4x12

South North
Transit Corridor Study

# Design Option Narrowing Final Report

South/North Steering Group

November 20, 1995

METRO

# Design Option Narrowing Final Report

## South/North Transit Corridor Study

South/North Steering Group

November 20, 1995

Metro

The preparation of this report was financed in part by the U.S. Department of Transportation, Federal Transit Administration, Oregon Department of Transportation and Washington Department of Transportation. The opinions, findings and conclusions expressed in this report are not necessarily those of either the U.S. Department of Transportation, Federal Transit Administration, Oregon Department of Transportation and Washington Department of Transportation

# TABLE OF CONTENTS

# 1.0 Introduction

## 1.1 PURPOSE OF THE REPORT

This report documents the light rail transit options selected by the South/North Steering Group to be studied further in the Draft Environmental Impact Statement (DEIS).

It is important to understand the context of this report. Earlier in Tier I, during the *Scoping Process*, it was determined that the DEIS will address two transportation alternatives for the South/North Corridor: (i) the No-Build Alternative; and, (ii) the Light Rail Transit (LRT) Alternative. Further, in December 1994, with the adoption of the *Tier I Final Report* (Metro: December 1994), Metro Council and the C-TRAN Board of Directors adopted the Phase One Termini and most of the Corridor's alignment alternatives to advance into the Tier II DEIS for further study. Later in the spring of 1995, the alignment alternatives in the remaining segments of the corridor (the south Willamette River crossings and the North Portland alignments) were narrowed. Then finally, in August 1995, following an extensive effort to involve the public in the creation of the Clark County and City of Vancouver Transportation Futures process, C-TRAN amended the northern Phase I terminus (from 99th Street to Veterans Administration (VA) Hospital/Clark College).

This report establishes the:

[a] LRT alignment design options;

[b] general location of potential light rail stations, transit centers and park-and-ride lots on each of the proposed alignment options; and

[c] "Minimum Operable Segments (MOS)";

which will be addressed in the Draft Environmental Impact Statement.

This report also includes listings of *Issues* regarding the identified options. Many of these *Issues* identify major areas for further study that may occur between the time this report is approved and the time DEIS analysis begins. These activities may result in refinements to the recommended alignment, station location and MOS options. Refinements may also occur during the DEIS and the FEIS. Thus, the options set forth in this report are a starting point, not a final proposal.

## 1.2 STUDY, PUBLIC INVOLVEMENT AND DECISION-MAKING PROCESS

Tier I of the South/North Corridor Transit Study began in April 1993. The bi-state study has included the work of 15 different governmental entities having some responsibility for the project, including: five cities, four counties, Tri-Met, C-TRAN, Metro, RTC, ODOT, WSDOT and the Port of Portland.

In December 1993, the South/North Steering Group adopted the *Tier I Evaluation Methodology Report* (Metro: December 1993). The *Methodology Report* includes the adopted Goal for the South/North Project: "To implement a major transit expansion program in the South/North Corridor that supports bi-state land use goals, optimizes the transportation system, is environmentally sensitive, reflects community values and is fiscally responsive." The report also adopted the criteria and measures and process to be used to narrow design options that will advance into the DEIS for further study. Appendix A includes a diagram of the Design Option Narrowing process and Appendix B includes a summary table of the Design Option Narrowing Criteria and Measures.

Over the past 12 months, project staff have been engaged in identifying, engineering, costing, projecting ridership and assessing the impacts of alignment design options identified at the beginning of or during Tier I. The results of that work are documented in the *South/North Design Option Narrowing Briefing Document* and the *South/North Design Option Narrowing Technical Summary Report* (Metro: October 1995).

In addition, there has been a myriad of public forums and hearings, Citizen Advisory Committee meetings, Expert Review Panel meetings and technical meetings concerning design options. Hundreds of public comments have been received, catalogued and distributed to project staff and policy-makers. Those public comments are included within the *South/North Design Option Narrowing Public Comments Report* (Metro: September 1995).

The design options identified in this report for further study within the DEIS are based on the results of these technical and public involvement activities, as well as the consideration of recommendations independently proposed by the South/North Citizens Advisory Committee and the South/North Project Management Group.

The *Design Option Narrowing Final Report*, as adopted by the Steering Group, will be distributed to the governing body of each of the participating governmental entities. Tier I will conclude when the Steering Group and participating jurisdictions reach a consensus on the design options to advance into the DEIS for further study. Subsequently, the preparation of the DEIS will begin and the process of evaluating and refining the options will continue to occur, this time at a more detailed level of analysis.

## 1.3 ORGANIZATION OF THE REPORT

Chapter Two of this report defines the two termini for the full length light rail alternative and four potential minimum operable segments. It also identifies the major issues regarding the *MOS's* which still need resolution.

Chapter Three defines one or two alignment options for each of eight segments encompassing the full-length light rail alignment. Potential station locations and major outstanding issues are also identified in each segment.

# 2.0 Minimum Operable Segments/Terminus Options

## 2.1 BACKGROUND

The full-length light rail alternative to be examined in the DEIS would run between the vicinity of the Clackamas Town Center in Oregon and the vicinity of the Veterans Administration (VA) Hospital/Clark College in Vancouver, Washington. This alternative is premised on the assumption that:

[a] the Clark County transportation futures study incorporates a continued interest to examine bi-state light rail options; and

[b] 50% federal funding for such an option would be secured over two federal authorization cycles requiring the full-length project to be built in two construction segments.

FTA requires that all DEISs include an examination of Minimum Operable Segments (MOS's) for each light rail alternative. MOS's are light rail alignments which are:

[a] segments of the full length alternative;

[b] can be operated successfully on an interim or long-term basis; and

[c] can be extended into the full-length alternative at a later time.

FTA requires MOS's to be studied to:

[a] assess whether project objectives can be equally or more cost-effectively met by *MOS's* than the more expensive full-length alternatives;

[b] ensure that there are alternatives which could be constructed if funding sources provide less revenues than initially expected or desired; and

[c] ensure that there are options which could be built in sequence, over time, if cash flow requirements dictate phased-construction.

In addition, the MOS's provide the opportunity to examine different permanent termini in North Portland if the Clark County transportation futures process determines that light rail is not an appropriate mode in Clark County at this time.

## 2.2 SELECTED MOS's

These conditions lead to defining a series of MOS's which include:

[a] One MOS providing a bi-state segment:

1. **Milwaukie CBD/Marketplace Park-and-Ride to V.A. Hospital/Clark College (Vancouver)**

[b] Three Oregon-only MOS's providing various length extensions into N/NE Portland:

2. **Clackamas Town Center Vicinity to Rose Quarter Vicinity**

3. **Clackamas Town Center Vicinity to Kaiser Clinic Vicinity**

4. **Clackamas Town Center Vicinity to Expo Center Vicinity**

## 2.3 MOS ISSUES

Four issues regarding MOS's require continued investigation at this time:

1. *Design of MOS termini:* The location and design of the three MOS termini in North Portland (Rose Quarter, Kaiser Clinic and Expo Center), including the station and trackage, need to be refined over the next two months.

2. *Bus service:* The bus configuration serving the North Portland MOS termini (in the CTC to North Portland MOS's) and the Milwaukie terminus (in the Milwaukie to Vancouver MOS) also need to be defined over the next two months.

3. *Park-and-ride configurations:* The configuration of the Expo Center park-and-ride (in the CTC to Expo Center MOS) and the Milwaukie park-and-ride (in the Milwaukie to Vancouver MOS) need to be refined over the next two months.

4. *MOS funding plans:* As part of the DEIS, a funding plan will be prepared for each of the MOS options.

# 3.0 Design Options

## 3.1 CLACKAMAS TOWN CENTER VICINITY

### 3.1.1 Clackamas Town Center Vicinity: Recommended Options (See Figures 1 & 2)

In this segment, two design options will be examined in the DEIS:

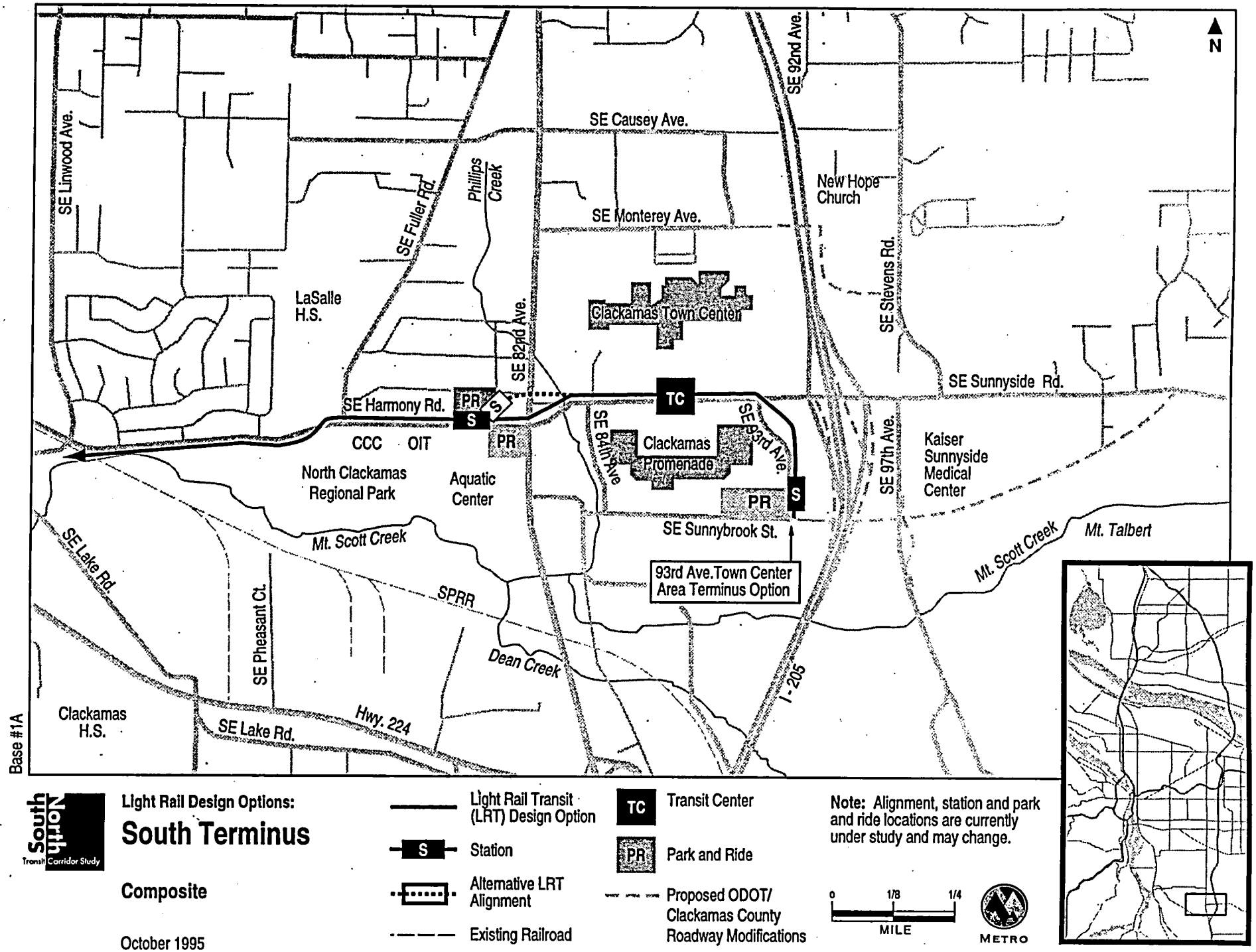
1. *North of Clackamas Town Center Alignment to Sunnyside Area Terminus*: From the S.E. Fuller Road/S.E. Harmony Road vicinity, the alignment would run along the west and north circumference of the Southgate community. It would then cross S.E. 82nd Avenue on an elevated structure and head eastward in the vicinity of S.E. Monterey Avenue to a transit center serving the CTC. From there, the alignment would continue eastward, crossing I-205 on a new structure, to a park-and-ride near the New Hope Church. From the Church, the alignment would run southward, paralleling I-205, crossing S.E. Sunnyside Road and then proceeding eastward to a park-and-ride terminus station.

2. *South of Clackamas Town Center Alignment to S.E. 93rd Avenue Town Center Area Terminus:* From the S.E. Fuller Road/S.E. Harmony Road vicinity, the alignment would run eastward along S.E. Harmony Road, to a park-and-ride station just west of S.E. 82nd Avenue. This station would also serve walk-ons from the Southgate community, Aquatic Center and Oregon Institute of Technology. The alignment would then curve slightly northwards to a point near the northern border of S.E. Sunnyside Road, cross S.E. 82nd Avenue and head eastward to a transit center south of the Clackamas Town Center. Bus improvements providing access to the transit center would also be included. The LRT alignment would extend east and cross Sunnyside Road above grade and extend south, parallel to and east of I-205, to a terminus station and park-and-ride lot in the vicinity of 93rd Avenue and Sunny Brook Street.

### 3.1.2 Clackamas Town Center Vicinity: Issues

Several issues require continued investigation in this area. As explained earlier, the Town Center area is recommended as the southern terminus of the South/North LRT Project for two primary reasons: (i) the general Town Center area is proposed to be a Regional Center in the Region 2040 Plan and (ii) the Town Center mall itself is a high-transit-ridership node. The Town Center area terminus works best if these opportunities are realized and its success depends on the integration of the LRT alignment with an on-the-ground transit-supportive land use pattern and related (re)development site plans. Six issues need to be resolved which, depending on how they are resolved, may result in changes to the design options in the CTC vicinity:

1. *Southgate community redevelopment*: As part of its urban renewal planning effort, Clackamas County should determine if and how light rail fits into the redevelopment of the Southgate residential area. The current design calls for an LRT alignment which skirts the




South North Transit Corridor Study

**Light Rail Design Options:**

# South Terminus

**Composite**

October 1995

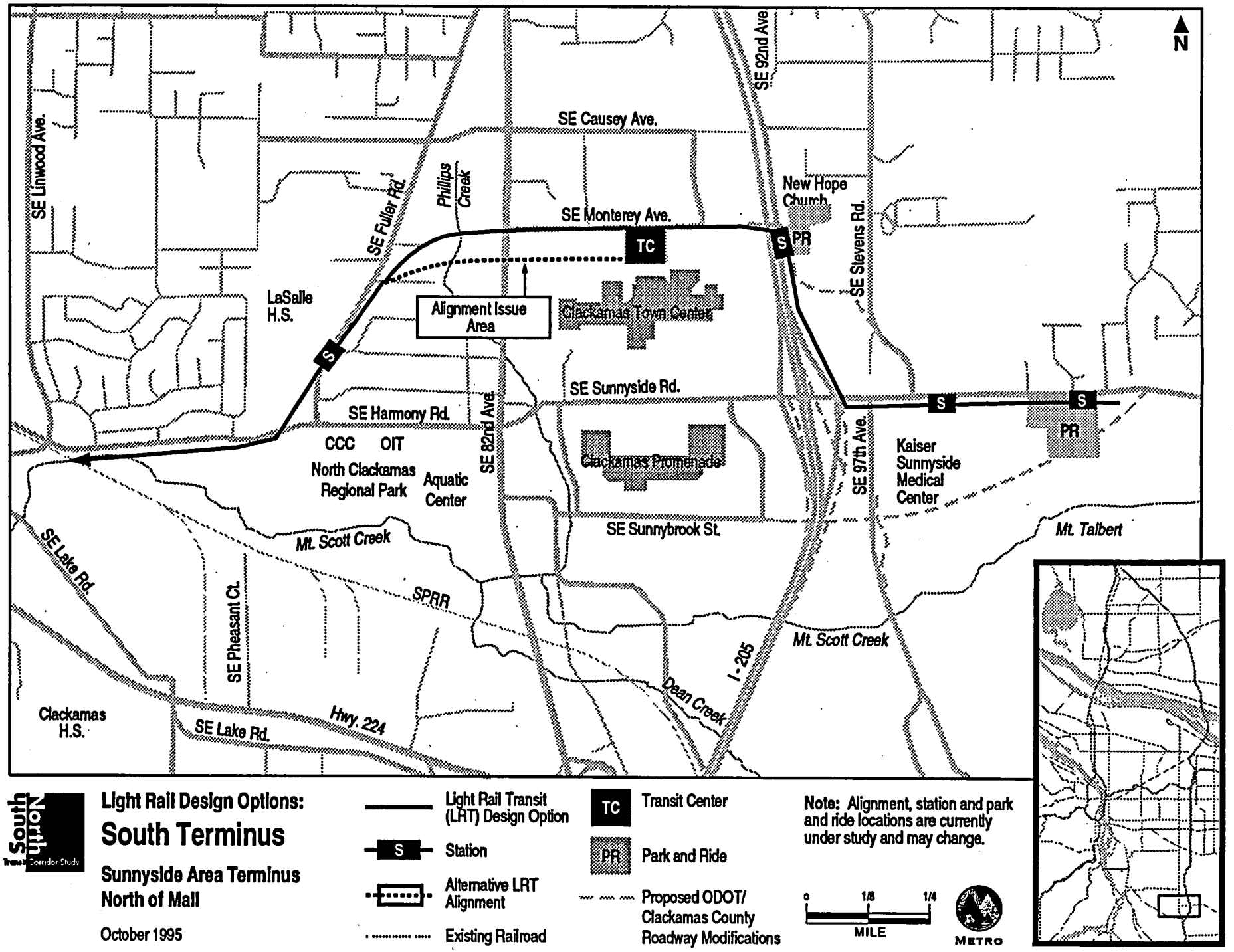
- Light Rail Transit (LRT) Design Option
- S — Station
- Alternative LRT Alignment
- Existing Railroad
- TC — Transit Center
- PR — Park and Ride
- Proposed ODOT/ Clackamas County Roadway Modifications

**Note:** Alignment, station and park and ride locations are currently under study and may change.

0 1/8 1/4 MILE

METRO

Figure 2




South North Corridor Study

**Light Rail Design Options:**

# South Terminus

**Sunnyside Area Terminus North of Mall**

October 1995

- Light Rail Transit (LRT) Design Option
- S — Station
- Alternative LRT Alignment
- Existing Railroad
- TC — Transit Center
- PR — Park and Ride
- Proposed ODOT/ Clackamas County Roadway Modifications

**Note:** Alignment, station and park and ride locations are currently under study and may change.

0 1/8 1/4 MILE

METRO

residential area. If Clackamas County recommends the adoption of a redevelopment plan for the Southgate area which (i) increases residential or mixed-use densities in the area and (ii) calls for a modified LRT alignment through the Southgate area which does not require an inordinate increase in residential displacement, the Steering Group will consider adding such an alignment option to the EIS[1]. The Steering Group's action will be viewed in concert with the resolution of the other issues listed in this sub-section.

2. *Future development of the Clackamas Town Center*: The North of Town Center alignment recommended to be included in the DEIS would run along the northern edge of the Town Center parking area parallel to S.E. Monterey Avenue. This alignment is predicated on the expansion of the Town Center northerly towards the proposed LRT station, either by expanding the Mall and/or developing transit-supportive, free-standing buildings on perimeter sites. If plans for such an expansion are not agreed-upon prior to the completion of the DEIS or are not likely to be realized in the foreseeable future, an alignment slightly south of S.E. Monterey Avenue, closer to the existing Mall, will be considered for inclusion in the EIS[1] in lieu of or addition to the current alignment.

   A similar course-of-action will be taken for the South of Town Center alignment. The expansion plans for the Clackamas Town Center mall currently call for the addition of an anchor store at the southern end of the mall between Sears and Meier & Frank. The entrance to this planned expansion could be in the vicinity of the proposed light rail station associated with the South of the Mall alignment. If plans for the mall expansion are not agreed-upon in the foreseeable future, an alignment closer to an entrance to the existing Mall will be considered for inclusion in the EIS[1].

3. *Redevelopment of the area between the New Hope Church and the Sunnyside Medical Center*: The current alignment in this area would run parallel to and in the vicinity of I-205. An area just to the east of the proposed alignment is currently designated as open space. If Clackamas County (i) recommends that a significant portion of this area be redesignated as a transit-supportive residential or mixed-use area and (ii) calls for a modified LRT alignment through the area, the Steering Group will consider adding such an alignment option to the EIS[1]. The Steering Group's action will be viewed in concert with the resolution of the other issues listed in this sub-section.

4. *Extension/expansion of the urban renewal district:* Clackamas County has begun to evaluate whether the existing Clackamas Town Center Urban Renewal Area (CTC URA) should be extended in time (it is now slated to terminate June 30, 1998) and expanded in geographic area (an expansion of approximately 100 acres is statutorily permitted). In order to resolve these issues, the Steering Group recommends that Clackamas County consider amending the CTC urban renewal plan to provide redevelopment and light rail-related design features to achieve the purposes of the 2040 Plan and the South/North Project.

---

[1] The term "EIS" is used here to denote either the DEIS or FEIS, whichever is found most appropriate.

5. *Tax increment financing of localized alignment and design features in the Town Center area*: The recommended North of Town Center alignment/Sunnyside Terminus option is currently estimated to cost $55 million more than the recommended South of Town Center alignment/S.E. 93rd Avenue Town Center Area terminus option. As studies proceed on the issues mentioned above, the cost of both alignment options may change, as might the cost differential between the options. Given (i) the cost differences between the CTC options and (ii) the shared objectives between the South/North Project and an amended urban renewal plan (if one is adopted), the Steering Group recommends that Clackamas County consider the use of tax increment funds from the amended plan and/or other local funding sources for a portion of the light rail costs in this area.

6. *Future light rail alignment to Oregon City*: Pursuant to the Tier I decision, an effort parallel to the DEIS process will consider alternative ways to extend the South/North LRT to Oregon City in a Phase II project. Two basic alignment options will be considered: the McLoughlin Boulevard corridor from downtown Milwaukie and the I-205 corridor from the CTC vicinity. This study may result in refinements/ modifications to the light rail alignments, station locations and terminus sites/designs in the CTC vicinity which are incorporated in the EIS[1].

7. *Location of the 82nd Avenue and Harmony Road park-and-ride with the "South of Clackamas Town Center" option and design of the alignment, stations, transit center and terminus park-and-ride lot east of 82nd Avenue:* The precise location of the alignment, station and park-and-ride lot just west of S.E. 82nd Avenue on/near S.E. Harmony Road needs to be refined over the next two months. Options to be considered include locations on both the north and south sides of S.E. Harmony Road. The precise location of the alignment, stations, transit center and terminus park-and-ride lot east of 82nd Avenue needs to be refined over the next two months.

### 3.1.3 Clackamas Town Center Vicinity: Rationale

Because, the "South of the Mall" design options are shorter, they are less expensive to build and operate and faster for through-travel than the "North of the Mall" design options. However, the "North of the Mall" options may better serve land use objectives by assisting in the redevelopment of Southgate area, serving the existing multi-family residential areas to the north of the mall and (as discussed in the *Issues* section) the potentially rezoned lands just east of I-205.

The recommended design options in the Clackamas Town Center (CTC) segment are proposed to frame the fundamental issue in this segment: are the land use benefits of the "North of the Mall" and "east of I-205 terminus" options worth their greater costs and longer travel times? To best assess this issue in the DEIS, the best "North of the Mall" option should be compared against the best "South of the Mall" option.

The S.E. 93rd Avenue Town Center Area Terminus is the selected "South of the Mall" option because:

[a] It would be $34 and $124 million ($YOE) less expensive than the "South of the Mall" options that connect to the Sunnyside Terminus or the Highway 212/224 Terminus options.

[b] It would provide an additional park-and-ride lot opportunity for the south of CTC alignment over the 84th Avenue CTC terminus option.

[c] It would be capable of being extended south at a future date, if so desired.

The Sunnyside Terminus is the selected "North of the Mall" option because:

[a] It would serve the major growth area along S.E. Sunnyside Road east of I-205, where the other options would not.

[b] Its number of light rail boardings in the CTC segment would be 64% - 89% greater than the other "North of the Mall" options.

[c] It would be $106 million ($YOE) less expensive to construct, $180,000 per year less expensive to operate and faster to operate than the Highway 212/224 Terminus option.

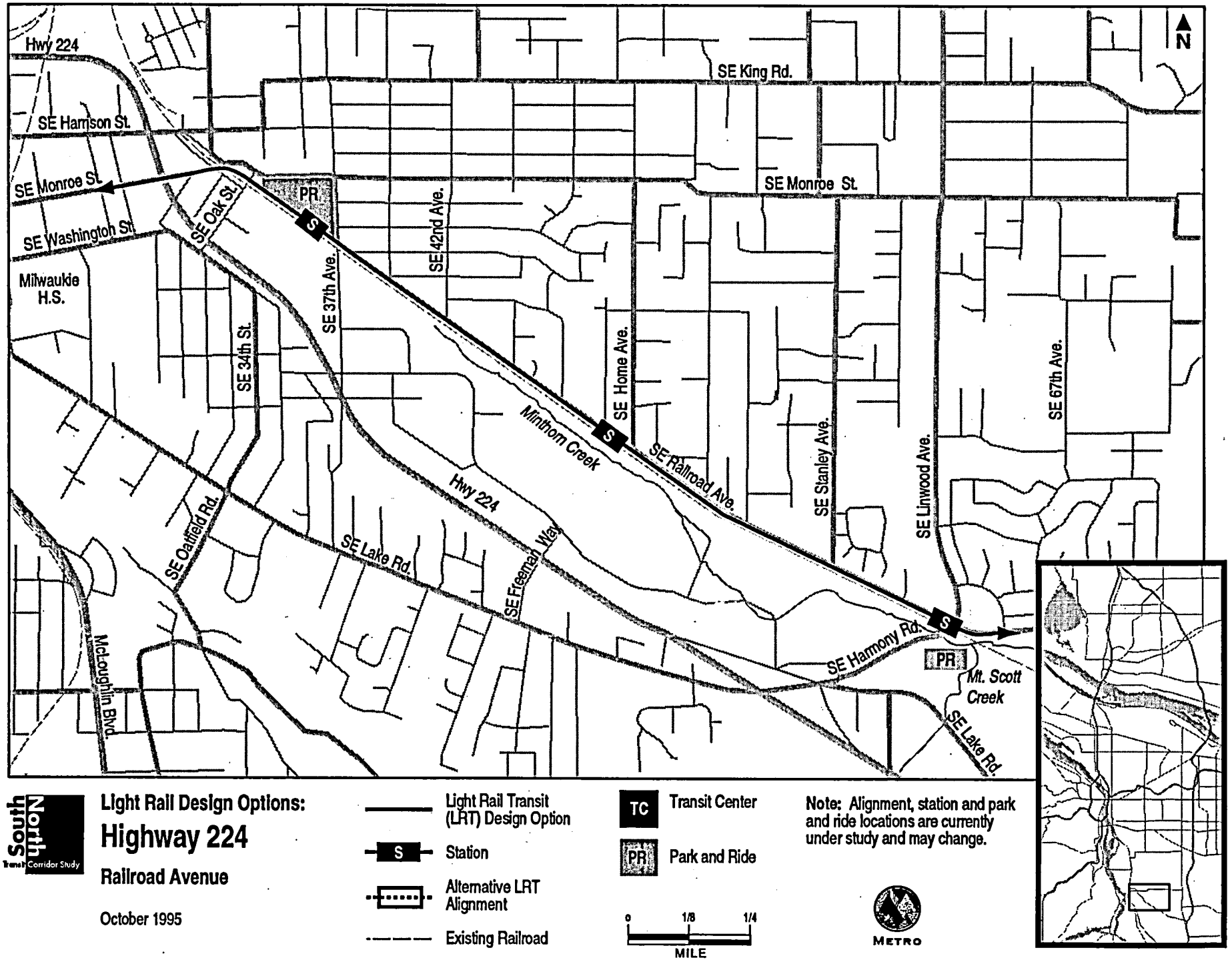
[d] It would be capable of being extended to the south at a future date, if so desired.

## 3.2 CTC TO MILWAUKIE

### 3.2.1 CTC to Milwaukie: Selected Options (See Figure 3)

In this segment, one design option is selected to be examined further in the DEIS:

*1.* *Railroad Avenue:* From the south side of S.E. Harmony Road, the light rail alignment would cross under S.E. Harmony Road east of its intersection with S.E. Linwood and S.E. Railroad Avenues. A potential park-and-ride station would be located at S.E. Harmony Road/S.E. Linwood Avenue. The alignment would proceed westward on the south side of S.E. Railroad Avenue in the public right-of-way adjacent to the Southern Pacific main line. Railroad Avenue would be reconstructed to accommodate the light rail alignment. A station could be located near S.E. Home Avenue to serve the residential area to the north and the industrial area to the south. The alignment would continue adjacent to the SP main line until crossing over the main line in the vicinity of S.E. Oak and S.E. Myrtle




South North Transit Corridor Study

**Light Rail Design Options:**

# Highway 224

**Railroad Avenue**

October 1995

- Light Rail Transit (LRT) Design Option
- S — Station
- Alternative LRT Alignment
- Existing Railroad
- TC — Transit Center
- PR — Park and Ride

0 1/8 1/4 MILE

**Note:** Alignment, station and park and ride locations are currently under study and may change.

METRO

Figure 3

Streets, just west of the Milwaukie Market Place. A station would serve the area and a potential park-and-ride lot. The structure would overpass Highway 224, landing on S.E. Monroe Street.

### 3.2.2 CTC to Milwaukie: Issues

Three issues require continued investigation in this area:

1. *Design of Railroad Avenue Collector:* The initial design of the Railroad Avenue option required substantial residential displacement and, as a result, relatively high capital cost due to the relocation and reconstruction of Railroad Avenue. A modified option providing for a Railroad Avenue reconstructed as a "collector" is now proposed. This modification would reduce the possible displacement impacts and capital costs of the option. As the EIS is prepared, project staff will investigate the possibility of using Southern Pacific right-of-way as a method to further reduce possible displacements and costs.

2. *Access to industrial area*: Railroad Avenue parallels the north side of major employment centers along Highway 224. Special consideration will be given to the alignment, station locations and access ways in this segment to ensure that light rail is accessible is to these centers.

3. *Location and design of station in the vicinity of S.E. Railroad Avenue and S.E. Oak Street:* The design and location of the Milwaukie Market Place station will be refined over the next two months to improve its auto access, neighborhood access and cost.

### 3.2.3 CTC to Milwaukie: Rationale

The S.E. Railroad Avenue option is the selected option in the CTC to Milwaukie segment for inclusion in the DEIS because:

[a] It would be $8 to $23 million ($YOE) less expensive to construct than the Highway 224 options.

[b] It would be slightly faster (8 - 19 seconds) to operate and would attract slightly more light rail boardings (30 - 60 per day) in the CTC to Milwaukie segment than the Highway 224 options.

[c] Its comparative ratio would be 13% to 32% better than the Highway 224 options.

