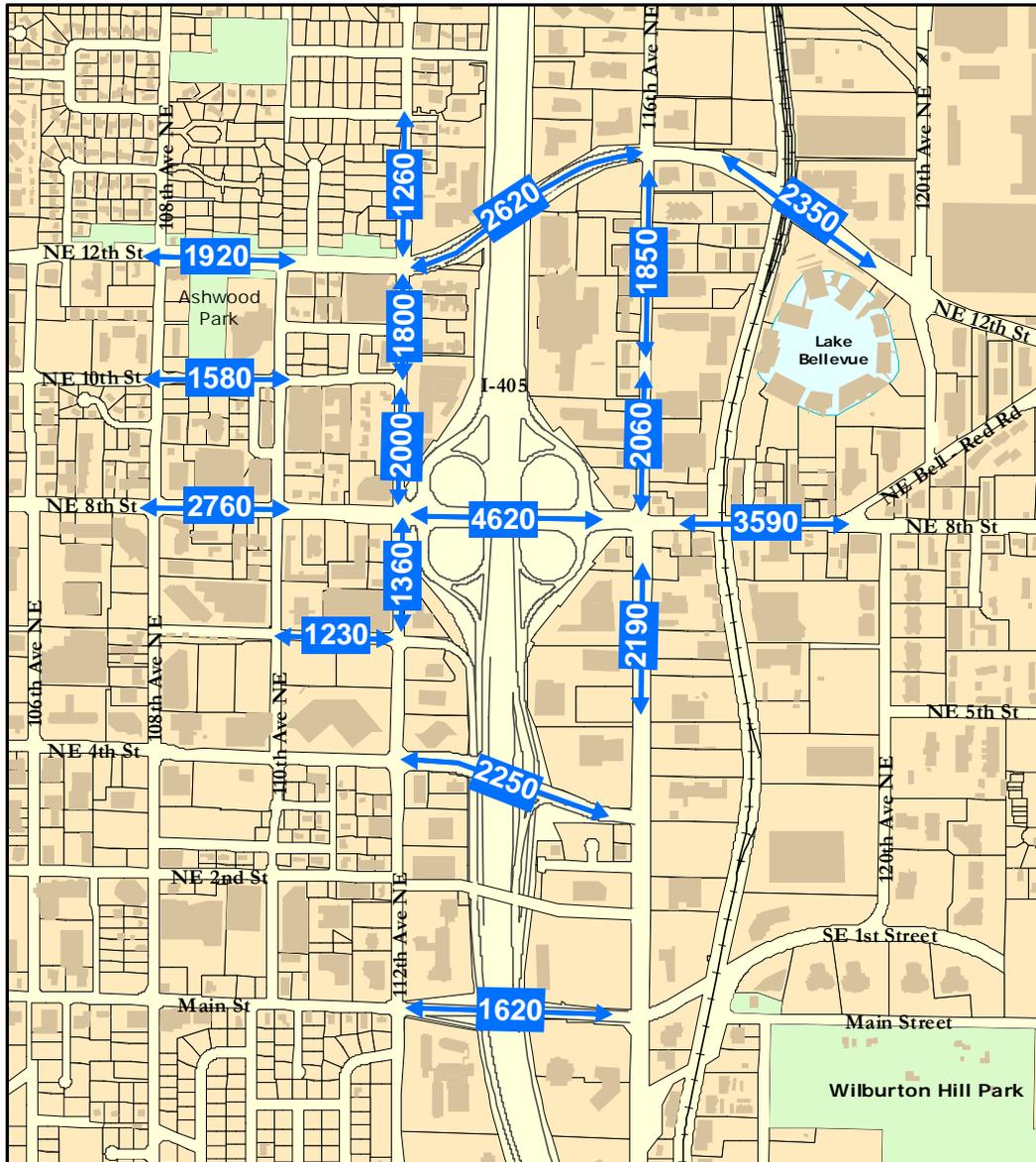
## Land Use Assumptions for Overlake Hospital Expansion

Alternative/Land Use	Area (GSF)
<b>2007 No Action</b>	
Overlake Hospital	371,000
MOB	340,300
Restaurant	3800
<b>2007 Master Plan</b>	
	<b>Added GSF</b>
Hospital Tower <sup>a</sup>	150,000
Group Health ACC	300,000
MOB <sup>a</sup>	200,000
Restaurant	(3800)
<b>2030 Development</b>	
	<b>Added GSF</b>
Hospital <sup>b</sup>	147,200
MOB <sup>a</sup>	200,000
<b>2030 Net Added</b>	
	<b>Net GSF</b>
Hospital	297,200
Group Health ACC	300,000
MOB	400,000
Restaurant	(3800)

Note: Net square footages reflect the demolition of existing structures on the Overlake campus.



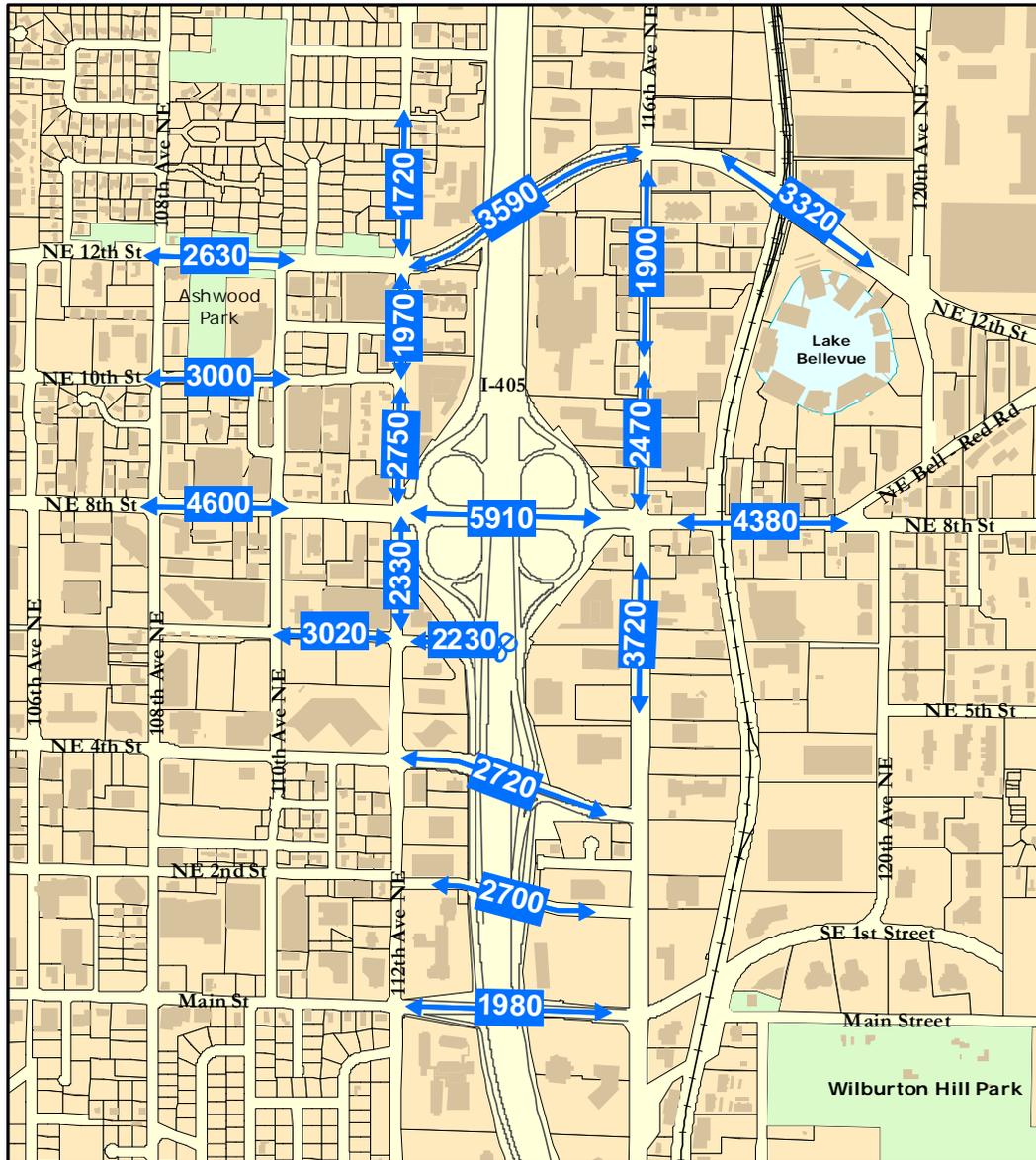
# Plot 1: 2003 Existing PM PK Hour Auto Traffic Forecast



## Key Observations:

- Heaviest volumes are on NE 8<sup>th</sup> Street over I-405, reflecting critical intersections at 112<sup>th</sup> and 116<sup>th</sup> Aves NE
- Volumes on both 112<sup>th</sup> and 116<sup>th</sup> are near 2000 veh per hour during afternoon peak

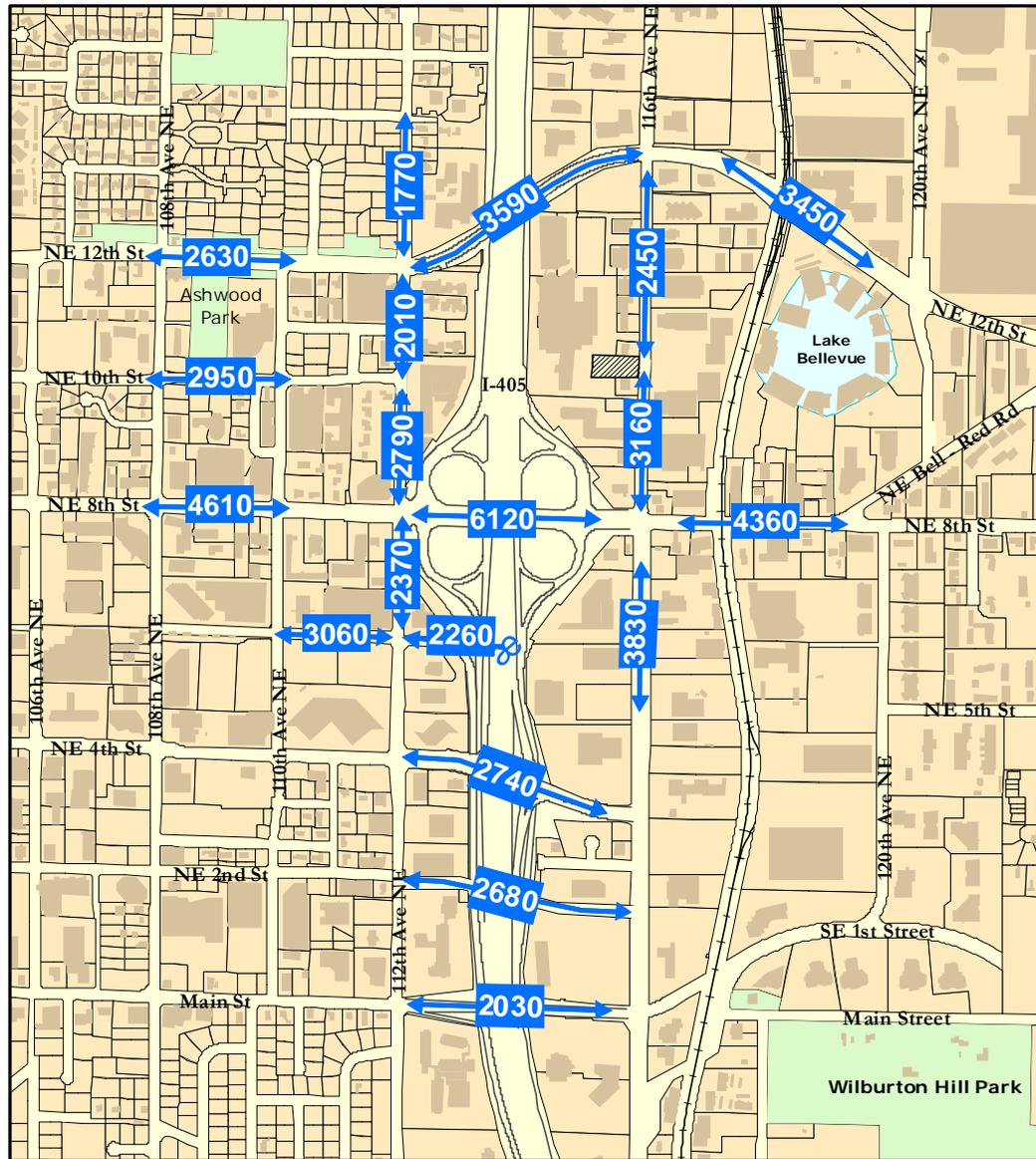
# Plot 2: 2030 No Action PM PK Hour Auto Traffic Forecast



## Key Observations:

- Substantial volume growth even w/o hospital expansion
- Example increases over 2003:
  - 90% = NE 10<sup>th</sup> W of 110<sup>th</sup>
  - 37% = NE 12<sup>th</sup>/I-405
  - 41% = NE 12<sup>th</sup> E of 116<sup>th</sup>
  - 67% = NE 8<sup>th</sup> W of 110<sup>th</sup>
  - 38% = 112<sup>th</sup> N of 8<sup>th</sup> St
  - 70% = 116<sup>th</sup> S of 8<sup>th</sup> St

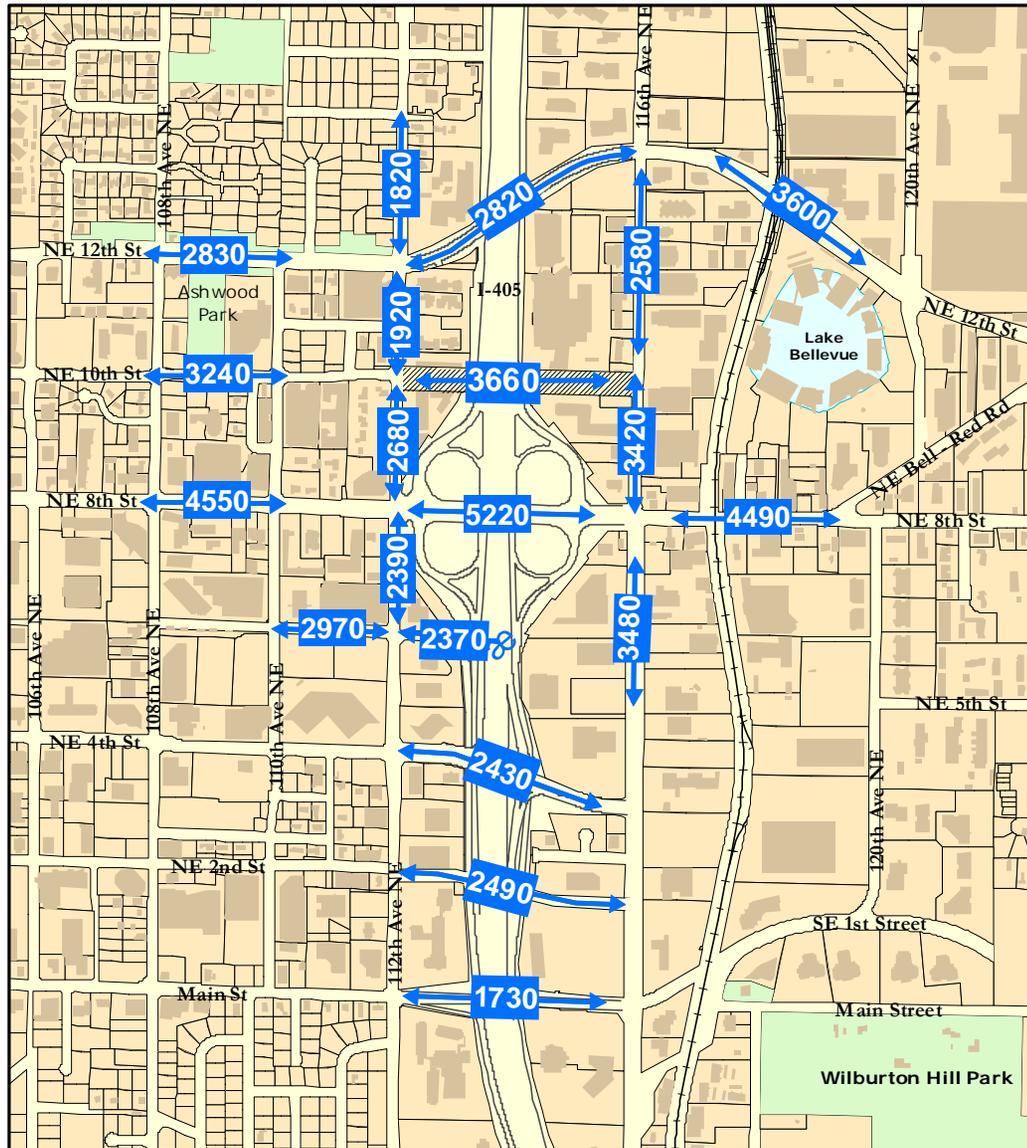
# Plot 3: 2030 w/ OHMC Expansion / NE 10<sup>th</sup> Segment PM PK Hr. Auto Traffic Forecast



## Key Observations:

- OHMC expansion raises volumes nearly 30% on 116<sup>th</sup> Ave NE over No Action Alt
- Smaller increases on other streets (single digit percentages)

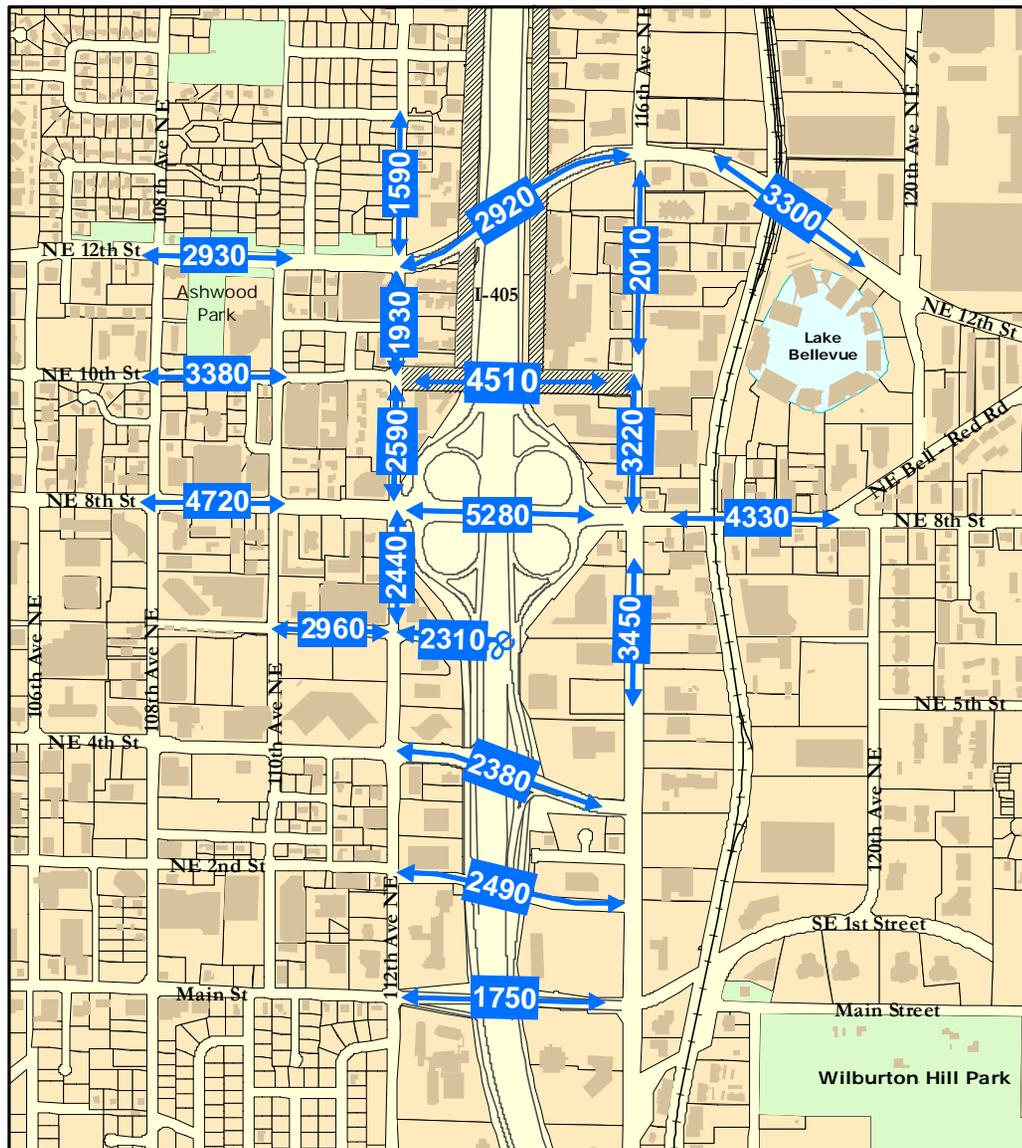
# Plot 4: 2030 w/ OHMC Expansion/NE 10th Extension PM PK Hr. Auto Traffic Forecast



## Key Observations:

- 10<sup>th</sup> Extension would attract more volume than 12<sup>th</sup> Street
- Volumes drop on all E-W streets over I-405 compared to No Action
- Relief for NE 8<sup>th</sup> / 112<sup>th</sup> and 8<sup>th</sup> / 116<sup>th</sup> intersections
- Volumes up 10% on 10<sup>th</sup> St West of 110<sup>th</sup> compared to No Action