[d] It would allow for a park-and-ride facility east of the Milwaukie CBD (in the vicinity of S.E. Railroad Avenue and S.E. Oak Street) which would serve the travel shed for the residential area north of S.E. Railroad Avenue. The station also would provide walk-on access to portions of the residential area north of S.E. Railroad Avenue.

## 3.3 MILWAUKIE

### 3.3.1 Milwaukie: Selected Options (See Figure 4)

In this segment, two design options are selected to be examined in the DEIS:

1. *S.E. Monroe Street to East of the Southern Pacific Tillamook Branch Line:* From the Highway 224 overcrossing, the alignment would proceed westerly on S.E. Monroe Street. S.E. Monroe Street would be configured to operate two tracks of light rail and one westbound traffic lane between S.E. 25th and S.E. 9th Streets.

   The alignment would curve northerly in the vicinity of S.E. 25th Street to a transit center just east of the S.P. branch line between S.E. Monroe and S.E. Harrison Streets. The alignment would then proceed adjacent to the east side of the S.P. Branch line, through an existing underpass of Highway 224 and on structure over to the westside of the branch line, to a potential park-and-ride station at S.E. Ochoco Street. The alignment would then continue northerly along the branch line to about S.E. Umatilla Street where it would veer towards S.E. McLoughlin Boulevard as it continues northerly.

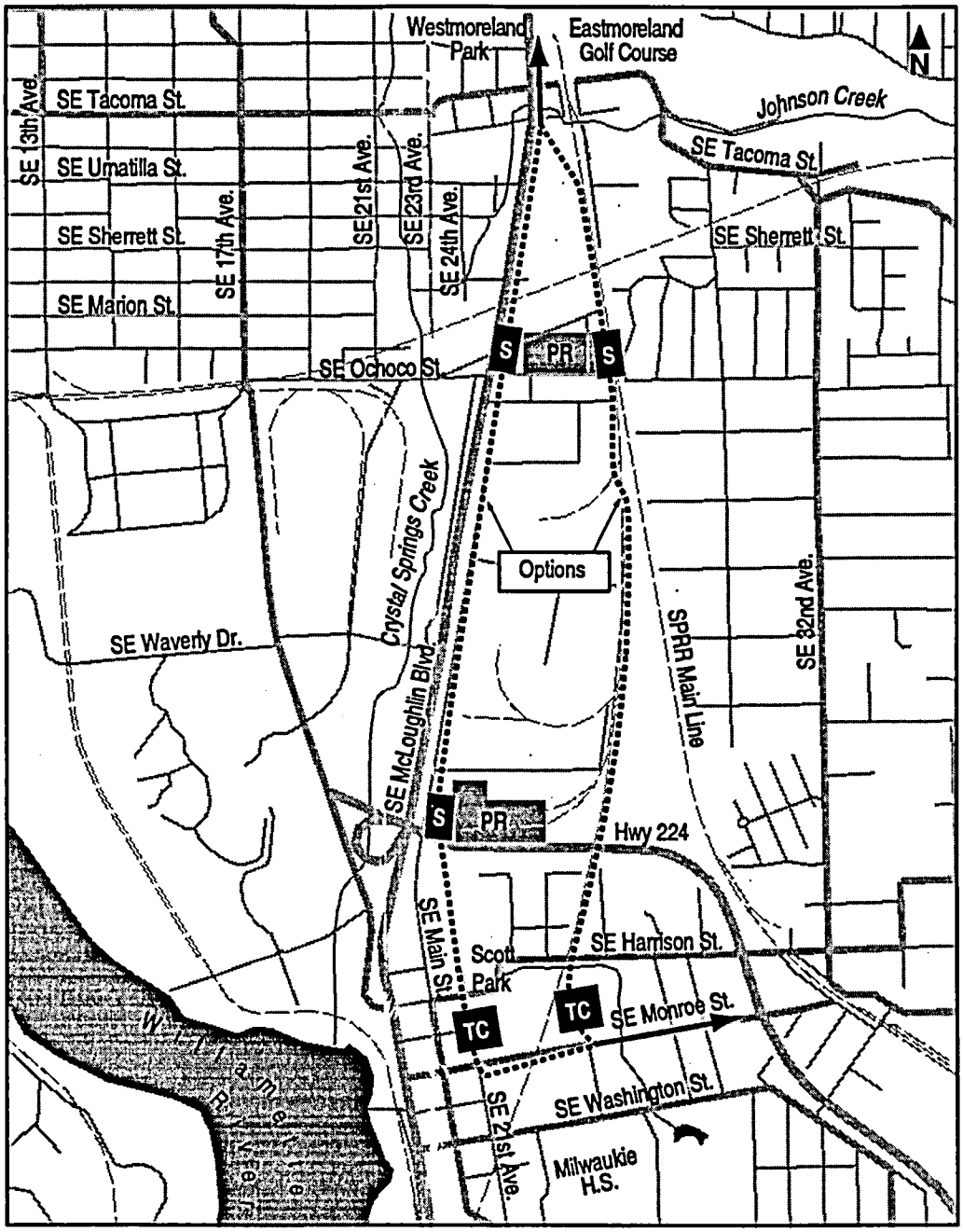
2. *S.E. Monroe to S.E. 21st Avenue/S.E. McLoughlin Boulevard:* From the overcrossing of Highway 224, the alignment would proceed westerly on S.E. Monroe Street. S.E. Monroe Street would be configured to operate two tracks of light rail and one westbound traffic lane between S.E. 25th and S.E. 9th Avenues.

   The alignment would pass under the SP branch line and proceed to a transit center at S.E. 21st Avenue. The alignment would then proceed northward to McLoughlin Boulevard, crossing underneath Highway 224 where there could be a park-and-ride station. It would then continue northerly paralleling McLoughlin Boulevard to a park-and-ride station at S.E. Ochoco Street and then continue north.

### 3.3.2 Milwaukie: Issues

Six issues require continued investigation in this area:

1. *Changes in Comprehensive Plan:* The central Milwaukie area is proposed to be a Regional Center in the Region 2040 Plan. The success of the South/North Project depends, in part, on the integration of the LRT alignment with an on-the-ground transit-supportive land use pattern and related (re)development site plans in Central Milwaukie. As a result, the planning currently underway regarding the Regional Center concept and transportation system plan in Milwaukie may result in changes to the alignment and design options.




South North Transit Corridor Study

## Light Rail Design Options:

# Milwaukie

### Monroe Street

October 1995

**Note:** Alignment, station and park and ride locations are currently under study and may change.

- Light Rail Transit (LRT) Design Option
- S — Station
- Alternative LRT Alignment
- Existing Railroad
- TC — Transit Center
- PR — Park and Ride

0 1/8 1/4
MILE

METRO

Figure 4

2. *Design and location of Milwaukie Transit Center options*: Notwithstanding land use changes resulting from the Regional Center designation, the design and location of the Milwaukie Transit Center for both the S.E. Monroe Street to East of the Southern Pacific Tillamook Branch Line option and the S.E. Monroe to S.E. 21st Avenue option need to be refined over the next two months to maximize local access and to mitigate displacement and traffic impacts.

3. *Extension to Oregon City:* Pursuant to the Tier I decision, an effort parallel to the DEIS process will consider alternative ways to extend the South/North LRT to Oregon City in a Phase II project. One of the options to be considered would use the McLoughlin Boulevard corridor from downtown Milwaukie. This study may result in refinements/modifications to the light rail alignments, station locations and station sites/designs in central Milwaukie which are incorporated in the EIS[1].

4. *Need to consider land use integration in selecting the preferred alignment through central Milwaukie:* The central Milwaukie alignment is predicated on its integration with a Regional Center plan for the area. If such a plan is not agreed upon by the City of Milwaukie prior to the completion of the DEIS or is not likely to be realized in the foreseeable future, less expensive alignment options serving central Milwaukie will be considered for inclusion in the EIS[1] in lieu of or addition to the currently recommended alignments.

5. *Park-and-ride lot location north of Milwaukie:* A special study of park-and-ride lot locations and capacity will be undertaken for the north Milwaukie area between Highway 224 and S.E. Tacoma Street. The study will identify potential park-and-ride sites which meet the anticipated demand and will use DEIS-level data to select site(s) for inclusion in the EIS[1]. This study will be coordinated with the study proposed under issue 6.

6. *Maintenance facility location north of Milwaukie:* A special study of maintenance facility locations and designs will be undertaken for the north Milwaukie and other areas. The study will identify potential maintenance facility sites and designs which meet the anticipated South/North LRT needs and will use DEIS-level data to select site(s)/design(s) for inclusion in the EIS[1].

### 3.3.3 Milwaukie: Rationale

One of the fundamental objectives of the South/North LRT Project is to serve the central Milwaukie business district. Two of the options examined in this segment, the SP Main Line option and the Milwaukie Expressway option, would bypass the Milwaukie central business district. As a result, these options fundamentally fail to meet a primary objective of the project and, therefore, are recommended to be eliminated from further consideration.

Each of the three remaining "east-west" alignment options (S.E. Harrison Street, S.E. Washington Street and S.E. Monroe Street) has two "north-south" sub-options (the East of the SP Branch

Line option and the S.E. 21st/Main Street/McLoughlin Boulevard option). For each of the "east-west" alignment options, the following relationship holds for the "north-south" sub-option:

[a] The SP Branch Line option would be shorter, less expensive to build and operate and faster than the S.E. 21st Street/McLoughlin Boulevard option.

[b] The S.E. 21st/Main Street/McLoughlin Boulevard option may better serve City of Milwaukie land use objectives by assisting in the redevelopment of the central business district.

As a result, irrespective of which "east-west" option(s) are recommended in the Milwaukie segment, a fundamental issue in this segment is: are the land use benefits of the S.E. 21st/Main Street/McLoughlin Boulevard sub-option worth its greater costs and longer travel times? To best assess this issue, it is recommended that the DEIS examine both "north-south" sub-options for whichever "east-west" sub-option(s) are proposed.

Regarding the "east-west" sub-options in the Milwaukie segment, the S.E. Monroe Street option is selected for inclusion in the DEIS because:

[a] It would provide better access and wider coverage to the central business district than the S.E. Harrison Street option.

[b] It would be $22 - $28 million ($YOE) less expensive to construct than the S.E. Washington Street option (depending on the north-south sub-option selected) and $4 million ($YOE) less expensive to construct than the S.E. Harrison Street - S.E. Main Street/McLoughlin Boulevard option (the SP Main Line sub-option would be $14 million ($YOE) less expensive with the S.E. Harrison Street option).

[c] It would be $360,000 per year less expensive to operate than the McLoughlin Boulevard/21st Avenue and S.E. Washington Street option (depending on the north-south sub-option selected) and $650,000 - $710,000 per year less expensive to operate than the S.E. Harrison Street options.

[d] It would be 70 - 88 seconds faster (depending on the north-south sub-option), attract 170-190 more boardings per day and exhibit a 17-20% better comparative ratio than the S.E. Washington Street option.

[e] It has greater community support than the other options.

## 3.4 MILWAUKIE TO PORTLAND CBD

### 3.4.1 Milwaukie to Portland CBD: Selected Options (See Figures 5 & 6)

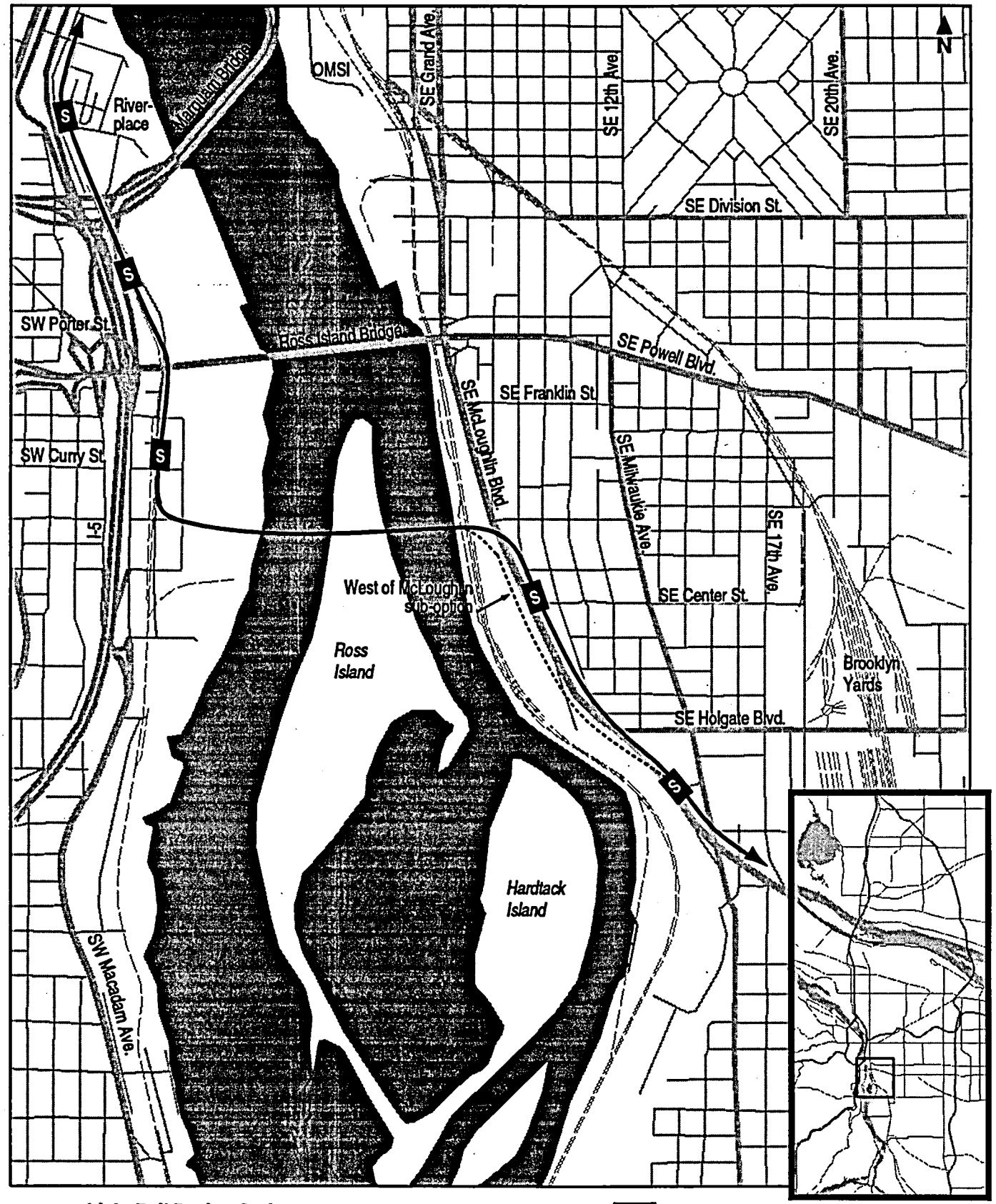
The South/North Project Steering Group determined during the Tier I decision process that both East side/Caruthers Crossing option(s) and Ross Island Crossing option(s) will be carried forward into the DEIS. Thus, the issue at hand is to determine the best Eastside/Caruthers Crossing option and the best Ross Island Crossing option. Based on the Steering Groups direction, two design options are selected to be examined in the DEIS in this segment:

1. *West Brooklyn Yards to Caruthers Modified River Crossing:* From the park-and-ride station at S.E. Ochoco Street, the light rail would proceed parallel to McLoughlin Boulevard (between the existing trees and the S.P. railroad) to a potential station at S.E. Bybee Boulevard. The alignment would continue along S.E. McLoughlin to the vicinity of S.E. Harold Street where it would turn and follow the western boundary of the Brooklyn Yards. A station may be located near S.E. Holgate Boulevard. From there the alignment would continue to follow the west side of the Yards to a potential station in the vicinity of S.E. Rhine/Lafayette Street with pedestrian access across the Brooklyn Yards to the East Brooklyn neighborhood.

   The alignment would continue north, crossing S.E. Powell Boulevard on an elevated structure. The alignment would parallel the existing railroad tracks, passing over S.E. 11th/12th Avenues, where the would be a potential station. From there, it would continue parallel to the existing railroad tracks to a potential elevated station just south of OMSI.

   From the OMSI station, the Caruthers Modified River Crossing would leave the east bank of the Willamette River in the vicinity of Water Avenue and continue on structure to the west side of S.W. Moody Avenue. The alignment would weave between columns supporting the Marquam Bridge towards a station at Riverplace.

2. *North Ross Island River Crossing:* From the park-and-ride station at S.E. Ochoco Street, the light rail alignment would proceed parallel to McLoughlin Boulevard (between the trees and the railroad right-of-way) to potential stations at S.E. Bybee Boulevard, the vicinity of S.E. 16th and S.E. Milwaukie Avenues and S.E. Center Street and McLoughlin Boulevard. From the Center Street station, the alignment would continue north along S.E. McLoughlin a short distance to S.E. Bush Street, cross under S.E. McLoughlin Boulevard and cross the Willamette River on structure in the vicinity of the northern tip of Ross Island. The light rail bridge would land on the west side of S.W. Moody Avenue with a potential station in the vicinity of S.W. Curry Street. The alignment would then follow the west side of S.W. Moody Avenue to a S.W. Porter Street station and then proceed towards a station at Riverplace.




South North Transit Corridor Study

**Light Rail Design Options:**

# South Willamette River Crossing

**North Ross Island**

Figure 5

Light Rail Transit (LRT) Design Option

S Station

Alternative LRT Alignment

Existing Railroad

TC Transit Center

PR Park and Ride

0 1/8 1/4 MILE

**Note:** Alignment, station and park and ride locations are currently under study and may change.

METRO

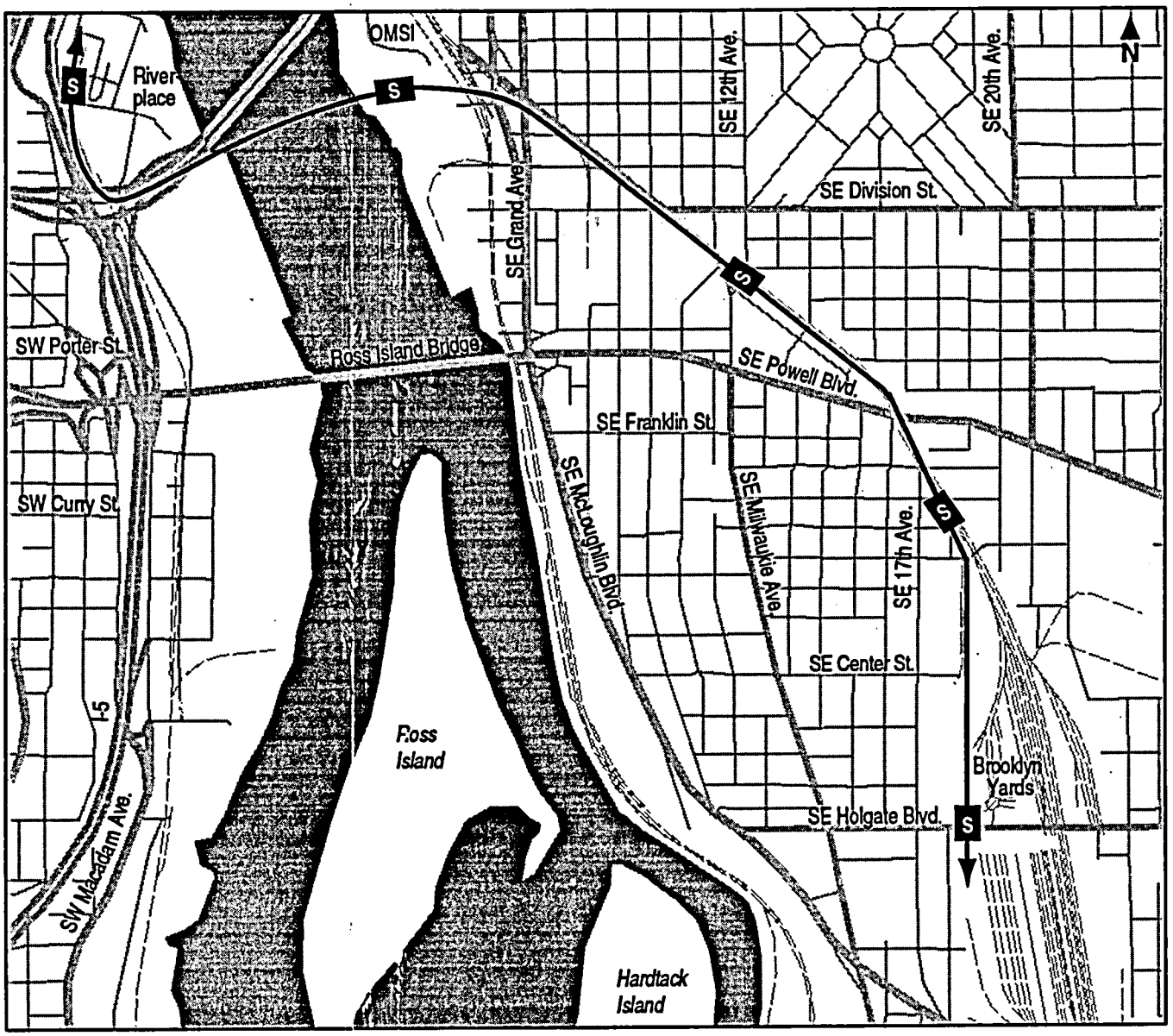

OMSI
River place
SE 12th Ave.
SE 20th Ave.
N
SE Division St.
SE Grand Ave.
SW Porter St.
Ross Island Bridge
SE Powell Blvd.
SE Franklin St.
SE McLoughlin Blvd.
SE Milwaukie Ave.
SE 17th Ave.
SW Curry St.
SE Center St.
I-5
Ross Island
Brooklyn Yards
SE Holgate Blvd.
SW Macadam Ave.
Hardtack Island
South North Transit Corridor Study
Light Rail Design Options:
South Willamette River Crossing
Caruthers Modified - West Brooklyn Yards
October 1995
Light Rail Transit (LRT) Design Option
Station
Alternative LRT Alignment
Existing Railroad
TC Transit Center
PR Park and Ride
0 1/8 1/4
MILE
Note: Alignment, station and park and ride locations are currently under study and may change.
METRO

Figure 6

### 3.4.2 Milwaukie to Portland CBD: Issues

Three issues require continued investigation in this segment:

1. *Actual location of the North Ross Island Crossing:* While drawings to date have shown the North Ross Island Crossing option to follow S.W. Gaines Street in the North Macadam area, it is possible that it might be located within a narrow band south of that location. Project staff will work with interested parties to determine an appropriate location to include in the DEIS.

2. *Alternate North Ross Island alignment (West of McLoughlin Boulevard Sub-Option):* A variation on the North Ross Island option would have the light rail alignment proceed north of a potential station at S.E. Holgate Boulevard on the west side of S.E. McLoughlin Boulevard to about S.E. Rhone Street where the light rail alignment would begin to elevate and curve to the west. The North Ross Island bridge would be in the same general vicinity as described above. This sub-option would have additional expense and lower ridership, but could also have less potential residential property displacement in the Brooklyn neighborhood. The West of McLoughlin sub-option will be further developed in parallel to the EIS process.

3. *Choice between the North Ross Island crossing alternative and the West Brooklyn Yards/Caruthers crossing alternative:* This choice will be one of the major issues to be resolved during the DEIS process. An important basis for making this determination will focus on the progress that has been made along both options to plan and develop transit-oriented land uses. Issues of density, timing and certainty of development, parking, integration of light rail with major attractors and similar factors will be taken into consideration.

### 3.4.3 Milwaukie to Portland CBD: Rationale

The West Brooklyn Yards to Modified Caruthers Bridge option is selected for inclusion in the DEIS because:

[a] In comparison to the PTC/McLoughlin Boulevard option, the Brooklyn Yard options would provide significantly better transit access and service to the inner east side neighborhoods, offer five minute walk access to 4,100 - 4,600 more employees (in the year 2015), attract 1,400 - 1,600 more light rail boardings in this segment and exhibit 42% - 57% better comparative ratios.

[b] The West Brooklyn Yard option would be $42 million ($YOE) less expensive to construct, impact less commercial and residential buildings, and exhibit a 10% better comparative ratio than the East Brooklyn Yard option.

[c] The Caruthers Modified option would cost $18 million ($YOE) less to construct, $370,000 per year less to operate and would be over 1 minute faster than the Caruthers "S" option.

[d] While estimated to cost $8 - $9 million ($YOE) more to construct than the Caruthers and Caruthers/Marquam options, the Caruthers Modified option would have the least negative impacts on the redevelopment property south of the Marquam Bridge and avoids significant adverse impacts on PDC's two remaining parcels in Riverplace and privately-owned properties south of the Marquam Bridge.

The North Ross Island option is selected for inclusion in the DEIS because:

[a] The North Ross Island option would provide the best combination of (re)development potential, ridership and cost of the Ross Island crossing options. This is exhibited by the North Ross Island option having the lowest (best) comparative ratio.

[b] The South Parallel Ross Island option could have an adverse visual impact on the Ross Island Bridge which is eligible for the National Register of Historic Places. As such, there could be Section 106 (historical resources) problems with the South Parallel Ross Island option.

[c] The South Parallel Ross Island option would not provide a station in the North Macadam District, the station would have to be north of the existing Ross Island Bridge. In addition, it would attract less 1,800 - 2,000 daily LRT segment boardings, impact 28 - 45 more residential units and exhibit a 31% poorer comparative ratio than the other Ross Island Crossing options.

[d] The Mid Ross Island Crossing option would cost $54 million ($YOE) more to construct than the North Ross Island Crossing option. In addition, the construction of the Mid-Ross Island Crossing option raises a higher risk of negatively impacting the Great Blue Heron rookery buffer area on Ross Island. The North Ross Island crossing would potentially have less impact on the Willamette River ecosystem due to fewer piers in the river as compared to the South Parallel option.

[e] There is generally stronger community support for the North Ross Island Crossing than for the other Ross Island crossing options.

## 3.5 PORTLAND CBD

### 3.5.1 Portland CBD Options

The Portland CBD alignment and station locations to be carried forward into the DEIS are recommended under separate cover.

## 3.6 STEEL BRIDGE TO KAISER MEDICAL FACILITY VICINITY

### 3.6.1 Steel Bridge to Kaiser Medical Facility Vicinity: Selected Options (See Figures 7& 8)

In this segment, two design options are selected to be examined in the DEIS:

1. *East I-5/N. Kerby Avenue:* The alignment would proceed eastward from a slightly relocated Rose Garden transit station, run underneath the I-5 freeway and turn north along the eastern edge of I-5. It would then run along the edge of I-5 to a transit station serving the N.E. Broadway area and adjacent Eliot neighborhood. The alignment would continue along the east edge of I-5, behind the Harriet Tubman Middle School, crossing N. Russell Street on structure, to a station on N. Kerby Avenue between N. Graham and N. Stanton Streets at Emanuel Hospital. The alignment would curve westward, passing over I-5 on structure to a location just west of the freeway and then proceed northerly to the Edgar Kaiser clinic.

2. *N. Wheeler Avenue/N. Russell Street:* The alignment would pass along the eastern edge of the Rose Garden Arena with a potential station north of the arena near N. Weidler. It would cross N. Broadway and N. Weidler at street level and proceed north along the east side of N. Flint Avenue. The alignment would turn westerly at N. Russell Street with a potential station on Russell Street at the south end of the Emanuel Hospital campus. It would elevate on a structure and pass over N. Kerby Avenue, Stanton Yard and N. Mississippi Avenue. The alignment would then curve westward, passing over I-5 on structure to a location just west of the freeway and then proceed north to the Edgar Kaiser clinic.

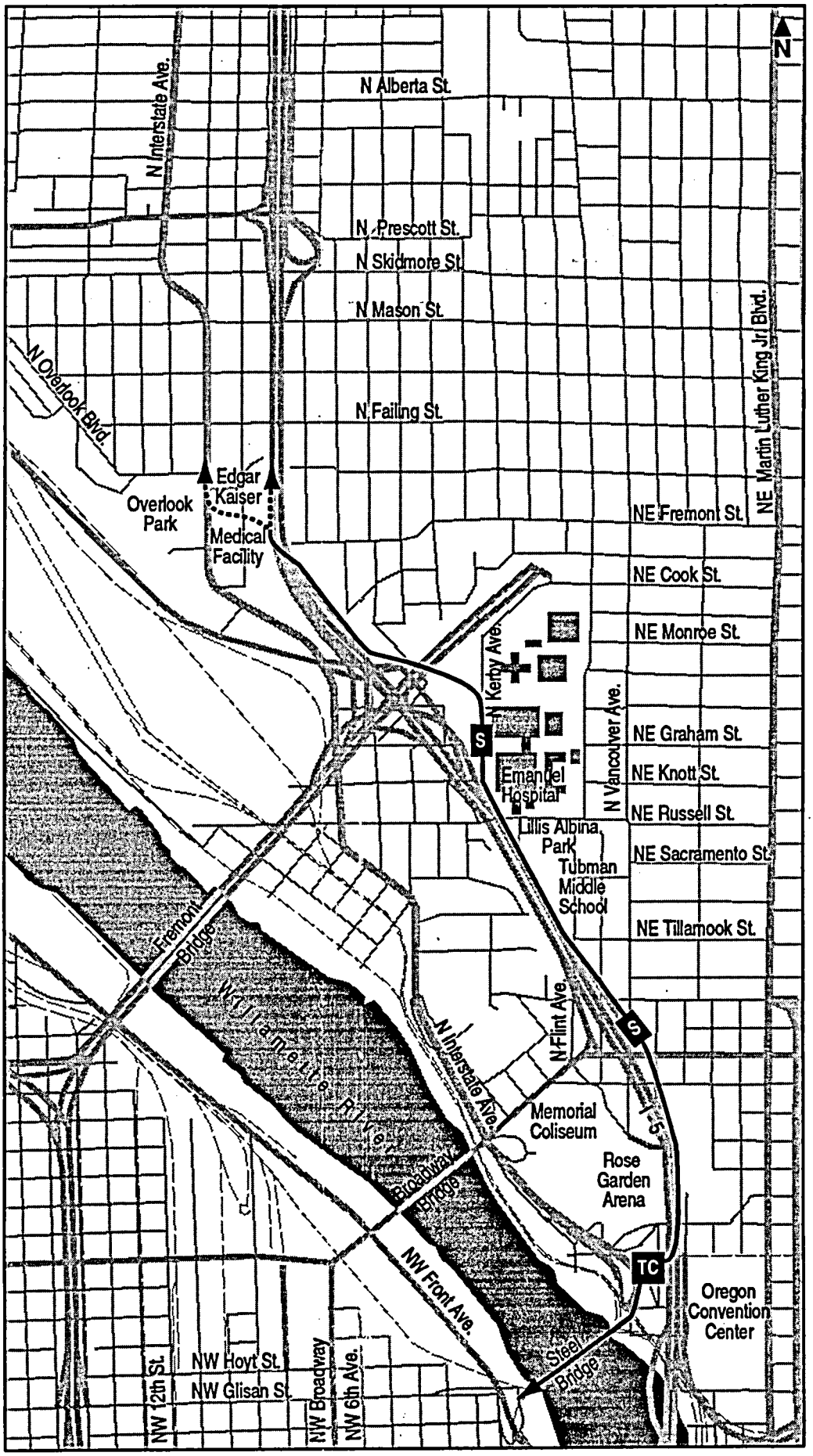
### 3.6.2 Steel Bridge to Kaiser Medical Facility: Issues

Three issues require continued investigation in this area:

1. *Design of the N.E. Broadway Station with the East I-5 option:* Initial designs for this station were below-grade (and may not provide a pleasant environment for users or good pedestrian connections between Broadway and the Rose Quarter). Project staff will investigate refined designs which mitigate these concerns.

2. *Design and location of stations on the N. Wheeler Avenue/N. Russell Street:* The station locations along this alignment should be refined during the next two months to ensure that access into the Eliot neighborhood and Emanuel Hospital is maximized.

3. *Mitigate operational issues associated with the N. Wheeler/N. Russell and East I-5 options:* The N. Wheeler Avenue/N. Russell Street and East I-5 options could present difficult operational problems and conflicts between light rail, auto traffic and/or




South North Transit Corridor Study

**Light Rail Design Options:**

# Steel Bridge to Kaiser

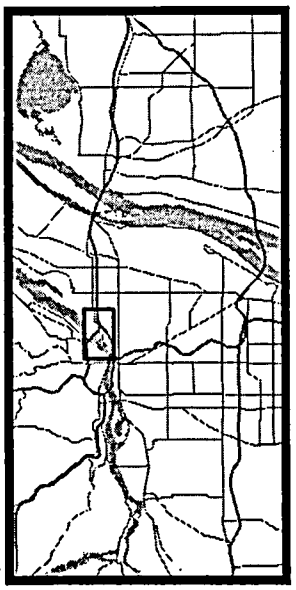
**East I-5 / Kerby**

September 1995

**Note:** Alignment, station and park and ride locations are currently under study and may change.

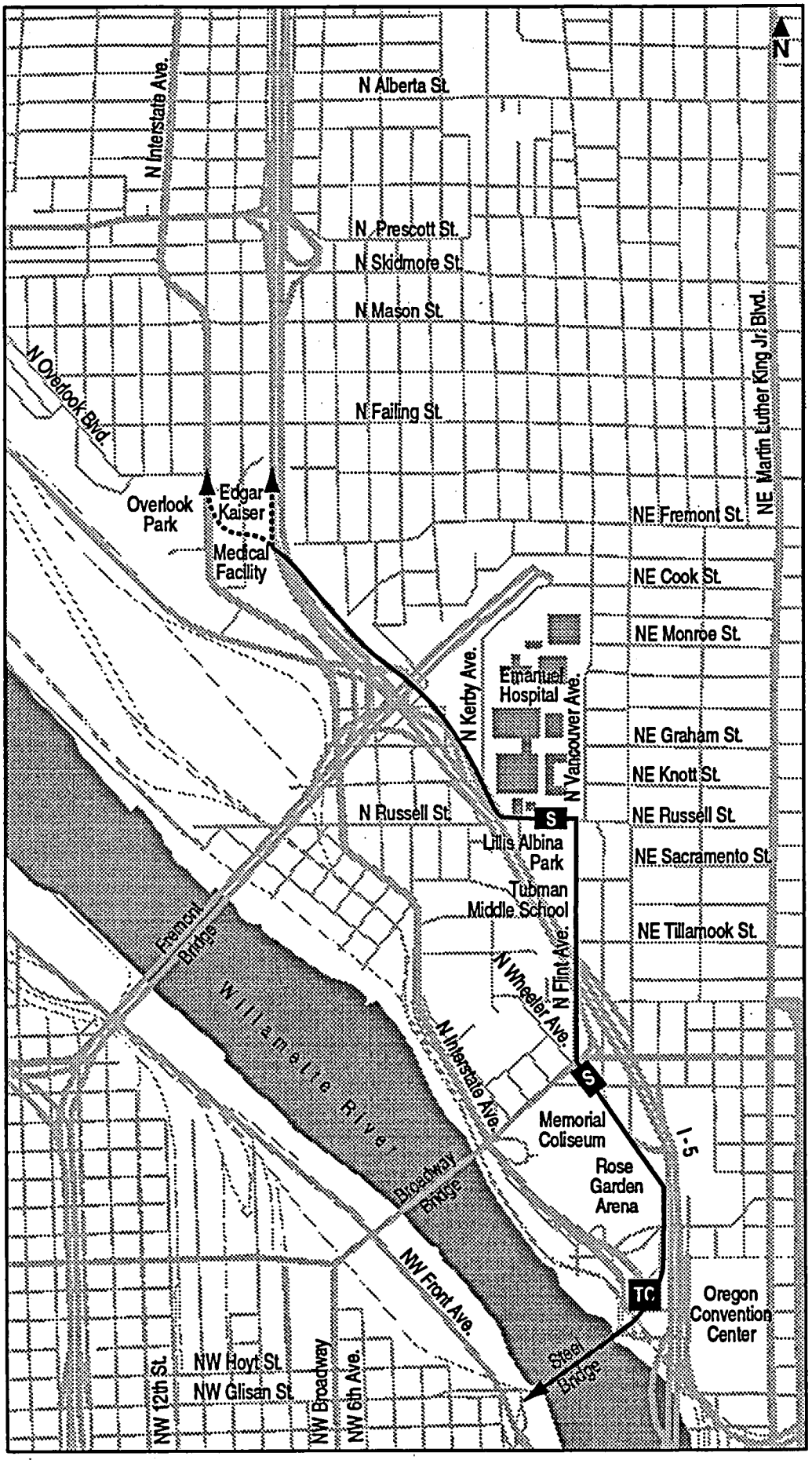
- Light Rail Transit (LRT) Design Option
- S — Station
- Alternative LRT Alignment
- Existing Railroad
- TC — Transit Center
- PR — Park and Ride

0 1/8 1/4
MILE



METRO

Figure 7




South North Transit Corridor Study

## Light Rail Design Options:

# Steel Bridge to Kaiser

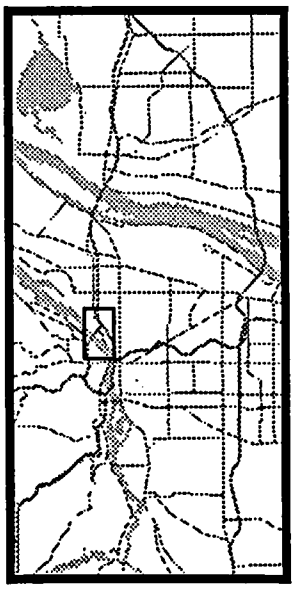
### Wheeler / Russell

September 1995

**Note:** Alignment, station and park and ride locations are currently under study and may change.

- Light Rail Transit (LRT) Design Option
- S — Station
- Alternative LRT Alignment
- Existing Railroad
- TC — Transit Center
- PR — Park and Ride

0 1/8 1/4 MILE



METRO

Figure 8

pedestrians. Methods to mitigate these potential problems will be analyzed prior to and during the DEIS process.

4. *In the Broadway/Weidler Interchange Area:* Alignment options for light rail should be incorporated into an integrated design with I-5 and street system impropements in order to improve circulation for automobiles, pedestrian and bicycles and which would optimize bus and LRT operations.

### 3.6.3 Steel Bridge to Kaiser Medical Facility: Rationale

The East I-5/N. Kerby Avenue and N. Wheeler Avenue/N. Russell Street options are selected for inclusion in the DEIS because:

[a] The East I-5/N. Kerby Avenue provides the best combination of cost, ridership, travel time and light rail access as evidenced by having the lowest (best) comparative ratio. It would provide stations which would serve both the Eliot neighborhood and the Emanuel Hospital campus. In addition, it would attract the highest light rail boardings in this segment amongst all of the alignment options.

[b] The N. Wheeler/N. Russell Street option may provide the best access to the Eliot neighborhood and the best redevelopment opportunities amongst all options in this segment. It also provides more flexibility in the station placement within the Eliot neighborhood than would the N. Wheeler/N. Flint option.

[c] The West I-5 option, while would serve the industrial sanctuary between I-5 and the Willamette River, is not selected for further study because it would not adequately serve the Eliot neighborhood or Emanuel Hospital which are the priority areas to be served. Light rail users wishing to access Emanuel Hospital or the Eliot neighborhood from the N. Graham Street station would have to walk-up an eighty foot elevation change. Moreover, by servicing the industrial sanctuary, the West I-5 option may create non-industrial redevelopment pressures which contradict City objectives for this area.

## 3.7 KAISER MEDICAL FACILITY TO EXPO CENTER

### 3.7.1 Kaiser Medical Facility to Expo Center: Selected Options (See Figures 9 & 10)

The South/North Steering Group determined that an Interstate Avenue and an I-5 alignment alternative would be advanced into the DEIS for further study and that various design options and crossover combinations of the alignment alternatives would be developed, evaluated and narrowed within the Design Option Narrowing Process.

One design option for each alignment alternative is selected for further study within the DEIS:

1. *All I-5 Alignment:* From Emanuel Hospital, the light rail alignment would pass beneath the I-405 ramps and climb-up along the eastern edge of I-5. From the potential station at the Kaiser clinic, the light rail alignment would proceed north along the top of the western bank of the I-5 freeway to a station south of N. Skidmore Street.

   It would then continue north, passing beneath N. Going Street in a box structure, then running above the freeway along N. Minnesota Avenue (west of the freeway ramps) from N. Going Street to a potential station at N. Killingsworth Street. It would then proceed along the top of the freeway bank and then curve west along the freeway ramps to a potential station on the south side of N. Portland Boulevard. The alignment would cross N. Portland Boulevard at street level and continue north along the west bank of the freeway to a potential station on the south side of N. Lombard Street. It would then pass over N. Lombard and the adjacent freeway ramps on a structure and proceed northerly to a potential Kenton station at N. Kilpatrick Street.

   From the Kenton station, the alignment would proceed northerly along the west side of the I-5 freeway. It would cross over N. Columbia Boulevard and the Columbia Slough on a bridge, and then lower to ground level. It would then pass Delta Park and begin to elevate for about 1/2 mile and crossover Highway 99 adjacent to Expo Road. An elevated potential station would be located near the Expo Center parking lot.

2. *All Interstate Avenue and West of Denver Avenue Alignment:* From Emanuel Hospital, the light rail alignment would pass beneath the I-405 ramps and climb-up along the eastern edge of I-5. It would crossover I-5 on a structure near N. Fremont Street and then proceed across the Kaiser campus with a diagonal street level station near the existing Town Hall building.

   The alignment would then turn onto N. Interstate Avenue near N. Overlook Boulevard. From there, the alignment would proceed northerly in the center of N. Interstate Avenue. One lane of auto traffic in each direction would be provided except at the approaches to N. Going Street and N. Lombard Street where two lanes of traffic in each direction would be provided. All intersections would be crossed at street level. Potential stations would be located at N. Skidmore Street, N. Killingsworth Street, N. Portland Boulevard, N. Lombard Street and the Kenton commercial district.

   From the Kenton station, the alignment would follow the west side of N. Denver Avenue viaduct (the "West of Denver" option). It would proceed northerly across N. Columbia Boulevard and the Columbia Slough on a bridge, pass West Delta Park and follow Expo Road to an elevated potential station near the Expo Center parking lot.

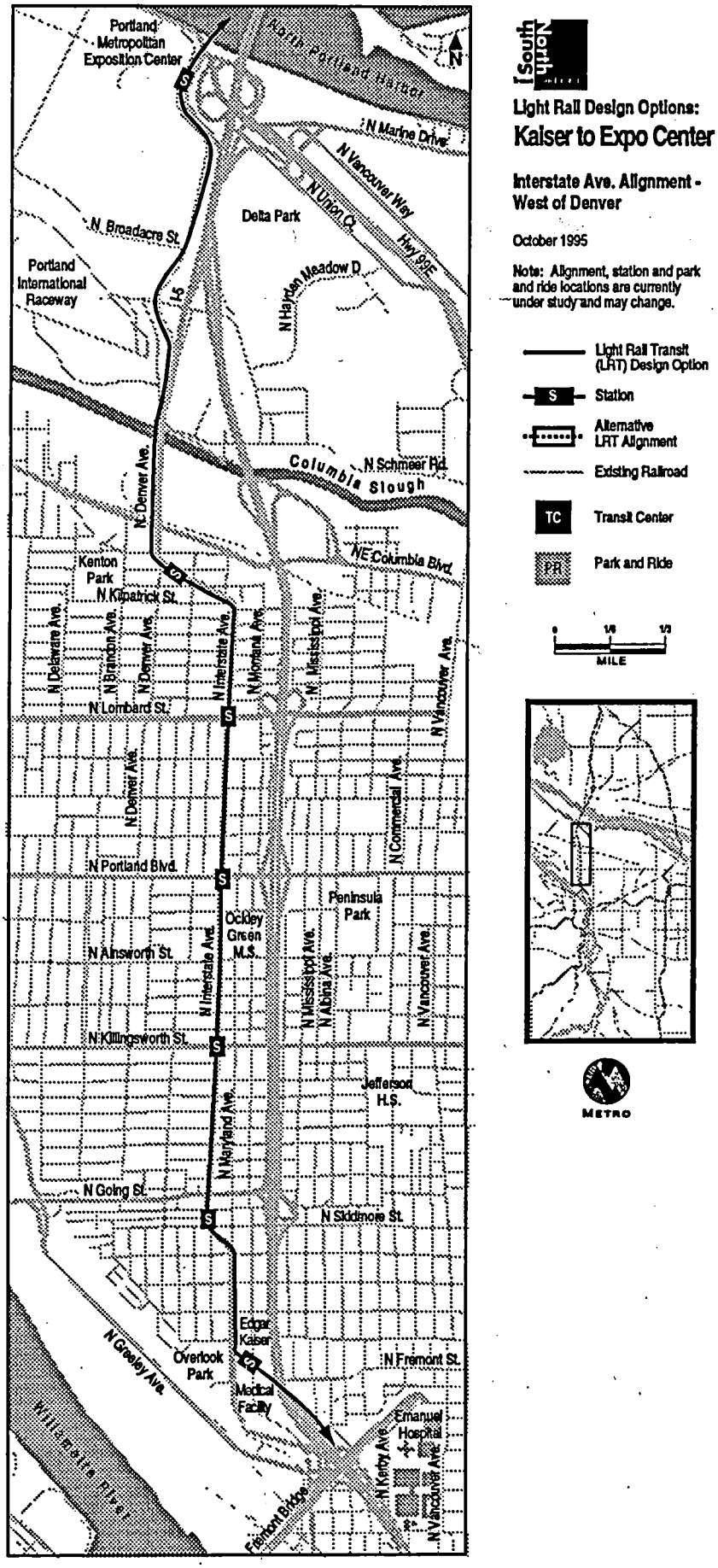

Portland Metropolitan Exposition Center
North Portland Harbor
N Marine Drive
N Vancouver Way
N Union Ct.
Hwy 99E
N. Broadacre St.
Delta Park
Portland International Raceway
I-5
N Hayden Meadow Dr.
Columbia Slough
N Schmeer Rd.
N. Denver Ave.
NE Columbia Blvd.
Kenton Park
N Kilpatrick St.
N Delaware Ave.
N Brandon Ave.
N Denver Ave.
N Interstate Ave.
N Montana Ave.
N. Mississippi Ave.
N Vancouver Ave.
N Lombard St.
N Commercial Ave.
N Portland Blvd.
Peninsula Park
Ockley Green M.S.
N Ainsworth St.
N Killingsworth St.
N Maryland Ave.
Jefferson H.S.
N Going St.
N Skidmore St.
Edgar Kaiser
Overlook Park
N Fremont St.
N Greeley Ave.
Medical Facility
Emanuel Hospital
N Kerby Ave.
N Vancouver Ave.
Willamette River
Fremont Bridge
North
South
Light Rail Design Options:
Kaiser to Expo Center
Interstate Ave. Alignment - West of Denver
October 1995
Note: Alignment, station and park and ride locations are currently under study and may change.
Light Rail Transit (LRT) Design Option
Station
Alternative LRT Alignment
Existing Railroad
Transit Center
Park and Ride
0
1/6
1/3
MILE
METRO

Figure 9

### 3.7.2 Kaiser Medical Facility to Expo Center: Issues

Four issues require continued investigation in this area:

1. *Design of Interstate Avenue option for auto traffic:* The configuration and operation of the traffic lanes on and intersecting Interstate Avenue (in the Interstate Avenue option) will be refined during the next two months.

2. *Choice between the I-5 option and the Interstate Avenue option:* This choice will be one of the major issues to be resolved during the DEIS process. An important basis for making this determination will focus on the ability to plan and develop transit-oriented land uses around stations. Issues of density, timing and certainty of development, parking, integration of light rail with major attractors, equity, capital cost, light rail travel speed/time, reliability, ridership, neighborhood cohesiveness and similar factors will be taken into consideration when evaluating these two options.

3. *Design and location of stations in the Kaiser Medical Facility to Expo Center segment:* The station locations along this segment will be refined during the next two months to ensure that access into the neighborhood is maximized and feeder bus service is efficiently provided.

4. *Crossovers:* The desirability and preferred location for a crossover between the I-5 alignment and the Interstate Avenue alignment has not been determined as part of the Tier I process. At this time, no crossover option will be studied in the DEIS. In making this determination, the Steering Group notes that the DEIS will focus on the key issue in this segment -- the relative merits and impacts of the Interstate Avenue and I-5 alignment options. Following completion of the results reports for the DEIS, staff will report back to the PMG, CAC and Steering Group to determine which crossover warrants further study.

5. *Expo Center and Portland International Raceway Stations:* Through the information developed for the DEIS, an assessment will be made as to the cost-effectiveness of the Expo Center Station. If that analysis concludes that and Expo Center station is not warranted, the alignment over Marine Drive may be redesigned. In addition, a possible future station serving the Portland International Raceway may be included within the design if future analysis indicates that it would be warranted.

### 3.7.3 Kaiser Medical Facility to Expo Center: Rationale

The Interstate Avenue option would provide a light rail alignment that is more centrally located in North Portland neighborhoods than the I-5 option and may enhance certain land use opportunities. Conversely, the I-5 option would cost less to construct, would provide faster travel speeds to more users, provide better access to neighborhoods east of I-5 and may not be subject to the operational and traffic problems inherent in the Interstate Avenue option. These are

key trade-offs for which information is not yet available to forge a consensus decision. Thus, it is essential that both options be further examined in the DEIS.

## 3.8 EXPO CENTER TO V.A. HOSPITAL/CLARK COLLEGE VICINITY

### 3.8.1 Expo Center to V.A. Hospital/Clark College Vicinity: Selected Options (See Figures 11, 12 & 13)

In this segment, one design option is selected to be examined in the DEIS:

1. *West of I-5/Lift Span Bridge/Washington Street (2-way)/E. McLoughlin Boulevard:* From the Expo Center, the alignment would proceed north over N. Marine Drive, North Portland Harbor and N. Jantzen Avenue on a bridge structure. The alignment would pass under the I-5 ramps (Sub-option B: Under the I-5 Ramps), then continue northerly along the westside of the freeway to a new lift span bridge crossing the Columbia River. The light rail bridge would parallel the westside of the existing I-5 bridge and would be approximately the same height above the river. The bridge would pass over Columbia Way in Vancouver and then would cross under the railroad berm before connecting with Washington Street. Washington Street would operate in a two-way light rail configuration (2-Way on Washington Option). The light rail alignment would proceed northerly on Washington Street to stations at W. 7th Street, between W. 11th and W. 12th Streets and between W. 16th and W. 17th Streets. At McLoughlin Boulevard, the alignment would curve easterly, proceeding along E. McLoughlin Boulevard to the east side of I-5. A station would be potentially located on E. McLoughlin Boulevard between "D" and "E" Streets. The alignment would cross under I-5 and then turn northerly and proceed along the east side of I-5 to a park-and-ride station in the vicinity of the Veterans Hospital. The alignment would then turn easterly, proceeding to the terminus station west of Fort Vancouver Way.

### 3.8.2 Expo Center to V.A. Hospital/Clark College Vicinity: Issues

One issue requires continued investigation in this area:

1. Clark County Transportation Futures Process: The outcome of Clark County's "Transportation Futures" study may necessitate changes to the light rail alignment, station locations, park-and-ride facility design(s) and location(s) and terminus in this segment.

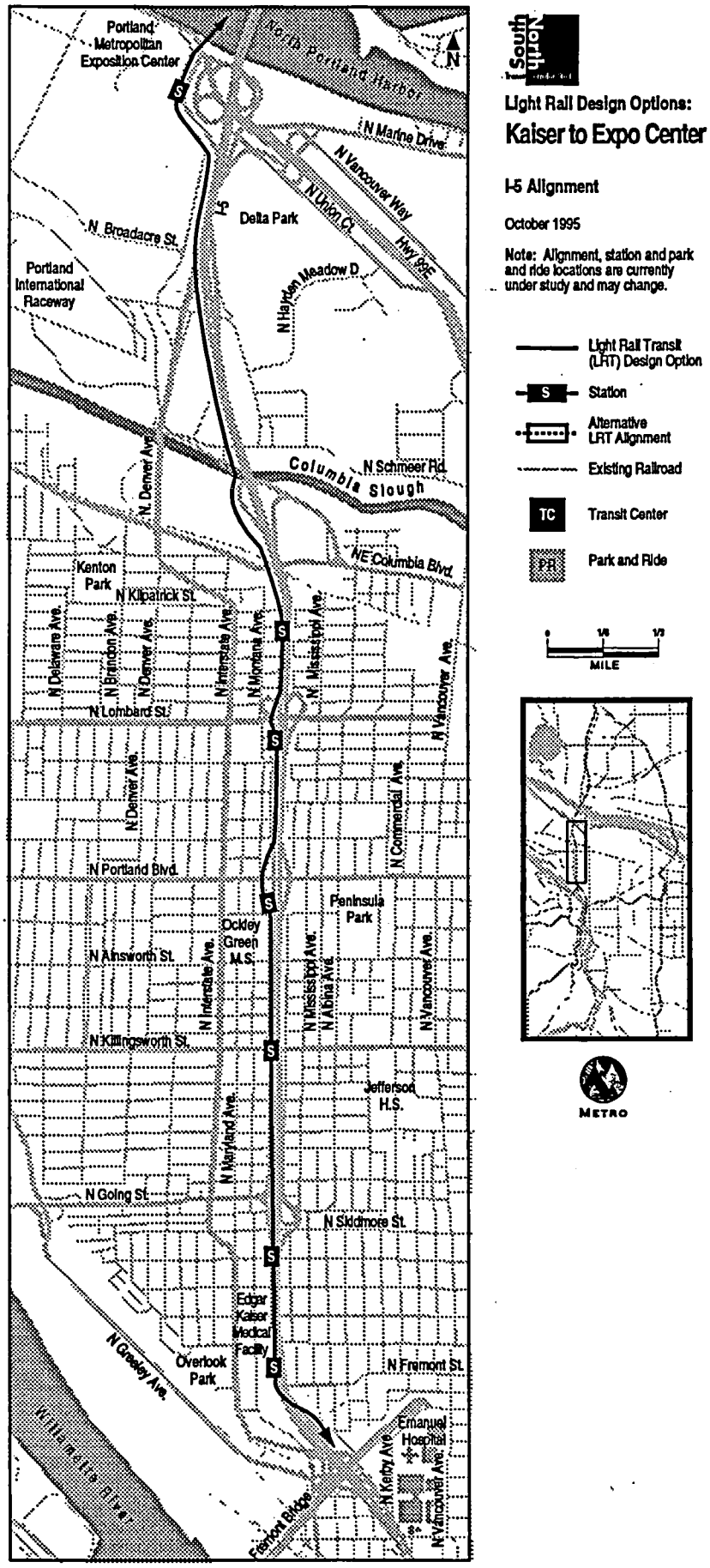
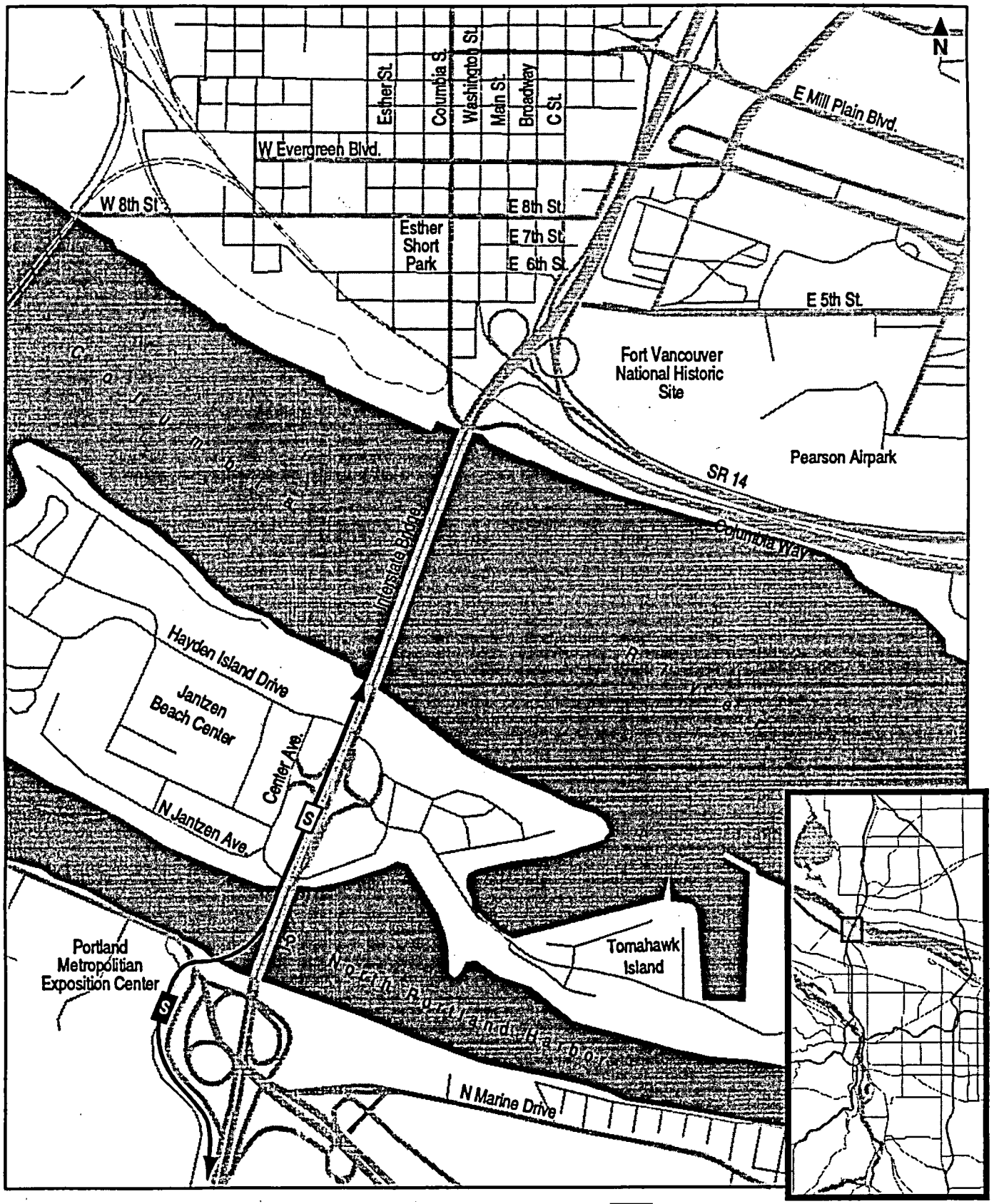

Portland Metropolitan Exposition Center
Inner Portland Harbor
N Marine Drive
N Vancouver Way
N Union Ct.
Hwy. 99E
Delta Park
N. Broadacre St.
Portland International Raceway
N Hayden Meadow D
Columbia Slough
N Schmeer Rd.
N. Denver Ave.
NE Columbia Blvd.
Kenton Park
N Kilpatrick St.
N Delaware Ave.
N Brandon Ave.
N Denver Ave.
N Interstate Ave.
N Montana Ave.
N. Mississippi Ave.
N Vancouver Ave.
N Lombard St.
N Commercial Ave.
N Portland Blvd.
Peninsula Park
Ockley Green M.S.
N Ainsworth St.
N Alberta Ave.
N Killingsworth St.
Jefferson H.S.
N Maryland Ave.
N Going St.
N Skidmore St.
Edgar Kaiser Medical Facility
Overlook Park
N Greeley Ave.
N Fremont St.
Willamette River
Fremont Bridge
Emanuel Hospital
N Kerby Ave.
N Vancouver Ave.
South
North
Light Rail Design Options:
Kaiser to Expo Center
I-5 Alignment
October 1995
Note: Alignment, station and park and ride locations are currently under study and may change.
Light Rail Transit (LRT) Design Option
S
Station
Alternative LRT Alignment
Existing Railroad
TC
Transit Center
PR
Park and Ride
0
1/4
1/2
MILE
METRO