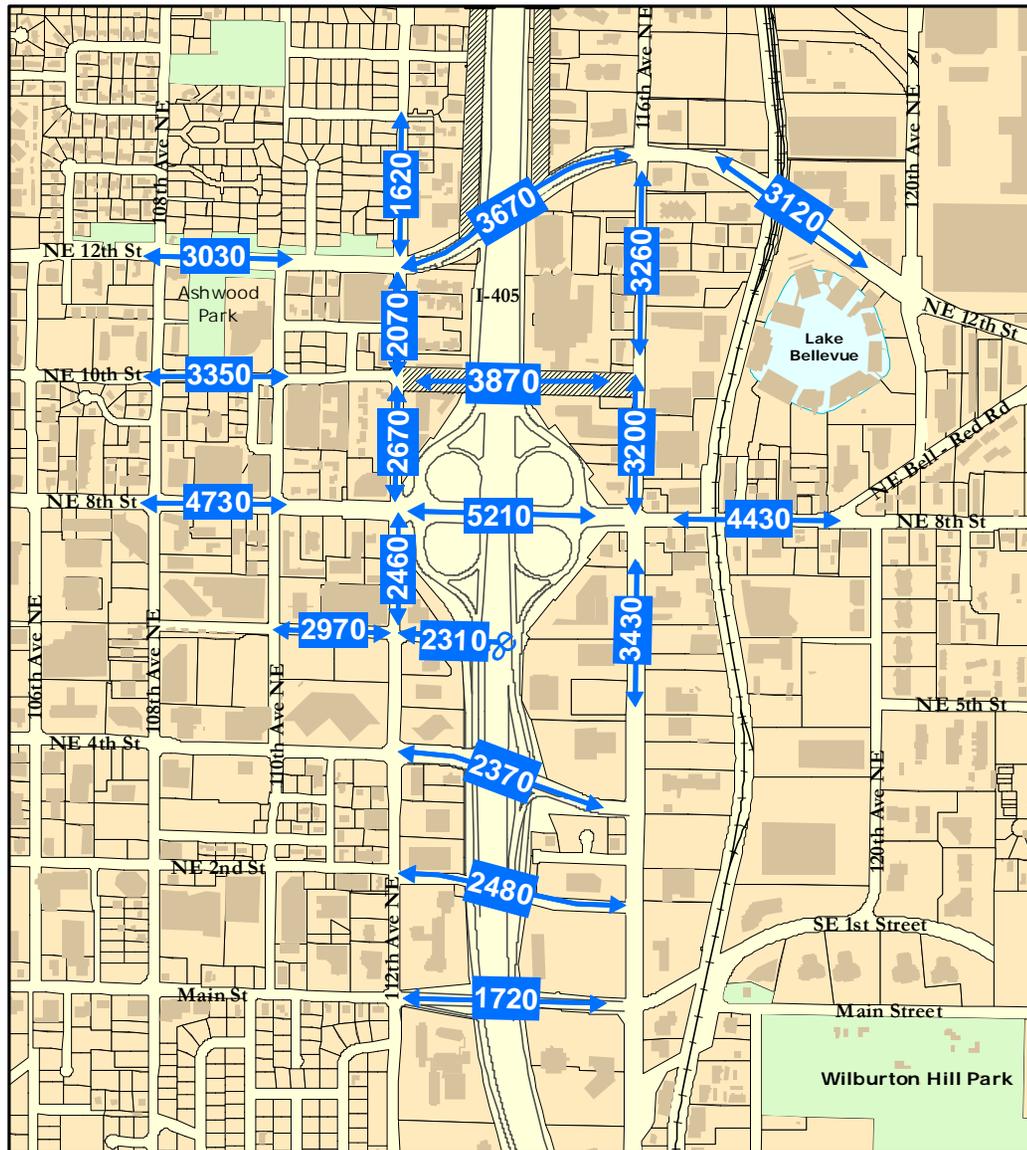
# Plot 5: 2030 w/ OHMC Expansion/NE 10<sup>th</sup> Extension/Ramps at NE 10<sup>th</sup> to SR-520 PM PK Hr. Auto Traffic Forecast



## Key Observations:

- Volume drops 22% on 116<sup>th</sup> N of 10<sup>th</sup> compared to the Extension w/o ramps
- Volume drops on 8<sup>th</sup> & 12<sup>th</sup> Streets E of 116<sup>th</sup> and on 112<sup>th</sup> N of 12<sup>th</sup> Street
- Volume up 19% on 10<sup>th</sup> Street over I-405 and 4% west of 110<sup>th</sup> compared to Extension w/o ramps

# Plot 6: 2030 w/ OHMC Expansion/NE 10<sup>th</sup> Extension/Ramps at NE 12th to SR-520 PM PK Hr. Auto Traffic Forecast



## Key Observations:

- Volume up 30% on 12<sup>th</sup> St over 1-405 compared to 10<sup>th</sup> Extension w/o ramps
- Volume up 26% on 116<sup>th</sup> N of 10<sup>th</sup> St compared to Ext w/o ramps (+60% over No Action)
- Volume up slightly on 10<sup>th</sup> in Ashwood (+3%)
- Volume down on 12<sup>th</sup> St E of 116<sup>th</sup> Ave (-13%)



**Interoffice  
Correspondence**

December 27, 2004

**DESIGN DECISION**

By: Eric O'Brien, PE

Subject: NE 10th Extension: Alternative 1 – Partial NE 10th Ramps

**Background**

The Master Plan of the I-405 Congestion Relief & Bus Rapid Transit Projects calls for a crossing over I-405 at NE 10th St. The City of Bellevue commissioned an advanced study of four ramp alternatives that developed connections to I-405 and SR-520 from either NE 10th St or NE 12th St. One of these alternatives involved having ramps only to/from the west side of I-405. (Referred to as Alternative 1 in the City of Bellevue's "Overlake Hospital Master Plan / NE 10th St. Extension Draft EIS (DEIS)".) This Alternative would have no connection to the area east of I-405 (i.e. the Overlake Hospital campus).

**Study**

*Traffic Analysis*

The City of Bellevue contracted with a HDR, Inc. to develop formal traffic models for the NE 10th DEIS project for the years 2007 and 2030. Their interim findings were summarized in the memo, "Review of 2030 Forecast Model Volumes and Conclusions" in March of 2004. One of the findings of the study was that this Alternative (Partial NE 10th ramps) yielded worse traffic results for the area than the "No Action" Alternative. (For example: Level of Service (LOS) E for the 'No-Action' Alternative vs. LOS F for this Alternative at NE 12th St. and 112th Ave. NE.) The main reason for this finding is that under the "No Action" Alternative, the Overlake Hospital campus did not expand and did not add traffic volumes to the local area. Under Alternative 1, both the South Tower and the Group Health Ambulatory Care Center were assumed built and the traffic they generated had to use either NE 12th St. or NE 8th St. before they could get to the ramp at NE 10th St.

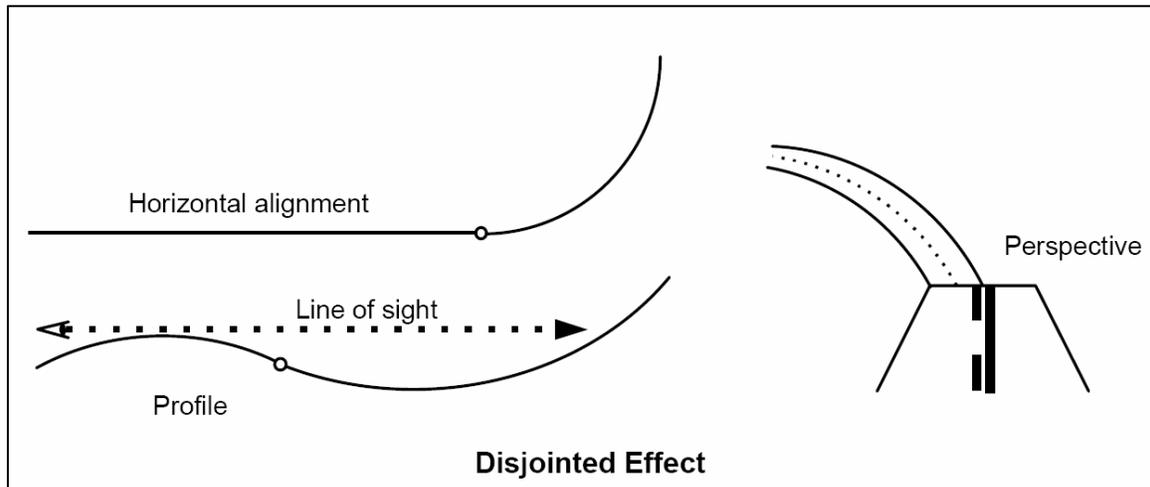
*Roadway Design*

The "Partial NE 10th Ramps" Alternative consists of ramps that begin at the current terminus of NE 10th St. on the west side of I-405 and only connects to/from SR-520. This ramp would not connect to any streets east of I-405. The existing crossing over I-405 at NE 12th St. would also be lengthened in the east-west direction, to accommodate the ramps from NE 10th St. and the planned future widening of I-405.

The initial approach to designing this Alternative was to create a crossing over the majority of I-405 and then incorporate a sharp turn to the north that would become a ramp coming down from the crossing. Because the sharp turn would not allow drivers to maintain the project's design speed, later versions of the design incorporated a larger radius that would meet the minimum ramp design speed of 25mph. However, the larger radius curve increased the structure span over I-405 and required skews at the pier lines that exceed the 30-degree maximum desired by WSDOT. The General Purpose (GP) lane on this ramp would also be metered and in order to develop the anticipated storage length, the ramp meter signal would be installed approximately 200 ft. north of the end of the 25mph curve.

The best version of this concept was reviewed by WSDOT's Assistant State Design Engineer for Urban Corridors (John Milton), and in his opinion it was not acceptable for the following reasons:

- While the larger radius meets the minimum design speed for WSDOT, it would not accommodate the higher speeds anticipated from vehicles traveling from the city streets to SR-520. It is expected that, because drivers would perceive this Alternative as more of a ramp to the freeway instead of a freeway crossing with a ramp, east-bound through traffic on 10th could be traveling at speeds greater than 25 mph in the curve, creating an unsafe condition.
- Placing a sharp horizontal curve directly after a crest vertical curve presents an illusion to the driver that creates an unsafe condition, particularly at night (see graphic below). While focusing on navigating the curve, drivers may become distracted and cause accidents with vehicles queued at the ramp meter approximately 200 ft. north of the end of the curve.



(WSDOT Design Manual: Figure 630-2b)

- The on- and off-ramps at the ramp terminal on 112th NE would be required by FHWA to have a physical separation of 6 ft. or more to deter wrong-way entry onto the off-ramp. This would require widening of NE 10th to the west of 112th NE to accommodate the separation at the terminal (and purchasing right-of-way from either the Puget Sound Blood Center, or the newly-built apartments at the SW corner of NE 10th St. & 112th\_Ave NE).
- Based on the poor traffic performance of local intersections and the low design speed of the south-bound curve near the ramp terminal, traffic is expected to backup onto the south-bound off-ramp.

### **Conclusion**

Alternative 1 will no longer be considered because:

- Traffic modeling showed the Alternative worsened local and freeway conditions,
- Geometric design requirements would not be met,
- The Alternative would likely be rejected by FHWA.









## Interoffice Correspondence

February 14, 2005

### DESIGN DECISION

By: Eric O'Brien, PE

Subject: NE 10th Extension: Alternative 2 – Ramps from NE 10th St. only

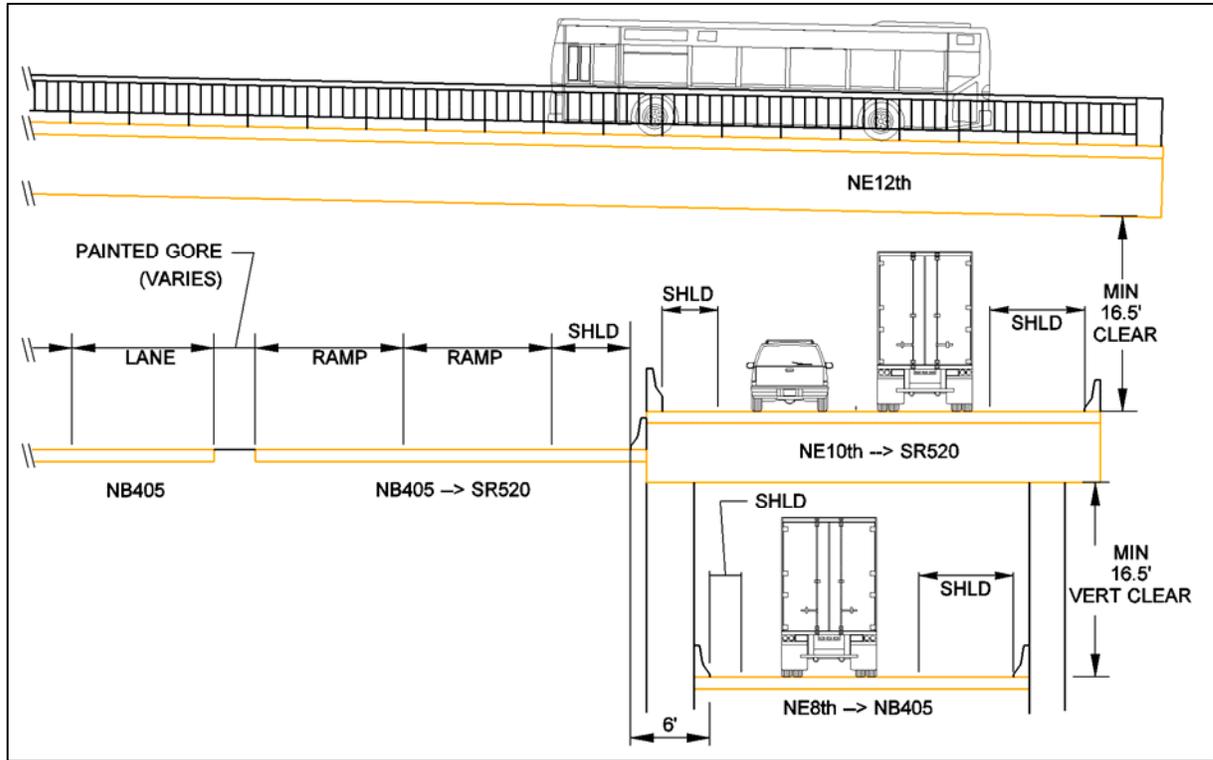
#### **Background**

The Master Plan of the I-405 Congestion Relief & Bus Rapid Transit Projects calls for a crossing over I-405 at NE 10th St. The City of Bellevue commissioned an advance study of four ramp alternatives that developed connections to I-405 and SR-520 from either NE 10th St or NE 12th St. One of the alternatives involved ramps at NE 10th St. (for traffic going to/from SR-520). This was referred to as Alternative 2 in the City of Bellevue's "Overlake Hospital Master Plan / NE 10th St. Extension" Draft EIS (DEIS).

#### **Study**

Alternative 2 in the DEIS consisted of new ramps only at NE 10th St. The ramps at NE 10th St. would only connect with SR-520. As with all the Alternatives, the existing bridge crossing at NE 12th St. would be extended (in the east-west direction), to accommodate the under-crossing ramps from NE 10th St.

For the ramp in the north-bound direction, in order to minimize right-of-way impacts to adjacent properties, this Alternative was designed to stack the NE 10th ramps over the C-D lane. (The roadway cross-section in Figure 1 illustrates some of the stacking that occurred in Alternative 2.) As the ramps descended from NE 10th St., the C-D lanes also descended below ground at the same angle. After passing under the NE 12th St. crossing, the ramp from NE 10th St. diverged to the east and continued on to SR-520 while the C-D lane continued to I-405. While still underground, the C-D lane then passed under a 'braided' ramp taking traffic from north-bound I-405 to SR-520. (A braided ramp physically separates ramps by crossing them at different elevations and improves traffic flow because vehicles no longer have to 'weave' with other vehicles to get to their respective destinations.) The C-D lanes began to climb up to the I-405 mainline after passing under the braided ramp.



**Figure 1 – Roadway cross-section at NE 12th St. (looking north)**

As in the north-bound direction, the ramps in the south-bound direction would only carry vehicles coming from SR-520. There would also be a braided ramp from the SR-520 off-ramp to the I-405 mainline. Prior to the beginning of the braided ramps, an off-ramp from I-405 to the C-D lanes would start descending below ground in order to cross under the braided ramp. The C-D lanes would stay stacked under the ramps to NE 10th St. and then would begin to climb out of the ground at the same angle (and location) as the ramps from SR-520 climb up to NE 10th St.

Concerns were voiced by Overlake Hospital with regards to the height of the north-bound ramp from NE 10th St. and how many patient rooms would have their views impacted. Figure 2 illustrates the height of the ramps in this Alternative with respect to Overlake Hospital's buildings (east side of I-405). Steeper ramp designs were investigated, but because the I-405 mainline rises in elevation as it proceeds to the north, these steeper designs resulted in a deeper sag at the bottom of the vertical curve and minimal ramp elevation reduction in front of the Overlake Hospital buildings. Figure 3 illustrates the height of the ramps in this Alternative with respect to the buildings in the One-Twelfth at Twelfth office complex (west side of I-405).

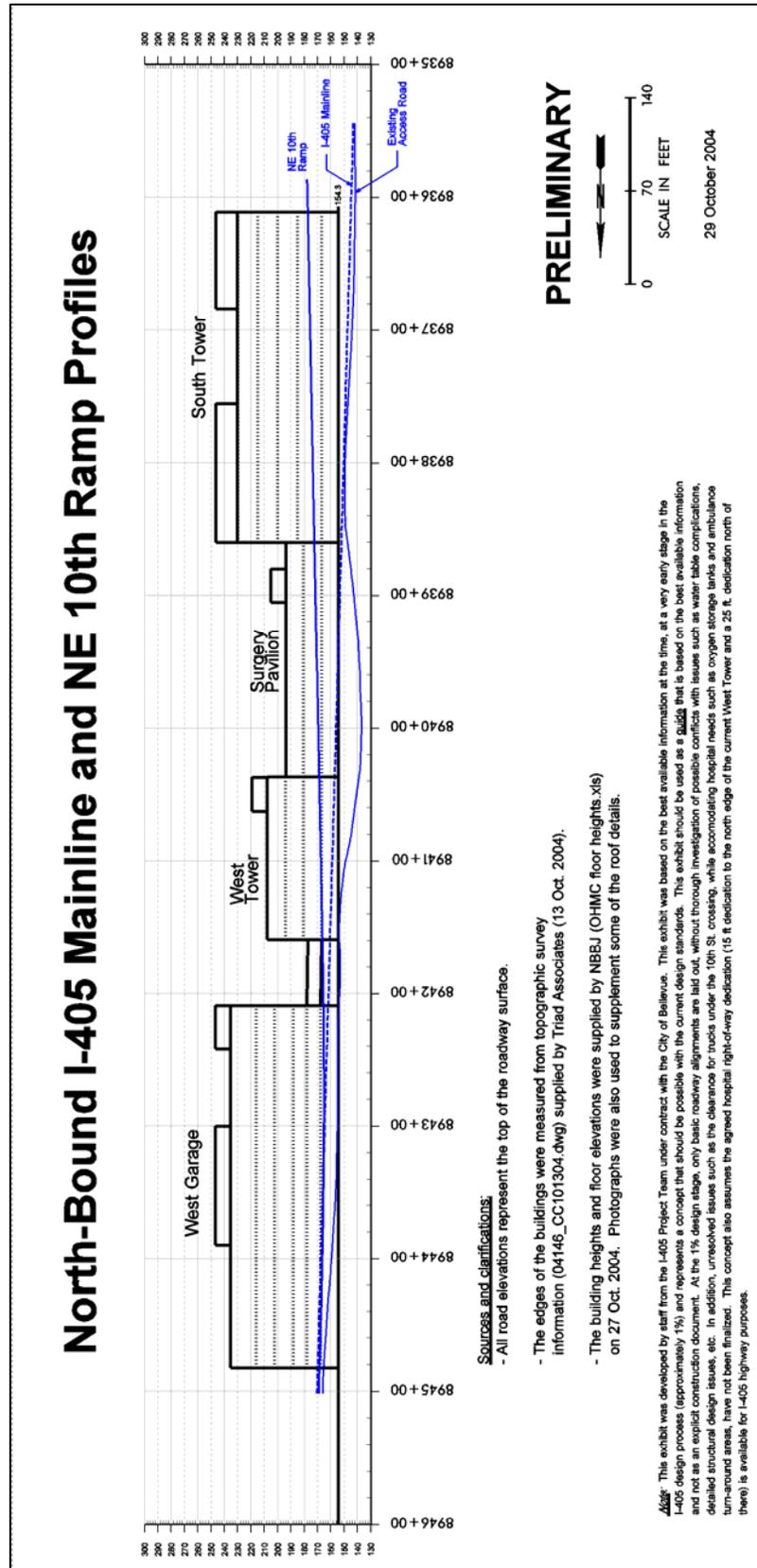


Figure 2 - North-bound I-405 Mainline and NE 10th Ramp Profiles

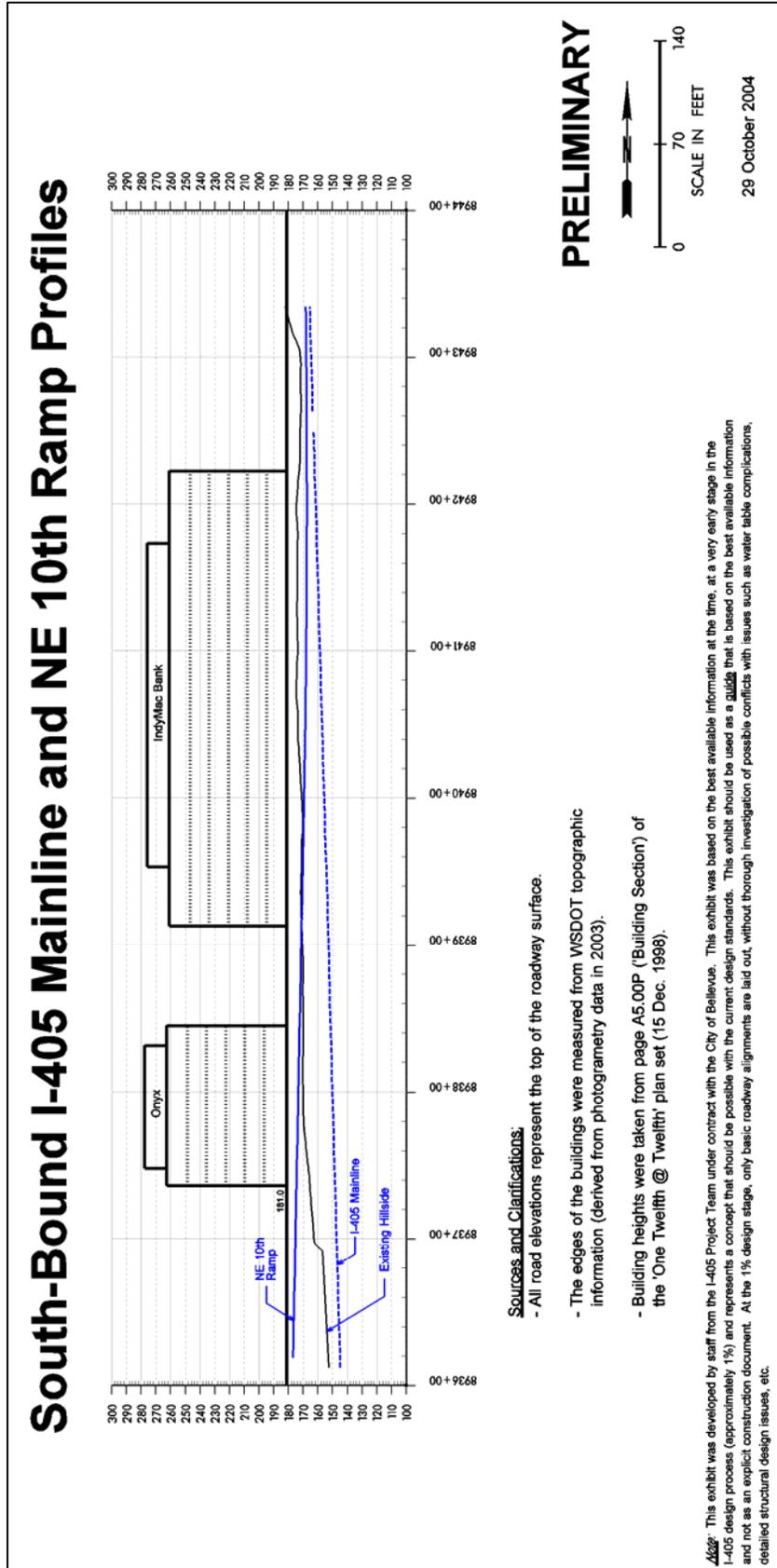


Figure 3 - South-bound I-405 Mainline and NE 10th Ramp Profiles

### **Design Deviations (common to all Alternatives):**

The following design deviations have been identified for all Alternatives:

#### **Taper deviation for the ramps to north-bound I-405 from NE 8th Street.**

Because any changes to the north-bound ramps in the existing clover-leaf at NE 8th Street (which is retained through the Implementation Plan<sup>1</sup>) would need to match the I-405 Master Plan<sup>2</sup> SPUI (single-point, urban interchange) ramps under NE 10th Street, the lane reduction tapers were reduced to develop two lanes of storage behind the ramp meter. The standard tapers for a two-lane ramp with HOV bypass is 300 ft. to drop the second General Purpose (GP) lane and 300 ft. to drop from two lanes (HOV+1GP) to a single lane. Note also that to meet full standard, these two tapers are separated by a 300 ft. long two lane segment. To match the Master Plan on-ramp lane configuration and location, both tapers were reduced, and the intermediate two lane segment was eliminated. The first taper, from three lanes (HOV+2GP) to two lanes (HOV+1GP) was reduced to 252 ft. The second taper, from two lanes (HOV+GP) to one lane was reduced to 248 ft. **This deviation would be removed in the Master Plan.**

#### **Off-ramp connection to SR-520, non-standard configuration.**

In order to match the north-bound C-D/Off-ramp Master Plan braid, the off-ramp from I-405 has an additional curve departing from mainline I-405 that is not part of standard layout. The curve was added to compensate for an angle change between the Implementation and Master Plan layout of mainline I-405. The braid would be constructed as part of the Implementation Plan but would need to be compatible with the Master Plan. **This non-standard element would be removed in the Master Plan.**

#### **Shoulder Deviation (south-bound).**

In order for south-bound I-405 to accommodate additional mainline width, the inside mainline shoulder is reduced to less than 10 ft. width for 401 ft. (74 ft. taper + 23 ft. of 5 ft. wide shoulder + 304 ft. taper) in the vicinity of the SR-520 interchange. (Specifically, underneath the flyover from east-bound SR-520 to north-bound I-405.) This deviation maintains 6.5 ft. from edge of mainline shoulder to existing bridge

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<sup>1</sup> Implementation Plan – a medium-term (10+ years) program of improvements, totaling \$4.7 billion. Since 2002, work has focused on developing and adopting an “Implementation Plan” to define and guide the first phase of the I-405 project’s development for a decade or more, as well as to indicate future strategies to accomplish the Master Plan. The Implementation Plan will improve I-405 continuously from I-5 in Tukwila to SR 522 in Bothell. The Implementation Plan’s improvements will closely match the Master Plan from SR 167 in Tukwila to I-90, which is the narrowest portion of the corridor with the highest congestion. The section from I-90 to SR 522 will have one additional lane added each way. The portion of this section from NE 70th Street to NE 116th Street will be constructed to near Master Plan level. Multi-modal aspects include transit access ramps, park and ride expansion, Bus Rapid Transit improvements to allow BRT line implementation, and transit expansion.

<sup>2</sup> Master Plan – the long-term “vision” for improving the entire I-405 corridor, consisting of \$10.9 billion in projects. The Master Plan for fixing I-405 traffic includes all transportation modes, adding up to two new lanes each direction to I-405, a corridor-wide bus rapid transit (BRT) line and increased local transit service. It will fix bottlenecks such as the SR 167/I-405 interchange, improve key arterials, expand transit centers, and add about 1,700 new vanpools and over 5,000 park and ride spaces.

column, and minimal vertical clearance to the pier header. **This deviation would be removed in the Master Plan.**

**Shoulder Deviation (north-bound).**

In order for north-bound I-405 to accommodate additional mainline width, the outside mainline shoulder is reduced to less than 10 ft. width for 888 ft. (381 ft. taper + 469 ft. of 4 ft. wide shoulder + 38 ft. taper) in the vicinity of the SR-520 interchange. (Specifically, underneath the flyover from east-bound SR-520 to north-bound I-405.) This deviation maintains 12.75 ft. from edge of mainline to existing bridge column, and minimal vertical clearance to the pier header. **This deviation would be removed in the Master Plan.**

**Design Deviations (specific to this Alternative):**

The following design deviations have been identified for this Alternative:

**Shoulder Deviation**

This deviation is necessary for I-405 and the north-bound C-D to accommodate a north-bound auxiliary lane from NE 4th Street that drops at SR-520. The mainline shoulder in the vicinity of the NE 10th crossing is reduced to less than 10 ft. width for 690 ft. (206 ft. taper + 244 ft. of 6 ft. shoulder + 240 ft. taper), and the C-D shoulder is reduced to less than 4 ft. for 519 ft. (242 ft. taper + 175 ft. of 2 ft. shoulder + 102 ft. taper). This deviation maintains 6 ft. from the edge of the C-D to the edge of the mainline for concrete barriers and columns. **This deviation would be removed in the Master Plan.**

**Lane and Shoulder width deviation for On-ramp.**

While the current standard is 12 ft. lanes with 4 ft. inside shoulder and 8 ft. outside shoulder, these have been reduced to 11 ft. lanes, 2 ft. inside shoulder and 2 ft. outside shoulder. The deviated section was added to accommodate two General Purpose left-turn lanes from NE 10th Street while limiting the impact to the hospital. **This deviation could be mitigated by acquiring additional right of way from hospital or removing one lane (HOV bypass or GP) lane from ramp. There are presently no plans for removing this deviation.**

## **Traffic Analysis**

Several potential off- and on-ramp connections between Bellevue surface streets and I-405 were analyzed. These include:

- Ramps to and from SR 520 at NE 10th St.
- Ramps to and from SR 520 at NE 12th St.
- Ramps to and from SR 520 at NE 10th St. and ramps to and from southbound I-405 at NE 2nd St.

These scenarios were evaluated for year 2030 conditions and assuming the I-405 Implementation Plan would already be built.

Based on the analysis conducted, the NE 10th St. and the NE 10th and NE 2nd St. alternatives both perform better than the NE 12th St. alternative. The NE 12th St. alternative has a short northbound weaving distance which would result in an unacceptable level of performance.

## **Structural Considerations**

### **Ramps**

Generally, the ramps providing access to and from NE 8th Street will be depressed below the ramps providing access to and from the NE 10th St. bridge structure. Where the lower level ramps are in a depressed section they will be between retaining walls. The ramps providing access to the bridges will be elevated above the lower level ramps. The upper level elevated structures will probably be either cast-in-place concrete or precast concrete. The footings for the elevated ramps will likely be incorporated into the wall footings below. The elevated ramps will have expansion joints where they tie into the bridge structures.

For Alternative 2, the two-level stacked ramps will need to be depressed to pass under the NE 12th St. Bridge. The lowest level ramp (from the C-D) will be entirely enclosed by walls and the elevated ramp above. The length of the enclosed section will be limited to 400 feet, to eliminate the need for active ventilation and fire suppression equipment. The existing NE 12th crossing would need to be rebuilt to accommodate these new retaining walls.

### **NE 12th Street Bridge**

The new NE 12th St. Bridge will support four lanes of through traffic, a center turn lane, and two sidewalks. The bridge will span I-405 and the new NE 8th St. off-ramps. For Alternatives 2 and 4 the new NE 12th St. Bridge will also span the NE 10th St. and NE 8th St. off- and on-ramps. The bridge will have span lengths of up to 210 feet long over I-405.

### **NE 10th Street Bridge**

For this Alternative, the NE 10th Street Bridge will support four lanes of through traffic, two turn lanes and two sidewalks. The bridge will span I-405 and the new NE 8<sup>th</sup> Street ramps, and an existing hospital service road. The bridge will have span lengths of up to 240 feet long over I-405.

### **Superstructure Selection**

Three cost-effective types of superstructures were evaluated for the NE 12th St. Bridge. They were two-span steel plate girder superstructures, two-span prestressed concrete girder superstructures and two-span cast-in-place concrete post-tensioned box girder superstructures. The two-span steel plate girder superstructures will be the likely choice since the 210 ft. and 240 ft. span lengths exceed the conventional prestressed girder capacity and a cast-in-place concrete superstructure would require false work over I-405 and would be disruptive to traffic.

### **NE 10th St. Over-Crossing Bridge.**

A 40-foot long, over-crossing bridge will be provided where NE 10th Street crosses above the proposed pedestrian access between the Overlake Hospital Medical Center (OHMC) South Tower and the Group Health Cooperative (GHC) Building. It is likely that the NE 10th St Bridge will be constructed of a precast, prestressed concrete slab supported on cast-in-place abutment walls and spread footings. The bridge length and vertical clearance were set to avoid potential conflicts with the independent pedestrian walkway. The pedestrian walkway will be constructed by the hospital and may be enclosed prior to constructing the bridge.

### **Right-of-Way (ROW)**

In addition to the right-of-way required to construct elements common to all Alternatives (e.g. the braided ramps), the ramps in this Alternative would require some land from both the One Twelfth at Twelfth office complex and Overlake Hospital, but there were no impacts to any of the buildings themselves. The actual NE 10th St. extension does require the purchase of the Ramada Inn at 818 112th Ave. NE. and the 1011 Building on the Overlake Hospital campus.

### **Conclusion**

This Alternative provides the best geometric design of the Alternatives studied and will best reduce congestion on I-405. This concept also complements the Preferred Alternative called for in the City of Bellevue's "Downtown Implementation Plan" (Dec. 2003).

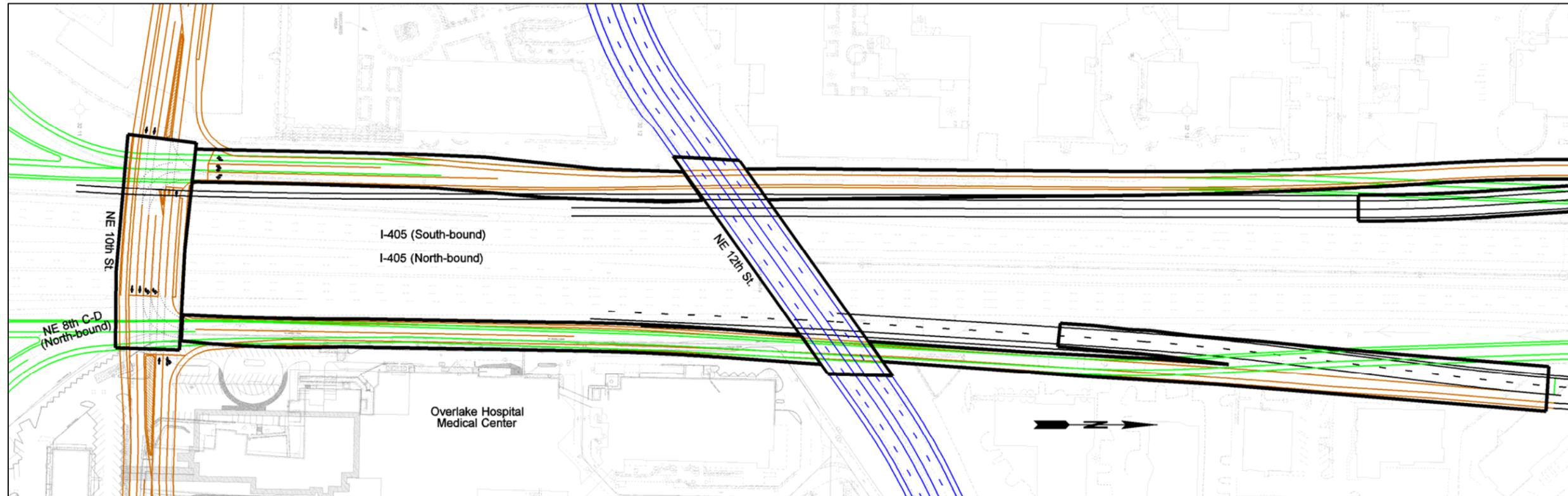


Figure 4 - Close-up of the Alternative 2 ramp connections

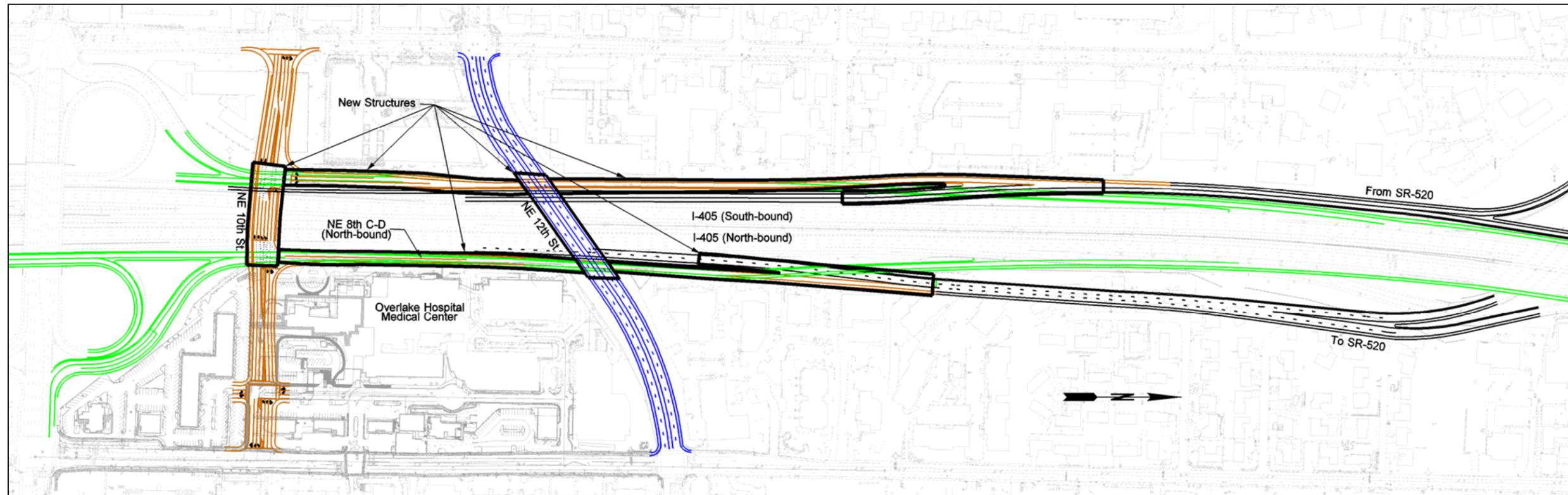


Figure 5 - Alternative 2 between NE 8th St. and SR-520





**Interoffice  
Correspondence**

February 14, 2005

**DESIGN DECISION**

By: Eric O'Brien, PE

Subject: NE 10th Extension: Alternative 3 – Ramps from NE 12th St. only

**Background**

The Master Plan of the I-405 Congestion Relief & Bus Rapid Transit Projects calls for a crossing over I-405 at NE 10th St. The City of Bellevue commissioned an advance study of four ramp alternatives that developed connections to I-405 and SR-520 from either NE 10th St or NE 12th St. One of the alternatives involved ramps at NE 12th St. (for traffic going to/from SR-520). This was referred to as Alternative 3 in the City of Bellevue’s “Overlake Hospital Master Plan / NE 10th St. Extension” Draft EIS (DEIS).

**Study**

Alternative 3 in the DEIS consisted of extending NE 10th St. over I-405, through the Overlake Hospital campus and connecting to 116th Ave. NE, but without any ramps to I-405. There would only be new ramps at NE 12th St. and these ramps would only connect with vehicles to/from SR-520.

Northbound, as the ramps descended from NE 12th St., the nearby collector-distributor (C-D) lanes would be required to descend underground in order to pass under a ‘braided’ ramp taking traffic from north-bound I-405 to SR-520. (A braided ramp physically separates ramps by crossing them at different elevations and improves traffic flow because vehicles no longer have to ‘weave’ with other vehicles to arrive at their respective destinations.) The C-D lanes began to rise up to the I-405 mainline after passing under the braided ramp.

As in the north-bound direction, the ramps in the south-bound direction would only serve vehicles coming from SR-520. There would also be a braided ramp from the SR-520 off-ramp to the I-405 mainline. Prior to the beginning of the braided ramps, an off-ramp from I-405 to the C-D lanes would start descending below ground in order to cross under the braided ramp. The C-D lanes would remain stacked under the ramps to NE 12th St. and then would begin to rise out of the ground at the same angle (and location) as the ramps from SR-520 rise up to NE 12th St. (See Figure 1 of the Alternative 2 Design Decision for an example of stacked roadways.)

Because the NE 12th St. on/off ramps are so far to the north, their close proximity to the SR-520 interchange causes an extremely short ‘weaving’ distance (1,692 ft.) for traffic from I-405 (going to east-bound SR-520) and NE 12th St. (going to west-bound SR-520) to interact.

While this distance does meet the minimum standards (1,600 ft.) listed in the WSDOT Design Manual, the traffic analysis shows that a longer weaving section is required for the larger volumes of traffic to operate at an acceptable level. Without a longer distance, queuing of vehicles would occur.

### **Design Deviations (common to all Alternatives):**

The following design deviations have been identified for all Alternatives:

#### **Taper deviation for the ramps to north-bound I-405 from NE 8th Street.**

Because any changes to the north-bound ramps in the existing clover-leaf at NE 8th Street (which is retained through the Implementation Plan<sup>1</sup>) would need to match the I-405 Master Plan<sup>2</sup> SPUI (single-point, urban interchange) ramps under NE 10th Street, the lane reduction tapers were reduced to develop two lanes of storage behind the ramp meter. The standard tapers for a two-lane ramp with HOV bypass is 300 ft. to drop the second General Purpose (GP) lane and 300 ft. to drop from two lanes (HOV+1GP) to a single lane. Note also that to meet full standard, these two tapers are separated by a 300 ft. long two lane segment. To match the Master Plan on-ramp lane configuration and location, both tapers were reduced, and the intermediate two lane segment was eliminated. The first taper, from three lanes (HOV+2GP) to two lanes (HOV+1GP) was reduced to 252 ft. The second taper, from two lanes (HOV+GP) to one lane was reduced to 248 ft. **This deviation would be removed in the Master Plan.**

#### **Off-ramp connection to SR-520, non-standard configuration.**

In order to match the north-bound C-D/Off-ramp Master Plan braid, the off-ramp from I-405 has an additional curve departing from mainline I-405 that is not part of standard layout. The curve was added to compensate for an angle change between the Implementation and Master Plan layout of mainline I-405. The braid would be constructed as part of the Implementation Plan but would need to be compatible with the Master Plan. **This non-standard element would be removed in the Master Plan.**

#### **Shoulder Deviation (south-bound).**

In order for south-bound I-405 to accommodate additional mainline width, the inside mainline shoulder is reduced to less than 10 ft. width for 401 ft. (74 ft. taper + 23 ft. of

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<sup>1</sup> Implementation Plan – a medium-term (10+ years) program of improvements, totaling \$4.7 billion. Since 2002, work has focused on developing and adopting an “Implementation Plan” to define and guide the first phase of the I-405 project’s development for a decade or more, as well as to indicate future strategies to accomplish the Master Plan. The Implementation Plan will improve I-405 continuously from I-5 in Tukwila to SR 522 in Bothell. The Implementation Plan’s improvements will closely match the Master Plan from SR 167 in Tukwila to I-90, which is the narrowest portion of the corridor with the highest congestion. The section from I-90 to SR 522 will have one additional lane added each way. The portion of this section from NE 70th Street to NE 116th Street will be constructed to near Master Plan level. Multi-modal aspects include transit access ramps, park and ride expansion, Bus Rapid Transit improvements to allow BRT line implementation, and transit expansion.