Figure 10




South North Transit Corridor Study

**Light Rail Design Options:**

# Expo Center to Hayden Island

**West of I-5 (under ramps)**

Figure 11

Light Rail Transit (LRT) Design Option

S Station

Alternative LRT Alignment

Existing Railroad

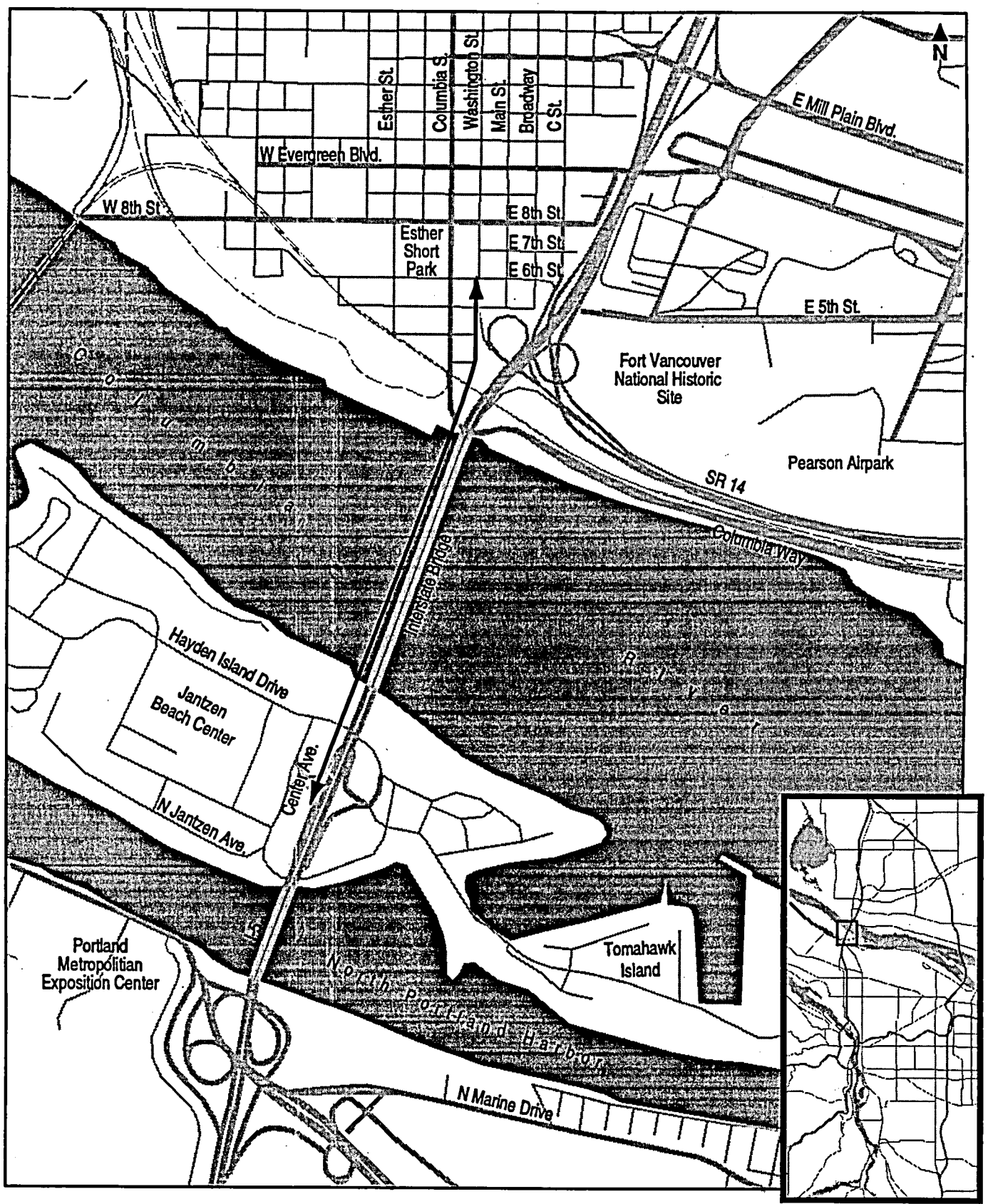
TC Transit Center

PR Park and Ride

0 1/8 1/4 MILE

**Note:** Alignment, station and park and ride locations are currently under study and may change.

METRO




South North Transit Corridor Study

**Light Rail Design Options:**

# Columbia River Crossing

**Lift Span Bridge**

Figure 12

Light Rail Transit (LRT) Design Option

S Station

Alternative LRT Alignment

Existing Railroad

TC Transit Center

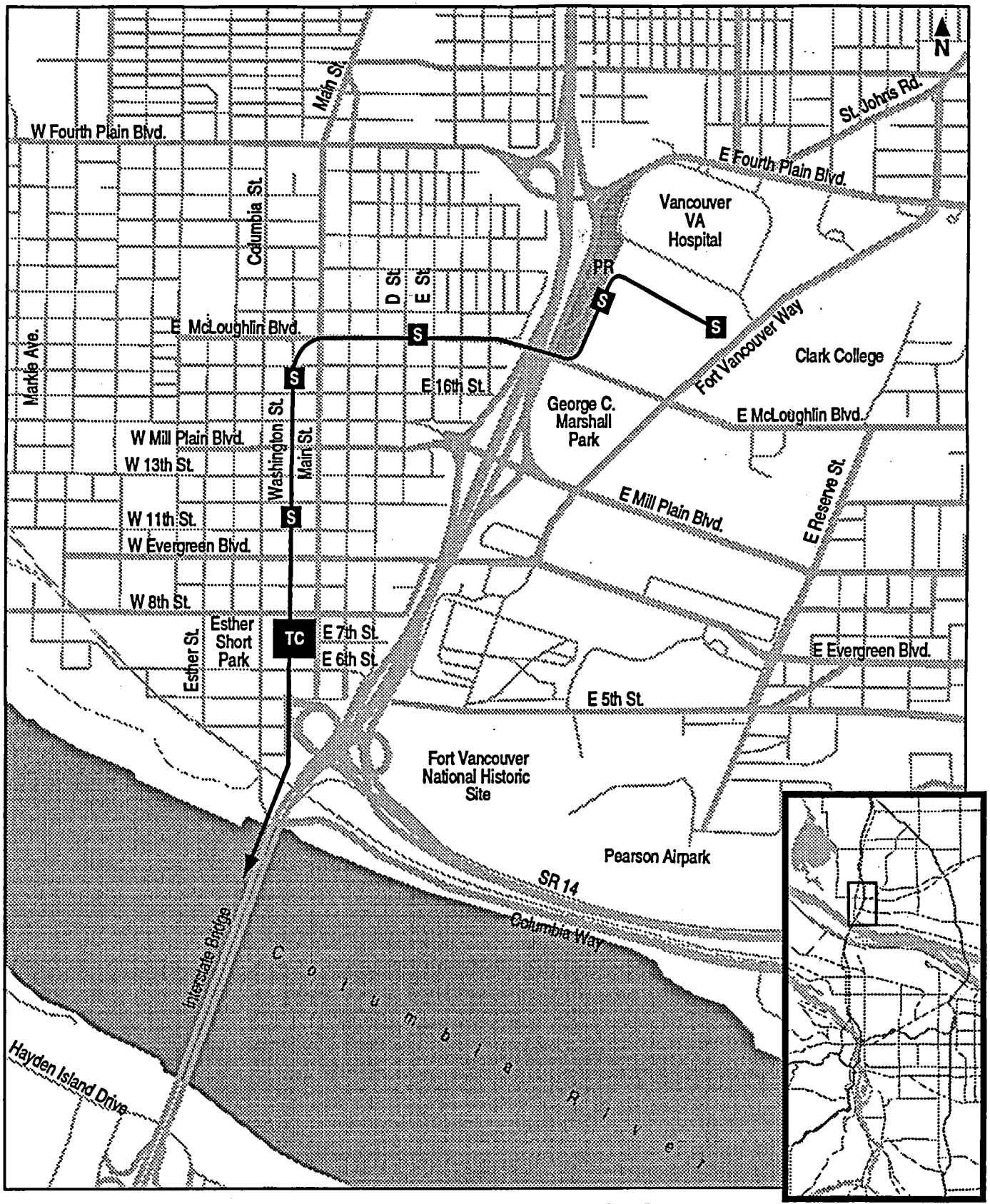
PR Park and Ride

0 1/8 1/4

MILE

**Note:** Alignment, station and park and ride locations are currently under study and may change.

METRO




South North Transit Corridor Study

**Light Rail Design Options:**

# Downtown Vancouver to VA Hospital/ Clark College

**2-Way on Washington**

Light Rail Transit (LRT) Design Option

S Station

Alternative LRT Alignment

Existing Railroad

TC Transit Center

PR Park and Ride

0 1/8 1/4 MILE

**Note:** Alignment, station and park and ride locations are currently under study and may change.

METRO

Figure 13

### 33.8.3 Expo Center to V.A. Hospital/Clark College Vicinity: Rationale

The West of I-5/Lift Span Bridge/Washington Street (2-way)/E. McLoughlin Boulevard alignment is selected to be included in the DEIS because:

[a] Between Expo Center and Hayden Island, the West of I-5 Under the Ramps option is selected for inclusion in the DEIS because it would be the least expensive of the West of I-5 options, it would not create a barrier which divides Hayden Island as do the Center Street and Adjacent to Jantzen Beach Center options and would have the minimum traffic impacts.

[b] The Lift Span bridge is selected for inclusion in the DEIS over the Bored Tunnel option because it would be $101 million ($YOE) less expensive, would have considerably less adverse impacts on Hayden Island and downtown Vancouver and would provide centrally located access through downtown Vancouver and which would be in proximity to major redevelopment sites. The LRT bridge can be built using techniques that would minimize effects on the Columbia River ecosystem.

[c] The Two-Way on Washington Street Option is selected for inclusion in the DEIS because, compared to the other Vancouver CBD alignment options, it would be the least expensive to construct, would exhibit the fastest travel times, would attract the highest ridership, has the highest level of public support and would be the most consistent with the development and redevelopment objectives in downtown Vancouver.

South North
Transit Corridor Study

# Appendix A

# Design Options Considered

# Design Option Narrowing by Segment

The following provides a quick look at the Project Management Group recommendations. Refer to the maps inside to locate specific design options selected by the group for further study.

### 1. South Terminus (end point)

*Terminus*
- Sunnyside area
- 84th Avenue CTC
- 93rd Avenue Town Center area
- Highway 212/224

*CTC Alignment*
- North of CTC
- South of CTC

### 2. Railroad Avenue/Highway 224:

- Railroad Avenue
- North of Highway 224
- South of Highway 224

### 3. Central Milwaukie

- Monroe Street and 21st /McLoughlin
- Monroe Street and SP branch line
- Washington to 21st/McLoughlin
- Washington Street and SP branch line
- Harrison Street and 21st Street/McLoughlin
- Harrison Street and SP branch line
- Clackamas Highway
- Southern Pacific main line

Between the Milwaukie and River Crossing segments, only a SE McLoughlin Boulevard option is being considered.

### 4. South Willamette River Crossing

*Caruthers Eastside*
- West Brooklyn Yards
- PTC/McLoughlin Boulevard
- East Brooklyn Yards

*Caruthers Crossing*
- Caruthers Modified
- Caruthers "S"
- Caruthers
- Caruthers/Marquam

*Ross Island Crossing*
- North Ross Island
- South Parallel Ross Island
- Mid Ross Island

### 6. Steel Bridge to Kaiser Clinic

- East I-5 and Kerby Street station
- Wheeler Avenue and Russell Street station
- Wheeler Avenue and Flint Street station
- West of I-5 Alignment and Graham Street station

### 7. Kaiser Clinic to Expo Center

- All Interstate Avenue alternative
- All I-5 alternative
- North Killingsworth crossover
- North Portland Blvd. crossover
- Kenton area crossover

### 8. Expo Center to Hayden Island

- West of I-5 freeway (under ramps)
- West of I-5 (over ramps)
- Adjacent to Jantzen Beach Center
- Center Avenue

### 9. Columbia River Crossing

- Lift span bridge
- Bored tunnel

### 10. Downtown Vancouver to VA Hospital/Clark College

- Two-way on Washington Street
- Washington/Main Street couplet

In August 1995, following an extensive effort to involve the public in the creation of the Clark County and Vancouver Transportation Futures process, C-TRAN amended the northern Phase I terminus from 99th Street to Veterans Administration Hospital/Clark College. Design options previously developed for the North Vancouver and Clark County segments will be narrowed as part of the future phase two extension process.

### 11. North Vancouver

- Two-way on Main Street
- Main/Broadway Street couplet to two-way on Main
- Two-way on Broadway to two-way on Main
- McLoughlin Boulevard to East of I-5 freeway

### 12. Clark County

- Stations at 63rd, 72nd, 88th and 105th streets
- Stations at 63rd, 78th, 88th and 105th streets
- Stations at 63rd, 88th and 105th streets
- Stations at 63rd, 72nd, 82nd and 95th streets
- Stations at 63rd, 82nd and 95th streets

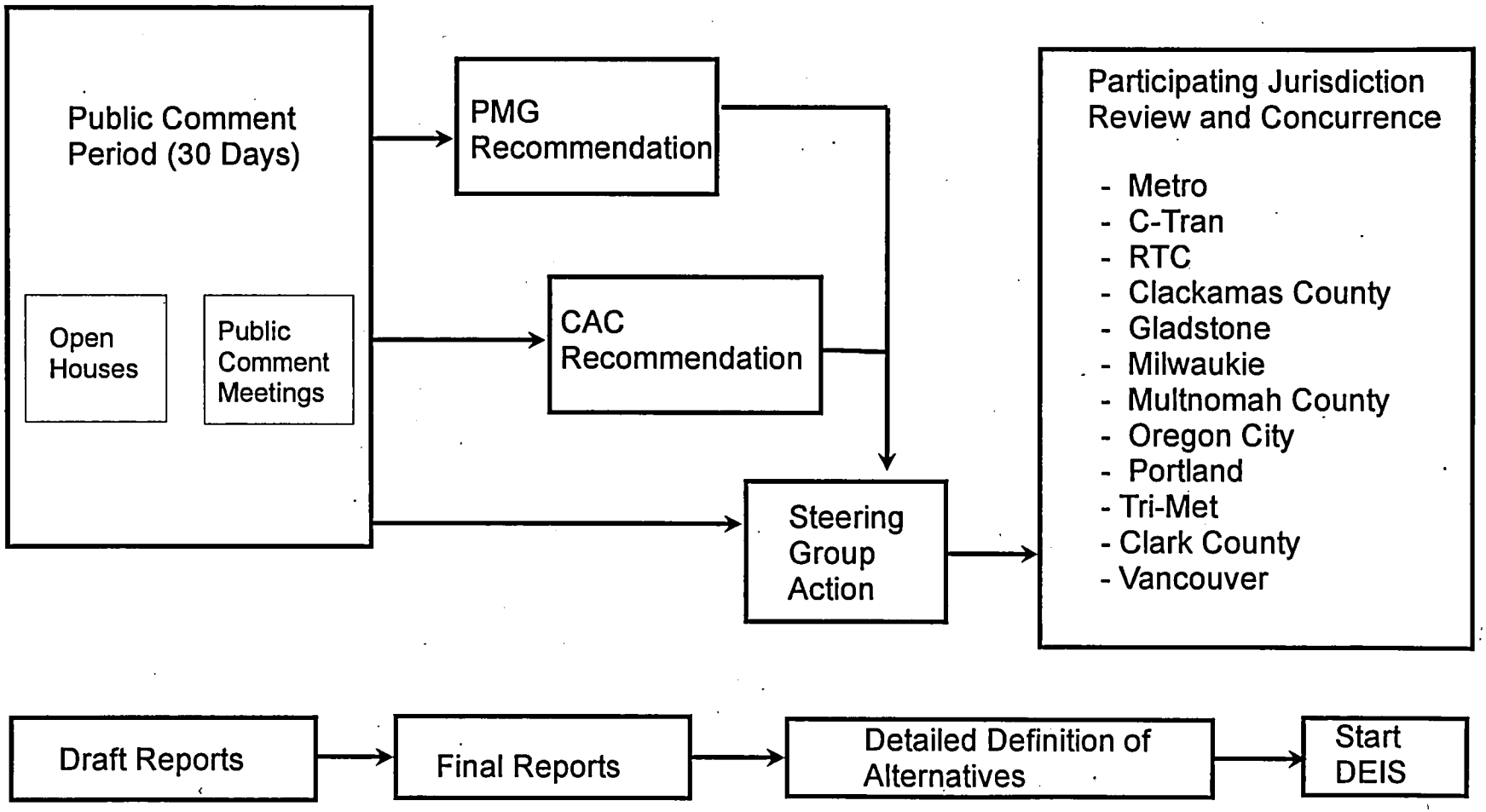
South North
Transit Corridor Study

# Appendix B

# Design Option Narrowing Process

# South/North

# Design Option Narrowing Process



South North
Transit Corridor Study

# Appendix C

# Design Options Narrowing Criteria and Measures

Criteria for Evaluating Design Options During Tier I

| NARROW MODAL ALTERNATIVES | NARROW ALIGNMENT ALTERNATIVES | NARROW DESIGN OPTIONS | NARROW STUDY TERMINI ALTERNATIVES |
|---|---|---|---|
| Modal Alternatives which result from the Scoping Process will be carried through Tier I | Alignment Alternatives which result from the Scoping Process will be carried through Tier I | Transit Service<br>-- *Ease of Access*<br>-- *Transferability*<br><br>Transit Operations<br>-- *Modal Compatibility*<br><br>Ability to Accommodate Growth<br>-- NA --<br><br>Minimize Traffic and Neighborhood Infiltration<br>-- NA --<br><br>Promote Land Use Desired Patterns and Development<br>-- *Support Major Activity Centers*<br>-- *Support Bi-State Policies*<br><br>Fiscal Stability and Efficiency<br>-- *Cost*<br><br>Engineering Efficiency and Environmental Sensitivity<br>-- *Environmental Impacts*<br>-- *Design Considerations* | Study Termini Alternatives which resulted from the Pre-AA Process will be carried through Tier I |

# Summary of Measurement Criteria
## CTC Mall Alignment

| Criteria | Measure | South of Mall | North of Mall |
|---|---|---|---|
| **Promote Desired Land Use and Development** | | | |
| *Service to Activity Centers* | Current and Planned Land Use Context | Direct access to CCC/OIT, Aquatic Center on Harmony Road | Closer to CTC public facilities |
| *Walk Market Area Data* | Vacant and Redevelopable Acres (Residential/Commercial/Industrial): | | |
| | Within 5 minute walk of LRT stations | | |
| | Sunnyside Terminus | 6 / 30 / 0 | 10 / 16 / 0 |
| | 93rd Ave Town Center Area Terminus | 1 / 33 / 0 | 5 / 19 / 0 |
| | Between 5 & 10 min. walk of LRT stations | | |
| | Sunnyside Terminus | 76 / 191 / 77 | 60 / 52 / 40 |
| | 93rd Ave Town Center Area Terminus | 18 / 73 / 41 | 36 / 87 / 44 |
| | Households/Employment: | | |
| | Within 5 minute walk of LRT stations | | |
| | Hwy. 212/224 | 400 / 4,340 | 860 / 3,400 |
| | Sunnyside Terminus | 1,120 / 5820 | 1,930 / 4,980 |
| | 93rd Ave Town Center Area Terminus | 390 / 3,820 | 840 / 2,870 |
| | Between 5 & 10 min. walk of LRT stations | | |
| | Hwy. 212/224 | 1,000 / 7,350 | 2,130 / 9,510 |
| | Sunnyside Terminus | 1,450 / 7,680 | 2,340 / 6,990 |
| | 93rd Ave Town Center Area Terminus | 840 / 6,040 | 1,980 / 8,270 |
| *Land Use Policies* | Local Jurisdiction's Policies<br>County/State/Regional Policies | | Greater opportunity for future transit oriented development |
| **Transit Ridership** | | | |
| *Ridership* | Walk Market LRT Ridership Potential (Hwy. 212/224/ Sunnyside/ 93rd / 84th) | 1,340 / 1,970 / 1,180 / 940 | 1,210 / 1,980 / 1,060 / N/A |
| | LRT Travel Time (minutes:seconds) (Hwy. 212/224 / Sunnyside / 93rd / 84th) | 7:53 / 6:22 / 4:55 / 3:10 | 8:55 / 8:00 / 5:57 /N/A |
| | LRT Ridership Impacts from Run Time Differences (Hwy. 212/224 / Sunnyside / 93rd / 84th) | 0 / 0 / 0 / 0 | -70 / -110 / -70 / N/A |
| | Net LRT Segment Boardings (Hwy. 212/224 / Sunnyside / 93rd / 84th) | 1,340 / 1,970 / 1,180 / 940 | 1,140 / 1,870 / 990 /N/A |
| *Reliability* | Percentage of Segment within Exclusive ROW<br>At-grade Crossings | 97-99% | 96-99% |
| *Transferability* | Quality of Bus Service/LRT Transfer | Less auto/bus conflicts | Existing Transit Center location |

| Criteria | Measure | South of Mall | North of Mall |
|---|---|---|---|
| **Fiscal Stability and Efficiency** | | | |
| *Costs (in millions of $)* | YOE Capital Costs | | |
| | Hwy. 212/224 Terminus | $271 | $307 |
| | Sunnyside Terminus | $181 | $202 |
| | 93rd Ave Town Center Area Terminus | $147 | $183 |
| *(From lowest cost design option with the same terminus))* | YOE Difference in Capital Costs [1] | | |
| | Hwy. 212/224 Terminus | $0 | $36 |
| | Sunnyside Terminus | $0 | $21 |
| | 93rd Ave Town Center Area Terminus | $0 | $36 |
| | 84th Ave CTC Mall Terminus | N/A | N/A |
| | Difference in Annual O&M (1994$)[1] | | |
| | Hwy. 212/224 Terminus | $0 | $0.25 |
| | Sunnyside Terminus | $0 | $0.45 |
| | 93rd Ave Town Center Area Terminus | $0 | $0.25 |
| | 84th Ave CTC Mall Terminus | N/A | N/A |
| *Comparative Ratio*[2] | Ratio of Annual Cost and Ridership | | |
| | Hwy. 212/224 Terminus | 21.3 | 24.4 |
| | Sunnyside Terminus | 14.1 | 16.7 |
| | 93rd Ave Town Center Area Terminus | 11.9 | 14.9 |
| | 84th Ave CTC Mall Terminus | 7.3 | N/A |
| **Engineering Efficiency** | | | |
| *Design Considerations* | Level of Engineering Risk or Construction Issues | More Construction impacts to businesses; bridge/berm on north side of Sunnyside from 82nd up to 97th | 82nd Avenue bridge, I-5 Bridge, Sunnyside Bridge |
| **Environmental Sensitivity** | | | |
| *Displacements* | Residential/Commercial Bldgs./Commercial Units | | |
| | Sunnyside Terminus | 31 / 6 / 6 | 74 / 3 / 3 |
| | 93rd Ave Town Center Area Terminus | 17 / 6 / 6 | 72 / 9 / 15 |
| | 84th Ave CTC Mall Terminus | 27 / 4 / 4 | N/A |
| *Neighborhoods* | Integration of LRT Service in the Community | Affects south of Southgate Village area | Affects north/east portion of Southgate Village area |
| *Visual* | Potential Impacts on Aesthetics of an Area | Structure at Mall/Sunnyside Road | |
| *Noise and Vibration* | Potentially Sensitive Receptors | | Some residential |
| *Traffic* | Traffic Impact Assessment | | 2 gate crossings of mall traffic |

**Note:** All costs are in millions. Capital costs are for year of expenditure (YOE). Operating and Maintenance (O&M) costs are in 1994 dollars.

[1] Difference from the lowest cost design option. A zero indicates that option as the low cost option.

[2] Comparative ratio includes *LRT Segment Boardings* plus the following bus transfers to LRT: 1) 930 bus transfer access trips for the Highway 212/224 termini - South of Mall design option; 2) 1,100 bus transfer access trips for Highway 212/224 termini - North of Mall design option; 3) 1,070 for 93rd Avenue, Town Center Area terminus - South of Mall design option; 4) 1,240 for 93rd Avenue Town Center Area terminus - North of Mall design option; 5) 380 bus transfer access trips for the Sunnyside terminus - South and North of Mall design option; and 6) 1,310 bus transfer access trips for 84th Avenue/CTC terminus.

# Summary of Measurement Criteria
# Southern Terminus Options

| Criteria | Measure | Hwy. 212/224 Terminus | Sunnyside Terminus | 93rd Avenue Town Center Area Terminus | 84th Avenue CTC Terminus |
|---|---|---|---|---|---|
| **Promote Desired Land Use and Development** | | | | | |
| *Service to Activity Centers* | Current and Planned Land Use Context | Terminus located in commercial industrial area | Terminus located near residential/ commercial/medical uses | Terminus located near office/ commercial uses | Does not serve all of Regional Center |
| *Walk Market Area Data* | Vacant and Redevelopable Acres (Residential/Commercial/Industrial): | | | | |
| | Within 5 minute walk of LRT stations | 0-4 / 27-40 / 2 | 0-11 / 16-30 / 0 | 0-5 / 19-33 / 0 | N/A |
| | Between 5 & 10 min. walk of LRT stations | 5-34 / 97-109 / 65-78 | 20-45 / 52-191 / 40-77 | 2-32 / 87-73 / 0-1 | |
| | Households/Employment: | | | | |
| | Within 5 minute walk of LRT stations | | | | |
| | South of Mall | 400 / 4,340 | 1,120 / 5,820 | 390 / 3,820 | 390 / 2,930 |
| | North of Mall | 860 / 3,400 | 1,930 / 4,980 | 840 / 2,870 | |
| | Between 5 & 10 min. walk of LRT stations | | | | |
| | South of Mall | 1,000 / 7,350 | 1,450 / 7,680 | 840 / 6,040 | N/A |
| | North of Mal | 2,130 / 9,510 | 2,340 / 6,990 | 1,980 / 8,270 | |
| *Land Use Policies* | Local Jurisdiction's Policies<br>County/State/Regional Policies | | | | |
| **Transit Ridership** | | | | | |
| *Ridership* | Walk Market LRT Ridership Potential | | | | |
| | South of Mall | 1,340 | 1,970 | 1,180 | 940 |
| | North of Mall | 1,210 | 1,980 | 1,060 | N/A |
| | LRT Travel Time (minutes:seconds) | | | | |
| | South of Mall | 7:53 | 6:22 | 4:55 | 3:10 |
| | North of Mall | 8:55 | 8:00 | 5:57 | N/A |
| | LRT Ridership Impacts from Run Time Differences (from North of Mall LRT Ridership) | -70 | -110 | -70 | N/A |
| | Net LRT Segment Boardings | | | | |
| | South of Mall | 1,340 | 1,970 | 1,180 | 940 |
| | North of Mall | 1,140 | 1,870 | 990 | N/A |
| *Reliability* | Percentage of Segment within Exclusive ROW | 98% | 96% | 97% | 98% |
| | At-grade Crossings | 5-11 | 7-13 | 4-10 | 2 |
| *Transferability* | Quality of Bus Service/LRT Transfer | No differences between options | No differences between options | No differences between options | No differences between options |

| Criteria | Measure | Hwy. 212/224 Terminus | Sunnyside Terminus | 93rd Avenue Town Center Area Terminus | 84th Avenue CTC Terminus |
|---|---|---|---|---|---|
| **Fiscal Stability and Efficiency** | | | | | |
| *Costs (in millions of $)* | YOE Capital Costs | | | | |
| | South of Mall | $271 | $181 | $147 | $89 |
| | North of Mall | $307 | $207 | $183 | N/A |
| *(From lowest cost design option with the same terminus)* | YOE Difference in Capital Cost [1] | $182 - $219 | $92 -$113 | $58 - 94 | 0 |
| | Difference in Annual O&M (1994$)[1] | $1.20 / $1.46 | $0.83 / $1.28 | $0.45 - $0.71 | $0.00 |
| *Comparative Ratio* [2] | Ratio of Annual Cost and Ridership | | | | |
| | South of Mall | 21.3 | 14.1 | 11.9 | 7.3 |
| | North of Mall | 24.4 | 16.7 | 14.9 | N/A |
| **Engineering Efficiency** | | | | | |
| *Design Considerations* | | | | | |
| | Level of Engineering Risk or Construction Issues | New underpass of I-205, wetlands, construction impacts on traffic | Bridge of I-205, construction impacts on traffic | Construction impacts on traffic | |
| **Environmental Sensitivity** | | | | | |
| *Displacements* | Residential/Commercial Units | 23-72 / 11-15 | 31-74 / 3-6 | 17-72 / 6-15 | 4 / 27 |
| *Neighborhoods* | Integration of LRT Service in the Community | | Direct service to Sunnyside Area | | |
| *Noise and Vibration* | Potentially Sensitive Receptors | Precision Castparts | Kaiser/Sunnyside | | |
| *Ecosystems* | Potential Impacts on the Natural Environment | Mt. Scott and Dean Creek | | | Phillips Creek and CTC detention pond |

**Note:** All costs are in millions. Capital costs are for year of expenditure (YOE). Operating and Maintenance (O&M) costs are in 1994 dollars.

[1] Difference from the lowest cost design option with same central Milwaukie alignment. A zero indicates that option as the low cost option.

[2] Comparative ratio includes *LRT Segment Boardings* plus the following bus transfers to LRT: 1) 930 bus transfer access trips for the Highway 212/224 termini - South of Mall design option; 2) 1,100 bus transfer access trips for Highway 212/224 termini - North of Mall design option; 3) 1,070 for 93rd Avenue Town Center Area Terminus - South of Mall design option; 4) 1,240 for 93rd Avenue Town Center Area Terminus - North of Mall design option; 5) 380 bus transfer access trips for the Sunnyside terminus - South and North of Mall design options, and 6) 1,310 bus transfer access trips for 84th Avenue CTC Terminus.

## Summary of Measurement Criteria
## Highway 224 Segment

| Criteria | Measure | Railroad Ave. | North of Hwy. 224 | South of Hwy. 224 |
|---|---|---|---|---|
| **Promote Desired Land Use and Development** | | | | |
| *Service to Activity Centers* | Current and Planned Land Use Context | Near to residential and industrial | Adjacent to industrial/ commercial | Adjacent to residential |
| *Walk Market Area Data* | Vacant and Redevelopable Acres (Residential/Commercial/Industrial): | | | |
| | Within 5 minute walk of LRT stations | 6 / 2 / 15 | 6 / 2 / 17 | 8 / 1 / 12 |
| | Between 5 & 10 min. walk of LRT stations | 41 / 9 / 22 | 52 / 9 / 27 | 50 / 11 / 28 |
| | Households/Employment (2015): | | | |
| | Within 5 minute walk of LRT stations | 500 / 500 | 460 / 320 | 500/ 370 |
| | Between 5 & 10 min. walk of LRT stations | 1,490 / 2,710 | 1,520 / 3,150 | 1,490 / 3,090 |
| *Land Use Policies* | Local Jurisdiction's Policies | No significant differences | | |
| | County/State/Regional Policies | No significant differences | | |
| **Transit Ridership** | | 3 stations | 3 stations | 3 stations |
| *Ridership* | Walk Market LRT Ridership Potential | 400 | 340 | 370 |
| | LRT Travel Time (minutes:seconds) | 3:33 | 3:41 | 3:52 |
| | LRT Ridership Impacts from Run Time Differences | 0 | 0 | 0 |
| | Net LRT Segment Boardings | 400 | 340 | 370 |
| *Reliability* | Percentage of Segment within Exclusive ROW | 99% | 99% | 98% |
| | At-grade Crossings | 2 | 4 | 5 |
| *Transferability* | Quality of Bus Service/LRT Transfer | No significant differences | No significant differences | No significant differences |

| Criteria | Measure | Railroad Ave. | North of Hwy. 224 | South of Hwy. 224 |
|---|---|---|---|---|
| **Fiscal Stability and Efficiency** | | | | |
| *Costs (in millions of $)* | YOE Capital Costs | $189 | $212 | $197 |
| | YOE Difference in Capital Costs [1] | $0 | $23 | $8 |
| | Difference in Annual O&M (1994$)[1] | $0 | $0 | $0 |
| *Comparative Ratio* | Ratio of Annual Cost and Ridership | 80.9 | 106.5 | 91.3 |
| **Engineering Efficiency** | | | | |
| *Design Considerations* | Level of Engineering Risk or Construction Issues | Construction adjacent to SP Main Line | Wetlands, impacts to Hwy. 224 | Retaining walls, impacts to Hwy. 224 |
| **Environmental Sensitivity** | | | | |
| *Displacements* | Residential Units/Commercial Buildings/Commercial Units | 71 / 5 / 5 | 46 / 11 / 11 | 85 / 3 / 6 |
| *Neighborhoods* | Integration of LRT Service in the Community | | | |
| *Visual* | Potential Impacts on Aesthetics of an Area | Structure near residential area | None identified | None identified |
| *Noise and Vibration* | Potentially Sensitive Receptors | No potential receptors | Some potential receptors | Some potential receptors |
| *Ecosystems* | Potential Impacts on the Natural Environment | Minimal | Wetlands | Minimal |
| *Hazardous Materials* | Potential Hazardous Materials Risk | Confirmed release at Catellus Site | None identified | None identified |
| *Historic* | Number of Potential Impacts on Historic and Cultural Resources | 2 | 0 | 0 |
| *Parks* | Potential Impacts to Parklands | Campbell School Playground | | |
| *Traffic* | Traffic Impact Assessment | | No significant differences | No significant differences |

**Note:** All costs are in millions. Capital costs are for year of expenditure (YOE). Operating and Maintenance (O&M) costs are in 1994 dollars.
[1] Difference from the lowest cost design option connecting to the same Central Milwaukie alignment. A zero indicates that option as the low cost option.