<sup>2</sup> Master Plan – the long-term “vision” for improving the entire I-405 corridor, consisting of \$10.9 billion in projects. The Master Plan for fixing I-405 traffic includes all transportation modes, adding up to two new lanes each direction to I-405, a corridor-wide bus rapid transit (BRT) line and increased local transit service. It will fix bottlenecks such as the SR 167/I-405 interchange, improve key arterials, expand transit centers, and add about 1,700 new vanpools and over 5,000 park and ride spaces.

5 ft. wide shoulder + 304 ft. taper) in the vicinity of the SR-520 interchange. (Specifically underneath the flyover from east-bound SR-520 to north-bound I-405.) This deviation maintains 6.5 ft. from edge of mainline shoulder to existing bridge column, and minimal vertical clearance to the pier header. **This deviation would be removed in the Master Plan.**

**Shoulder Deviation (north-bound).**

In order for north-bound I-405 to accommodate additional mainline width, the outside mainline shoulder is reduced to less than 10 ft. width for 888 ft. (381 ft. taper + 469 ft. of 4 ft. wide shoulder + 38 ft. taper) in the vicinity of the SR-520 interchange. (Specifically underneath the flyover from east-bound SR-520 to north-bound I-405.) This deviation maintains 12.75 ft. from edge of mainline to existing bridge column, and minimal vertical clearance to the pier header. **This deviation would be removed in the Master Plan.**

**Design Deviations (specific to this Alternative):**

The following design deviation has been identified for this Alternative:

**Intersection Angle**

The standard intersection angle can range from 75 to 105 degrees. Both the north-bound on-ramp and south-bound off-ramp alignments intersect NE 12th at approximately 55 degrees, which is outside this range. This deviation could be mitigated by moving the ramp terminal intersections away from the bridge. However, moving the terminals away from the bridge would add reverse curves to the ramps' horizontal alignment and would push the limited access requirements onto the local roads, adding restrictions to the road approaches in the vicinity of the intersection. **This deviation could be further evaluated along with the related implications to determine if it could be removed.**

**Traffic Analysis**

Several potential off- and on-ramp connections between Bellevue surface streets and I-405 were analyzed. These include:

- Ramps to and from SR 520 at NE 10<sup>th</sup> St.
- Ramps to and from SR 520 at NE 12<sup>th</sup> St.
- Ramps to and from SR 520 at NE 10<sup>th</sup> St. and ramps to and from southbound I-405 at NE 2<sup>nd</sup> St.

These scenarios were evaluated for year 2030 conditions and assuming the I-405 Implementation Plan would already be built.

Based on the analysis conducted, the NE 10<sup>th</sup> St. and the NE 10<sup>th</sup> and NE 2<sup>nd</sup> St. alternatives both perform better than the NE 12<sup>th</sup> St. alternative. The NE 12<sup>th</sup> St. alternative has a short northbound weaving distance which would result in an unacceptable level of performance.

## **Structural Considerations**

### **Ramps**

The ramps providing access to and from the NE 12th St. bridge structure would be typical freeway ramps built on existing soil or fill material. The ramps would have expansion joints where they tie into the NE 12th St. bridge structure.

Prior to reaching the braided ramps from I-405, the C-D lanes would be depressed below ground. Where these lanes are in a depressed section they would be between retaining walls. The existing NE 12th crossing would need to be rebuilt to accommodate these new retaining walls.

### **NE 12th Street Bridge**

The new NE 12th St. Bridge will support four lanes of through traffic, a center turn lane, and two sidewalks. The bridge will span I-405 and the new NE 8th St. off-ramps. For Alternatives 2 and 4 the new NE 12th St. Bridge will also span the NE 10th St. and NE 8th St. off- and on-ramps. The bridge will have span lengths of up to 210 feet long over I-405.

### **NE 10th Street Bridge**

For this Alternative, the bridge will support four lanes of through traffic, one turn lane and two sidewalks. The bridge will span I-405 and the new NE 8<sup>th</sup> Street Ramps, and an existing hospital service road. The bridge will have span lengths of up to 240 feet long over I-405.

### **Superstructure Selection**

Three cost-effective types of superstructures were evaluated for the NE 12th St. Bridge. They were two-span steel plate girder superstructures, two-span prestressed concrete girder superstructures and two-span cast-in-place concrete post-tensioned box girder superstructures. The two-span steel plate girder superstructures will be the likely choice since the 210 ft. and 240 ft. span lengths exceed the conventional prestressed girder capacity and a cast-in-place concrete superstructure would require false work over I-405 and would be disruptive to traffic.

### **NE 10th St. Over-Crossing Bridge.**

A 40-foot long, over-crossing bridge will be provided where NE 10th Street crosses above the proposed pedestrian access between the Overlake Hospital Medical Center (OHMC) South Tower and the Group Health Cooperative (GHC) Building. It is likely that the NE 10th St Bridge will be constructed of a precast, prestressed concrete slab supported on cast-in-place abutment walls and spread footings. The bridge length and vertical clearance were set to avoid potential conflicts with the independent pedestrian walkway. The pedestrian walkway will be constructed by the hospital and may be enclosed prior to constructing the bridge.

### **Right-of-Way (ROW)**

In addition to the properties that would need to be purchased to construct the I-405 Master Plan, the ramps in this Alternative would require additional purchase of land and buildings from the following properties:

- 1200 112th Avenue NE
- 1417 116th Avenue NE
- 1427 116th Avenue NE

Some land would also need to be purchased from 1515 116th Avenue NE, but this preliminary design does not show any impacts to the building itself. The actual NE 10th St. extension does require the purchase of the Ramada Inn at 818 112th Ave. NE. and the 1011 Building on the Overlake Hospital campus.

### **Conclusion**

While this Alternative appears to meet the general geometric design standards in the WSDOT Design Manual, it should be noted that high traffic volumes are projected at this location. Traffic analysis shows that these high volumes will not functionally operate at an acceptable level through the minimum north-bound weave section.



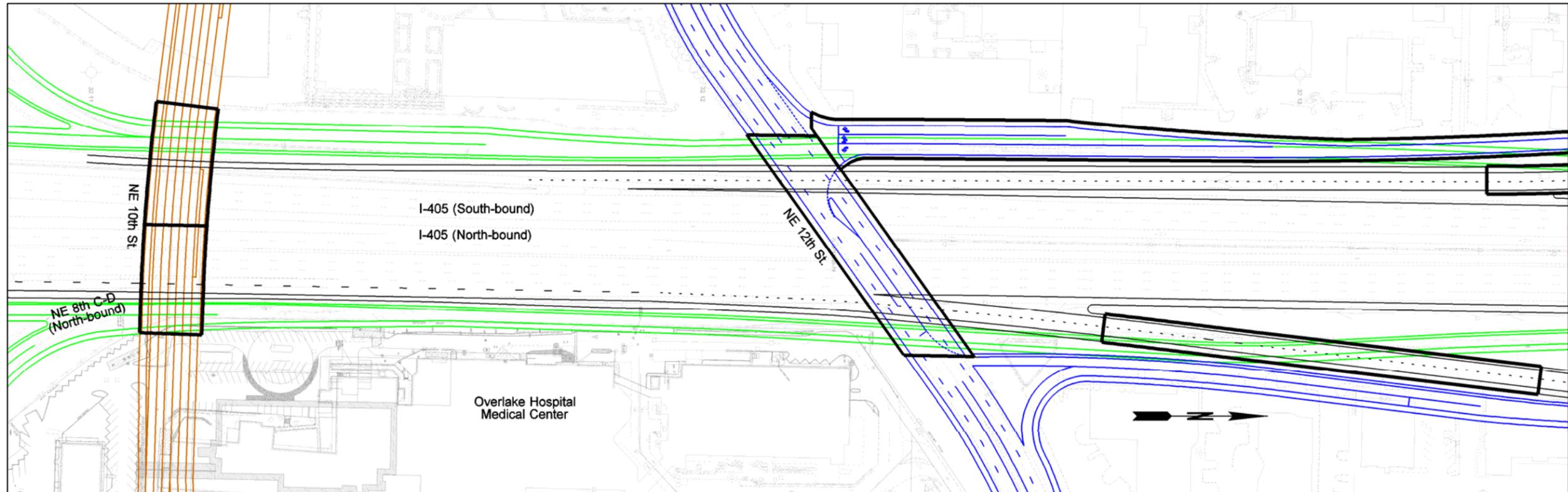


Figure 1 - Close-up of the Alternative 3 ramp connections

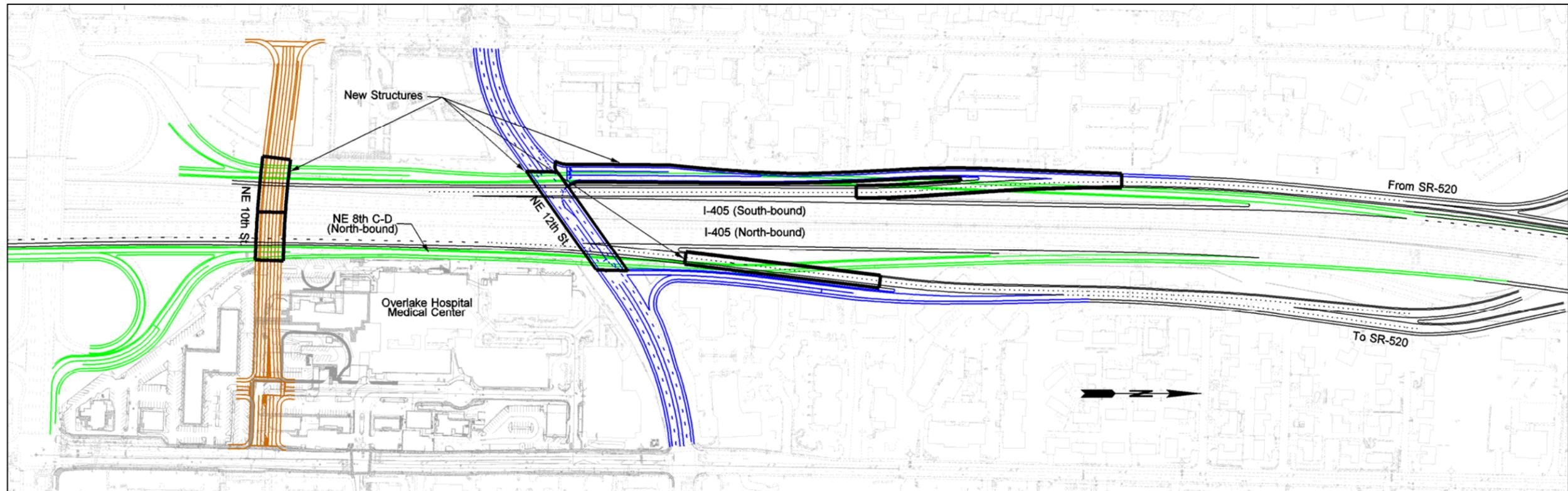


Figure 2 - Alternative 3 between NE 8th St. and SR-520





**Interoffice  
Correspondence**

February 14th, 2005

**DESIGN DECISION**

By: Eric O'Brien, PE

Subject: NE 10th Extension: Alternative 4 – Ramps from NE 10th St. and NE 12th St.

**Background**

The Master Plan of the I-405 Congestion Relief & Bus Rapid Transit Projects calls for a crossing over I-405 at NE 10th St. The City of Bellevue commissioned an advanced study of four ramp alternatives that developed connections to I-405 and SR-520 from either NE 10th St or NE 12th St. One of the alternatives involved ramps from both NE 10th St. (for traffic going to I-405) and NE 12th St. (for traffic going to SR-520). This was referred to as Alternative 4 in the City of Bellevue's "Overlake Hospital Master Plan / NE 10th St. Extension" Draft EIS (DEIS).

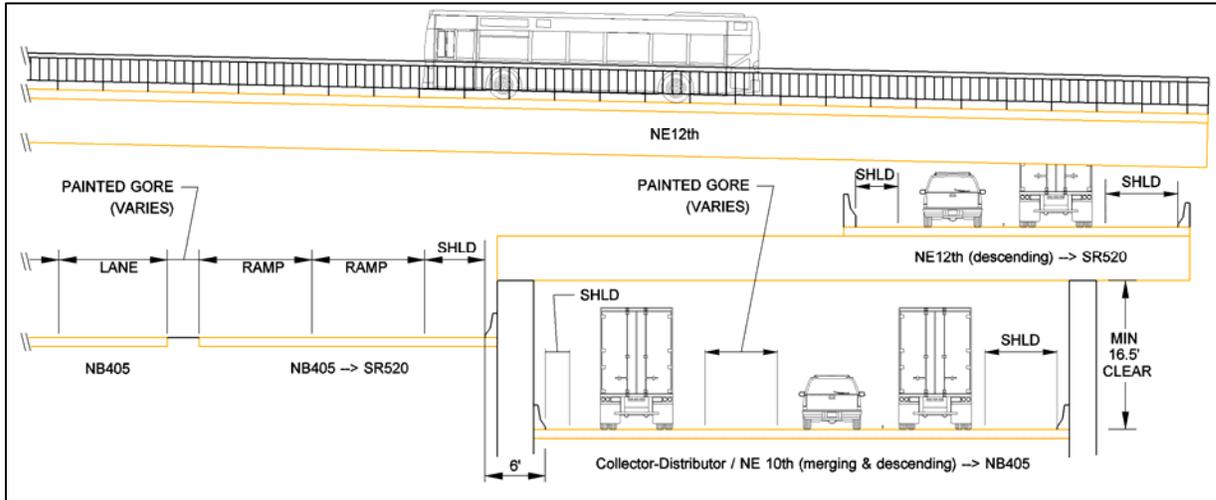
**Study**

Alternative 4 in the DEIS, consisted of new ramps at both NE 10th and NE 12th St. The ramp at NE 10th St. would only allow traffic to travel to/from I-405. NE 12th St. would have ramps that would only connect to/from SR-520. As with all the alternatives, the existing bridge crossing at NE 12th St. would be extended (in the east-west direction), to accommodate the under-crossing ramps from NE 10th St. and the planned widening of I-405 called for in the I-405 Master Plan.

It was recognized early on that the most difficult aspect to this concept would be in the north-bound direction. The initial approach to designing this Alternative was to stack the NE 10th ramps over the collector-distributor (C-D) lanes from NE 8th St., as had been done in the earlier Alternatives. With the additional ramps from NE 12th St., it was determined that there wasn't enough room (horizontally and vertically) to make all of the ramp connections work properly when stacking was used. These ramp connections included the collector-distributor, the NE 10th ramps to I-405, the NE 12th ramp to SR-520, the north-bound I-405 off-ramp, the ramp to east-bound SR-520, and the ramp to west-bound SR-520.

After trying the unsuccessful stacked approach, a modified-stacked concept was developed. (See Figure 1) With this concept, the north-bound ramp from NE 10th would join with the NE 8th C-D. Because of the short distance between NE 10th and NE 12th Streets, the merge could not occur until after 10th and the NE 8th C-D had both gone under NE 12th St. The merged 10th/C-D then passed underneath the ramp from NE 12th (which was descending from the 12th crossing) and then passed underneath the braided traffic that was traveling from I-405 to SR-520. The merged 10th/C-D then climbed up to connect to the I-405 mainline. As the ramp

from NE 12th St. descended from the crossing, it met with the I-405 off-ramp to form a drop-lane that continued to east-bound SR-520. Traffic from NE 12th that wanted to travel to west-bound SR-520 had a short distance available to merge with traffic from I-405. Likewise, traffic from I-405 that wanted to travel to east-bound SR-520 would have had a short distance to merge with traffic from NE 12th St. Since traffic from NE 8th St. would no longer be able to travel to SR-520, the ramp from NE 12th St. would also attract a large number of vehicles from downtown Bellevue that wanted to travel to SR-520.



**Figure 1 – Modified stacked roadway cross-section at NE 12th St. (looking north)**

The main issue that would make this Alternative difficult to implement is the type and amount of right-of-way (R/W) that would be required for the NE 10th ramps. Because the NE 10th ramp and the NE 8th C-D need to merge together very quickly, there isn't enough room to stack them one on top of the other. This means they would have to be built side-by-side. For this to work, it would require that WSDOT purchase and demolish the Overlake Hospital buildings adjacent to I-405. Since these are the main buildings of the hospital, WSDOT would essentially have to buy the majority of the medical center campus.

Other design concepts were studied for this Alternative, but none of them were geometrically acceptable.

### **Traffic Analysis**

Several potential off- and on-ramp connections between Bellevue surface streets and I-405 were analyzed. These include:

- Ramps to and from SR 520 at NE 10th St.
- Ramps to and from SR 520 at NE 12th St.
- Ramps to and from SR 520 at NE 10th St. and ramps to and from southbound I-405 at NE 2nd St.

These scenarios were evaluated for year 2030 conditions and assuming the I-405 Implementation Plan would already be built.

Based on the analysis conducted, the NE 10th St. and the NE 10th and NE 2nd St. alternatives both perform better than the NE 12th St. alternative. The ramps from NE 12th St. lead to a short northbound weaving distance which would result in an unacceptable level of performance.

### **Conclusion**

Considering the right-of-way needed for this Alternative (the main hospital buildings on the OHMC campus) and the limited weave distance available for traffic to proceed to east- and west-bound SR-520 (and the resulting back-ups to the I-405 mainline), this Alternative has been removed from further consideration.



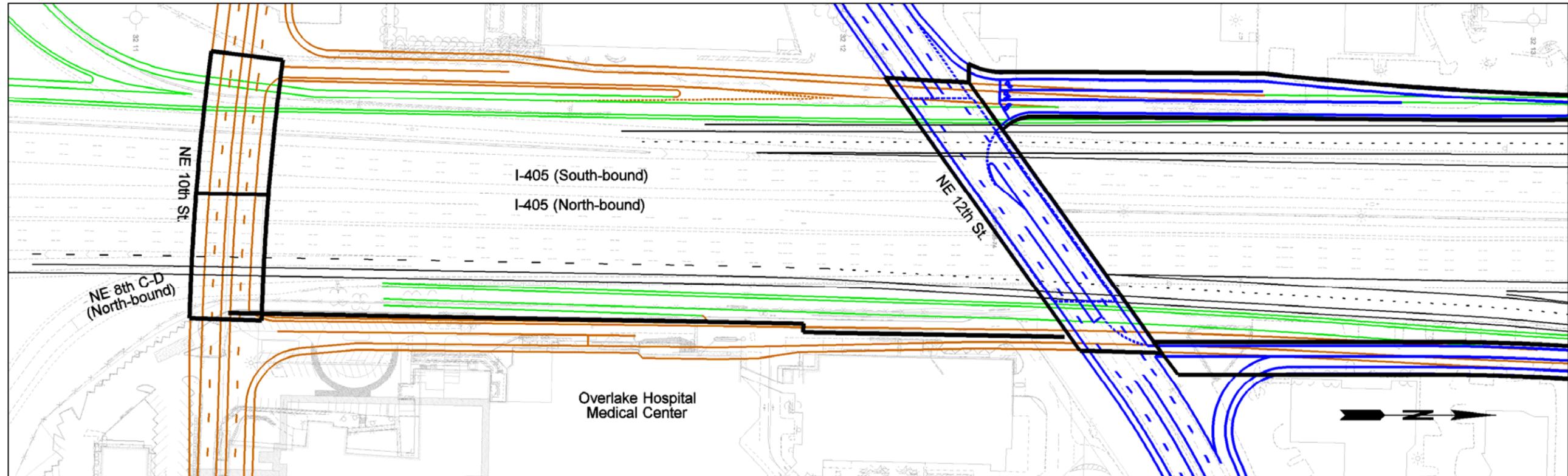


Figure 2 - Close-up of the Alternative 4 ramp connections

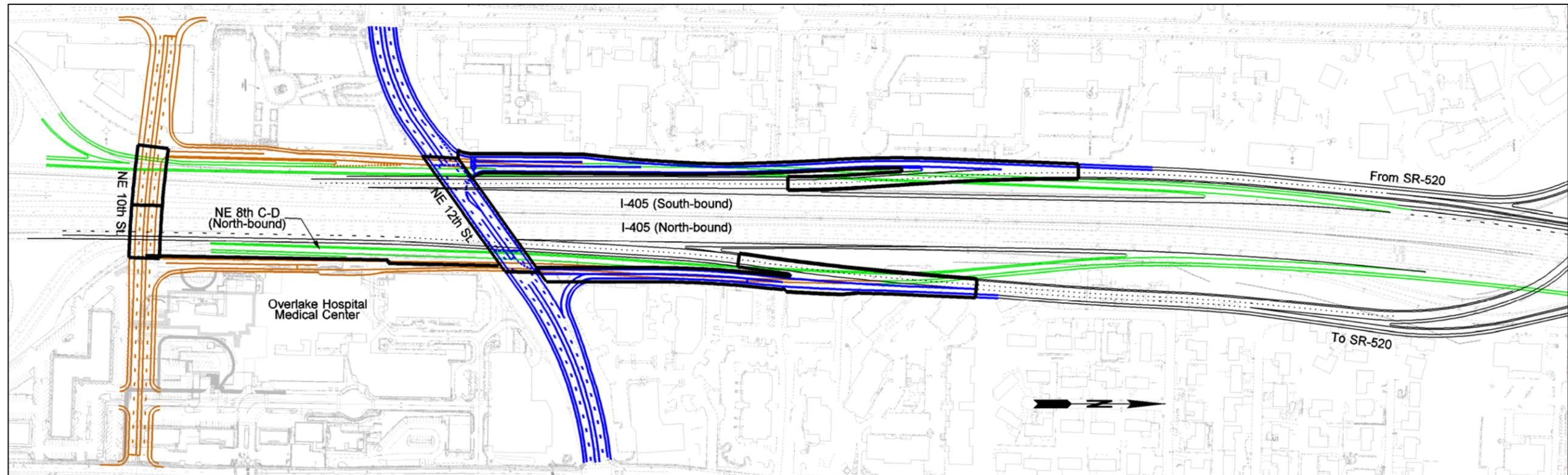


Figure 3 - Alternative 4 between NE 8th St. and SR-520



APPENDIX D

# Supplemental Noise Analysis

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# MEMORANDUM

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**Project No: 10250.000.0**

**TO:** Kris Liljeblad and Steve Sindiong, City of Bellevue  
**CC:** Jenifer Young, CH2M-Hill  
**FROM:** Richard Steffel  
**DATE:** December 7, 2004  
**SUBJECT:** NE10th Street Extension Project  
Supplemental Noise Modeling for NE10th Extension and Ramps

---

At your request, Geomatrix Consultants, Inc. (Geomatrix) has completed a computer modeling analysis to consider the noise implications of traffic using both the proposed NE 10th Street extension and the possible future freeway ramps from NE 10th to I-405/SR-520. The modeling examined noise from traffic along the existing alignment of I-405 and along these potential new roadway structures based on traffic volumes projected to occur in 2030. The modeling considered theoretical "receptors" at exterior locations near the roadway facing sides of buildings at the expanded Overlake Hospital Medical Center campus and the Group Health Cooperative facility. The modeling indicated noise from I-405 will continue to be the dominant noise source in the future with or without the roadway extension or ramps, and that freeway noise would overwhelm the comparatively minor noise contributions of noise from these other roadways. This memo provides a summary of the noise modeling methods and analytical results that led to these conclusions.

## Noise Modeling Tool

Geomatrix calculated traffic noise levels in 2030 using the FHWA Traffic Noise Model, version 2.5 (FHWA 2004). TNM is the most current traffic noise modeling tool available, and FHWA requires its use for their projects. TNM considers the horizontal and vertical locations of roadways and roadway structures, traffic volumes and their composition, travel speed, intervening terrain and ground types, and the presence or absence of obstructions like buildings or noise barriers. The modeling for this analysis considered peak-period traffic data provided by the City of Bellevue and HDR, Inc. The model calculates hourly equivalent sound levels ( $L_{eqs}$ ) from traffic sources.<sup>(1)</sup> Sound levels calculated using this model can be compared with sound levels measured using sound meters that calculate the measurement interval  $L_{eq}$ . In this way, it is possible to determine and compare sound levels using a consistent noise metric (the  $L_{eq}$ ) that corresponds well with the way communities often perceive noise. The sound level measurement data collected during the analysis conducted for the Draft EIS noise study are therefore useful for this purpose. These measurements are summarized in the next section.

---

<sup>(1)</sup> The  $L_{eq}$  is the level that if held constant over the same period of time would have the same sound energy as the actual, fluctuating sound. As such, the  $L_{eq}$  can be considered an energy-average sound level. But this metric should not be confused with an arithmetic average which tends to de-emphasize high and low values, because the  $L_{eq}$  gives most weight to the highest sound levels because they contain the most sound energy. The  $L_{eq}$  noise metric has been found to be highly correlated to community response to noise, and is often the metric calculated by noise models used to assess potential impacts and the need for mitigation.

## Measured Existing Sound Levels

As reported in the Draft EIS for the project, Geomatrix staff (then working as MFG, Inc.) measured existing sound levels at two locations on the Overlake Hospital campus. The measured levels were reported in the DEIS and are summarized in **Table 1**. As indicated in the description of the noise sources in the lower portion of the table, existing sound levels in the vicinity are dominated by noise from I-405, and these levels are relatively high at outdoor locations in the area. These measurement data also reveal that the structure of the existing hospital building provides *at least* a 28-dBA reduction in exterior sound levels. The actual noise reduction provided by the building structure is probably greater than indicated by these measurements because *interior* sound sources in the hospital surgical suite corridor elevated the measured interior levels above what they would likely have been had there been no such sound sources. These measurements provide an indication of existing levels in the area and are therefore useful for making comparisons with model-calculated levels.<sup>(2)</sup>

**Table 1. Measured Existing Sound Levels on OHMC Campus**

Sound Level Measurement Location	SLM Number	Duration	Measurement Leq (dBA)
Overlake Hospital Indoors	SLM 3	15 minutes Starting at 11:25 AM	50
Overlake Hospital Outdoors	SLM 4	15 minutes Starting at 11:25 AM	78
Overlake Hospital roof-top	SLM 5	24 hours Starting at 11:00 AM	69-76
<p><b>SLM 3</b> was taken inside the operating room suite area at Overlake Hospital simultaneously with SLM 4. The meter was in the hallway of the second floor operating room corridor, overlooking I-405 to the west. There were no major sources of noise noted during the measurement. At times, traffic along I-405 was audible, but barely. The ventilation system in the building was a continuous minor source of background noise. Other minor sources included doors opening and closing and staff noises.</p> <p><b>SLM 4</b> was taken atop the roof of a building at Overlake Hospital, adjacent to the operating room suite and overlooking I-405. The measurement was taken simultaneously with SLM 3. The measurement location had a direct line of sight to I-405, which was the major source of noise during the measurement. No minor sources of noise were noted.</p> <p><b>SLM 5</b> was taken on a roof at Overlake Hospital, slightly south of SLM 4. The measurement lasted 24 hours and documented the variation in sound levels over a day. The major source of noise noted during meter setup and retrieval and during the SLM3 and SLM4 measurements at the hospital was traffic along I-405.</p> <p><b>Source: Sound level measurements by MFG, Inc. (the previous name of the Geomatrix air/noise group)</b></p>			

<sup>(2)</sup> Note that in some cases it is possible to "calibrate" a noise modeling setup by comparing measured levels and modeling results based on observed conditions during the measurements. Such an exercise was only partially possible in this analysis because completely considering existing conditions was beyond the scope of this review. But in the single instance where model-calculated levels could be compared with measured levels, the comparison indicated the modeling was adequately representing the situation (e.g., agreement was at 0.7 dBA).

Measured outdoor sound levels at building setbacks on the OHMC campus ranged from the high 60s to the high 70s dBA. The quietest hours were during the early morning (1-3 AM), and sound levels during the daytime were all in the 70s dBA. Daytime sound levels were lowest during the peak period commutes due to traffic congestion.

## Noise Modeling Results

The road network and the receptor locations considered in the noise modeling are depicted in [Figure 1](#) (page 5). The model receptors included both ground-level and elevated locations at parking lot and building setbacks on the OHMC campus and the Group Health site. With the exception of the parking lot receptor locations, all other receptors were at the same elevation as the nearest portion of the freeway ramp, or 20 feet higher (for the two "b" receptors). The noise modeling results are presented in [Table 2](#).

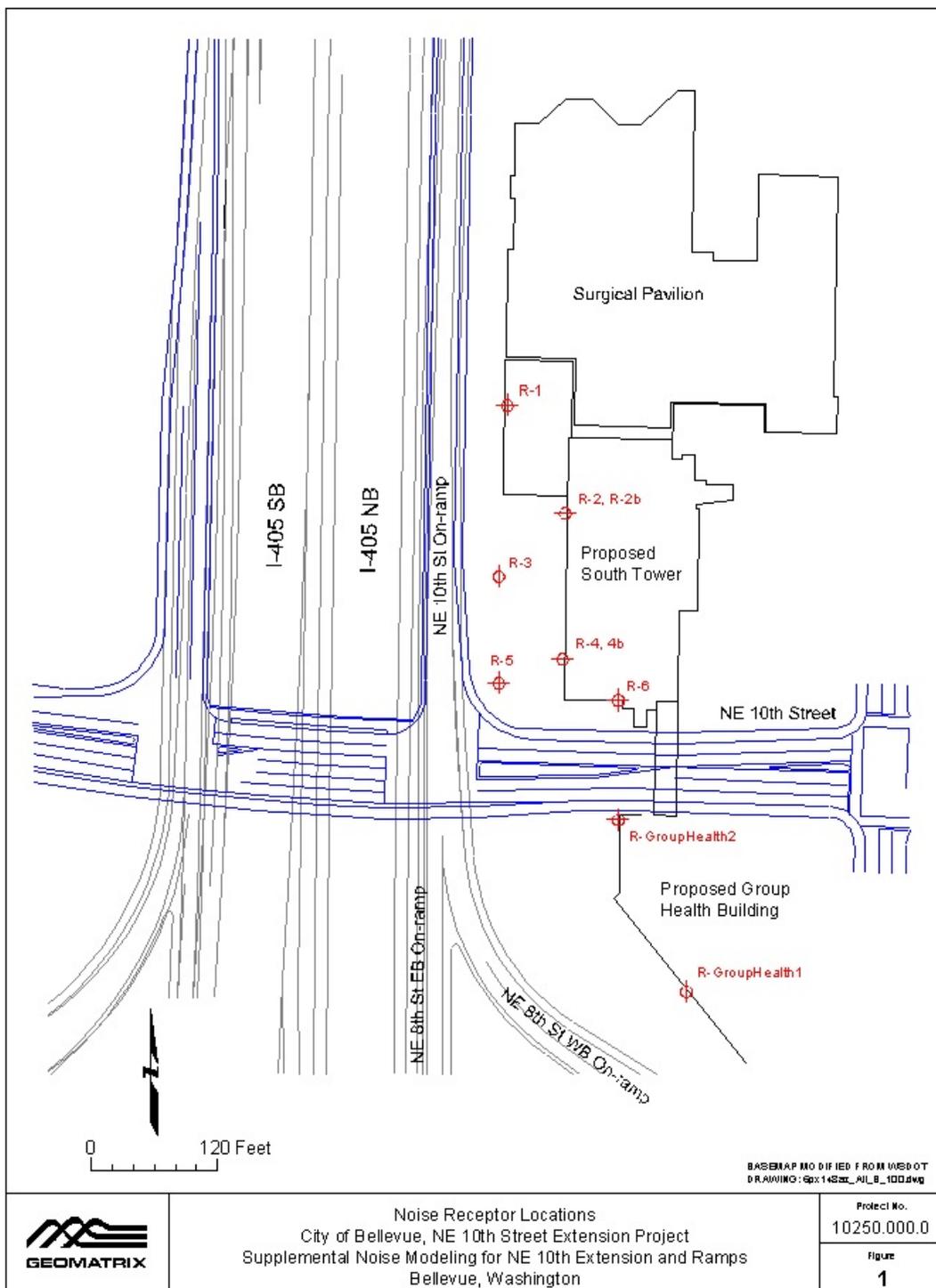
**Table 2. Traffic Noise Model Calculated 2030 Sound Levels (dBA)**

Model Receptor # (hgt above ground)	Freeway Noise	NE 10th Ramp Noise	Total Noise Level	Estimated Interior Level <sup>(a)</sup>
1 (30')	78	68	79	51
2 (26')	77	65	77	49
2b (46')	77	66	77	49
3 (ground level)	77	63	77	49
4 (32')	77	66	77	49
4b (52')	77	66	77	49
5 (ground level)	77	63	77	49
6 (36')	74	61	74	46
GHC 1 (5')	76	60	76	48
GHC 2 (40')	71	53	71	43
<sup>(a)</sup> Interior levels are estimated based on an expected reduction of at least 28 dBA, determined from measurements taken at the OHMC facility. Actual noise reduction is likely to be greater.				
<b>Source: Noise modeling by Geomatrix Consultants, Inc.</b>				

## Conclusions

The noise modeling results indicate noise from NE 10th and from the freeway ramps near the medical campus would be relatively minor noise sources in this area compared with noise from traffic on the freeway itself. With sound level differences of 10 dBA or more, the lower sound level contains so much less energy that it has little if any effect on the overall sound level that is dominated by the higher level. For example  $77 \text{ dBA} + 65 \text{ dBA} = 77.3 \text{ dBA}$ , an insignificant change. Therefore as shown in [Table 2](#),

traffic noise from the NE 10th ramp would be a minor factor in the overall exterior sound levels on the OHMC campus. And with even the minimum estimated sound reduction provided by the structure of the building (based on simultaneous indoor/outdoor measurements), sound levels inside the new hospital buildings are unlikely to be significantly affected by noise from the new traffic sources in the area. In addition, expected increases in I-405 traffic volumes in future years also would not cause more than minor increases over existing sound levels in the area because large changes in traffic volumes, speeds, and/or composition are necessary to make marked differences in related noise. For these reasons, if existing traffic noise levels are not presently causing problems inside the existing facility, future traffic noise related to the NE 10th Street Extension and the NE 10th Street ramps to the freeway also would not cause problems inside the new OHMC or Group Health facilities.





APPENDIX E

# Vibration Analysis

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**OVERLAKE MEDICAL CENTER  
10<sup>th</sup> STREET EXTENSION VIBRATION EIS**

**17 February 2005**

**Submitted to:**

**Jenifer Young  
CH2M Hill Seattle Office  
777 108<sup>th</sup> Ave NE  
Bellevue, WA 98004**

**Prepared By:**

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Principal**

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## **INTRODUCTION/SUMMARY**

This report concerns the potential for vibration impact on operating theatres of the proposed Overlake Hospital Medical Center and Group Health Cooperative (GHC) facilities that would be located adjacent to the proposed extension of N.E. 10<sup>th</sup> Avenue in Bellevue, Washington. Two types of potential impact were considered. The first, and foremost, was vibration impact caused by traffic over the overpass. The second was the temporary vibration impact caused by construction activities.

The results of this investigation indicate that the vibration generated by highway traffic, including trucks, would be within generic criteria published by the American National Standards Institute (ANSI) and the International Standards Organization (ISO) for operating theatres. There would be no traffic generated vibration impact on patient rooms, exam rooms, public areas, offices, or other areas involving normal hospital activity. There would be no impact on bench microscopes, microbalances, computer equipment, and the like. Normal automotive traffic running on a well maintained pavement surface should not impact the operating theaters or MRI proposed for the GHC and OHMC. Surgical microscopes that are supported on adequate structures for controlling footfall-induced vibration should also not be affected significantly by highway traffic. No mitigation measures other than construction of the road surface to highway standards for smoothness and maintenance of the road surface should necessary to maintain an adequately low vibration environment for operating theaters and the MRI systems. In the GHC, operating theater floor vibration and MRI vibration from NE 10<sup>th</sup> Avenue traffic would be less than that caused by garage traffic.

Maximum levels of rms vibration, measured with one-second averaging times, generated by pile driving or vibratory rollers would likely exceed ANSI and ISO criteria and IES VC-C criterion curve at the operating theatres and MRI in the GHC, and would likely exceed the typical site specification for the MRI that would be located in the GHC. Mitigation should be provided to control construction related vibration. This might include use of static rollers rather than vibratory rollers, use of a hydraulic static pile driver, and coordination of activities between pile driving and operating theatre or MRI activity. Pile driving and vibratory roller operation might impact MRI's located in the OHMC, depending on distance.

Monitoring of vibration during pile driving or vibratory roller operation should be conducted to ensure that vibration magnitudes do not exceed building damage criteria, when pile driving or vibratory rollers are used with 100 feet of the building.

## **SITE DESCRIPTION**

The Overlake Medical Center campus is bordered by NE 12<sup>th</sup> Street on the north, NE 8<sup>th</sup> Street on the south, 116<sup>th</sup> Ave. NE on the east, and the Interstate 405 freeway on the west. The NE 10<sup>th</sup> St. extension is due to take place through the southern part of the campus, over or near the existing Senior Health Center.

The northernmost right-of-way lines would be a few feet from the stair tower of the OHMC Southern Tower and about 22 feet from the building proper. Operating theaters would be located

in the OHMC building at about 200 feet from the northern right-of-way. Radiology ER with surgery would be located in the proposed OHMC South Tower at about 145 feet north of the NE 10<sup>th</sup> Avenue alignment. An MRI may be located in the ER.<sup>1</sup>

The southern right-of-way line would be a few feet from the proposed Group Health Cooperative (GHC) building. The existing Senior Health Center is assumed to be demolished to make room for the Group Health Center. The GHC would contain operating rooms and an MRI in the second bay removed from the northern extremity of the building. Thus, they would be located at least 30 feet from the southern right-of-way boundary. A four-level parking garage would be located below the operating theaters and MRI.<sup>2</sup>

## CRITERIA

The ANSI Standard S3.29 “Guide to the Evaluation of Human Exposure to Vibration in Buildings” provides a floor vibration velocity limit for hospital operating theaters. The standard includes 1/3 octave band vibration velocity limits for tri-axial combined-response of a person, derived from the base vibration velocity of nominally 4,000 micro-in/second with a downward multiplier of 0.7 to arrive at a criterion of 2,800 micro-in/second root mean square velocity limit in any 1/3 octave band at frequencies of 8 Hz and higher. This criterion is suitable for operating room theaters that are in use.<sup>3</sup> The International Standards Organization has also recommended a limit of 4,000 micro-in/sec for operating theaters.<sup>4</sup>

While the ANSI standard should be suitable for most conditions, additional criteria are discussed here for equipment that may be less tolerant to vibration. The IES<sup>5</sup> has published criteria for vibration sensitive equipment, designated vibration criteria curves VC-A (2,000 micro-in/sec), VC-B (1,000 micro-in/sec), VC-C (500 micro-in/sec), etc. The IES VC-A criterion is applicable to optical bench microscopes up to 400X and optical or microbalances. The VC-B criterion is appropriate for optical microscopes of 1000X. The VC-C standard is the most stringent, and is more than adequate for ceiling- and/or floor-mounted operating room microscopes that would be suspended from cantilevered arms.

Site specifications for MRI’s are usually given in terms of vibration acceleration spectra. These can be very restrictive, possibly excessively so. Correlations with the IES velocity criteria have

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<sup>1</sup> Conversation with OHMC representative, 15 February 2005

<sup>2</sup> Conversation with Trammel Crowe, 16 February 2005

<sup>3</sup> American National Standard S3.29, “Guide to the Evaluation of Human Exposure to Vibration in Buildings”,

<sup>4</sup> ISO 2631-2, “Evaluation of Human Exposure to Whole-Body Vibration – Part 2: Continuous and Shock-Induced Vibration in Buildings (1 to 80 Hz)”, International Standards Organization, 1989

<sup>5</sup> Institute of Environmental Sciences, Recommended Practice IES-RP-CC012.1, “Considerations in Cleanroom Design,” Appendix C, 1995.

not been done for this report, but vibration in excess of the IES VC-B would be expected to impact MRI operation, while vibration below the IES VC-C would likely be comparable with some of the less tolerant specifications, and would not likely interfere with normal MRI operation.

Building damage criteria for vibration vary with respect to the type of building involved. For pile driving, the U. S. Bureau of Mines RI 8507, Appendix B, and Office of Surface Mining Chart Option are often used.<sup>6</sup> Vibration from vibratory sources such as vibratory rollers and vibratory hammers should be limited to 0.2 in/sec peak particle velocity. This limit may also be applied to impact pile driving for an added measure of protection.

## **TRAFFIC GENERATED VIBRATION**

The vibration that would be generated by traffic traveling on the proposed embankment and overpass was assumed to be no worse than that generated by existing traffic on existing roads, provided that reasonable care would be taken in road surface construction and maintenance. If anything, the embankment would be expected to provide some vibration reduction at high frequencies that might be of some benefit. To determine existing vibration from highway traffic, including trucks, Wilson, Ihrig, & Associates, Inc. (WIA) measured ground vibration levels on 26-27<sup>th</sup> January, 2005 around the proposed site of the building. The measurement locations were chosen such that the distances between the measurement locations and passing traffic would be comparable with the distances between traffic on the proposed extension and hospital structures. The measurements included primarily highway traffic on Interstate 405 and on related ramps. Traffic counts were not obtained, but are assumed here to be comparable with the NE 10<sup>th</sup> Avenue extension. I-405 traffic volume and speed were presumed to be higher than those that would occur at the NE 10<sup>th</sup> Avenue structure.

### **Measurement Locations**

Measurements around the Overlake Medical Center took place at four representative locations, shown in Figure 1. Figure 1 is an aerial photograph that clearly shows the measurement locations relative to the traffic lanes of I-405 and related on ramp and collector-distributor of NE 8<sup>th</sup> Avenue.

Location 1 was approximately 19 feet from the Interstate right-of-way (ROW), near the merge between the NE 8<sup>th</sup> Street to Northbound Interstate-405 on-ramp. A second channel was recorded simultaneously at 44 feet from the ROW. Numerous trucks traveling on the right-hand lane pass this location at speed. Two or three trucks travel on the on-ramp.

Location 2 was located further south along the on-ramp, opposite the Northbound I-405 Collector-Distributor to Westbound NE 8<sup>th</sup> off-ramp, with accelerometers at 10 and 50

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<sup>6</sup> Siskind, David, "Vibrations from Blasting", 1<sup>st</sup> Edition, International Society of Explosives Engineers, 2000, Pg. 98

feet from the on-ramp ROW. Two or three trucks passed the location during the measurement.

Location 3 was about 75 feet north of Location 1, near the merge between the NE 8<sup>th</sup> Street to Northbound Interstate-405 on-ramp. Traffic was at near full speed. Accelerometers were placed at 17 and 57 feet from the ROW. Numerous trucks traveling on the right-hand lane pass this location at speed. Two or three trucks traveled on the on-ramp.