# Summary of Measurement Criteria
## Milwaukie Segment

| Criteria | Measure | Washington to 21st/McLoughlin | Washington to East of SP Branch Line | Monroe St. to 21st/McLoughlin | Monroe St. to East of SP Branch Line |
|---|---|---|---|---|---|
| **Promote Desired Land Use and Development** | | | | | |
| *Service to Activity Centers* | Current and Planned Land Use Context | Residential/Commercial | Residential/Commercial | Residential/Commercial | Residential/Commercial |
| *Walk Market Area Data* | Vacant and Redevelopable Acres (Residential/Commercial/Industrial): | | | | |
| | Within 5 minute walk of LRT stations | 1-2 / 8-9 / 0 | 3 / 6 / 0 | 1 / 9 / 0 | 3 / 3 / 0 |
| | Between 5 & 10 min. walk of LRT stations | 7-11 / 17-21 / 0 | 8 / 26 / 0 | 7 / 19 / 0 | 6 / 25 / 0 |
| | Households/Employment (2015): | | | | |
| | Within 5 minute walk of LRT stations | 170-200 / 550 | 190 /580 | 170 / 550 | 200 / 610 |
| | Between 5 & 10 min. walk of LRT stations | 1,025-1,160 / 1,230-1,250 | 970 / 1,170 | 1,030 / 1,250 | 960 / 1,140 |
| *Land Use Policies* | Local Jurisdiction's Policies<br>County/State/Regional Policies | Direct CBD service; Central to Regional Center | Edge of CBD service; Central to Regional Center | Direct CBD service; Central to Regional Center | Edge of CBD service; Central to Regional Center |
| **Transit Ridership** | | | | | |
| *Ridership* | Walk Market LRT Ridership Potential | 760 | 790 | 760 | 810 |
| | LRT Travel Time (minutes:seconds) | 6:04 | 5:12 | 4:36 | 4:02 |
| | LRT Ridership Impacts from Run Time Differences | -470 | -360 | -280 | -210 |
| | Net LRT Segment Boardings | 290 | 430 | 480 | 600 |
| *Reliability* | Percentage of Segment within Exclusive ROW | 58% | 49% | 91% | 88% |
| | At-grade Crossings (gated/signalized) | 5 | 6 | 8 | 6 |
| *Transferability* | Quality of Bus Service/LRT Transfer | | | | |
| **Fiscal Stability and Efficiency** | | | | | |
| *Costs (in millions of $)* | YOE Capital Costs[1] | $227 - 236 | $202 - 209 | $206 - 216 | $185 - 192 |
| | YOE Difference in Capital Costs [2] | $106 | $79 | $79 | $57 |
| | Difference in Annual O&M (1994$) [2] | $0.36 | $0.15 | $0 | $0.19 |
| *Comparative Ratio* [3] | Ratio of Annual Cost and Ridership | 12.2 - 12.6 | 10.3 - 10.7 | 10.2 - 10.7 | 9.1 - 9.4 |

| Criteria | Measure | Harrison to Main St./McLoughlin | Harrison to East of SP Branch Line | Milwaukie Expressway | SP Main Line |
|---|---|---|---|---|---|
| **Promote Desired Land Use and Development** | | | | | |
| *Service to Activity Centers* | Current and Planned Land Use Context | Residential/Commercial | Residential/Commercial | Residential/Commercial | Industrial/Commercial |
| *Walk Market Area Data* | Vacant and Redevelopable Acres (Residential/Commercial/Industrial): | | | | |
| | Within 5 minute walk of LRT stations | 1 / 7 / 0 | 1 / 3 / 0 | 1 / 5 / 0 | 0 |
| | Between 5 & 10 min. walk of LRT stations | 1 / 16 / 2 | 6 / 17 / 4 | 11 / 22 / 0 | 0 |
| | Households/Employment (2015): | | | | |
| | Within 5 minute walk of LRT stations | 250 / 420 | 540 / 200 | 240 / 370 | 0 |
| | Within 5 & 10 min. walk of LRT stations | 430 / 1,420 | 510 / 1,630 | 390 / 1,470 | 0 |
| *Land Use Policies* | Local Jurisdiction's Policies<br>County/State/Regional Policies | Far edge of CBD service | Far from CBD | Far from CBD | Does not serve CBD; edge of regional center |
| **Transit Ridership** | | | | | |
| *Ridership* | Walk Market LRT Ridership Potential | 750 | 870 | 720 | 350 |
| | LRT Travel Time (minutes:seconds) | 4:55 | 4:30 | 4:09 | 2:32 |
| | LRT Ridership Impacts from Run Time Differences | -325 | -265 | -225 | 0 |
| | Net LRT Segment Boardings | 425 | 605 | 495 | 350 |
| *Reliability* | Percentage of Segment within Exclusive ROW | 93% | 93% | 99% | 99% |
| | At-grade Crossings | 3 | 3 | 1 | 1 |
| *Transferability* | Quality of Bus Service/LRT Transfer | | | | |
| **Fiscal Stability and Efficiency** | | | | | |
| *Costs (in millions of $)* | YOE Capital Costs [1] | $210 - 214 | $171 - 178 | $183 -192 | $128 - 139 |
| | YOE Difference in Capital Costs [2] | $82 | $43 | $56 | $0 |
| | Difference in Annual O&M from (1994$) [2] | $0.71 | $0.84 | $0.62 | $0.98 |
| *Comparative Ratio* [3] | Ratio of Annual Cost and Ridership | 11.2 - 11.4 | 9.1 - 9.4 | 9.7 - 10.1 | 8.4 - 9.0 |

## Milwaukie Segment (cont.)

| Criteria | Measure | Washington to 21st/McLoughlin | Washington to East of SP Branch Line | Monroe St. to 21st/McLoughlin | Monroe St. to East of SP Branch Line |
|---|---|---|---|---|---|
| **Engineering Efficiency** | | | | | |
| *Design Considerations* | Level of Engineering Risk or Construction Issues | Steep grades, CBD construction impacts; blind tunnel under SP | CBD construction impacts | Steep grades, CBD construction impacts; tunnel under SP | CBD Construction impacts |
| **Environmental Sensitivity** | | | | | |
| *Displacements* | Residential Units/Commercial Units | 3-9 / 37-49 | 5-9 / 37-48 | 11-18 / 21-22 | 64-70 / 18-19 |
| *Neighborhoods* | Integration of LRT Service in the Community | | | | |
| *Visual* | Potential Impacts on Aesthetics of an Area | SP branch line undercrossing | | SP branch line undercrossing | |
| *Noise and Vibration* | Potentially Sensitive Receptors | Several potential sensitive receptors with all downtown options. | | | |
| *Historic* | Number of Potential Impacts on Historic and Cultural Resources | 5 | 1 | 7 | 4 |
| *Parks* | Potential Impacts to Parklands | Scott Park | | Scott Park | |
| *Traffic* | Traffic Impact Assessment | Mixed traffic | Mixed traffic | | |

**Note:** All costs are in millions. Capital costs are for year of expenditure (YOE). Operating and Maintenance (O&M) costs are in 1994 dollars.

[1] The range of capital costs represents the difference in the cost of connecting the design option to the three different design options in the Railroad Avenue/Highway 224 segment.

[2] Difference from the lowest cost design option connecting to the Railroad Avenue design option. A zero indicates that option as the low cost option.

[3] The daily LRT ridership used to develop the *comparative ratio* includes an additional 390 bus transfer trips with the SP Main Line design option. Also, the weekday LRT ridership for the downtown Milwaukie design options includes an additional 3,000 bus transfer from buses south of Milwaukie, while the SP Main Line option includes an additional 2,790 bus transfers from buses south of Milwaukie.

| Criteria | Measure | Harrison to Main St./McLoughlin | Harrison to East of SP Branch Line | Milwaukie Expressway | SP Main Line |
|---|---|---|---|---|---|
| **Engineering Efficiency** | | | | | |
| *Design Considerations* | Level of Engineering Risk or Construction Issues | CBD Construction impacts, long bridge | | Long bridge | Negotiating with railroad |
| **Environmental Sensitivity** | | | | | |
| *Displacements* | Residential Units/Commercial Units | 21-26 / 23-25 | 20-23 / 18-21 | 1-7 / 19-27 | 0-4 / 18 |
| *Neighborhoods* | Integration of LRT Service in the Community | | | | |
| *Visual* | Potential Impacts on Aesthetics of an Area | Bridge structure in downtown | | | |
| *Noise and Vibration* | Potentially Sensitive Receptors | Several potential receptors in downtown area | | Few potential receptors | Few potential receptors |
| *Historic* | Number of Potential Impacts on Historic and Cultural Resources | 2 | 1 | 1 | 0 |
| *Parks* | Potential Impacts to Parklands | Scott Park | | | |
| *Traffic* | Traffic Impact Assessment | Regional collector | Regional collector | | |

**Note:** All costs are in millions. Capital costs are for year of expenditure (YOE). Operating and Maintenance (O&M) costs are in 1994 dollars.

[1] The range of capital costs represents the difference in the cost of connecting the design option to the three different design options in the Railroad Avenue/Highway 224 segment.

[2] Difference from the lowest cost design option connecting to the Railroad Avenue design option. A zero indicates that option as the low cost option.

[3] The daily LRT ridership used to develop the *comparative ratio* includes an additional 390 bus transfer trips with the SP Main Line design option. Also, the weekday LRT ridership for the downtown Milwaukie design options includes an additional 3,000 bus transfer from buses south of Milwaukie, while the SP Main Line option includes an additional 2,790 bus transfers from buses south of Milwaukie.

## Summary of Measurement Criteria
## Eastside Connection Design Options

| Criteria | Measure | PTC/McLoughlin | East Brooklyn Yards | West Brooklyn Yards |
|---|---|---|---|---|
| **Promote Desired Land Use and Development** | | | | |
| *Service to Activity Centers* | Current and Planned Land Use Context | Serves Brooklyn neighborhood and industrial area | Serves Brooklyn and HAND neighborhood & industrial area | Serves Brooklyn and HAND neighborhood & industrial area |
| *Walk Market Area Data* | Vacant and Redevelopable Acres (Residential/Commercial/Industrial): | | | |
| | Within 5 minute walk of LRT stations | 4 / 10 / 25 | 4 / 5 / 44 | 4 / 6 / 40 |
| | Between 5 & 10 min. walk of LRT stations | | | |
| | Households/Employment (2015): | | | |
| | Within 5 minute walk of LRT stations | 900 / 2,430 | 680 / 7,030 | 695 / 6,540 |
| | Between 5 & 10 min. walk of LRT stations | 1,780/ 7,390 | 6,330/ 11,460 | 3,760/ 10,370 |
| *Land Use Policies* | Local Jurisdiction's Policies | | | |
| | County/State/Regional Policies | | | |
| **Transit Ridership** | | 3 stations | 3 stations | 3 stations |
| *Ridership* | Walk Market LRT Ridership Potential | 1,990 | 3,570 | 3,400 |
| | LRT Travel Time (minutes:seconds) | 6:30 | 6:17 | 6:25 |
| | LRT Ridership Impacts from Run Time Differences | 0 | 0 | 0 |
| | Net LRT Segment Boardings | 1,990 | 3,570 | 3,400 |
| *Reliability* | Percentage of Segment within Exclusive ROW | 99% | 100% | 99% |
| | At-grade Crossings | 1 | 0 | 3 |
| *Transferability* | Quality of Bus Service/LRT Transfer | | | |

| Criteria | Measure | PTC/McLoughlin | East Brooklyn Yards | West Brooklyn Yards |
|---|---|---|---|---|
| **Fiscal Stability and Efficiency** | | | | |
| *Costs (in millions of $)* | YOE Capital Costs | $211 | $279 | $237 |
| | YOE Difference in Capital Costs [1] | $0 | $68 | $26 |
| | Difference in Annual O&M (1994$)[1] | N/A | N/A | N/A |
| *Comparative Ratio* | Ratio of Annual Cost and Ridership | 19.2 | 13.5 | 12.3 |
| **Engineering Efficiency** | | | | |
| *Design Considerations* | Level of Engineering Risk or Construction Issues | Questionable fill near OMSI | Questionable fill near OMSI, negotiations with railroads | Questionable fill near OMSI, negotiations with railroads |
| **Environmental Sensitivity** | | | | |
| *Displacements* | Residential Units/Commercial Buildings/ Commercial Units | 28 / 11 / 11<br>13 / 10 / 10 sub-option | 16 / 47 / 49 | 1 / 38 / 53 |
| *Neighborhoods* | Integration of LRT Service in the Community | Opposition to Center St. Station | | Neighborhood support |
| *Noise and Vibration* | Potentially Sensitive Receptors | Residences on east side of McLoughlin | | |
| *Ecosystems* | Potential Impacts on the Natural Environment | Willamette River edge | | |
| *Hazardous Materials* | Potential Hazardous Materials Risk | Industrial area | Industrial area | Industrial area |
| *Historic* | Number of Potential Impacts on Historic and Cultural Resources | 7 | 3 | 5 |
| *Parks* | Potential Impacts to Parklands | Greenway, Riverside Park, PTC Trail | | |
| *Traffic* | Traffic Impact Assessment | Minor | Minor | Minor |

**Note:** All costs are in millions. Capital costs are for year of expenditure (YOE). Operating and Maintenance (O&M) costs are in 1994 dollars.
[1] Difference from the lowest cost design option. A zero indicates that option as the low cost option.

## Summary of Measurement Criteria
## Caruthers River Crossings

| Criteria | Measure | Caruthers/Marquam | Caruthers Modified | Caruthers | Caruthers "S" |
|---|---|---|---|---|---|
| **Promote Desired Land Use and Development** | | | | | |
| *Service to Activity Centers* | Current and Planned Land Use Context | Serves Riverplace and OMSI | Serves Riverplace and OMSI | Serves Riverplace and OMSI | Serves Riverplace, OMSI and North Macadam |
| *Walk Market Area Data* | Vacant and Redevelopable Acres (Residential/Commercial/Industrial): | | | | |
| | Within 5 minute walk of LRT stations | N/A | N/A | N/A | |
| | Between 5 & 10 min. walk of LRT stations | N/A | N/A | N/A | |
| | Households/Employment (2015): | | | | |
| | Within 5 minute walk of LRT stations | N/A | N/A | N/A | 690 / 5,050 |
| | Between 5 & 10 min. walk of LRT stations | | | | |
| *Land Use Policies* | Local Jurisdiction's Policies<br>County/State/Regional Policies | | | | |
| **Transit Ridership** | | | | | 1 station |
| *Ridership* [3] | Walk Market LRT Ridership Potential | N/A | N/A | N/A | 2,000 |
| | LRT Travel Time (minutes:seconds) | 1:57 | 1:43 | 2:00 | 3:09 |
| | LRT Ridership Impacts from Run Time Differences | N/A | N/A | N/A | -400 |
| | Net LRT Segment Boardings | N/A | N/A | N/A | 1,600 [4] |
| *Reliability* | Percentage of Segment within Exclusive ROW | 99% | 100% | 98% | 98% |
| | At-grade Crossings | 1 | 1 | 3 | 3 |
| *Transferability* | Quality of Bus Service/LRT Transfer | same | same | same | same |
| **Fiscal Stability and Efficiency** | | | | | |
| *Costs (in millions of $)* | YOE Capital Costs [1] | $132 | $141 | $133 | $159 |
| | YOE Difference in Capital Costs [2] | $0 | $9 | $1 | $27 |
| | Difference in Annual O&M (1994$)[2] | $0 | $0 | $0 | $0.37 |
| *Comparative Ratio* | Ratio of Annual Cost and Ridership | N/A | N/A | N/A | N/A |

| Criteria | Measure | Caruthers/Marquam | Caruthers Modified | Caruthers | Caruthers "S" |
|---|---|---|---|---|---|
| **Engineering Efficiency** | | | | | |
| *Design Considerations* | Level of Engineering Risk or Construction Issues | Geologic/Seismic | Geologic/Seismic | Geologic | Geologic |
| **Environmental Sensitivity** | | | | | |
| *Displacements* | Residential Units/Commercial Buildings/ Commercial Units | 0 | 1 | 0 | 0 |
| *Visual* | Potential Impacts on Aesthetics of an Area | New bridge | New bridge | New bridge | Impacts view from both banks |
| *Ecosystems* | Potential Impacts on the Natural Environment | Piers in River | Piers in River | Piers in River | More piers in River |
| *Hazardous Materials* | Potential Hazardous Materials sites | | | Known site | Known site |
| *Historic* | Number of Potential Impacts on Historic and Cultural Resources | 2 | 2 | 2 | 3 |
| *Parks* | Potential Impacts to Parklands | Willamette Greenway | Willamette Greenway | Willamette Greenway | Willamette Greenway |
| *Traffic* | Traffic Impact Assessment | Grade-crossing at Moody | Grade-crossing at Moody | Grade crossing at Moody and Sheridan | Grade crossing at Moody and Sheridan |

**Note:** All costs are in millions. Capital costs are for year of expenditure (YOE). Operating and Maintenance (O&M) costs are in 1994 dollars.

[1] The capital costs for these bridge options assume a concrete segmental bridge type. Other bridge types may cost more; for example, a through truss bridge would cost $18M more for Caruthers "S" and about $15M more for the other options.

[2] Difference from the lowest cost design option. A zero indicates that option as the low cost option.

[3] *LRT segment boardings* for the Caruthers "S" option reflects the increase in South/North LRT riders over the other two options which would require riders to board buses at this location and transfer to South/North LRT at a downtown station. Without accounting for bus transfers to LRT for the other two options, the Caruthers "S" would have approximately 2,600 *LRT segment boardings.*

[4] *LRT segment boardings* may be over estimated because the Caruthers "S" option may limit the development potential of the property between the Ross Island and Marquam Bridges which could lead to fewer residents and employees being located within walking distance of the LRT station.

# Summary of Measurement Criteria
# Ross Island River Crossings

| Criteria | Measure | South and Parallel to Ross Island Bridge | North Ross Island | Mid Ross Island |
|---|---|---|---|---|
| **Promote Desired Land Use and Development** | | | | |
| *Service to Activity Centers* | Current and Planned Land Use Context | Serves some of North Macadam redevelopment area | Serves all North Macadam redevelopment area | Serves all North Macadam redevelopment area |
| *Walk Market Area Data* | Vacant and Redevelopable Acres (Residential/Commercial/Industrial): | | | |
| | Within 5 minute walk of LRT stations | 5 / 63 / 13 | 4 / 86 / 14 | 1 / 88 / 9 |
| | Between 5 & 10 min. walk of LRT stations | not available | not available | not available |
| | Households/Employment (2015): | | | |
| | Within 5 minute walk of LRT stations | 1,550 / 6,440 | 2,250 / 9,230 | 1,660 / 10,280 |
| | Between 5 & 10 min. walk of LRT stations | not available | not available | not available |
| *Land Use Policies* | Local Jurisdiction's Policies | Less supporting | Supports comp plan densities | Supports comp plan densities |
| | County/State/Regional Policies | Less supporting | Supports 2040 | Supports 2040 |
| **Transit Ridership** | | 4 stations | 5 stations | 4 stations |
| *Ridership* | Walk Market LRT Ridership Potential | 4,490 | 6,460 | 6,440 |
| | LRT Travel Time (minutes:seconds) | 7:20 | 8:00 | 7:27 |
| | LRT Ridership Impacts from Run Time Differences | 0 | -200 | 0 |
| | Net LRT Segment Boardings | 4,490 | 6,260[3] | 6,440 |
| *Reliability* | Percentage of Segment within Exclusive ROW | 98% | 98% | 98% |
| | At-grade Crossings | 3 | 3 | 3 |
| *Transferability* | Quality of Bus Service/LRT Transfer | 2 transfer stations | 2 transfer stations | 3 transfer stations |
| **Fiscal Stability and Efficiency** | | | | |
| *Costs (in millions of $)* | YOE Capital Costs [1] | $331 | $351[4] | $405 |
| | YOE Difference in Capital Costs [2] | $0 | $20 | $74 |
| | Difference in Annual O&M (1994$) [2] | $0 | $0.16 | $0 |
| *Comparative Ratio* | Ratio of Annual Cost and Ridership | 12.7 | 9.7 | 10.7 |

| Criteria | Measure | South and Parallel to Ross Island Bridge | North Ross Island | Mid Ross Island |
|---|---|---|---|---|
| **Engineering Efficiency** | | | | |
| *Design Considerations* | Level of Engineering Risk or Construction Issues | Geological, in-water construction limits | Geological, in-water construction limits | Geological, in-water construction limits, conflict with gravel extraction |
| **Environmental Sensitivity** | | | | |
| *Displacements* | Residential Units/Commercial Buildings/ Commercial Units | 58 / 12 / 14<br>15 / 13 / 15 sub-option | 30 / 13 / 15<br>15 / 14 / 16 sub-option | 13 / 17 / 17 |
| *Neighborhoods* | Integration of LRT Service in the Community | | | |
| *Visual* | Potential Impacts on Aesthetics of an Area | New bridge | New bridge | New bridge |
| *Noise and Vibration* | Potentially Sensitive Receptors | Most: East side of McLoughlin | More: East side of McLoughlin | Few |
| *Ecosystems* | Potential Impacts on the Natural Environment | River, but more piers | River, Island | River, Island, Great Blue Heron |
| *Hazardous Materials* | Potential Hazardous Materials Risk | Known unremediated sites | Potential along Moody Ave. | Potential along Moody Ave. |
| *Historic* | Number of Potential Impacts on Historic and Cultural Resources | 3 | 3 | 4 |
| *Parks* | Potential Impacts to Parklands | Willamette Greenway and Riverside Park | Willamette Greenway | Willamette Greenway |
| *Traffic* | Traffic Impact Assessment | Moody Ave., Franklin St. | Moody Ave., Center St. | Potential impact on Bancroft |

**Note:** All costs are in millions. Capital costs are for year of expenditure (YOE). Operating and Maintenance (O&M) costs are in 1994 dollars.

[1] Capital cost assumes a concrete segmental bridge. Other bridge types may cost more, for example, a cable stayed (North and Mid Ross Island) or through truss (South Parallel) bridge type would cost between $18 to $20 million more.

[2] Difference from the lowest cost design option. A zero indicates that option as the low cost option.

[3] The West of McLoughlin sub-option would eliminate the Center Street station resulting in a decrease in segment LRT boardings to 6,030.

[4] The West of McLoughlin sub-option would cost $354M (YOE).

# Summary of Measurement Criteria
## Steel Bridge to Kaiser

| Criteria | Measure | Wheeler/Flint Station | Wheeler/Russell Station | East I-5/Kerby Station | West I-5/Graham Station |
|---|---|---|---|---|---|
| **Promote Desired Land Use and Development** | | | | | |
| *Service to Activity Centers* | Current and Planned Land Use Context | Flint Station serves high density residential | Russell Station serves high density residential | Kerby Station serves center of Emanuel Campus | Graham Station serves industrial sanctuary |
| *Walk Market Area Data* | Vacant and Redevelopable Acres (Residential/Commercial/Industrial): | | | | |
| | Within 5 minute walk of LRT stations | 2 / 13 / 7 | 1 / 13 / 10 | 2 / 16 / 12 | 2 / 13 / 27 |
| | Between 5 & 10 min. walk of LRT stations | 43 / 37 / 50 | 54 / 43 / 44 | 45 / 33 / 35 | 45 / 36 / 23 |
| | Households/Employment (2015): | | | | |
| | Within 5 minute walk of LRT stations | 340 / 7,400 | 290 / 7,850 | 320 / 9,240 | 210 / 7,920 |
| | Between 5 & 10 min. walk of LRT stations | 940 / 3,150 | 950 / 2,400 | 1,380 / 8,260 | 860 / 8,080 |
| *Land Use Policies* | Local Jurisdiction's Policies | Identified in Albina Community Plan | Identified in Albina Community Plan | Not included in Albina Community Plan | Not included in Albina Community Plan |
| **Transit Ridership** | | 3 stations | 3 stations | 3 stations | 3 stations |
| *Ridership* | Walk Market LRT Ridership Potential | 2,580 | 2,680 | 3,140 | 2,640 |
| | LRT Travel Time (minutes:seconds) | 6:25 | 6:33 | 5:16 | 4:28 |
| | LRT Ridership Impacts from Run Time Differences | -780 | -780 | -270 | 0 |
| | Net LRT Segment Boardings | 1,800 | 1,900 | 2,870 | 2,640 |
| *Reliability* | Percentage of Segment within Exclusive ROW | 51% | 58% | 86% | 95% |
| | At-grade Crossings | 12 | 8 | 5 | 6 |
| *Transferability* | Quality of Bus Service/LRT Transfer | Transfers at Rose Quarter Transit Ctr. | Transfers at Rose Quarter Transit Ctr. | Transfers at Rose Quarter Transit Ctr. | Transfers at Rose Quarter Transit Ctr. |
| **Fiscal Stability and Efficiency** | | | | | |
| *Costs (in millions of $)* | YOE Capital Costs | $169 | $168 | $146 | $145 |
| | YOE Difference in Capital Costs [1] | $24 | $23 | $1 | $0 |
| | Difference in Annual O&M (1994$)[1] | $0.49 | $0.52 | $0.20 | $0 |
| *Comparative Ratio* | Ratio of Annual Cost and Ridership | 18.1 | 17.0 | 9.4 | 9.9 |

| Criteria | Measure | Wheeler/Flint Station | Wheeler/Russell Station | East I-5/Kerby Station | West I-5/Graham Station |
|---|---|---|---|---|---|
| **Engineering Efficiency** | | | | | |
| *Design Considerations* | Level of Engineering Risk or Construction Issues | Coordination with I-5 improvements, narrow ROW on Wheeler, difficult access to I-5 alignment | Coordination with I-5 improvements, narrow ROW on Wheeler | Coordination with I-5 improvements | Coordination with I-5 improvements, difficult access to I-5 alignment |
| **Environmental Sensitivity** | | | | | |
| *Displacements* | Residential Units/Commercial Buildings/ Commercial Units | 8 / 14 / 15 | 15 / 12 / 18 | 7 / 9 / 10 | 3 / 12 / 74 |
| *Noise and Vibration* | Potentially Sensitive Receptors | Tubman Middle School, Emanuel, Kaiser | Tubman Middle School, Emanuel, Kaiser | Emanuel, Kaiser | Kaiser |
| *Historic* | Number of Potential Impacts on Historic and Cultural Resources | 4 | 4 | 5 | 6 |
| *Parks* | Potential Impacts to Parklands | Lillis Albina Park | Lillis Albina Park | Lillis Albina Park | none |
| *Traffic* | Traffic Impact Assessment | Arena parking access, at-grade crossing of Broadway/Weidler | Arena parking access, at-grade crossing of Broadway/Weidler | none | none |

**Note:** All costs are in millions. Capital costs are for year of expenditure (YOE). Operating and Maintenance (O&M) costs are in 1994 dollars.
[1] Difference from the lowest cost design option. A zero indicates that option as the low cost option.

# Summary of Measurement Criteria
## Kaiser to Expo Center

| Criteria | Measure | All I-5 Alternative | N. Killingsworth Crossover | N. Portland Blvd. Crossover | Kenton Area Crossover |
|---|---|---|---|---|---|
| **Promote Desired Land Use and Development** | | | | | |
| *Service to Activity Centers* | Current and Planned Land Use Context | No direct service to Kenton Business District | Direct access to Kenton Business District | Direct access to Kenton Business District | Direct access to Kenton Business District |
| *Walk Market Area Data* | Vacant and Redevelopable Acres (Residential/Commercial/Industrial) | | | | |
| | Within 5 minute walk of LRT stations | 16 / 16 / 4 | 24 / 23 / 5 | 30 / 23 / 4 | 26 / 19 / 26 |
| | Between 5 & 10 min. walk of LRT stations | 45 / 13 / 5 | 48 / 7 / 5 | 44 / 7 / 6 | 44 / 11 / 6 |
| | Households/Employment (2015): | | | | |
| | Within 5 minute walk of LRT stations | 1,600 / 2,760 | 2,260 / 3,320 | 2,210 / 3,520 | 1,780 / 3,370 |
| | Between 5 & 10 min. walk of LRT stations | 3,330 / 2,950 | 3,350 / 2,340 | 3,240 / 2,450 | 3,460 / 2,470 |
| *Land Use Policies* | Local Jurisdiction's Policies | Identified in Albina Community Plan | Consistent with Albina Community Plan | Consistent with Albina Community Plan | Consistent with Albina Community Plan |
| **Transit Ridership** | | 6 stations | 6 stations | 6 stations | 6 stations |
| *Ridership* | Walk Market LRT Ridership Potential | 2,110 | 2,790 | 2,820 | 2,430 |
| | LRT Travel Time (minutes:seconds) | 11:20 | 12:32 | 12:24 | 12:28 |
| | LRT Ridership Impacts from Run Time Differences | 0 | -550 | -550 | -550 |
| | Net LRT Segment Boardings | 2,110 | 2,240 | 2,270 | 1,880 |
| *Reliability* | Percentage of Segment within Exclusive ROW | 100% | 66% | 76% | 95% |
| | At-grade Crossings | 10 | 19 | 18 | 16 |
| *Transferability* | Quality of Bus Service/LRT Transfer | No Kenton transfer | Kenton transfer opportunity | Kenton transfer opportunity | Kenton transfer opportunity |
| **Fiscal Stability and Efficiency** | | | | | |
| *Costs (in millions of $)* | YOE Capital Costs | $374 | $434 | $410 | $402 |
| | YOE Difference in Capital Costs [1] | $0 | $60 | $36 | $28 |
| | Difference in Annual O&M (1994$)[1] | $0 | $0.29 | $0.29 | $0.29 |
| *Comparative Ratio* | Ratio of Annual Cost and Ridership | 31.8 | 34.4 | 32.4 | 38.4 |

| Criteria | Measure | All I-5 Alternative | N. Killingsworth Crossover | N. Portland Blvd. Crossover | Kenton Area Crossover |
|---|---|---|---|---|---|
| **Engineering Efficiency** | | | | | |
| *Design Considerations* | Level of Engineering Risk or Construction Issues | Neighborhood construction impacts | Tight turns on crossovers | Tight turns on crossovers | Tight turns on crossovers |
| **Environmental Sensitivity** | | | | | |
| *Displacements* | Residential Units/Commercial Units | 81 / 5 | 69 / 16 | 81 / 16 | 93 / 17 |
| *Noise and Vibration* | Potentially Sensitive Receptors | Noise walls are possible | Noise walls are possible in I-5 sections | Noise walls are possible in I-5 sections | Noise walls are possible in I-5 sections |
| *Historic* | Number of Potential Impacts on Historic and Cultural Resources | | 2 | 0 | 4 |
| *Parks* | Potential Impacts to Parklands | Low impact risk | Low impact risk | Low impact risk | Low impact risk |
| *Traffic* | Traffic Impact Assessment | Few traffic concerns | Traffic concerns at Crossover and in Kenton | Traffic concerns at Crossover and in Kenton | Traffic concerns at Kenton |

**Notes:** All costs are in millions. Capital costs are for year of expenditure (YOE). Operating and Maintenance (O&M) costs are in 1994 dollars.
[1] Difference from the lowest cost design option. A zero indicates that option as the low cost option.