Location 4 was near 116<sup>th</sup> Ave. NE, 25 feet from the ROW. Vibration at this position was produced by NE 16<sup>th</sup> Avenue traffic and to a lesser extent by traffic entering or leaving the parking lot. Infrequent traffic entering the parking lot necessarily passed within a few feet of the transducer mounting point.

Measurements for Locations 1, 2, and 3 during the afternoon rush between 2PM and 5PM on 26 January, 2005, and measurement at Location 4 was performed between 9:30AM and 10AM on 27 January, 2005. These measurement periods overlap the rush periods.

### **Instrumentation**

Vibration was measured with high sensitivity, low noise accelerometers mounted on concrete curbs with “scientific” wax. This type of mounting provides a non-destructive secure base with excellent frequency response characteristics. The accelerometer signals were conditioned with WIA Type 112L charge amplifiers and a WIA Type 222 decade amplifiers. The analog data were integrated to yield a velocity signal for recording. The analog velocity data were recorded with a Sony M1 DAT Tape recorder with a bandwidth of approximately 3 Hz to 10 KHz. All instrumentation calibrations were traceable to the United States National Institute of Standards.

Each recording was approximately 15 minutes long. The recorded data were analyzed with a Larson-Davis 2900 1/3 octave band real time analyzer with center frequencies extending from 3.15 Hz to 2,500 Hz.

### **Results**

The results of our tested are shown in Figure 2 through Figure 8. Each of these figures compare the observed 1/3 octave band vibration velocity levels with criterion curves discussed above. The 1/3 octave levels are in decibels relative to 1 micro-in/second. The level in decibels is equal to twenty times the logarithm of the ratio of the RMS amplitude to the reference amplitude of 1 micro-in/second. Thus, a vibration magnitude of 1000 micro-in/sec corresponds to a level of 60 dB re 1 micro-in/sec.

The  $L_n$  curves, with n equal to 1, 10, 50, and 100%, represent the levels exceeded n% of the time during the test period. The  $L_{eq}$  is the energy-mean level measured during the entire period, and  $L_{max}$  is the highest level found within any 1/3-octave band during any single 1-second sample duration. The  $L_{max}$  is thus an extreme measure of vibration which is not necessarily

representative of vibration impact, but is of interest in terms of the severity of individual transient events.

Levels of random, stationary vibration, as with vibration produced by distant automotive traffic, vary over a range that would be well represented by the energy-mean vibration level, or  $L_{eq}$ . In this case, the energy-mean curve would be compared with the vibration criteria discussed above and included in each of the figures. Where vibration is produced by relatively dense traffic located nearby, the energy mean would still be appropriate.

Non-stationary vibration is characterized by vibration produced by occasional vehicle passby's, such as heavy trucks, trains, and footfalls. In this case, the level exceeded 1% of the time or even the maximum level might be most appropriate, depending on the nature of the activity. Even in this case, the energy-mean may be suitable for comparison with criteria, because the energy mean is very sensitive to maximum levels, is a robust descriptor, and may be most representative in any case. One should not over-estimate the significance of levels of vibration exceeded 1% of the time or the  $L_{max}$  unless such vibration might irrevocably damage something, or render a process useless.

The observed vibration spectra at Location 1 were all below the criteria discussed above. The highest 1/3 octave bands were of the order of 50 dB velocity level re 1 micro-in/second, or about 300 micro-inch per second. Vibration from automotive and truck traffic at these levels would have no effect on hospital operating theaters, bench microscopes, and operating room microscopes. The maximum vibration levels at both 19 feet and 44 feet from the ROW were comparable with site specifications for MRI's, and the energy-mean vibration levels,  $L_{eq}$ , were less than typical site vibration limits for MRI's.

At Location 2, the vibration levels were below the criterion curve with the possible exception of the maximum vibration velocity level observed at 10 feet from the right-of-way line. At this position, the maximum vibration velocity level in the 20 Hz 1/3 octave band exceeded the IES VC-C curve (54 dB re 1 micro-in/second, or 500 micro-in/second) by perhaps 2 decibels. At 50 feet from the right of way line (Figure 5) the maximum levels just met the IES VC-C criterion curve. All data were well below the ANSI Standard S3.29 and ISO recommended limits for operating theaters by an order of magnitude. These data would be entirely compatible with hospital operating theaters. However, the vibration measured at 10 feet might exceed the site specifications for some MRI's.

At Location 3, the 20 Hz 1/3 octave band maximum level exceeded the IES VC-C criterion curve (500 micro-in/second) at 17 feet from the right-of-way line. Data at this location were all well below the ANSI S3.29 and ISO recommended limits for hospital operating theaters. Vibration at this location would be compatible with operating theaters. However, the maximum levels observed at 17 feet from the right-of-way may be in excess of site specifications for some MRI's. At 57 feet from the right-of-way, all of the vibration statistics were well below the IES VC-C criterion curve, and would be compatible with MRI operation, OR scopes, and so forth.

At Location 4, at 25 feet from the curb, the maximum level reached the IES-VC-B criterion curve, while typical vibration levels, especially the energy-mean level,  $L_{eq}$ , were well below all

of the vibration criteria. The maximum level was likely caused by a vehicle entering the parking lot along the drive adjacent to the measurement location, and is not considered representative of NE 10<sup>th</sup> Avenue traffic. The levels exceeded 1 and greater percentage of the time and the energy-mean level,  $L_{eq}$ , were well below the IES VC-C criterion, and would likely be compatible with an MRI.

## **Discussion**

The soils in the area are evidently very stiff and resistant to ground vibration forces. Thus, vibration at this site tends to be less than that which might occur at locations near an estuary, where soft clays and alluvial materials would be of greater concern. Vibration does tend to travel farther and faster in stiff soils, so that the attenuation rate with distance may be lower than that which would occur with softer soils.

The embankment of the road surface would add mass to the ground surface, and thus provide some vibration reduction relative to that of flat terrain conditions. The degree of attenuation is not easily defined, and would be dependent on frequency.

A rough road surface would produce higher levels of vibration than those produced by a smooth road surface. Potholes, or speed bumps, may produce significantly higher levels than those shown here. The foundations of the proposed buildings would tend to attenuate ground vibration transmitted into the structure by roughly 6 to 8 dB at higher frequencies and less at lower frequencies. Spread footing foundations of large masonry buildings would likely provide greater vibration reduction at frequencies above 10 Hz.

Floor resonance amplification would tend to amplify vibration at the floor resonance frequency and higher frequencies. Below resonance, little or no amplification would occur. The amount of amplification at resonance would depend on the damping properties of the floor, largely controlled by the partitions between rooms. As much as 6 to 10 dB of amplification might occur, much of which would be compensated by the foundation response.

The floor of the operating room would likely be designed to control footfall induced vibration to limits comparable with those recommended by the ANSI S3.29 criterion for operating theaters, and some structural engineers would design operating theater floors to a higher vibration limit. If floor or ceiling mounted microscopes were to be used in operating theaters of the GHC, the floor or ceiling structures would likely be designed to control energy-mean footfall induced vibration to magnitudes comparable with the IES VC-B or VC-C curves, or 1000 and 500 micro-in/second, respectively, though the latter would be difficult to achieve without an independent suspension system. While an occasional traffic generated vibration event might exceed the 500 micro-in/second criterion curve for perhaps a few seconds in a 10 or 20 minute period, vibration generated by footfalls would likely be more numerous and significant.

Automobiles in the parking garage that would be located beneath the operating theaters and MRI would likely generate vibration at higher levels than that caused by NE 10<sup>th</sup> Avenue traffic. Automobiles traveling on the garage surface would induce moments and vertical forces into the

columns supporting the main floors above the garage, with the result that garage level floor vibration would be transmitted to these upper floors.

In view of the above, vibration from road traffic should be well below typical standards for operating theaters and below generic design guidelines for sensitive laboratory equipment. Maximum transient vibration might on occasion exceed the most restrictive IES generic criteria at the northern extremity of the GHC building, but such events should be comparable with or less than those produced by footfalls. An MRI located in the GHC building within the 2<sup>nd</sup> bay removed from the northern extremity would not likely be impacted by ground vibration from the NE 10<sup>th</sup> Avenue extension.

No mitigation measures would appear to be needed to control ground vibration produced by NE 10<sup>th</sup> Avenue traffic, other than maintaining the road in good condition.

## **CONSTRUCTION VIBRATION**

Construction vibration is considerably more difficult to characterize than highway traffic. The most significant sources of vibration would be pile drivers and vibratory compactors. Both of these sources have the potential to produce ground vibration in excess of the IES criterion curves, and in excess of the ANSI S3.29 and ISO limits for operating theaters. Of these two sources, the vibratory compactor would likely be the most significant.

### **Pile Driving Vibration**

The vibration produced by pile driving depends critically on the distance between the source and receiver, the type of pile driver, and the type of soils. Pile driving vibration is usually discussed in terms of peak particle velocity. Dowding<sup>7</sup> provides estimates of the peak particle velocity versus distance for a Link Belt 440 Diesel hammer. These are summarized Table 1. Conversion of these data to rms 1/3 octave band vibration velocities is difficult at best. However, one may assume that the maximum 1/3 octave band rms vibration velocity over a single second resulting from a single hammer blow may be of the order of 1/4 the peak particle velocity, or about 12 dB less. Pile driving impacts may occur at a frequency of one per second. In this case, the inferred vibration velocity would not fall below the operating theater criterion provided in ANSI S3.29 unless the pile driver would be located at 160 feet from the theater, notwithstanding the effects of building structure response. The various IES criteria would be exceeded, and operating room microscopes would likely be impacted. However, the soils may respond considerably less to pile driving vibration than implied by the data provided in Table 1.

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<sup>7</sup> Dowding, Charles H., "Construction Vibrations", Prentice Hall, Upper Saddle River, New Jersey, 1996, Figure 4-3, Pg. 46.

**Table 1 Vibration Due to Link Belt 440 Diesel Hammer**

Source Distance – ft	Peak Particle Velocity – in/sec	Inferred Maximum 1/3 Octave Band Velocity – in/sec
10	0.7	0.17
20	0.2	.05
40	0.1	.025
80	0.03	.0075
160	0.01	.0025

Vibratory hammers would produce lower vibration magnitudes, but would still involve undesirable startup and shutdown transients that might impact the operating theater unless they were located beyond, perhaps, 100 feet from the building. The transients are caused as the vibrator sweeps up to or down from its operating frequency. Vibratory hammers that operate at a constant frequency may avoid this startup and shutdown transient problem. Static pile drivers that rely on a constant static force to drive the pile would produce little or no vibration. Augered or drilled piles would also avoid generating significant vibration. The practicality of using vibratory and static pile drivers has not been determined. Our experience suggests that pile driving may not impact MRI operation beyond 200 or 300 feet from the pile driving.<sup>8</sup>

The estimates given in Table 1 indicate that peak particle velocities during pile driving might exceed building damage criteria when occurring within a distance of 20 feet from the building foundation. Vibration should be monitored during pile driving, and less pile driving energy or alternative installation methods should be employed if vibration exceeds threshold damage criteria.

### **Vibratory Rollers**

Vibratory compactors may produce higher levels of vibration than that produced by pile drivers. Dowding<sup>9</sup> also provides peak particle velocity data for a “2410” vibratory roller, as summarized in Table 2. The RMS magnitudes are calculated by dividing the peak particle velocity by the square root of two, or 1.4. For all conceivable distances, operation of a vibratory roller near the hospital could produce vibration with peak particle velocities in excess of any of the criteria discussed here, and thus could impact surgical procedures.

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<sup>8</sup> WIA monitored pile driving vibration near the UCSF building on 4<sup>th</sup> Street in San Francisco, where multiple MRI’s were recently installed. Pile driving occurred at ranges of 200 to 300 feet from the MRI’s, and WIA was not made aware of vibration interference with the MRI’s during pile driving. The base material in this area was described as very stiff and rock-like.

<sup>9</sup> Dowding, Charles H., “Construction Vibrations”, Prentice-Hall, Inc., Upper Saddle River, New Jersey, 1996, Figure 16-1, Pg. 249.

A static roller might be used in lieu of a vibratory roller to mitigate the potential vibration impact. A static roller would be less efficient than a vibratory roller for compacting soil, but should be acceptable as a compaction tool.

**Table 2 Ground Vibration Amplitude at Various Distances from a 2410 Vibratory Roller**

Source Distance – ft	Peak Particle Velocity – in/sec	RMS Vibration – in/sec
10	1.6	1.1
20	0.8	0.6
40	0.4	0.3
80	0.2	0.15
160	0.1	0.07
320	0.05	0.03

The estimates given in Table 2 indicate that peak particle velocities during vibratory rolling might exceed building damage criteria when occurring within a distance of 80 feet from the building foundation. Vibration should be monitored during vibratory rolling, and static roller compaction should be done to avoid exceeding 0.2 in/sec peak particle velocity.

### **Other Equipment**

Vibration produced by haul trucks, dozers, graders and the like would produce vibration comparable with that produced by the heaviest trucks, represented by the maximum levels discussed above, and would probably not present a significant vibration impact. The exception might be a tracked dozer running in excess of 2<sup>nd</sup> gear.

### **MITIGATION**

#### **Vibration from NE 10<sup>th</sup> Avenue Traffic**

No vibration impact mitigation provisions would be needed. However, the road surface should be constructed to appropriate highway standards for smoothness and should be maintained in good conditions to prevent potholes, washboard, or other significant imperfections in the road surface from developing.

#### **Construction**

The following mitigation measures may be considered to control construction related vibration:

- Use static rollers instead of vibratory rollers

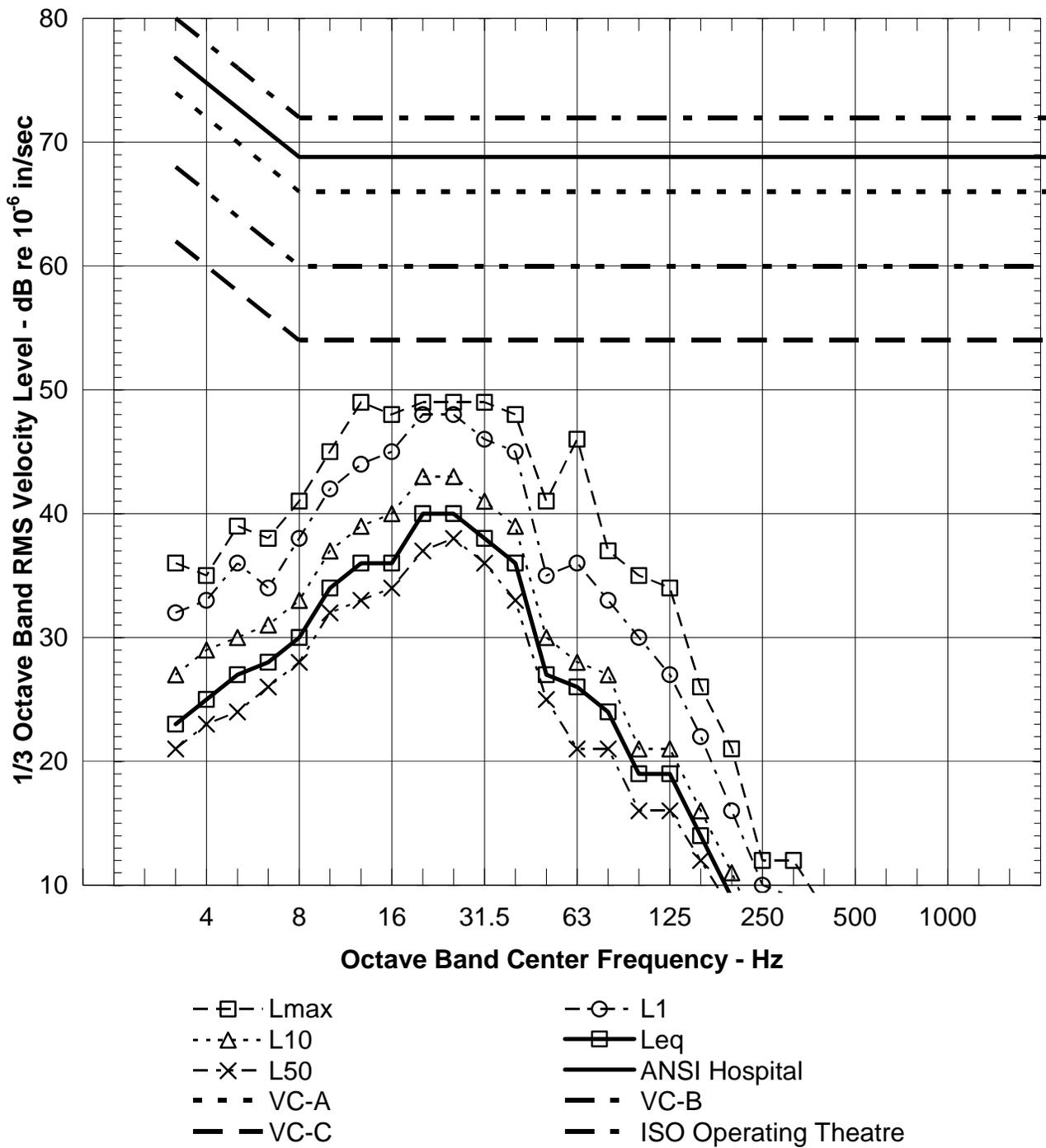
- Consider using hydraulic static pile drivers instead of impact or vibratory pile drivers

- Coordinate pile driving with operating room and MRI use

Monitor foundation vibration at the nearest structures during pile driving or vibratory roller operation within 100 feet of the structure to avoid building damage.

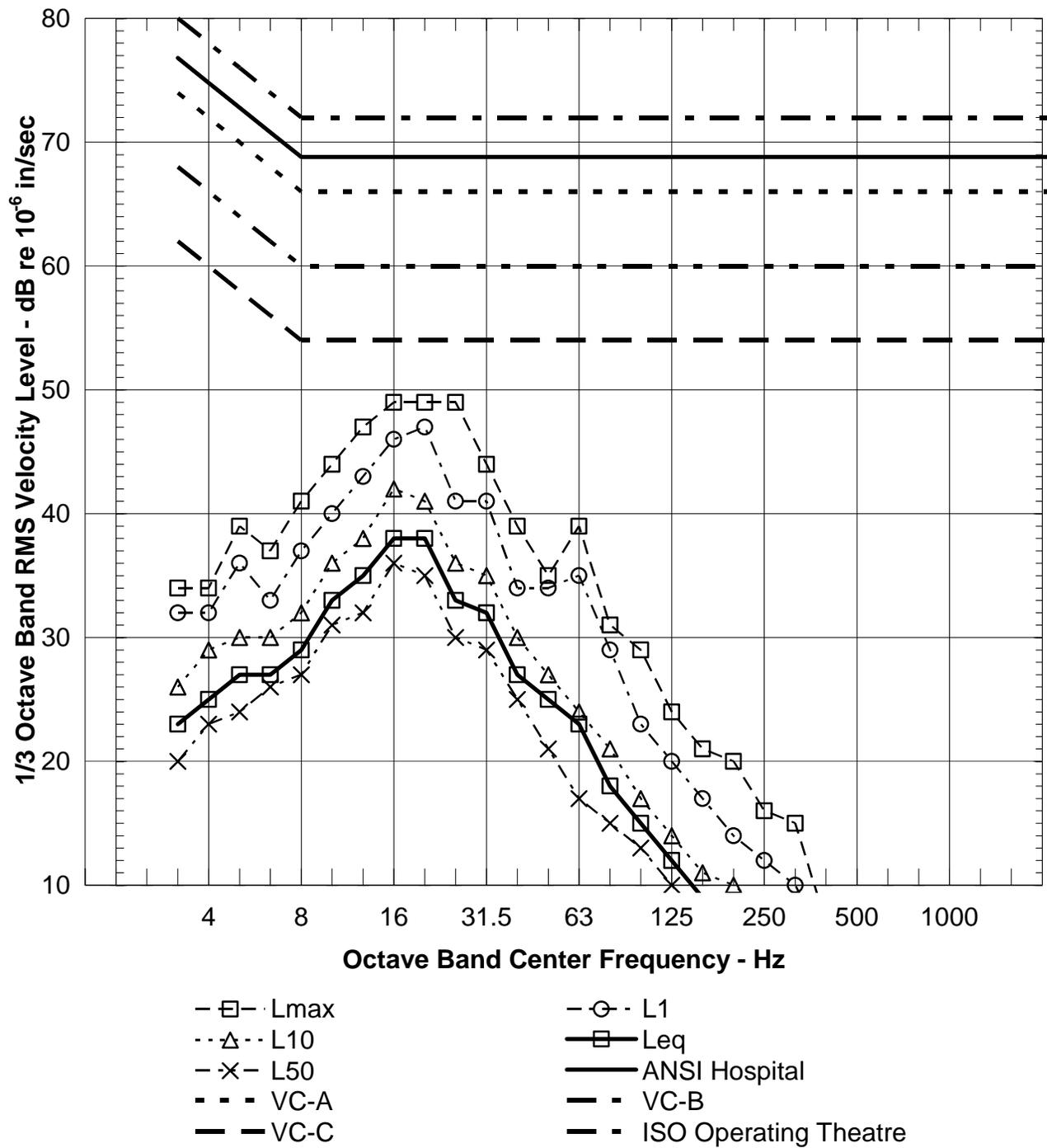


**Figure 1 Testing locations around south Overlake Medical Center Campus. Each location marker shows the location of Channel 1, with Channel 2 located within 50 feet**



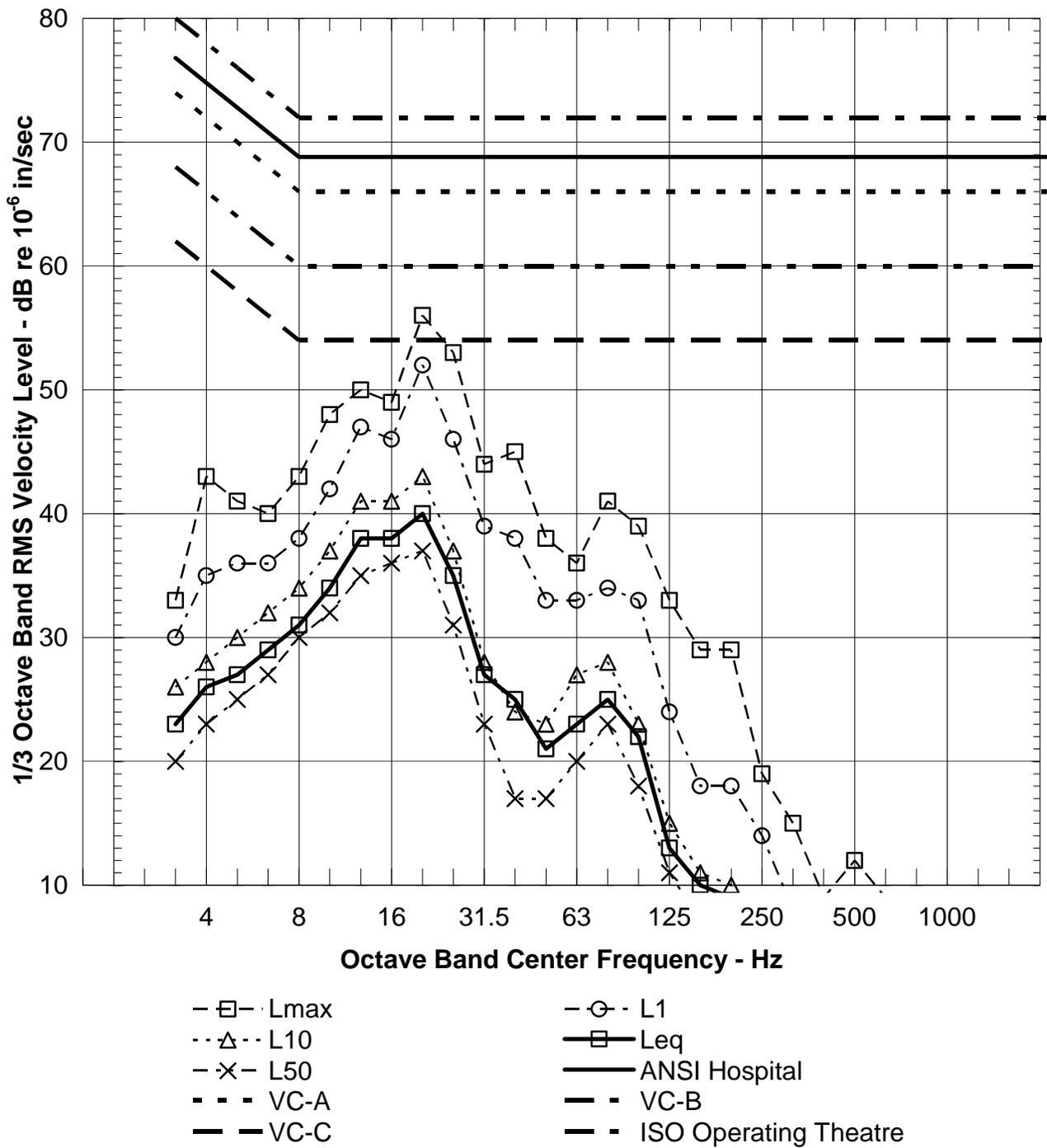
**Location 1 Channel 1**

**Figure 2** Vibration Velocity Levels Measured at Location 1 at 19 Feet from Interstate 405 Right-of-Way



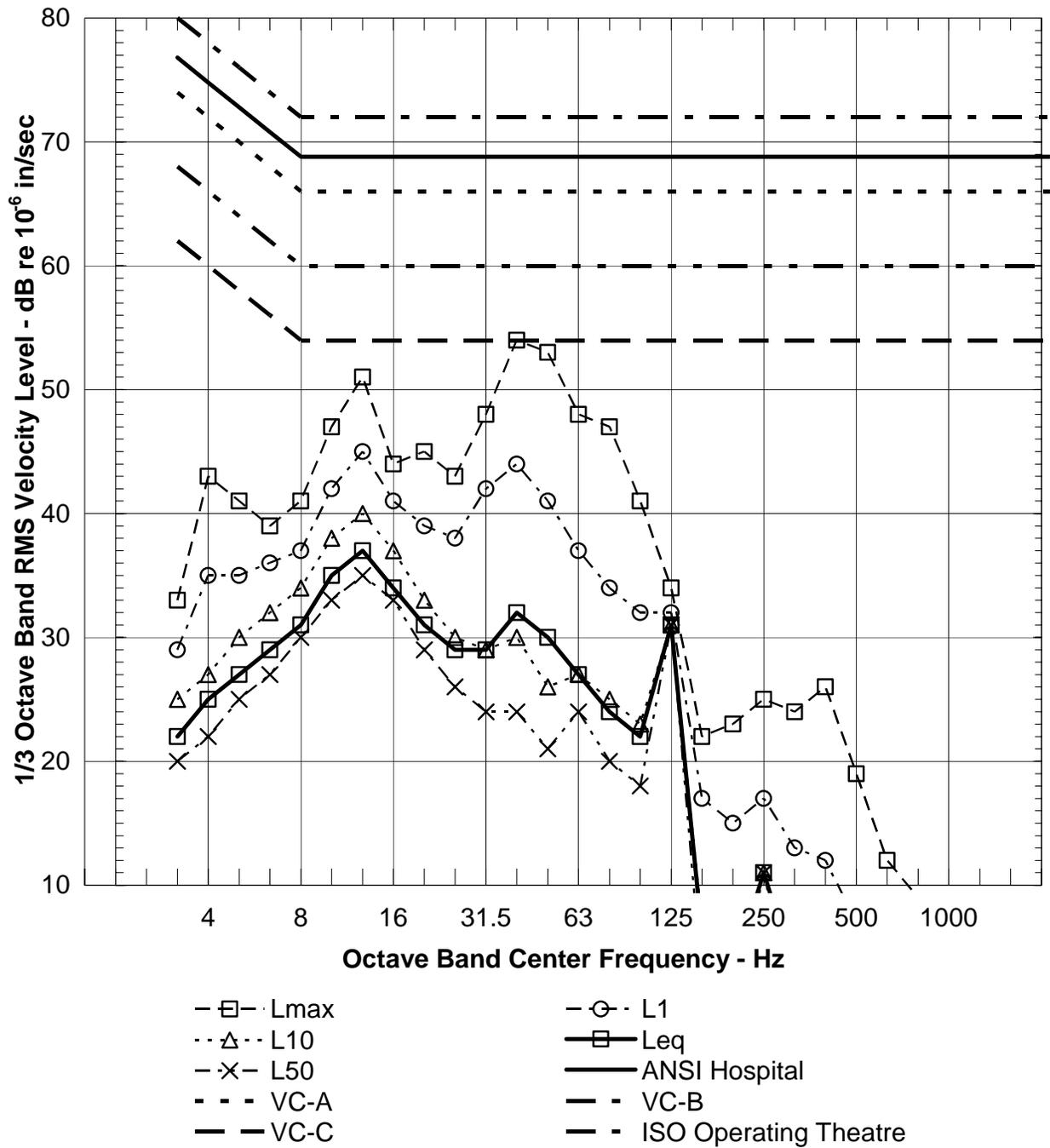
**Location 1 Channel 2**

**Figure 3** Vibration Velocity Levels Measured at Location 1 at 44 Feet from Interstate 405 Right-of-Way



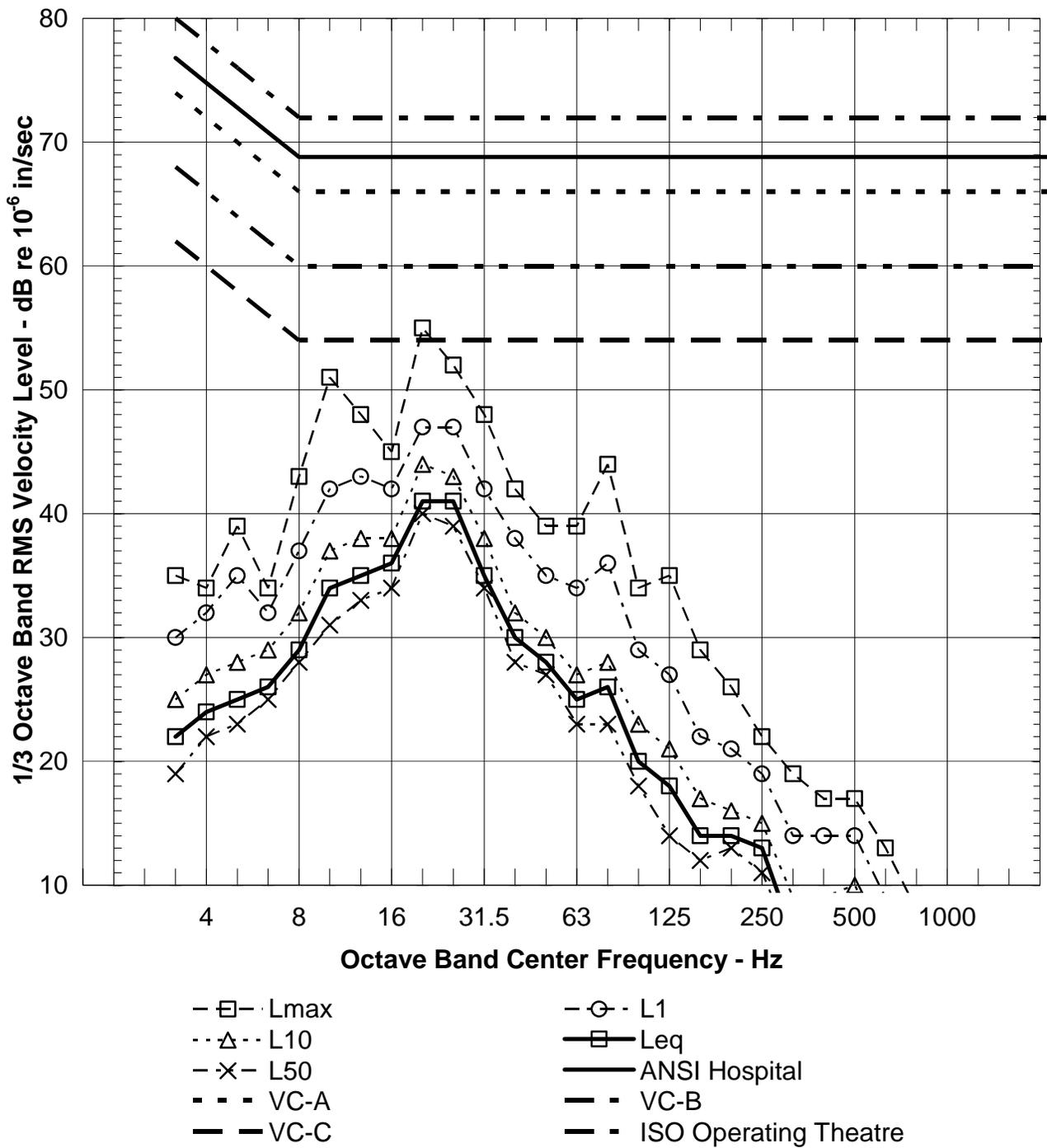
**Location 2 Channel 1**

**Figure 4** Vibration Velocity Levels Measured at Location 2 at 10 Feet from Interstate 405 Right-of-Way at the On-Ramp



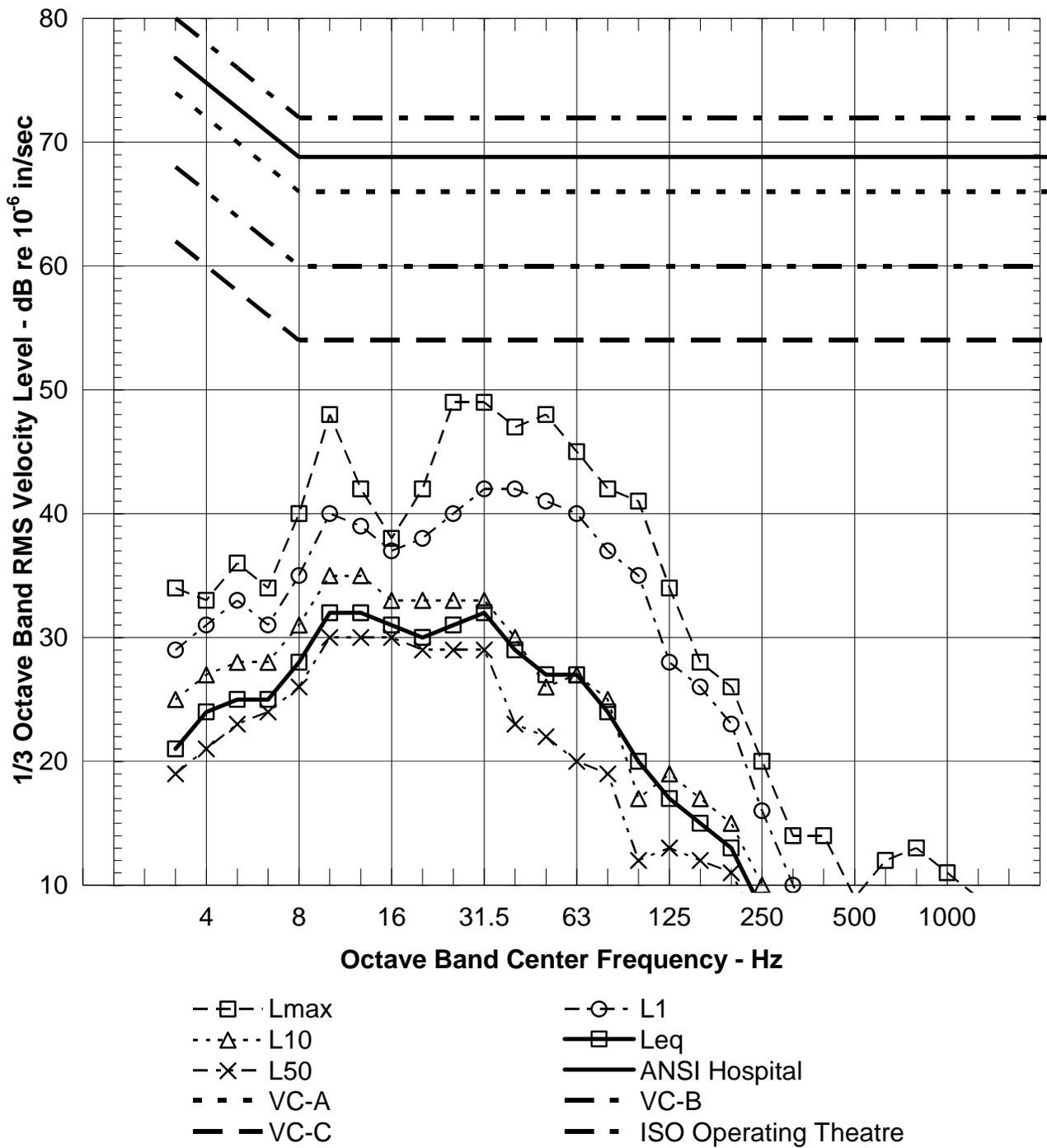
**Location 2 Channel 2**

**Figure 5** Vibration Velocity Levels Measured at Location 2 at 50 Feet from Interstate 405 Right-of-Way at the On-Ramp



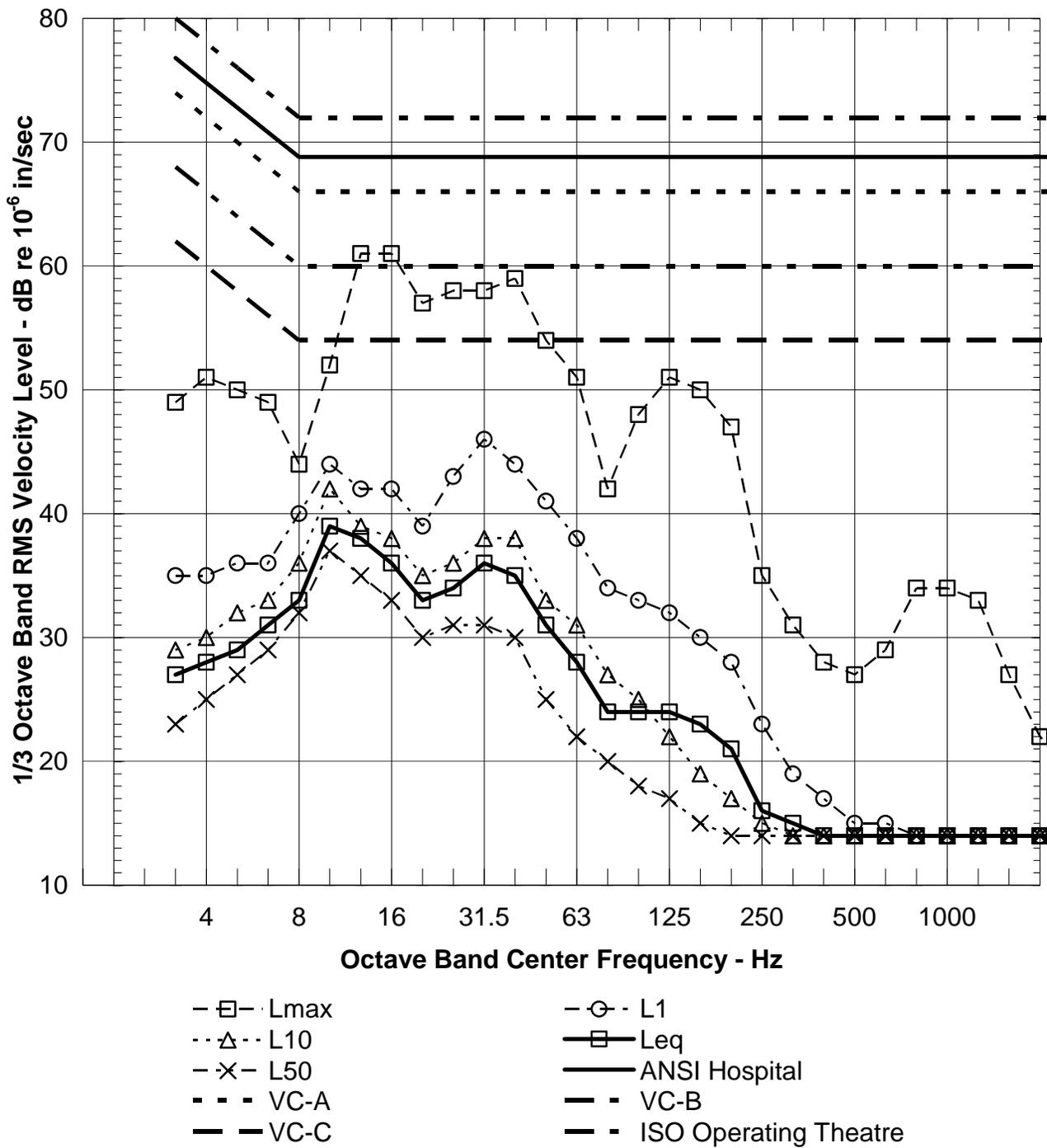
**Location 3 Channel 1**

**Figure 6** Vibration Velocity Levels Measured at Location 3 at 17 Feet from Interstate 405 Right-of-Way



**Location 3 Channel 2**

**Figure 7** Vibration Velocity Levels Measured at Location 3 at 57 Feet from Interstate 405 Right-of-Way



**Location 4 Channel 2**

**Figure 8** Vibration Velocity Levels at 25 Feet from NE 116<sup>th</sup> Avenue Right-of-Way on the Curb of the Driveway to the Parking Lot



APPENDIX F

# Frequently Asked Questions

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## **NE 10<sup>th</sup> Street Extension Frequently Asked Questions**

### **Why are we considering extending NE10<sup>th</sup> Street?**

In 2003, an intensive three year planning effort concluded with an update of the Downtown Implementation Plan (DIP). That Citizens Advisory Committee's (CAC) report to the Bellevue City Council includes a recommendation to extend NE 10<sup>th</sup> Street from 112<sup>th</sup> Avenue NE across I-405, through the Overlake Hospital campus to 116<sup>th</sup> Avenue NE and to add freeway access ramps to and from the north at NE 10<sup>th</sup> Street.

The CAC also recommended an extension of NE 2<sup>nd</sup> Street across I-405 with freeway ramps to and from the south. New freeway access at NE 2<sup>nd</sup> and NE 10<sup>th</sup> Streets are considered vital to support the planned growth of downtown Bellevue which anticipates approximately 10,000 new residents and 28,000 new employees within downtown Bellevue by 2020.

### **How will the extension of NE10<sup>th</sup> Street affect traffic circulation in downtown?**

Today, NE 10<sup>th</sup> Street is a 5-lane street that is under-utilized. It currently carries approximately one third of the daily traffic volume carried by NE 8<sup>th</sup> St. and about half as much as NE 4<sup>th</sup> St. The recommended extension of 10<sup>th</sup> Street and ramp connections would take advantage of the street's unused capacity to serve increased traffic associated with the projected growth of downtown Bellevue. In the future, NE 2<sup>nd</sup> and 10<sup>th</sup> Streets are planned as additional east-west arterials to meet projected traffic volumes in 2020, similar to the traffic volumes on NE 4<sup>th</sup> and NE 8<sup>th</sup> Streets today.