## Summary of Measurement Criteria
## Hayden Island

| Criteria | Measure | West of I-5 (over ramp) | West of I-5 (under ramp) | Center Avenue | Adjacent to Jantzen Beach Center |
|---|---|---|---|---|---|
| **Promote Desired Land Use and Development** | | | | | |
| *Service to Activity Centers* | Current and Planned Land Use Context | Retail Commercial | Retail Commercial | Retail Commercial | Retail Commercial |
| *Walk Market Area Data* | Vacant and Redevelopable Acres: | | | | |
| | Within 5 minute walk of LRT stations | N/A | N/A | N/A | N/A |
| | Between 5 & 10 min. walk of LRT stations | N/A | N/A | N/A | N/A |
| | Households/Employment (2015): | | | | |
| | Within 5 minute walk of LRT stations | N/A | N/A | N/A | N/A |
| | Between 5 & 10 min. walk of LRT stations | N/A | N/A | N/A | N/A |
| *Land Use Policies* | Local Jurisdiction's Policies | | | | |
| | County/State/Regional Policies | | | | |
| **Transit Ridership** | | | | | |
| *Ridership* | Walk Market LRT Ridership Potential | N/A | N/A | N/A | N/A |
| | LRT Travel Time (minutes:seconds) | 4:04 | 4:31 | 4:11 | 4:19 |
| | LRT Ridership Impacts from Run Time Differences | N/A | N/A | N/A | N/A |
| | Net LRT Segment Boardings | N/A | N/A | N/A | N/A |
| *Reliability* | Percentage of Segment within Exclusive ROW | 100% | 100% | 82% | 85% |
| | Number of At-grade Crossings | 0 | 0 | 2 | 2 |
| *Transferability* | Quality of Bus Service/LRT Transfer | good | good | good | good |
| **Fiscal Stability and Efficiency** | | | | | |
| *Costs (in millions of $)* | YOE Capital Costs | $95 | $89 | $81 | $83-$89 |
| | YOE Difference in Capital Costs [1] | $14 | $8 | $0 | $2-$8 |
| | Difference in Annual O&M (1994$)[1] | $0 | $0 | $0 | $0 |
| *Comparative Ratio* | Ratio of Annual Cost and Ridership | N/A | N/A | N/A | N/A |

| Criteria | Measure | West of I-5 (over ramp) | West of I-5 (under ramp) | Center Avenue | Adjacent to Jantzen Beach Center |
|---|---|---|---|---|---|
| **Engineering Efficiency** | | | | | |
| *Design Considerations* | Level of Engineering Risk or<br><br>Construction Issues | Harbor bridge and bridges over roadways; bridge over operating ramps | Harbor bridge and bridges over roadways; tunnel under operating ramps | Harbor bridge and bridges over roadways; bridge over major intersection | Harbor bridge and bridges over roadways; bridge over major intersection |
| **Environmental Sensitivity** | | | | | |
| *Displacements* | Residential Units/Commercial Buildings/ Commercial Units | 12 / 7 / 14 | 12 / 7 / 14 | 17 / 3 / 3 | 17 / 3 / 3 |
| *Neighborhoods* | Integration of LRT Service in the Community | Elevated station has difficult access | | Divides floating home community | Divides floating home community |
| *Visual* | Potential Impacts on Aesthetics of an Area | Highest impact | Low impact | Moderate impact | Moderate impact |
| *Noise and Vibration* | Potentially Sensitive Receptors | Hugs I-5 - away from receptors | Hugs I-5 - away from receptors | Closest to receptors | Closest to receptors |
| *Ecosystems* | Potential Impacts on the Natural Environment | Harbor Bridge | Harbor Bridge | Harbor Bridge | Harbor Bridge |
| *Hazardous Materials* | Potential Hazardous Materials Risk | | | | |
| *Historic* | Number of Potential Impacts on Historic and Cultural Resources | 0 | 0 | 0 | 1 |
| *Parks* | Potential Impacts to Parklands | | | | |
| *Traffic* | Traffic Impact Assessment | No impacts | No impacts | Impact to intersection of Center Ave. & ramps | Impacts to mall access and circulation |

**Note:** All costs are in millions. Capital costs are for year of expenditure (YOE). Operating and Maintenance (O&M) costs are in 1994 dollars.
[1] Difference from the lowest cost design option. A zero indicates that option as the low cost option.

## Summary of Measurement Criteria
## Columbia River Crossing

| Criteria | Measure | Low Level Lift Span | Bored Tunnel |
|---|---|---|---|
| **Promote Desired Land Use and Development** | | | |
| *Service to Activity Centers* | Current and Planned Land Use Context | Would serve Hayden Island and Vancourver CBD | Would serve Hayden Island |
| *Walk Market Area Data* | Vacant and Redevelopable Acres: | Would serve Lucky Brewery Redevelopment site | Would miss Lucky Brewery Redevelopment site |
| *Land Use Policies* | Local Jurisdiction's Policies | Encourages CDB's development | Misses most of downtown |
| **Transit Ridership** | | | |
| *Ridership* | Walk Market LRT Ridership Potential | N/A | N/A |
| *Reliability* | Percentage of Segment within Exclusive ROW | 100% | 100% |
| | Number of At-grade Crossings | N/A | N/A |
| *Transferability* | Quality of Bus Service/LRT Transfer | Serves the transit center | 4 blocks from transit center |
| **Fiscal Stability and Efficiency** | | | |
| *Costs (in millions of $)* | YOE Capital Costs [1] | $167 | $268 |
| | YOE Difference in Capital Costs [2] | $0 | $101 |
| | Difference in Annual O&M (1994$) [2] | $0 - 0.16 | $0 |
| *Comparative Ratio* | Ratio of Annual Cost and Ridership | N/A | N/A |

| Criteria | Measure | Low Level Lift Span | Bored Tunnel |
|---|---|---|---|
| **Engineering Efficiency** | | | |
| *Design Considerations* | Level of Engineering Risk or Construction Issues | Piers in River; in-water construction | Biological, tunneling, dewatering |
| **Environmental Sensitivity** | | | |
| *Displacements* | Residential Units/Commercial Buildings | 0 / 1 | 0 / 4 |
| *Neighborhoods* | Integration of LRT Service in the Community | | |
| *Visual* | Potential Impacts on Aesthetics of an Area | New bridge | 500' and 470' long portals |
| *Ecosystems* | Potential Impacts on the Natural Environment | Piers in River | |
| *Historic* | Number of Potential Impacts on Historic and Cultural Resources | 4 | 21 |

**Note:** All costs are in millions. Capital costs are for year of expenditure (YOE). Operating and Maintenance (O&M) costs are in 1994 dollars.

[1] Capital cost is for a concrete segmental bridge. Other bridge types could cost more. For example, a bow string design over the full length of the bridge could add up to $60 million (YOE) to the capital costs.

[2] Difference from the lowest cost design option. A zero indicates that option as the low cost option.

## Summary of Measurement Criteria
## Vancouver CBD to VA Hospital/Clark College

| Criteria | Measure | Washington Street from River | Columbia Street from River | Double-track on Washington | Washington/Main St. Couplet |
|---|---|---|---|---|---|
| **Promote Desired Land Use and Development** | | | | | |
| *Service to Activity Centers* | Current and Planned Land Use Context | | Could limit development of brewery | Better serves residential areas and office development | |
| *Walk Market Area Data* | Vacant and Redevelopable Acres: | | | | |
| | Within 5 minute walk of LRT stations | N/A | N/A | N/A | N/A |
| | Between 5 & 10 min. walk of LRT stations | N/A | N/A | N/A | N/A |
| | Households/Employment (2015): | | | | |
| | Within 5 minute walk of LRT stations | N/A | N/A | N/A | N/A |
| | Between 5 & 10 min. walk of LRT stations | N/A | N/A | N/A | N/A |
| *Land Use Policies* | Local Jurisdiction's Policies | | | | |
| | County/State/Regional Policies | | | | |
| **Transit Ridership** | | | | | |
| *Ridership* | Walk Market LRT Ridership Potential | | | | |
| | LRT Travel Time (minutes:seconds) | N/A | N/A | 2:11 | 3:00 |
| | LRT Ridership Impacts from Run Time Differences | N/A | N/A | 0 | -250 |
| | Net LRT Segment Boardings | | | | |
| *Reliability* | Percentage of Segment within Exclusive ROW | | | | |
| | At-grade Crossings | | | | |
| *Transferability* | Quality of Bus Service/LRT Transfer | | | | |
| **Fiscal Stability and Efficiency** | | | | | |
| *Costs (in millions of $)* | YOE Capital Costs | $34 | $31 | $56 | $87 |
| | YOE Difference in Capital Costs [2] | $3 | $0 | $0 | $31 |
| | Difference in Annual O&M (1994$)[1] | N/A | N/A | $0 | $0.22 |
| *Comparative Ratio* | Ratio of Annual Cost and Ridership | N/A | N/A | N/A | N/A |

| Criteria | Measure | Washington Street from River | Columbia Street from River | Double-track on Washington | Washington/Main St. Couplet |
|---|---|---|---|---|---|
| **Engineering Efficiency** | | | | | |
| *Design Considerations* | Level of Engineering Risk or Construction Issues | New opening under railroad | May require widening of existing structure | | Higher risk because of impacts to 2 streets; Main St. may be more sensitive to construction impacts |
| **Environmental Sensitivity** | | | | | |
| *Displacements* | Residential Units/Commercial Units | | | 0 / 0 | 0 / 0 |
| *Noise and Vibration* | Potentially Sensitive Receptors | | | | Tight turns could result in additional noise |
| *Ecosystems* | Potential Impacts on the Natural Environment | | | | |
| *Historic* | Number of Potential Impacts on Historic and Cultural Resources | | | 55 | 59 |
| *Parks* | Potential Impacts to Parklands | | May limit access to waterfront | | |
| *Traffic* | Traffic Impact Assessment | Potential traffic impacts at 5th & Washington | | Supports City proposals to enhance traffic circulation in CBD | Conflicts with future CBD circulation improvements |

**Note:** All costs are in millions. Capital costs are for year of expenditure (YOE). Operating and Maintenance (O&M) costs are in 1994 dollars.

[1] The data in this table represent the portion of this segment between 7th Street and 17th Street. The costs and run times for the portion from 17th Street to VA Hospital/Clark College would be constant for both options.

[2] Difference from the lowest cost design option. A zero indicates that option as the low cost option.

South North
Transit Corridor Study

DRAFT

# Downtown Portland Tier I Final Report

South/North Steering Group

December 1, 1995

METRO

# Downtown Portland
# Tier I Final Report

DRAFT

## South/North Corridor Transit Study

December 1, 1995

**Metro Council**

The preparation of this report was financed in part by the U.S. Department of Transportation, Federal Transit Administration, Oregon Department of Transportation and by the Washington State Department of Transportation. The opinions, findings and conclusions expressed in this report are not necessarily those of either the U.S. Department of Transportation, Federal Transit Administration, Oregon Department of Transportation or the Washington Department of Transportation

# Resolution of Findings and Conclusions Concerning the South/North Light Rail Alignment in Downtown Portland

## Introduction

In December 1994, the Metro Council and C-TRAN Board of Directors adopted the *South/North Tier I Final Report.* That report identified a surface alternative on the transit mall as the preferred Downtown Portland Light Rail Alignment that should be developed for further study in the Draft Environmental Impact Statement (DEIS). The report further determined that, prior to initiating work on the DEIS, the design of the 5th/6th Avenue alignment should be developed in detail to determine whether that alignment adequately addresses various principles also outlined in the report.

The Downtown Portland Oversight Committee was formed in response to those principles to ensure Downtown Portland community involvement in developing the surface light rail Transit Mall alignment options for further study and in selecting the locally preferred alternative. In particular, the charge of the oversight committee was to:

- Identify the most promising surface light rail transit (LRT) designs for a surface alignment through Downtown Portland within the 5th/6th Avenue Transit Mall between Union Station in the north and I-405 in the south.

- Accomplish this task in accordance with the principles established in the *South/North Tier I Final Report*, including the need to accommodate bus, light rail, auto and pedestrian travel on the Transit Mall.

- Determine whether those most promising alternatives adequately address the established criteria. If the criteria are adequately addressed, then only the surface LRT alternative for Downtown Portland will advance into the Tier II Draft Environmental Impact Statement (DEIS) for further study.

If the criteria are not adequately addressed, then one or more other alternatives within Downtown Portland will be developed along with the surface alternative for further study within the Tier II DEIS.

The findings and recommendations of the Oversight Committee were unanimously adopted on June 29, 1995 and are documented in: 1) *Resolution of Findings and Recommendations Concerning the South/North Light Rail Alignment in Downtown Portland: Downtown Portland Oversight Committee*; and 2) *Central Business District, Portland, Oregon, South/North Light Rail Alignment Recommendations Report.* Recommendations for the Downtown Portland Alignment were also adopted by the South/North Project Management Group (PMG) on October 19, 1995 and by the South/North Citizens Advisory Committee (CAC) on November 9, 1995.

Those findings and recommendations form the basis of the Metro Council's findings and conclusions for Downtown Portland.

In summary, the Metro Council finds that the following combination of alternatives meets the principles established by the Metro Council and the C-TRAN Board and that more detailed study of other tunnel and surface street alignments is not warranted. In addition, the Metro Council makes the following findings and conclusions. These findings and conclusions are documented in greater detail in the following chapters of this *Downtown Portland Tier I Final Report.*

**Findings**

The Metro Council has found that the surface LRT Transit Mall alternative and design options identified below for further study within the DEIS:

1) Reinforce the goals and objectives of the Central City Plan by supporting existing and future public and private development and investment in a manner that is consistent with commitments dating back to the Downtown Plan which was adopted over 20 years ago;

2) Maintain existing traffic and access patterns on 5th and 6th Avenues and within the Central Business District (CBD) which supports existing and future businesses and retailing and adds to the activity and quality of the streets;

3) Provide fast and convenient transit service to existing and future downtown office and commercial uses, delivering the most people to where they want to go, maximizing the potential for increased transit ridership to and from the Central City;

4) Maintain the current pedestrian character of the Transit Mall by retaining the sidewalk widths, pedestrian amenities and trees currently in place on the Central and North Mall;

5) Improve the role of the Portland Transit Mall as the central pedestrian boulevard and transit spine in the Downtown and CBD by extending it southward and changing its emphasis to light rail;

6) Ensure the least construction impacts and cost by placing light rail in a location where sidewalk reconstruction, street grade changes, utility relocations and other reconstruction work can be minimized and the benefits of past investments in the North and Central Transit Mall utility relocation, strain pole foundations, sidewalk improvements and surface grade adjustments can be utilized;

7) Offer the opportunity to reconfigure the Central City transit circulation plan, utilizing off-mall service (approximately 25-35 buses per hour by 2015) on other streets, most significantly 10th and 11th Avenues, where development can benefit from improved transit connections to the regional system, Central City Streetcar and intra-downtown circulation within Fareless Square;

8) Provide good light rail access to the River District, University District and River Place/South Waterfront area;

9) Reinforce the multi-modal transportation center concept by providing the best opportunity for a good connection at Union Station between light rail, Amtrak, inter- and intra-city buses and future high speed rail;

10) Provide the opportunity to maintain the function of the Portland Transit Mall while improving its aesthetic environment by minimizing the 'sheet metal' affect while simultaneously maximizing its functional passenger capacity;

11) Create the opportunity for coordination of construction and funding of improvements to the Central Mall and a funding source to insure that 5th and 6th Avenues can be enhanced to the original demanding Central Mall design standards; and,

12) Fulfill an objective of the Central Mall business community to enhance the pedestrian environment by reducing items on the street and increasing visibility of retailing along 5th and 6th Avenues by removing over half of the existing bus stops, shelters and related items.

## Conclusions

Therefore, as a general approach for the continued study of Downtown Portland alignments within the South/North Transit Corridor, Metro Council concludes:

1) Consistent with the *Tier I Final Report* conclusions and the *Regional Transportation Plan* (Metro: May 1995), the preferred design concept and scope for the South/North Corridor is light rail extending through Downtown Portland south into Clackamas County and north into Clark County;

2) That the A-2 Central Mall, B-3 North Mall, C-1 South Mall, S-1 South Entry and N-1 and N-2 North Entry options (illustrated in Figure A) meet the principles established by the Metro Council and are selected for further study within the DEIS and that more detailed study of other tunnel and surface street alignments is not warranted;

3) That convenient, readily accessible service be provided to all Central City districts including Riverplace, South Auditorium, Portland State University, Central Business District, Old Town/Chinatown and Union Station. Station stops at these locations should be established even if central city travel time for the LRT is lengthened. (The number and location of stations will be determined following publication of the DEIS and prior to publication of the Final Environmental Impact Statement (FEIS.)

4) That Tri-Met, the City of Portland, Metro and the Downtown Portland business community work to develop a plan for the central city streetcar and a central city transit circulation and facility plan that would spread transit access throughout more of the

central city area based upon the results of the DEIS and completed in conjunction with the FEIS.

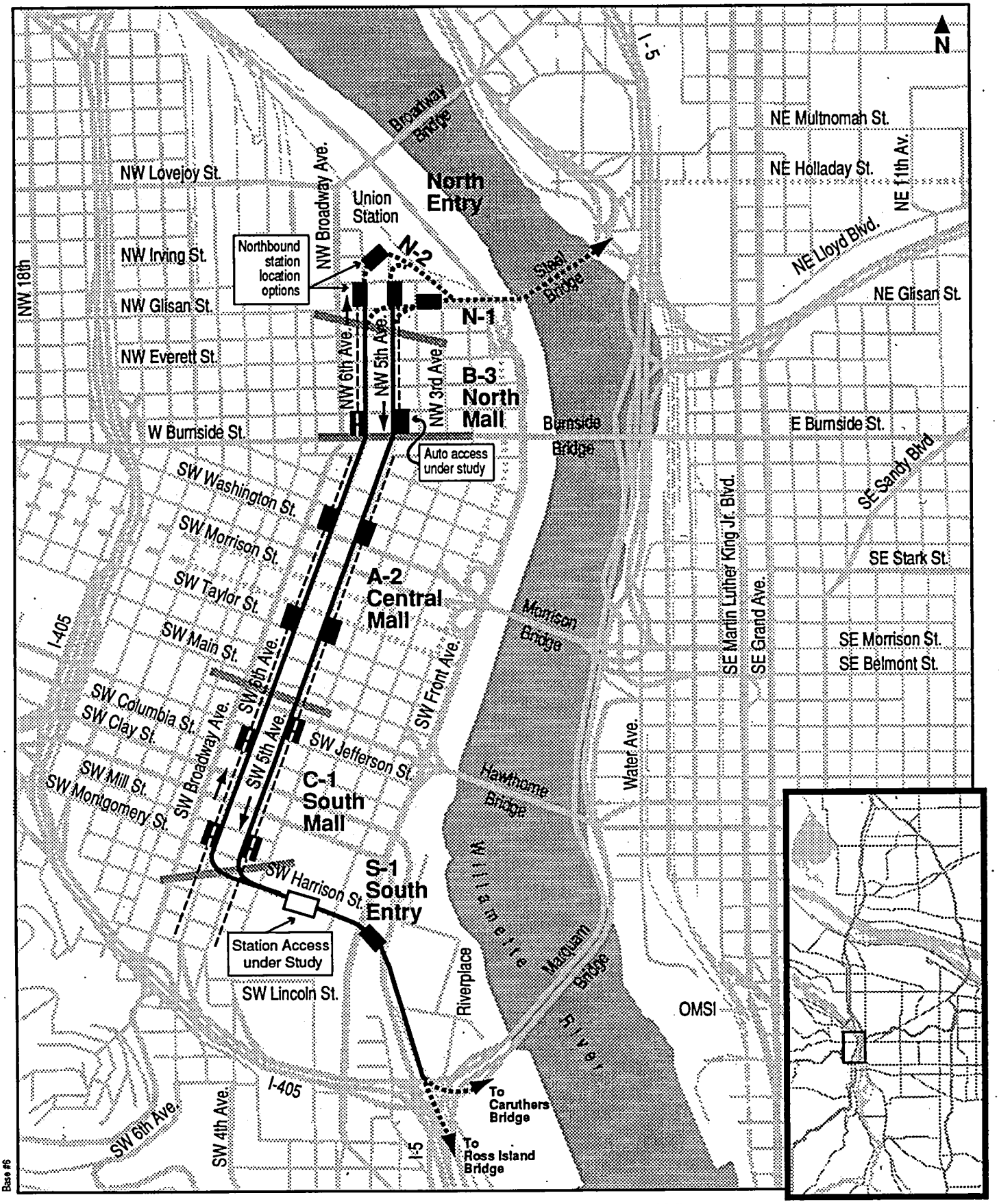
5) That a high-level, urban design standard be developed and implemented guiding the design and construction of the light rail alignment throughout the central city area;

6) During final design, a detailed construction management and mitigation plan should be developed for the central city area that would create a *Downtown Portland Construction District.* In addition, a Downtown Portland LRT Committee should be formed to oversee the design, development of contract documents and construction of all work within the Special Downtown Portland Construction District. Alternative contracting methods should be employed so that a contractor would be selected, based upon their experience and qualifications, to address the unique requirements of this project (including but not limited to the need to avoid disruption to adjacent businesses, to minimize the duration of construction and to avoid displacements); consequently, the low bidder may not be selected. Finally, the project should implement a temporary traffic management plan and a variety of special programs to mitigate the construction impacts on the central city.

   These methods should be based on criteria to be established by the Downtown Portland LRT Committee. Criteria to be considered include: a) negotiated rather than low-bid contracting; b) incentive and penalty clause; and, c) use of a single prime contractor for LRT and utility construction.

7) Construction time should be limited to three months per block in the North Mall, four months per block in the Central Mall, and six months per block in the South Mall and south portals. Major parallel sections of SW 5th and 6th Avenues in the Central Mall should not be under construction at the same time.

8) The entire central city construction plan, including major utility reconstruction, should be approved by Portland City Council, such action having been taken after a public hearing.




South North Transit Corridor Study

**Light Rail Design Option:**

# Downtown Portland

**5th/6th Avenue Surface Couplet**

December 1995

Figure A

- Light Rail Transit (LRT) alignment
- LRT alignment options
- MAX
- Westside LRT
- Existing railroad
- Mall auto access
- Station with no auto access on mall
- Station with auto access on mall

**Note:** Alignment, station and park and ride locations are currently under study and may change.

0 1/8 1/4 MILE

## Table of Contents

### Resolution of Findings and Conclusions



### Table of Contents

### I. Background



### II. Policy Framework



### III. Criteria



### IV. Alternatives

Appendix C: Downtown Portland Oversight Committee *Resolution of Findings and Recommendations*

Appendix D: South/North Project Management Group Downtown Portland Recommendation

Appendix E: South/North Citizen Advisory Committee Downtown Portland Recommendation

Appendix F: South/North Steering Group *Resolution of Findings and Recommendations*

Appendix G: Participating Jurisdiction Recommendations

Appendix H: Metro Council Resolution No. 95-2243 and Staff Report

# I. Background

This document sets forth the findings and conclusions of the Metro Council for the Downtown Portland alignment alternative and design options to be advanced into the Draft Environmental Impact Study (DEIS) for further study. It also contains a summary of information prepared by members of the Downtown Oversight Committee and the Downtown Technical Committee between January and June 1995. At the conclusion of the South/North Light Rail Project Tier I process in December 1994, consistent with the recommendation from the South/North Steering Group, the Portland City Council and Tri-Met, Metro Council adopted a policy that the South/North light rail alignment in Downtown Portland to be developed for further study in the DEIS should be on the Transit Mall, provided that light rail would enhance and maintain the character of the Mall. The agencies wanted to ensure that the introduction of light rail would result in a Mall that facilitates efficient bus and light rail operations, preserves auto access, maintains a pedestrian friendly environment and supports the economic vitality of the city. This policy and the commitment by the project to work closely with the Downtown Portland community led to the initiation of the Downtown Portland Alignment Study and to the formation of the Downtown Portland Oversight Committee.

## Downtown Alignment Study

The primary objective of the South/North Light Rail Downtown Alignment Study was to identify the most promising surface light rail transit options for a surface alignment through Downtown Portland on 5th and 6th Avenues between Union Station in the north and Portland State University in the south and to determine whether these options adequately address the principles established by Metro Council in December 1994. The study also identified the most promising alignment alternatives on the north end from the Steel Bridge to 5th and 6th Avenues and on the south end connecting the downtown and Portland State University with RiverPlace.

Technical aspects of the study were conducted by the Downtown Technical Committee consisting of representatives of Metro, Tri-Met, the City of Portland Office of Transportation, Association for Portland Progress (APP) and the consulting firms of Shiels Obletz Johnsen, Zimmer Gunsul Frasca Partnership and Kittelson & Associates. Findings and conclusions of the Downtown Technical Committee were presented to the Downtown Oversight Committee, the S/N Project Management Group, the S/N Citizens Advisory Committee and the S/N Steering Group in order to assist them in developing recommendations and fulfilling their charge. Following is an outline of the Downtown Portland LRT study process illustrated in Figure 1.

## Downtown Portland Oversight Committee

The Downtown Portland Oversight Committee was appointed by the South/North Steering Group to assess the feasibility of 5th and 6th Avenues as the alignment for light rail through the Portland Central Business District for the proposed South/North Light Rail Project. The Oversight Committee consists of representatives of public agencies, businesses and property owners.

Following is an excerpt from the Committee's charge that was distributed at the first meeting of the Committee in February 1995.

> The Oversight Committee's purpose was to:
>
> - Identify the most promising surface light rail transit (LRT) designs for a surface alignment through Downtown Portland within the 5th/6th Avenue Transit Mall between Union Station in the north and I-405 in the south.
>
> - Accomplish this task in accordance with the principles established in the *South/North Tier I Final Report*, including the need to accommodate bus, light rail, auto and pedestrian travel on the Transit Mall.
>
> - Determine whether those most promising alternatives adequately address the established criteria. If the criteria are adequately addressed, then only the surface LRT alternative for Downtown Portland will advance into the Tier II Draft Environmental Impact Statement (DEIS) for further study.
>
> - If the criteria are not adequately addressed, then one or more other alternatives within Downtown Portland will be developed along with the surface alternative for further study within the Tier II DEIS.

The Downtown Portland Oversight Committee was comprised of the following persons:

W. Charles Armstrong, Chairman, Chief Executive Officer, Bank of America, Chair
Mike Burton, Executive Officer, Metro
Earl Blumenauer, Commissioner, City of Portland
John R. Post, Deputy General Manager, Tri-Met
John Eskildsen, President, US Bank of Oregon
Greg Goodman, Vice President, City Center Parking
Jim Mark, Executive Vice President, Melvin Mark Properties
William S. Naito, Vice President, Norcrest China
Patrick Done, Manager, Pioneer Place
Tammy Hickel, General Manager, Nordstrom - Oregon Region
Lindsay Desrochers, Vice President, PSU Finance and Administration
Philip Kalberer, President, Kalberer Hotel Supply
Vern Rifer, Downtown Community Association
Jordan Schnitzer, Vice President, Harsch Investment
Susan Emmons, Executive Director, Northwest Pilot Projects
E. Kay Stepp, Portland Development Commission
Kerry Kincaid, Downtown Retail Council
Richard Michaelson, President, Planning Commission, City of Portland

The recommendations of the Downtown Portland Oversight Committee were adopted unanimously on June 29, 1995. They are described in the *Resolution of Findings and*

*Recommendations Concerning the South/North Light Rail Alignment in Downtown Portland* (Appendix C) and the *Portland, Oregon Central Business District South North Light Rail Alignment Recommendation Report.*

### Public Comment

Several meetings were held within Downtown Portland in the spring of 1995 to present information on the Downtown Portland Alignment Study to interested residents and business owners. A meeting to receive Public Comment on the design options under consideration was held by the Downtown Oversight Committee on June 12, 1995. Documentation of the Public Comment received at that meeting and throughout the study process can be found in the *South/North Downtown Portland Segment Public Comments Report* (Metro: November 1995).

### Project Management Group

The South/North Project Management Group (PMG) adopted its recommendations for Downtown Portland on October 19, 1995 and amended them slightly on November 16, 1995. Those recommendations are documented in a memorandum from the PMG to the Steering Group dated October 27, 1995. (This memorandum can be found in Appendix D.)

### Citizens Advisory Committee

The South/North Citizens Advisory Committee (CAC) adopted its recommendations for Downtown Portland on November 10, 1995. Those recommendations are documented in a memorandum from the CAC to the Steering Group dated November 10, 1995. (This memorandum can be found in Appendix E.)