### **What are the traffic impacts of the NE 10<sup>th</sup> Street extension to the Ashwood neighborhood, and access to Pacific Regent Condominiums?**

The most significant finding is that by 2007, without any improvement to either NE 10<sup>th</sup> Street or the hospital, approximately 2,200 vehicles will use NE 10<sup>th</sup> Street (between 108<sup>th</sup> Avenue NE and 110<sup>th</sup> Avenue NE) during the PM Peak hour, as compared to 1,580 in 2003. This is a 39% increase, which is primarily due to the growth in development that is expected to occur within downtown over the next several years. Under the 2007 Alternative B (NE 10<sup>th</sup> Extension to 116<sup>th</sup> Ave NE), there is a more modest 12% increase (or 270 additional vehicles over the 2,200 No Action) at that same location.

By the year 2030, without any roadway extension or hospital expansion, there are an estimated 3,000 vehicles that would use NE 10<sup>th</sup> Street between 108<sup>th</sup> Ave. NE and 110<sup>th</sup> Ave. NE during the PM peak hour. This constitutes a 90% increase compared with the 1,580 vehicles using that same roadway during the PM peak hour in 2003. With the full extension of NE 10<sup>th</sup> Street across I-405, there are an estimated 3,240 vehicles at that same location, or a 8% increase over the 2030 No Action. This indicates that most of the projected increase in traffic volume on NE 10<sup>th</sup> in the Ashwood District will happen regardless of whether NE 10<sup>th</sup> is extended across I-405. The addition of ramps connecting to the freeway at NE 10<sup>th</sup> Street (Alternative 2) would add another 140 vehicles, or a 13% increase over the No Action Alternative. The most significant change in traffic volume on NE 10<sup>th</sup> Street will result from the land use change within Downtown Bellevue between today and 2030, even without the NE 10<sup>th</sup> extension. The relative change in volume attributed to

the full roadway extension and or ramps is minor compared with the background growth. Although unsignalized driveways like the Pacific Regent's were not specifically analyzed, the existing traffic signals at the intersections of NE 10th Street/110th Avenue and NE 10th Street/108th Avenue should create adequate gaps in the traffic stream to allow vehicles to pull in and out. The existing two-way center turn lane also provides a refuge for left turns in or out of the site.

**What benefits would be provided by the extension of NE 10<sup>th</sup> Street?**

The extension of NE 10<sup>th</sup> Street across I-405 will provide additional vehicular and pedestrian access between downtown and the hospital area east of I-405. The intersections of NE 8<sup>th</sup> Street at 112<sup>th</sup> and 116<sup>th</sup> Avenues are currently among the most congested in the city. The NE 10<sup>th</sup> St. extension would help to reduce congestion, particularly on NE 8<sup>th</sup> and NE 12<sup>th</sup> Streets. In addition, the extension is expected to provide additional access to regional freeways and improve the community access to the Overlake Hospital Medical Center campus.

**If NE 10<sup>th</sup> Street is extended, what will the City do to address impacts on the Ashwood residential neighborhood, including noise and traffic safety issues?**

The extension of NE 10<sup>th</sup> Street would add to projected traffic volumes on NE 10<sup>th</sup> Street in the future. However, this street was widened to five lanes in the early 1990s to provide additional east-west capacity through downtown. Currently, that capacity is being under-utilized while the parallel streets of NE 4<sup>th</sup>, NE 8<sup>th</sup> and NE 12<sup>th</sup> Streets are becoming increasingly congested.

The Downtown Implementation Plan (DIP) recommendations, completed in 2003, indicate that the extension of NE 10<sup>th</sup> St. would help the City to serve the increased traffic related to growth of downtown, consistent with the City's adopted Comprehensive Plan. The previous EIS for the DIP and the recent Draft EIS for the Overlake Hospital Master Plan/NE 10<sup>th</sup> Street Extension have both indicated that, although noise levels would increase along NE 10<sup>th</sup> Street, no noise mitigation would be required. Providing a safe transportation system is a very important ongoing priority for the City. NE 10<sup>th</sup> Street will be monitored on a regular basis to determine if any measures are needed to respond to changing conditions.

**How much will the NE 10<sup>th</sup> Street Extension project cost, and who is paying for it?**

The initial segment of the project, located between 116<sup>th</sup> Avenue NE and the hospital's driveway (Swisstak Lane) would cost approximately \$4-6 million. The full extension across I-405 from 116<sup>th</sup> to 112<sup>th</sup> Avenue NE would cost approximately \$55 million (including right of way). The City has already secured approximately \$4 million to pay for the initial segment, and is continuing to seek additional federal and state funding to help pay for the full extension.

**Will NE 10<sup>th</sup> Street be a one-way street?**

No. The original Downtown Plan completed in 1989 did recommend that NE 10<sup>th</sup> Street act as a one-way street in combination with NE 8<sup>th</sup> Street. However, the Downtown Plan has since been updated (in 2003). NE 10<sup>th</sup> Street will continue to operate as a two-way street. The latest plan recommends that 106<sup>th</sup> Ave. NE and 108<sup>th</sup> Ave. NE act together as a north-south one-way couplet.

**What are the noise and light (headlight glare) impacts of the NE 10<sup>th</sup> Extension and ramps to the hospital?**

The Draft EIS acknowledges that vehicle headlights from NE 10<sup>th</sup> Street could cause glare impacts to the lower patient rooms of the new campus buildings. The DEIS identifies mitigation measures to reduce glare, including using interior window coverings to block exterior light and glare from the patient care environment.

The existing exterior sound level from I-405 is in the mid to upper 70s dBA. This is quite a high level; however, simultaneous interior and exterior noise measurements indicated a 28-dBA or greater reduction due to the building structure, such that "interior sound levels were due more to the HVAC system and activities in the building (I-405 traffic was barely audible)". The noise contribution from the new NE 10<sup>th</sup> roadway will be slight by comparison to existing sound levels, so the overall sound level will not impact the hospital's interior environments. The projected future noise levels due to the action alternatives (for both 2007 and 2030) would not trigger Bellevue's requirement to assess noise mitigation for the hospital, and no significant noise impacts would be expected.

**When and how would the construction of the NE 10<sup>th</sup> St. extension begin?**

Construction is expected to begin in late 2006 or early 2007 with an initial segment from 116th Ave NE into the Overlake Hospital campus. This segment would provide basic access in and out of the Overlake Hospital campus and new Group Health building. Completion would coincide with the first phase of the Overlake Hospital campus redevelopment planned for 2007.

**When would construction of the NE 10<sup>th</sup> St. be completed?**

Completion of the full NE 10<sup>th</sup> St. extension is dependent upon the appropriation of funding. If the City receives all of the necessary funding needed to complete the entire roadway extension across I-405, the extension could be completed by 2008. If full funding is delayed, construction would be completed in two phases. The first phase of the extension (described above) would coincide with the completion of the first phase of the hospital campus, planned for 2007. The remaining portion across I-405 would be built as funding becomes available.

**How will the location of new freeway ramps be decided?**

The Washington State Department of Transportation (WSDOT) is the final authority on locating freeway ramps. An evaluation of freeway ramp alternatives is provided in the *Overlake Hospital Master Plan/NE 10<sup>th</sup> Street Extension Environmental Impact Statement* (EIS) in order to inform the City Council, should they choose to offer a recommendation to WSDOT. It should be noted that WSDOT plans to conduct additional environmental reviews before making a final decision on ramp locations.

**When might additional freeway ramps be constructed?**

WSDOT has initiated design work; however, substantially more work is needed, including further design, environmental review, and right-of-way acquisition before construction can proceed. WSDOT will be responsible for that schedule and, at this time, we do not know when funding will become available for the addition of ramps.

**Why is it necessary to extend NE 10<sup>th</sup> St. if NE 8<sup>th</sup> and NE 12<sup>th</sup> Streets already provide access over I-405 to Overlake Hospital?**

Currently, both NE 8<sup>th</sup> and NE 12<sup>th</sup> Streets are heavily congested during the peak periods. By 2007, the expanded use of the hospital campus is projected to add more than 1,000 additional vehicle trips during the afternoon peak period. The extension of NE 10<sup>th</sup> Street will alleviate congestion on both NE 8<sup>th</sup> and NE 12<sup>th</sup> Streets and provide direct emergency access to the hospital campus.

**Are there any plans to extend NE 10<sup>th</sup> Street eastward from NE 116<sup>th</sup> Ave.?**

Not at this time. The City will be conducting a separate study to evaluate the transportation needs of the area east of 116<sup>th</sup> Avenue NE to 124<sup>th</sup> Avenue NE and north to SR 520. This study will be completed by Spring 2005.

**What is the City's process to approve and fund the NE 10<sup>th</sup> St. Extension?**

The project began as a recommendation from the updated *Downtown Implementation Plan*. It was adopted into the *Transportation Improvement Program* by Council in early 2004. The NE 10<sup>th</sup> St. extension has also been included in the *Downtown Subarea Plan*. That plan was adopted into the City's *Comprehensive Plan* in December 2004.

Currently, the City's 6-year *Capital Investment Program* includes funding to cover design of the first phase of the roadway into the hospital campus. In addition, the City will likely receive federal funding to pay for the construction of the initial segment. The City will continue to seek federal and state funding to support the entire roadway project.

**Why wasn't the Draft EIS delayed until the NE 10<sup>th</sup> ramp alternatives were fully defined?**

The Draft EIS includes two levels of analysis: it analyzes environmental impacts associated with a *project-level* evaluation of the near term (2007) hospital expansion and NE 10<sup>th</sup> Street extension and a *programmatic-level* evaluation of the longer term (2030) projects, including evaluation of potential freeway ramp locations to and from Interstate 405 (I-405) and/or SR 520. Analyzing and disclosing the impacts of the potential future freeway ramp locations in conjunction with the hospital expansion and NE 10<sup>th</sup> extension is consistent with State Environmental Protection Act (SEPA) Rules.

Because the location of future freeway ramps at NE 10<sup>th</sup> Street was identified as a recommendation in the prior Downtown Implementation Plan Update (2003), their location was generally known and a subject of significant uncertainty with regard to the hospital campus expansion and the extension of NE 10<sup>th</sup> Street. Incorporating the early programmatic analysis of the ramp locations was consistent with SEPA policy. This analysis benefited all the affected parties (Overlake Hospital, Group Health Cooperative, the Washington State Department of Transportation, and the City of Bellevue) by coordinating all decision-making, reducing uncertainty and delay and integrating SEPA review with project design and permitting decisions, and it provided a consolidated and combined public involvement process.

Future project-level analysis will be required before the freeway ramp connections can be advanced into final design and construction. The Federal Highway Administration and Washington State Department of Transportation are responsible for evaluating and approving new connections

to I-405 and SR 520 consistent with state and federal requirements. Therefore, they will conduct the project-level work when the freeway ramp project is ready to proceed.

### **What will be the impacts of construction to local businesses?**

As noted in the DEIS, a construction traffic management plan would be prepared prior to any construction under the proposal. This plan would outline steps for minimizing traffic impacts during construction activities. Because most of the construction activity would be located on the hospital campus, effects on businesses outside the campus are not expected to be significant.

### **Does the EIS evaluate cumulative impacts associated with other downtown developments or other planned roadway projects?**

The DEIS does consider cumulative impacts where the potential for such impacts exists. For example, traffic modeling for the 2007 and 2030 build alternatives assumed future growth that included all projects within the City's current 6-year Capital Investment Program, and all current approved private development projects. The 2030 model, in addition, includes all transportation projects that are included in the City's 12-year Transportation Facilities Program as well as proposed State highway projects. A number of approved or recently completed development projects are included in the model, including the Whole Foods Market, Lincoln Square, Marriott Courtyard, development of the Schnitzer property at NE 8<sup>th</sup>/ 112<sup>th</sup> Avenue NE, and the Wasatch development (NE 10<sup>th</sup> between 106<sup>th</sup> Ave NE and 108<sup>th</sup> Ave NE). Although identifying cumulative impacts of the proposed changes to the Institutional district is by nature somewhat speculative (since the only property with this designation is the Overlake Hospital campus itself), potential resulting pressures on development in surrounding areas are described in the Draft EIS. The fact that the EIS programmatically reviewed 2030 buildout of the hospital campus and the proposed connections from NE 10<sup>th</sup> or NE 12<sup>th</sup> to the freeway system, in addition to the project-level 2007 analysis, allows decisionmakers to see the cumulative effects of both projects, rather than only the immediate actions for which approvals are being sought.

### **How can I stay informed about developments on the extension of NE 10<sup>th</sup> Street?**

The most current information can be found at the City's website, [www.cityofbellevue.org](http://www.cityofbellevue.org). From the home page, select **Featured Pages** and click on **NE 10<sup>th</sup> Street project** to access pertinent project information and documents.

Updates to the project will also be published in our *It's Your City* newsletter and other City communications.

### **Questions?**

Contact: Lucy Garrick  
Project Community Relations  
City of Bellevue  
Department of Transportation  
425-452-7680  
LGarrick@ci.bellevue.wa.us.



APPENDIX G

## Distribution List

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# APPENDIX G

## Overlake Hospital Master Plan/ NE 10<sup>th</sup> Street Extension Final EIS Distribution List

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Distributed February 24, 2005

Beaux Arts Village	Puget Sound Regional Council
Bellevue Chamber of Commerce	Puget Sound Water Quality Action Team
Bellevue Downtown Association	Seattle Post Intelligencer
Bellevue Public Library	Seattle Public Library
Bellevue School District #405	Seattle Times
City of Issaquah	Sound Transit
City of Kirkland, Planning Department	Town of Clyde Hill
City of Medina	Town of Hunts Point
City of Mercer Island, Development Services	Tulalip Tribes
City of Newcastle, Planning Department	U.S. Environmental Protection Agency, Region X
City of Redmond, Planning Department	University of Washington, College of Architecture and Urban Planning Library
City of Renton, Environmental Review Committee	Washington State Department of Ecology
Darby, Arlene	Washington State Department of Fish and Wildlife
Daily Journal of Commerce	Washington State Department of Trade and Economic Development
East Bellevue Community Council	Washington State Department of Transportation
Eastside Journal	Washington State Office of Archaeology and Historic Preservation
Federal Highway Administration	Washington State Office of Community Development
Greater Seattle Chamber of Commerce	Washington State Social and Health Services
HUD	
Issaquah School District	
King County DDES	
King County Metro Transit, Environmental Planning	
Lake Hills Library	
Muckleshoot Indian Tribe/Fisheries Department	
Newport Way Library	
Office of the King County Executive	
Pacific Regent Condominium Association	
Puget Sound Air Pollution Control	
Puget Sound Blood Center	
Puget Sound Energy	



APPENDIX H

# Glossary

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# Glossary of Terms

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## **Accessibility**

The ease by which an individual can reach desired activities in any location by use of the transportation system.

## **Arterial**

A major street that primarily serves through traffic, but also provides access to abutting properties. Arterials are often divided into principal and minor classifications depending on connections made, nature of traffic, and other considerations.

## **Best Management Practices (BMPs)**

Methods that have been determined to be the most effective, practical means of preventing or reducing pollution from non-point sources.

## **Capacity**

The maximum sustained traffic flow of a transportation facility, expressed in vehicles per hour per lane, under prevailing traffic and roadway conditions.

## **Circulation**

The movement of people or goods along the public infrastructure (roads and sidewalks).

## **Comprehensive Plan**

A broad statement of community goals and policies that direct the orderly and coordinated physical development of the city into the future.

## **Congestion**

A condition characterized by unstable traffic flows that prohibit movement on a transportation facility at optimal legal speeds. Recurring congestion is caused by constant excess volume compared with capacity. Nonrecurring congestion is caused by unusual or unpredictable events such as traffic accidents.

## **Cumulative Effect**

The effects on the environment that result from the incremental consequences of an action when added to other past, present, and reasonably foreseeable future actions.

## **Direct Impact**

The impact on the environment that is caused by an action and occurs at the same time and place.

## **General Purpose (GP) Lane**

A freeway or arterial lane available for use by all traffic.

## **Grade Separation**

The separation of two roadways with one roadway going either over (a bridge) or under (a tunnel) the other.

**Growth Management Act (GMA)**

Washington State legislation passed in 1990 and subsequently amended that requires long-range comprehensive plans prepared by cities and counties to be balanced with supporting transportation infrastructure, including transportation.

**High-Capacity Transit**

Transit systems operating, in whole or part, on a fixed-guideway, dedicated right-of-way or freeway/express facility, designed to carry a large number of riders at higher speeds than conventional transit. Examples include express bus on HOV lanes, passenger ferry service, and light and heavy rail systems.

**High-Occupancy Vehicle**

A vehicle carrying two or more people. The minimum number of vehicle occupants required to qualify for HOV lane use may vary depending on the congestion levels and capacity of the HOV lane and the surrounding road system.

**Impervious Surface**

A surface that does not allow surface water to penetrate through.

**Ldn**

The day/night sound level. This is a daily average noise level that ranks noise that occurs during the night more heavily, adding 10 dBA to noise levels between 10 p.m. and 7 a.m.

**Leq**

Equivalent sound level. The level of a constant sound which in a given time period has the same energy as does a time-varying sound.

**Level of Service**

A gauge for evaluating system performance for roadways, transit, non-motorized, and other transportation modes.

**Mitigation**

Actions taken to reduce adverse effects on the environment.

**Mobility**

The ease of continuous movement along the transportation system.

**Mode Split**

Person trips are divided in their mode of transportation (i.e., Drive alone, Transit, Rideshare, Walk/Bike).

**National Ambient Air Quality Standards**

Standards established by the EPA that apply to outside air quality throughout the country.

**No Action Alternative**

The alternative under which no land use changes would take place on the Overlake Hospital campus, no Comprehensive Plan Amendment/Land Use Code Amendment would be adopted, NE 10<sup>th</sup> Street would not be extended, and no new connections to the regional highway system would be provided at NE 10<sup>th</sup> or NE 12<sup>th</sup> Streets.

**Ozone**

A form of oxygen found in two layers of the atmosphere, the stratosphere and the troposphere. In the stratosphere, ozone is a natural form of oxygen that provides a protective layer shielding the earth from ultraviolet radiation. In the troposphere, ozone is a chemical oxidant and major component of photochemical smog.

**Palustrine Wetland**

Freshwater wetlands dominated by trees, shrubs, and emergent vegetation.

**Particulate Matter**

A very small solid suspended in air or water which can vary widely in size, shape, density, and electrical charge.

**Peak-Period**

The 1-hour period in the late afternoon where traffic congestion is expected to be the most severe.

**Preferred Alternative**

The alternative recommended by City staff for implementation (2007 Alternative B). The City Council will make the ultimate decision on the Preferred Alternative for extension of NE 10<sup>th</sup> Street.

**Principal Arterial**

A street that serves primarily long trips, connecting to freeways and important activity centers.

**Riparian Area**

An area of land adjacent to and including a stream. The riparian corridor encompasses the stream channel, floodplain areas, wetlands, forests, and grasslands associated with stream ecosystems.

**Secondary Impact**

The impact on the environment that is caused by an action and occurs later in time or is farther removed in distance, but is still reasonably foreseeable. Generally, the impacts are induced by the initial action.

**Significant Unavoidable Adverse Impacts**

Impacts caused by the action that, after mitigation, have more than a moderate adverse impact on the environment.

**State Implementation Plan**

EPA-approved state plan for the establishment, regulation, and enforcement of air pollution standards.

**Traffic Concurrency**

The Bellevue Traffic Standards Code and the State Growth Management Act require the City to approve land development concurrently with the available capacity of its streets to support development.

**Transportation Demand Management (TDM)**

Institutional and operational methods to reduce travel demand on the transportation system. TDM strategies are usually implemented to support the use of HOVs, and

typically include carpool, vanpool, and public transit programs.

**Wetland**

Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Area of land covered with water during all or parts of the year.

APPENDIX I

# Open House on Draft EIS

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# Open House on Draft EIS

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**CITY OF BELLEVUE  
OVERLAKE HOSPITAL MEDICAL CENTER MASTER PLAN  
AND NE 10<sup>TH</sup> STREET EXTENSION  
ENVIRONMENTAL IMPACT STATEMENT (EIS)  
PUBLIC SCOPING MEETING**

Thursday, November 18, 2004  
6:00 PM to 7:00 PM

Council Conference Room  
Bellevue City Hall  
11511 Main Street  
Bellevue, Washington

**BELLEVUE STAFF:** Carol Helland, Land Use Division Director, PCD  
Steve Sindiong, Senior Planner, Transportation

**OTHERS PRESENT:** Roger Anderson, GLY  
Bill Biggs, Group Health Cooperative  
Arlene Darby, Bellevue resident  
Janet Donelson, Overlake Hospital Medical Center  
Phillip Wood, Trammell Crow  
Jennifer Young, CH2M Hill

**MINUTES TAKER:** Christy Hulin

**OPEN HOUSE – OVERLAKE HOSPITAL MASTER PLAN/NE 10<sup>TH</sup> STREET  
EXTENSION ENVIRONMENTAL IMPACT STATEMENT (EIS)**

Carol Helland opened the hearing at 6:05 p.m. She explained the purpose of the hearing, for the public to learn about the projects and provide feedback on issues and concerns that should be considered as decisions are made on the project components.

Ms. Helland noted that here tonight are representatives from Group Health, Overlake Hospital Medical Center, Bellevue Transportation Department, and consultants. She encouraged people to either make comments to the court reporter or fill out one of the blue comment forms. The comments must be received December 6 and a summary will be presented to the Council on December 13. Verbatim comments and responses to the comments will be in the Final Environmental Impact Statement (EIS).

Ms. Helland said the Planning Commission will be evaluating amendments to the Land Use Code that will result from the master plan on the Overlake Hospital Medical Center campus. In order to accomplish that and remove the land underneath the road, Comprehensive Plan Amendments are necessary. They will be introduced beginning December 1, and there will be additional public hearings as identified on the schedule that is available tonight.

Ms. Helland encouraged people to submit questions to Transportation staff or to the consultants.

No one offered oral comments to the Court Reporter.

### **ADJOURNMENT**

The open house ended at 7:00 p.m.