### Steering Group

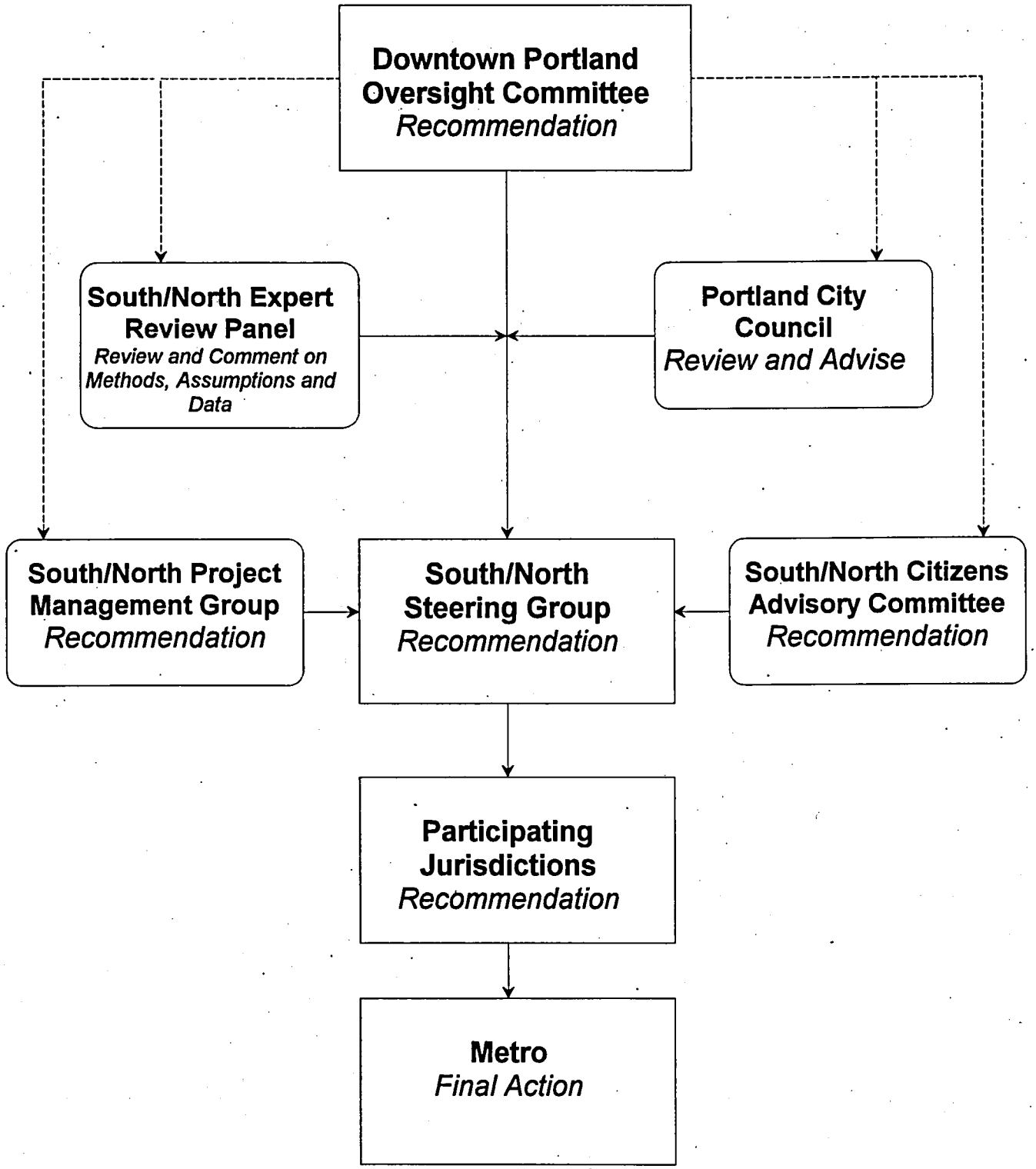
On November 20, 1995, the S/N Steering Group unanimously endorsed the recommendations of the Oversight Committee, the PMG and the CAC and adopted the *S/N Downtown Portland Tier I Findings and Recommendations* included in Appendix F. The Steering Group's recommendation was forwarded to participating jurisdictions and Metro Council for their consideration.

### Participating Jurisdictions

Jurisdictions participating in the S/N Transit Corridor study were provided the opportunity to forward independent recommendations to the Metro Council and are included in Appendix G.

Figure 1

# Downtown Portland Surface LRT Alignment Study Process




November 20,1995
Downtown2prs

## II. Policy Framework

### Central City Plan

The future viability and livability of Downtown Portland depends on transit for improved access. The Central City Plan and Central City Transportation Management Plan (CCTMP) calls for high growth of housing and jobs in the Central City. Specific goals have been adopted by the City calling for the creation of an additional 15,000 housing units and 75,000 jobs in the Central City.

The projected growth in the Central City is to be achieved with little increase in freeway access and parking. Central City growth is to be supported by increased mass transit and by locating housing in the Central City near the jobs. This strategy depends not only on improved transit connections with the suburbs including principally four light rail lines supplemented by continued bus service, but also by improved transit accessibility within the Central City. Accordingly, it is appropriate that a bus service plan should be developed that provides improved service to areas of the Central City now not well served complementing Fareless Square and the planned Central City Streetcar. The adoption of the A-2 Central Mall alternative supports a revised downtown bus circulation plan that would be developed and implemented over the next two decades.

The Central City Plan was adopted by the Portland City Council in 1988 and establishes the overall framework for development. The zoning and comprehensive plan designations are shown in Figure 2 and the Floor Area Ratios in Figure 3. The Central City Plan incorporated the Downtown Plan, first adopted by the City Council in 1972.

The Transit Mall is centered in the highest density employment corridor established by the Downtown Plan, with Floor Area Ratios (FAR's) ranging from 15:1 to 12:1. The next highest densities with FAR's of 9:1 were established along the North Mall and the Hawthorne and Morrison Bridgeheads. A major goal of the Downtown Plan was to develop a downtown residential neighborhood and established the RX area (the downtown residential zone) west of the Park blocks. The City also has a "No Net Loss Housing Policy" where, if a change of the Comprehensive Plan from residential to nonresidential is approved, it will be necessary to show that the loss of housing potential can be replaced.

Figure 4 illustrates the year 2010 downtown population distribution and Figure 5 illustrates the 2010 employment distribution. Approximately one-third of the employment is situated between Fourth and Broadway, and 88 percent east of the Park Blocks.

# Figure 2

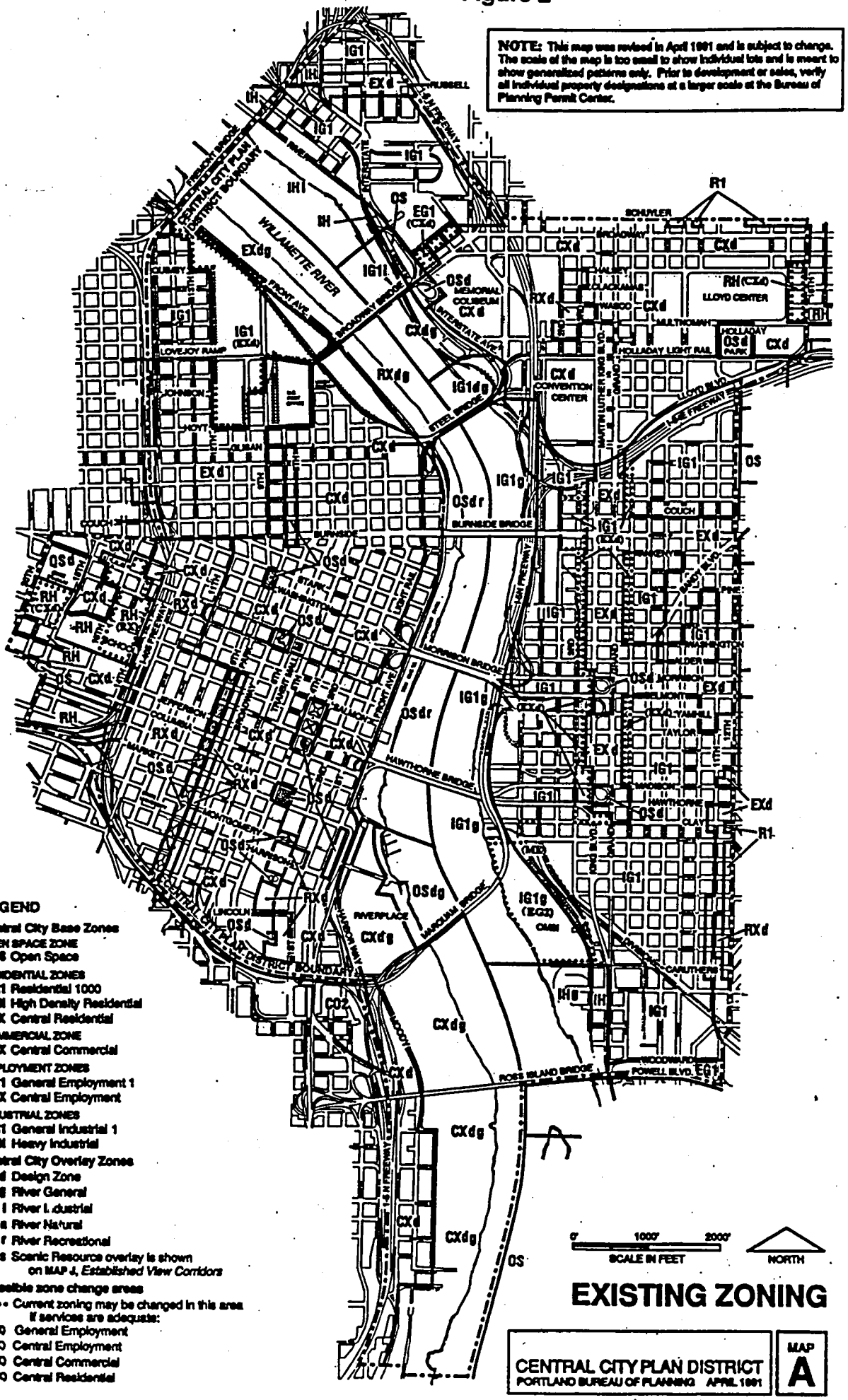
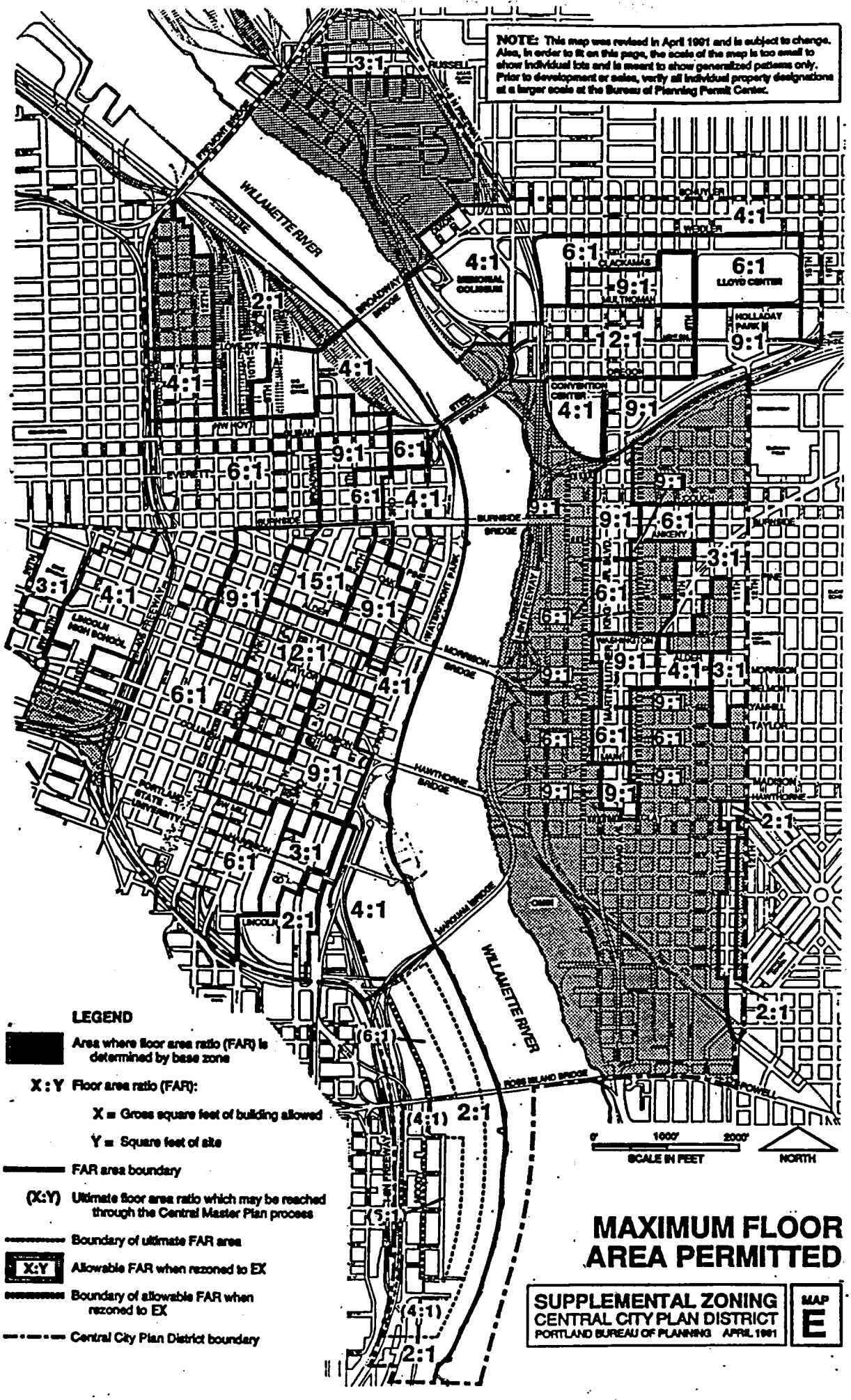

NOTE: This map was revised in April 1991 and is subject to change. The scale of the map is too small to show individual lots and is meant to show generalized patterns only. Prior to development or sales, verify all individual property designations at a larger scale at the Bureau of Planning Permit Center.
LEGEND
Central City Base Zones
OPEN SPACE ZONE
OS Open Space
RESIDENTIAL ZONES
R1 Residential 1000
RH High Density Residential
RX Central Residential
COMMERCIAL ZONE
CX Central Commercial
EMPLOYMENT ZONES
EG1 General Employment 1
EX Central Employment
INDUSTRIAL ZONES
IG1 General Industrial 1
IH Heavy Industrial
Central City Overlay Zones
d Design Zone
g River General
i River Industrial
n River Natural
r River Recreational
s Scenic Resource overlay is shown on MAP J, Established View Corridors
Possible zone change areas
Current zoning may be changed in this area if services are adequate:
(EG2) General Employment
(EX) Central Employment
(CX) Central Commercial
(RX) Central Residential
0' 1000' 2000'
SCALE IN FEET
NORTH
EXISTING ZONING
CENTRAL CITY PLAN DISTRICT
PORTLAND BUREAU OF PLANNING APRIL 1991
MAP A

Figure 3


NOTE: This map was revised in April 1991 and is subject to change. Also, in order to fit on this page, the scale of the map is too small to show individual lots and is meant to show generalized patterns only. Prior to development or sales, verify all individual property designations at a larger scale at the Bureau of Planning Permit Center.
WILLAMETTE RIVER
BROADWAY BRIDGE
STEEL BRIDGE
BURNSIDE BRIDGE
MORRISON BRIDGE
HAWTHORNE BRIDGE
MARQUAM BRIDGE
ROSE ISLAND BRIDGE
CONVENTION CENTER
MEMORIAL COLISEUM
LLOYD CENTER
PORTLAND STATE UNIVERSITY
LINCOLN HIGH SCHOOL
WATERFRONT PARK
SCALE IN FEET
NORTH
LEGEND
Area where floor area ratio (FAR) is determined by base zone
X : Y Floor area ratio (FAR):
X = Gross square feet of building allowed
Y = Square feet of site
FAR area boundary
(X:Y) Ultimate floor area ratio which may be reached through the Central Master Plan process
Boundary of ultimate FAR area
X:Y Allowable FAR when rezoned to EX
Boundary of allowable FAR when rezoned to EX
Central City Plan District boundary
MAXIMUM FLOOR AREA PERMITTED
SUPPLEMENTAL ZONING
CENTRAL CITY PLAN DISTRICT
PORTLAND BUREAU OF PLANNING APRIL 1991
MAP E

# 2010 DOWNTOWN POPULATION

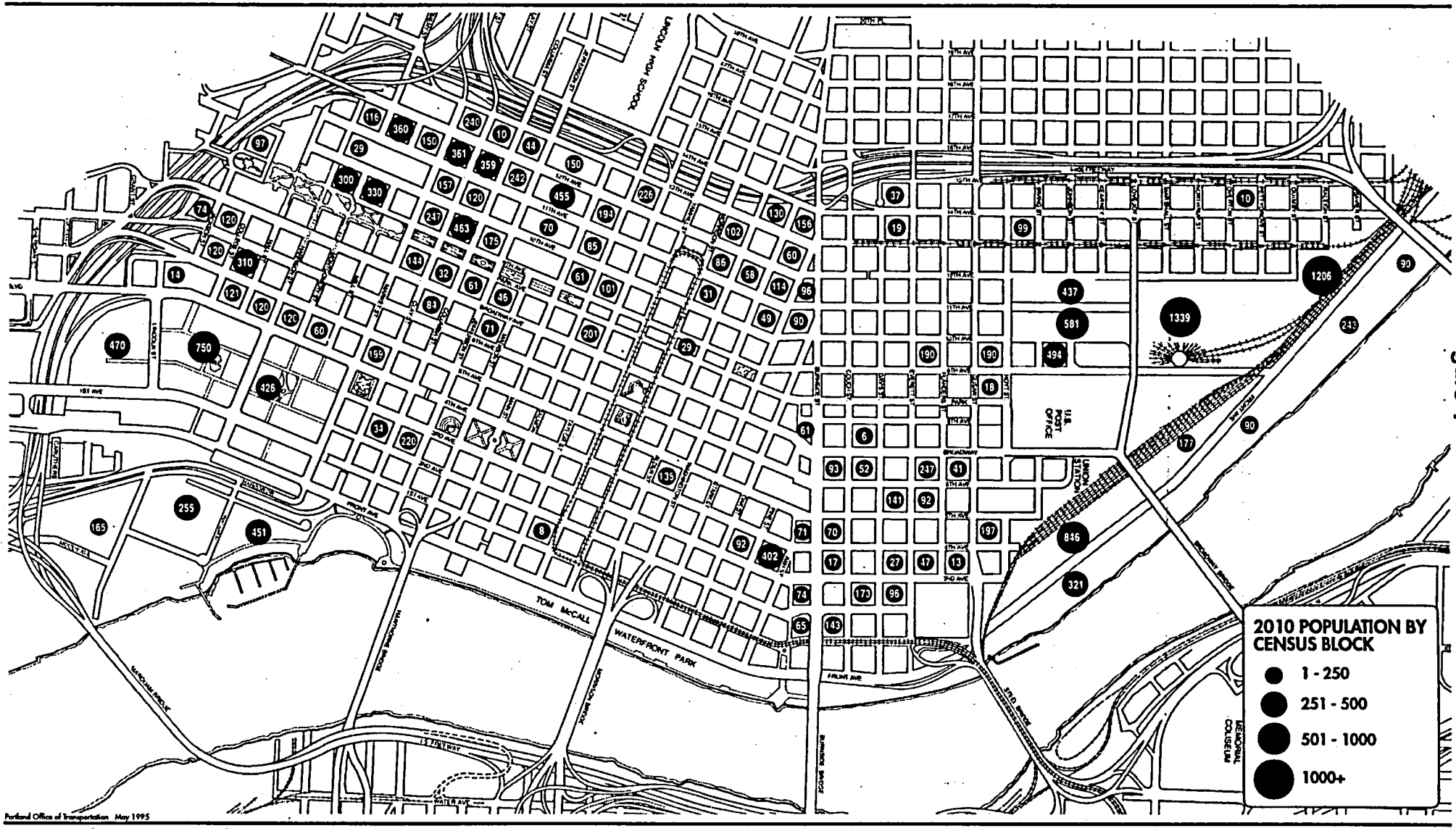



Figure 4

# 2010 DOWNTOWN EMPLOYMENT

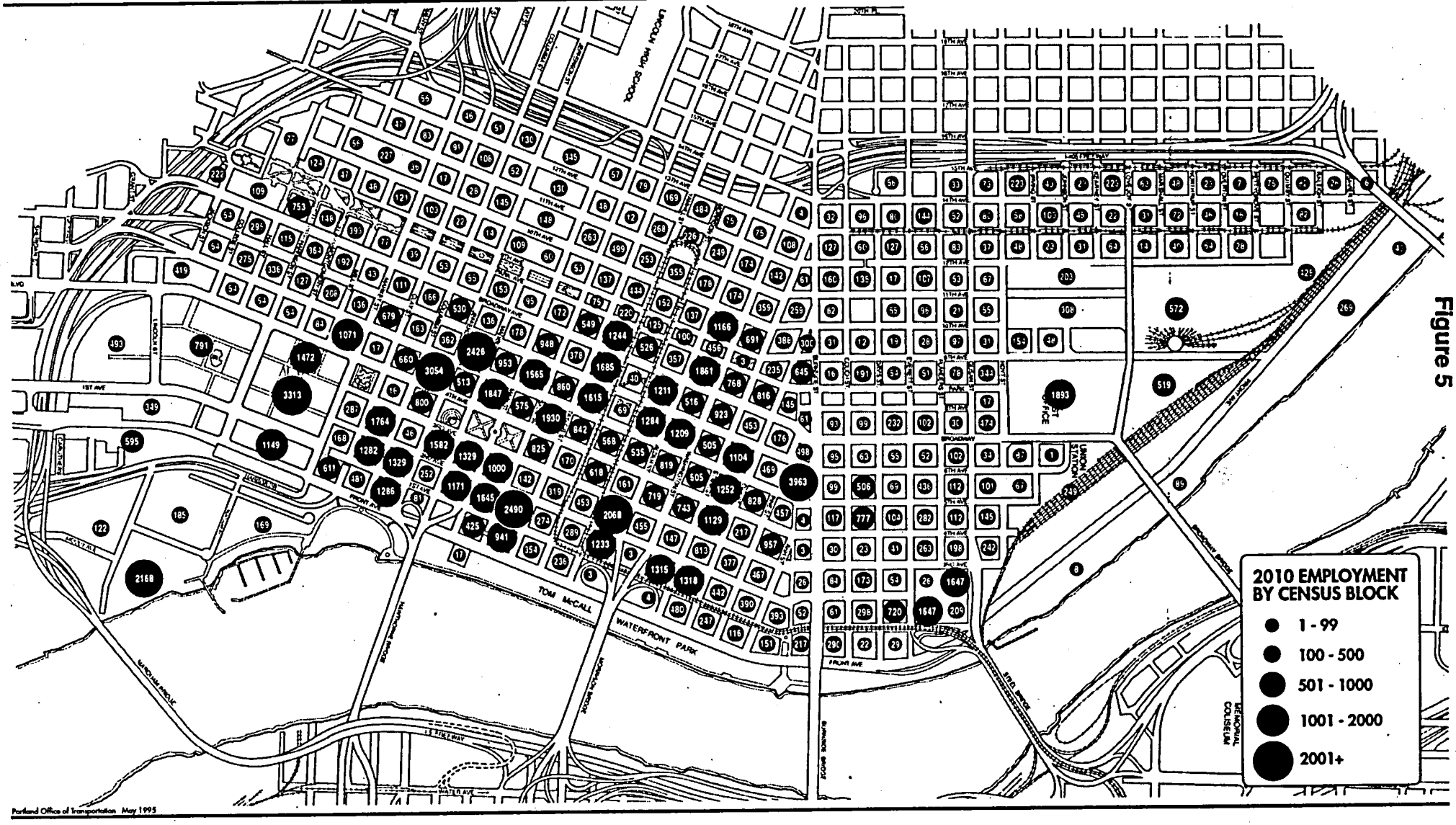



Figure 5

Based upon the Downtown Plan and the Central City Plan, the Portland City Council reinforced the importance of light rail on 5th and 6th Avenues Mall in three separate resolutions. In 1979 in conjunction with the Banfield Light Rail Project, the City Council supported the Morrison/Yamhill alignment with the condition that light rail will be on the Mall in the future. In 1983, the Westside DEIS and Locally Preferred Alternative, the City Council endorsed the concept of two downtown rail alignments for the Westside, the Morrison/Yamhill alignment and a Mall alignment. In 1989, Westside PE/DEIS supported the need for only the Morrison/Yamhill alignment for the Westside and deferred light rail on the Transit Mall to the next light rail corridor.

### Central City Transportation Management Plan

The Portland City Planning Commission has recommended the Central City Transportation Management Plan (CCTMP) for City Council's approval. The CCTMP will serve as the transportation element to the Central City Plan, and will replace the Downtown Parking and Circulation Policy as the adopted City policy to meet federal air quality standards for carbon monoxide.

The CCTMP calls for the creation of an additional 15,000 housing units and 75,000 jobs in the Central City. To accommodate this growth and preserve livability, the plan includes a strategy for continued transit improvements and development of housing in the Central City so that people will have greater opportunity to live near their Central City jobs. The Transit modal split goal for 2010 is 60 percent for commuter trips, a 20 percent increase in market share in the next 15 years.

The CCTMP provides policy guidance for increasing the role of bus service to off-mall destinations for improving intra-Central City mobility. The CCTMP will establish street classification designations for the Central City. Potential transit designations are shown in Figure 6.

### The Banfield/Cross-Mall Decision

In 1979, several options were considered for the Banfield Light Rail Project's downtown alignment. The options included the Transit Mall, 4th and Broadway and Yamhill/ Morrison (or the so-called Cross-Mall alignment). While the Transit Mall and 4th and Broadway alignments were considered to be more supportive of the Downtown Plan, downtown destinations and future expansions of light rail, the Cross-Mall alignment was selected. The Cross-Mall would avoid the impacts of reconstructing the newly completed Transit Mall, the traffic conflicts that light rail would create on 4th and Broadway and the need to revise the principal focus of the Transit Mall from bus transit, at that time still the principal mode for transit access in the downtown. In adopting the Cross-Mall alignment for the Banfield Light Rail, the Council stated its support for modifying the Transit Mall for light rail in the future when constructing a second regional light rail corridor.

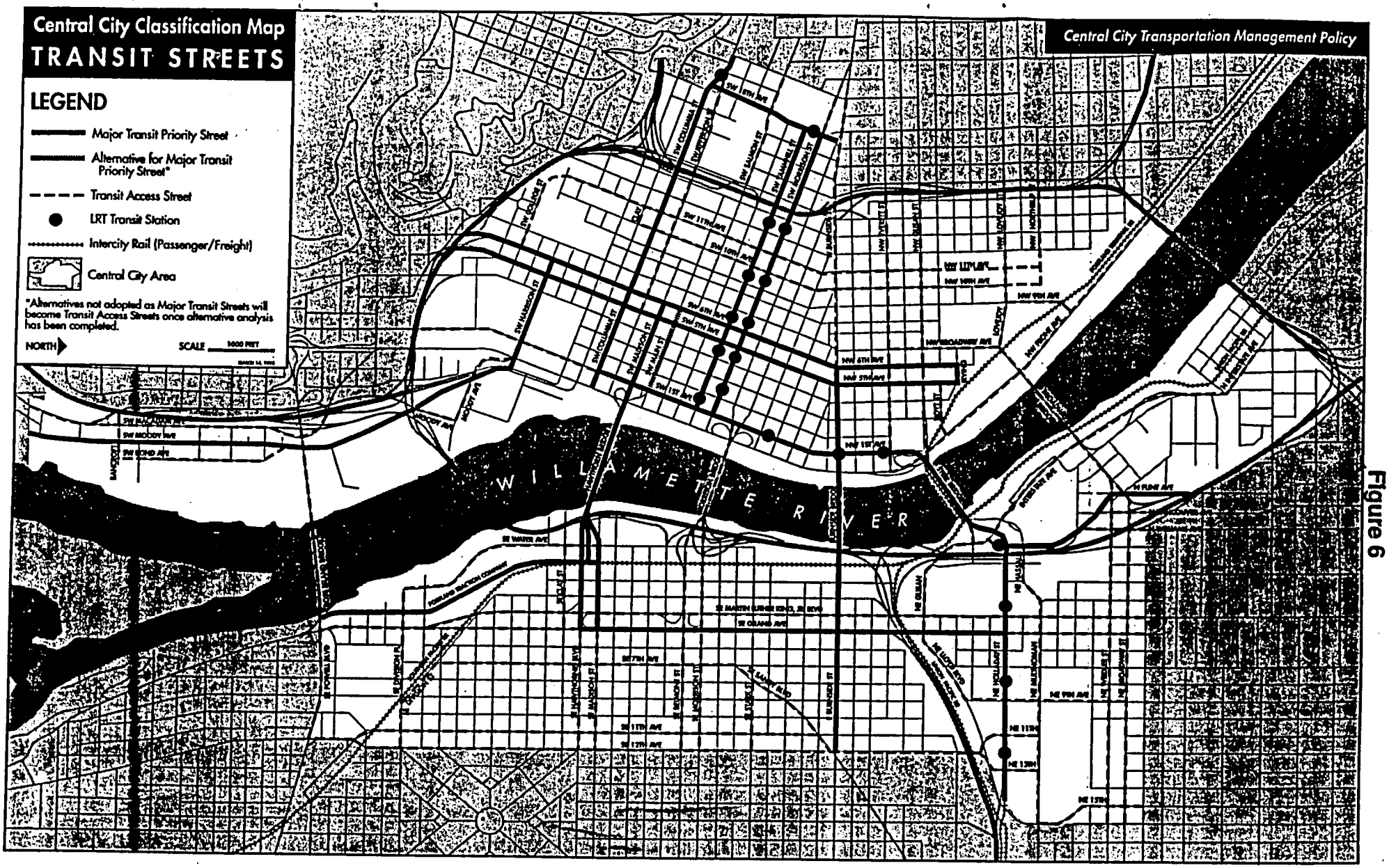

Central City Classification Map
TRANSIT STREETS
LEGEND
Major Transit Priority Street
Alternative for Major Transit Priority Street*
Transit Access Street
LRT Transit Station
Intercity Rail (Passenger/Freight)
Central City Area
*Alternatives not adopted as Major Transit Streets will become Transit Access Streets once alternative analysis has been completed.
NORTH
SCALE
WILLAMETTE RIVER

Figure 6

## Westside Corridor

In 1983, after a re-evaluation of the 1979 Mall and Cross-Mall recommendations, the City Council adopted a resolution directing that the Westside Light Rail should operate through the downtown on an extension of the Yamhill and Morrison Cross-Mall alignment. This decision was based on the conclusion that the Cross-Mall has sufficient capacity to serve both the Westside and Banfield corridors and that the creation of a new downtown light rail corridor was not warranted until development of the South/North light rail corridor in the future. At that time, the City Council also directed that steps should be taken to evaluate a subway option as an alternative to a surface alignment in the north/south corridor.

## Regional Transportation Plan

The Regional Transportation Plan adopted by Metro in 1992 and revised in May 1995 states: "Service for the Banfield LRT will be provided via the cross-mall alignment on Morrison and Yamhill streets. When the South/North project is constructed, or when capacity on the cross mall-alignment is exceeded, a mall alignment using 5th and 6th Avenues will be implemented. This north/south corridor would form the backbone of the downtown transit system, serving as the major mode of access to and through downtown. Alternative LRT alignments that connect to the 5th/6th Avenue alignment which provide service to the South Waterfront, RX Zone, Historic Districts and other downtown destinations are under consideration and shown in Figure 4.4 (see Figure 7). As the mall reaches its transit capacity, bus routes currently using the mall will be rerouted to other streets consistent with the Downtown Plan and the Downtown Parking Circulation Policy (such as 2nd and 3rd and 10th and 11th Avenues)."

## North Transit Mall

Meanwhile, 5th and 6th Avenues between W. Burnside and N.W. Irving were reconstructed extending the existing transit mall improvements across Burnside to Union Station and a new Tri-Met bus layover facility at N.W. Irving. In September 1994, the reconstruction of 18 blocks in Old Town was completed. The $10 million North Transit Mall project was designed to accommodate light rail south of N.W. Glisan. Numerous public and private utilities were relocated from the area that would be beneath a future light rail track slab in the left lane. Foundations beneath the street lighting fixtures were designed to accommodate future combination street light and strain poles to support the overhead traction electrification system for future light rail. In addition, the streets were graded to minimize cross-slopes and to limit longitudinal grade changes to ensure that adjustments in street grades would not be needed for light rail in the future.

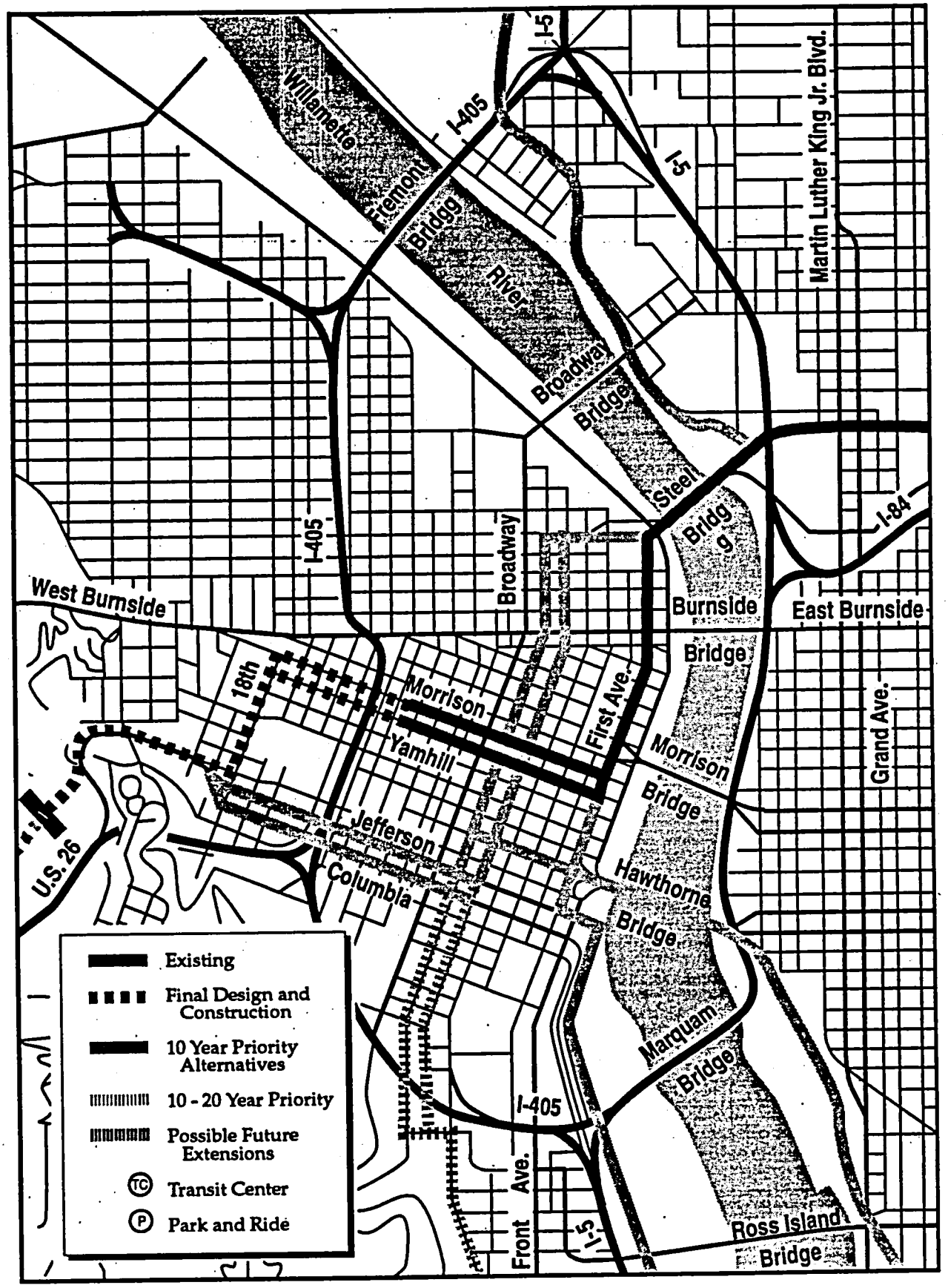



Figure 7 *Long-range LRT alignments in downtown Portland*

## Downtown Rail Advisory Committee

The Downtown Rail Advisory Committee (DRAC), a committee chaired by Jordan Schnitzer, was appointed by the City of Portland in 1989 to advise the City of Portland on the Westside downtown alignment decision. In preparation for the South/North light rail planning process, the DRAC was re-convened twice to consider a South/North downtown alignment including both surface and subway options. During the first step of the South/North Light Rail planning in early 1993, an initial screening of all downtown north/south streets suggested that 5th and 6th Avenues should continue to be considered as the best surface alignment. Fourth, 5th, 6th and Broadway would be considered for a subway alignment. The screening criteria included constructability, operations, effectiveness of service and urban impacts.

In Spring 1994, travel forecasting and cost estimates were prepared for a 5th and 6th Avenues Transit Mall surface alignment and a generic tunnel under either 5th Avenue or Broadway. Principally, the results revealed that a tunnel would cost at least $275 million more than a surface alignment. The estimated cost for a surface alignment on 5th and 6th Avenues was estimated to cost between $288-309 million and a subway was estimated to cost $551-584 million. During the process, a tunnel alignment under 4th Avenue was proposed. While a number of technical difficulties were identified, a similar alignment was estimated to cost less, but still approximately $230 million more than the 5th and 6th Avenues surface alignment.

While there remained support for the tunnel and other surface alignments, the parties agreed that a six month study would be initiated to identify the best means of constructing light rail on the surface of 5th and 6th Avenue and that other alternatives would be advanced into the EIS process only if that alignment could not meet established criteria.

## III. Criteria

The Downtown Light Rail Oversight Committee adopted the following criteria to be used in evaluating the various options for constructing light rail on 5th and 6th Avenues.

**Central City Plan.** Reinforce the goals and objectives of the Central City Plan. Consider:

- Existing development patterns
- Roles as office, retail, tourist and education center
- Consistency with designated street classification system
- Transit supportive development
- City housing agenda

**Vehicular Access.** Ensure adequate vehicular user access into and within downtown is maintained. Consider:

- Established auto circulation patterns on the Transit Mall
- Auto user access to the Transit Mall
- Traffic circulation patterns within Portland CBD, starting with existing patterns
- Service levels on downtown streets
- Service access to businesses on Transit Mall
- On-street and off-street parking

**Light Rail Operations.** Ensure that light rail facilities and operations are inviting, efficient and affordable. Consider:

- Access to light rail stations
- Light rail ridership
- Light rail travel times
- Capital and operating costs
- Light rail operations

- Future light rail capacity
- Reliability
- Connectivity/transfers
- Integration of light rail with bus and streetcar networks
- Safety

**Bus Operations.** Ensure that efficient bus operations and facilities are maintained in and through downtown. Consider:

- Access to bus stops
- Bus ridership
- Bus travel times
- Bus capital and operating costs
- Bus volumes, routing and operations
- Future bus capacity
- Connectivity/transfers
- Reliability
- Customer services
- Safety

**Aesthetic Integrity.** Ensure that the aesthetic integrity of the Transit Mall is maintained or improved. Consider:

- Quality of surfaces and furnishings
- Architectural continuity
- Visual clarity
- Space for amenities and services
- Trees

- Art
- Transit patron waiting space
- Capacity and patterns of pedestrian travel
- Odor, noise and sheet metal

**Construction Impacts.** Ensure that construction impacts are minimized. Consider:

- Duration of construction
- Quality of construction
- Management and mitigation of construction
- Geographic scope of construction
- Disruption of construction

## IV. Alternatives

Consistent with its charge, the Downtown Oversight Committee developed and considered a series of options for constructing the South/North light rail on 5th and 6th Avenues. The options are listed in Table 1. It should be recognized that the descriptions of the alternatives and the drawings are based on a preliminary analysis and that actual dimensions, grades and treatment may vary during preliminary and final design of the project.

**Central Mall.** The Central Mall is defined as the portion of 5th and 6th Avenues between W. Burnside on the north and Madison Street on the south, the existing Portland Transit Mall. The 5th and 6th Avenue rights-of-way are 80 feet wide. The street area has two 12 foot wide continuous exclusive bus lanes with an intermittent 12 foot wide auto lane, generally three blocks in length. Existing sidewalks are typically 26 feet wide on the bus loading side and 18 feet on the opposite side. At four locations, every fourth block, a 30 foot wide sidewalk interrupts the 3 block long auto lane.

**A-1** (4-Lane). The street area would be expanded to include two 12 foot wide exclusive bus lanes, a 12 foot wide exclusive lane for light rail and an intermittent 12 foot auto lane in three block segments as exists. Existing sidewalks on the bus loading right side of the street would be reduced to 17 feet. Sidewalks on the left side would be reduced to 15 feet and light rail station platforms would be located every fourth block on a 28 1/2 foot-wide sidewalk (narrowed from 30 feet) which would interrupt the 3-block long auto lane.

**A-2** (2 and 3-Lane LRT/Bus Share). The street width would remain unchanged, but with one 12 foot wide exclusive bus lane, one 12 foot wide lane for LRT and an intermittent 12 foot wide auto lane as exists. Buses would be able to use the LRT lane to overtake other buses when light rail vehicles are not present. Existing sidewalk widths would remain unchanged except that the 30 foot wide sidewalk would be expanded to 31 1/2 feet to act as LRT stations on the left side of the street in the two-lane blocks.

**A-3** (3-Lane LRT/Auto Share). The street area would include two 12 foot wide exclusive bus lanes as exists. Light rail would be located in the 12 foot wide auto lane on the left side of the street which would be shared by autos. Sidewalks would remain their current widths except at light rail platforms which would be located on every fourth block on 19 1/2 foot wide sidewalks (narrowed from 30 feet), interrupting the 3-block long auto lane.

**A-4** (3-Lane Bus/Auto Share). The street and sidewalks would be as described for A-3 above. However, autos would share the two bus lanes rather than the light rail lane.

## Table 1

## Matrix of Downtown Transit Mall Configurations

1-Jul-95

| Segment | | Profile | Shared Modes | Between LRT Station* Roadway configuration | Between LRT Station* Sidewalk widths | At LRT Stations* Roadway configuration | At LRT Stations* Sidewalk widths |
|---|---|---|---|---|---|---|---|
| **A) Central Mall**<br>*(Burnside to Madison)*<br>*80' ROW* | 1 | Four Lane Profile | No Shared Lanes | 48' curb to curb<br>one lane auto<br>one lane LRT<br>two lane bus | 17' and 15' | 31.5' curb to curb<br><br>one lane LRT<br>two lane bus | 28.5' and 17' |
| | 2 | Three Lane Profile | LRT/Bus Share | 36' curb to curb<br>one lane auto<br>one lane LRT and some bus<br>one lane bus | 18' and 26' | 22.5' curb to curb<br><br>one lane LRT<br>one lane bus | 31.5' and 26' |
| | 3 | | LRT/Auto Share | 36' curb to curb<br>one lane shared LRT/auto<br>two lanes bus | 18' and 26' | 34.5' curb to curb<br>one lane LRT<br>two lanes bus | 19.5' and 26' |
| | 4 | | Bus/Auto Share | 36' curb to curb<br>one lane LRT<br>one lane shared bus/auto<br>one lane bus | 18' and 26' | 34.5' curb to curb<br>one lane LRT<br>one lane shared bus/auto<br>one lane bus | 19.5' and 26' |
| | 5 | Existing | no shared | 36' or 24'<br>two lane bus<br>one lane auto | 18' and 26'<br>w/o auto 30' and 26' | NA | NA |
| **B) North Mall**<br>*(North of Burnside)*<br>*60' ROW* | 1 | Two lane Profile | No shared lanes | 24' curb to curb<br>one lane LRT<br>one lane bus | 16' and 20' | 22.5' curb to curb<br>one lane LRT<br>one lane bus | 17.5' and 20' |
| | 2 | | LRT/Auto share | 24' curb to curb<br>one lane shared LRT/auto<br>one lane bus | 16' and 20' | 22.5' curb to curb<br>one lane LRT<br>one lane bus | 17.5' and 20' |
| | 3 | | Bus/Auto share | 24' curb to curb<br>one lane LRT<br>one lane share bus/auto | 16' and 20' | 22.5' curb to curb<br>one lane LRT<br>one lane bus/auto | 17.5' and 20' |
| | 4 | Existing | Bus/Auto share | 24' curb to curb<br>one lane bus<br>one lane shared bus/auto | 16' and 20' | NA | NA |
| **C) South Mall**<br>*(South of Madison)*<br>*80' ROW* | 1 | Four lane Profile<br>6th Ave is shown. 5th Ave differs | Bus/Auto share | 48'-44' curb to curb<br>one lane LRT<br>two lanes shared bus/auto<br>1 lane parking or 3rd auto/bus | 5th Ave 16' and 20'<br>6th Ave 17' and 15' | 46.5' curb to curb<br>one lane LRT<br>two lanes shared auto/bus<br>1 lane parking or 3rd auto/bus | 19.5' and 14' |
| | 2 | Existing | Bus/Auto Share | 50' curb to curb<br>two lanes parking<br>three lanes shared bus/auto | 15' and 15' | NA | NA |

*looking north

1.5' extension of sidewalk is typical at stations

## Table 1 continued

## Matrix of Downtown South and North Entry Configurations

28-Jun-95

| *Segment* | *Profile* | |
|---|---|---|
| **S) South Entry** | **1** Harrison Street | Between First and Front Avenues, the 80 foot ROW would be expanded to include LRT and provide for traffic capacity.<br><br>Between First and Fourth Avenues, the current 80 foot ROW would be maintained with sidewalks similar to existing, a narrow median, LRT adjacent to the median and single lane of traffic in each direction.<br><br>Between Fourth and Fifth Avenues, the 60 foot ROW would be expanded north to accommodate both tracks and one lane of westbound or eastbound traffic. |
| | **2** Lincoln Street | Currently, the 80 ROW on Lincoln Street includes two 12 foot sidewalks, two lanes of traffic in either direction and a median. LRT would be in the median either adjacent to a narrow median or in place of a median.<br>One lane of traffic would provided in either direction along with standard sidewalks.<br>LRT would be on the westside of 4th Ave. between Lincoln and Harrison. |
| | **3** I-405 | LRT would be on the north side of I-405 in a separate ROW until 4th Avenue.<br>LRT would be on the westside of 4th Ave. between Lincoln and Harrison. |
| **N) North Entry** | **1** Glisan Street | Cross sections on Glisan would vary block by block. The current 60 foot ROW west of Fourth Avenue would be expanded between Fourth and Fifth Avenues to provide for LRT in both directions and two westbound traffic lanes.<br>West of Fifth Avenue, the northbound track and two westbound traffic lanes would be provided. |
| | **2** Irving/Union Station | Between the intersection of Third and Glisan and the intersection of Fifth and Irving, a new right of way would be created. |

**North Mall.** The North Mall is defined as the portion of N.W. 5th and 6th Avenues between Glisan (or Irving, depending on the North Entry decision) and W. Burnside, the recently completed North Transit Mall extension. The street area currently has two 12 foot-wide lanes, the right lane for exclusive bus use and the left lane for mixed use by buses and autos. The sidewalk on the right bus loading side is 20 feet wide and the sidewalk on the opposite side is 16 feet wide. All of the alternatives would accommodate buses in the existing right lane and light rail in the existing left lane. A station would be located on the left side of 5th and 6th Avenues in the block between W. Burnside and N.W. Couch. The sidewalk in that block would be widened to 17 1/2 feet. The three alternatives that were considered represent variations in the auto use only.

**B-1** (No autos). In this alternative, autos would not be permitted on segments of the North Mall with light rail.

**B-2** (LRT/Auto Share). In this alternative, autos would continue to use the left lane, sharing the lane with light rail.

**B-3** (Bus/Auto Share). In this alternative, autos would use only the right lane, sharing the lane with buses. Buses would be able to pass autos and buses by using the left light rail lane when light rail vehicles are not present.

**South Mall.** Only one option was considered for the segment south of the existing transit mall between S.W. Madison and S.W. Harrison.

**C-1** (4-Lane). The 80 foot wide right-of-way of S.W. 5th and 6th Avenues between S.W. Madison and S.W. Harrison would be rebuilt with one light rail lane on the left side of the street, two 12 foot wide traffic lanes and an 8 foot wide parking lane on the right side of the street. An alternative configuration with three traffic lanes and no on-street parking could also be explored. Sidewalks would typically be 20 feet wide on the left side of the street and 18 feet wide on the right side. Light rail stations could be located between Mill and Montgomery and between Madison and Jefferson on 5th Avenue (in front of City Hall) and between Jefferson and Columbia on 6th Avenue (in front of the Oregonian Building). Sidewalks in these station blocks would generally be 21 1/2 feet wide. Parking would be eliminated for a one-half block length between Mill and Clay to accommodate bus stops on the right side of 5th and 6th Avnues. The important auto access on 6th Avenue to Taylor would be maintained, controlled by a signal at 6th Avenue and Jefferson insuring that conflicts with light rail vehicles moving from the left lane of 6th Avenue to the center lane of the Central Mall would be avoided.

**North Entry.** From the North, light rail would enter the downtown over the Steel Bridge using the existing trackway in the center span and a new trackway along the south side of the existing or a rebuilt Glisan Street ramp. The ramp would continue to meet grade at the intersection of N.W. 3rd and Glisan. Westbound traffic on the bridge would be limited to the single lane on the outside span. The single lane would extend down the Glisan ramp with a second left turn lane when approaching the 3rd Avenue intersection. Two alternative alignments for the trackway west of the intersection of 3rd and Glisan to N.W. 5th and 6th were considered.

**N-1** (Glisan). In this alternative, the trackway would likely be located on the south side of Glisan. A station could be located between S.W. 3rd and 4th. Two lanes of traffic on Glisan could be maintained between 4th and 6th by widening the street to the north.

**N-2** (Irving/Union Station). In this alternative, the trackway would be aligned diagonally across the intersection of 3rd and Glisan, through the block bounded by Glisan, Hoyt, 3rd and 4th to Irving. Depending on the exact configuration of the alignment, stations could either be located on the left side of 5th and 6th between Glisan and Hoyt (in front of the Greyhound terminal) or with the outbound station diagonally through the portion of the Greyhound building and parking lot north of Hoyt and the inbound station on the left side of 5th Avenue roughly between Irving and Hoyt.

**South Entry.** Prior to commencement of the study, two options for the connection to Moody were identified: A Jefferson and Columbia couplet and Harrison. The Jefferson and Columbia couplet was not pursued further because it would not provide direct service to Portland State University and the University District. Harrison and two relatively new alternatives, the Lincoln Street and the I-405 Options, were considered.

**S-1** (Harrison). In the Harrison Street Option, the trackway would enter Harrison from Moody Street on an elevated structure over Harbor Drive. The trackway would cross Front and First Avenue at grade from the north side of Harrison. Harrison would be rebuilt for four or possibly five lanes of traffic between Front and First, requiring additional right-of-way on the south side of Harrison. The lanes would align with a future road proposed in the South Waterfront Development Plan connecting Harrison with the Moody Extension. A light rail station could be located on the bridge structure over Harbor Drive with direct pedestrian access from Harrison and to the RiverPlace/South Waterfront area by a ramp, stairway and/or elevator at the east end of the station. The elevation of the intersections of Harrison and Front and First would be raised by approximately 3 to 4 feet in order to reduce the grade of Harrison in that area to about 7 percent. This change would affect grades on Front and First approximately 200 feet each side of Harrison and on Harrison to just west of 2nd Avenue.

Presently, Harrison is an 80 foot wide right-of-way between Front and Fourth Avenues. Between First and Fourth, there are 12 foot sidewalks, two 11-1/2 foot eastbound and two 11-1/2 foot westbound traffic lanes and a 10 foot median. The character of the street is influenced by large street trees in the sidewalks and median. In this section, light rail trackways would be located in the left eastbound and westbound lanes, adjacent to the median, reducing the street to one 11 foot westbound and one 11 foot eastbound lane.

On Harrison between Fourth and 6th, given the narrower 60 foot right-of-way, light rail would be on the north side of the street with a single east or westbound traffic lane on the south side of the street.

S-2 (Lincoln). Light rail would enter the CBD on a structure over Harbor Drive and Front, from the South Waterfront property either north of the substation or between the substation and Harbor Drive. A station could be located in the South Waterfront area on the eastern end of the structure. At the west end of the structure, light rail would enter a retained fill and cross S.W. First Avenue at-grade. West of First, the trackway would be located in the median of Lincoln leaving one lane of traffic in each direction on Lincoln. Light rail would turn onto 4th Avenue with the two-way trackway on the west side of the street between Lincoln and Harrison. The trackway in this section of 4th would parallel three northbound traffic lanes. With standard width sidewalks on 4th, it is likely that the 80 foot right-of-way would have to be increased to as much as 88 feet. The trackway would turn west onto Harrison and, again onto 5th Avenue southbound and 6th northbound.

S-3 (I-405). This option would be limited to an entry that is served by the Caruthers/Marquam Crossing only. The configuration east of Front Avenue would preclude a connection to Moody and a possible Ross Island crossing. A station to serve the South Waterfront area would be located on the bridge structure approximately 30 to 35 feet above the ground elevation, approximately 45 feet beneath the lower deck of the Marquam bridge. Access from the station to the South Waterfront area would be by elevator and/or escalator. The bridge would continue over Moody and Harbor Drive entering the existing right-of-way of Caruthers. The two-way trackway would continue west under S.W. Front and First Avenues parallel to I-405 at the freeway level and enter 4th Avenue on the right, east side of the off-ramp. The trackway would continue north along 4th Avenue to Harrison as described above for the Lincoln Option.

## V. Alignments Selected for Further Study in the DEIS

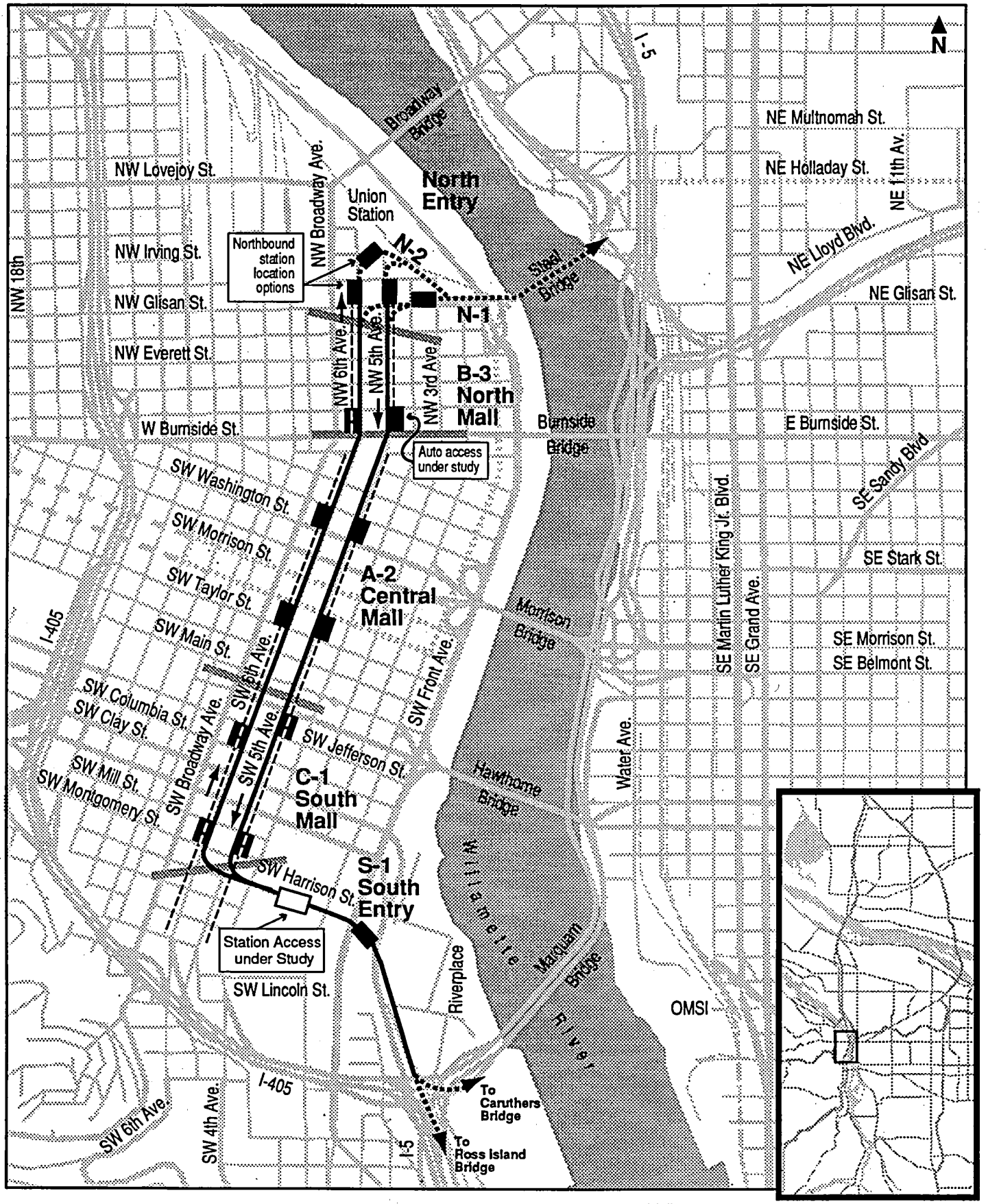
### CBD Alignment

The South/North Project spent nearly 12 months evaluating alignment alternatives for the South/North Light Rail through the Portland Central Business District on 5th and 6th Avenues. After completing an exhaustive examination of the technical information and after conducting a public meeting at which a wide variety of opinions were expressed, and considering the recommendations from the Downtown Oversight Committee, the PMG and the CAC, the Metro Council finds: 1) that the following combination of alternatives meets the principles established by the Metro Council in December 1994 (*Tier I Final Report*) and the criteria established by the Oversight Committee (see Figure 8); 2) that those options defining the surface LRT alignment on the 5th/6th Avenue Transit Mall and connecting streets should be studied further in the DEIS; and 3) that more detailed study of other tunnel and surface street alignments is not warranted:

- A-2 with light rail in the center lane of the Central Mall
- B-3 with light rail in the left lane and autos mixed with buses in the right lane of the North Mall
- C-1 with light rail on the left side of 5th and 6th Avenues on the South Mall
- N-1 (Glisan) and N-2 (Irving/Union Station) Options for the North Entry to be studied further during the EIS process; and
- S-1 (Harrison) Option at the South Entry;

The Metro Council has found that if South/North Light Rail is placed on 5th and 6th Avenues in accordance with the above alternatives, existing auto routing and capacity can be preserved, pedestrian access and amenities can be enhanced and efficient bus and light rail service can be provided on the mall and to other developing areas of the downtown. Specifically, the Metro Council has found that the alignment selected for further study in the DEIS:

- Reinforces the goals and objectives of the Central City Plan by supporting existing and future public and private development and investment in a manner that is consistent with commitments dating back to the Downtown Plan which was adopted over 20 years ago;
- Maintains existing traffic and access patterns on 5th and 6th Avenues and within the Central Business District which supports existing and future businesses and retailing and adds to the activity and quality of the streets;
- Provides fast and convenient transit service to existing and future downtown office and commercial uses, delivering the most people to where they want to go, maximizing the potential for increased transit ridership to and from the Central City;




South North Transit Corridor Study

**Light Rail Design Option:**

# Downtown Portland

**5th/6th Avenue Surface Couplet**

December 1995

Figure 8

Light Rail Transit (LRT) alignment

LRT alignment options

MAX

Westside LRT

Existing railroad

Mall auto access

Station with no auto access on mall

Station with auto access on mall

**Note:** Alignment, station and park and ride locations are currently under study and may change.

0 1/8 1/4

MILE

- Maintains the current pedestrian character of the Transit Mall by retaining the sidewalk widths, pedestrian amenities and trees currently in place on the Central and North Mall;

- Improves the role of the Portland Transit Mall as the central pedestrian boulevard and transit spine in the Downtown and CBD by extending it southward and changing its emphasis to light rail;

- Ensures the least construction impacts and cost by placing light rail in a location where sidewalk reconstruction, street grade changes, utility relocations and other reconstruction work can be minimized and the benefits of past investments in North and Central Transit Mall utility relocation, strain pole foundations, sidewalk improvements and surface grade adjustments can be utilized;

- Offers the opportunity to reconfigure the Central City bus circulation plan, utilizing off-mall service (approximately 25-35 buses per hour by 2015) on other streets, most significantly as 10th and 11th Avenues, where development can benefit from improved transit connections to the regional system, Central City Streetcar and intra-downtown circulation within Fareless Square;

- Provides good access to the River District, University District and RiverPlace/South Waterfront area;

- Reinforces the multi-modal transportation center concept by providing the best opportunity for a good connection at Union Station between light rail, Amtrak, inter and intra-City buses and future high speed rail;

- Provides the opportunity to maintain the function of the Portland Transit Mall while improving its aesthetic environment by minimizing the 'sheet metal' affect while simultaneously maximizing its functional passenger capacity;

- Creates the opportunity for coordination of construction and funding of improvements to the Central Mall and a funding source to ensure that 5th and 6th Avenues can be enhanced to the original demanding Central Mall design standards; and

- Fulfills an objective of the Central Mall business community to enhance the pedestrian environment by reducing items on the street and increasing visibility of retailing along 5th and 6th Avenues by removing over half of the existing bus stops, shelters and related items.

The Metro Council adopted these conclusions regarding the South/North Light Rail Downtown Alignment based on the additional comments, recommendations and findings set out in the balance of this section and under the following three sections titled Transit Operation Recommendations, Urban Design Recommendations and Construction Recommendations.

Following is a more detailed description of the alignment selected by the Metro Council for further study in the DEIS:

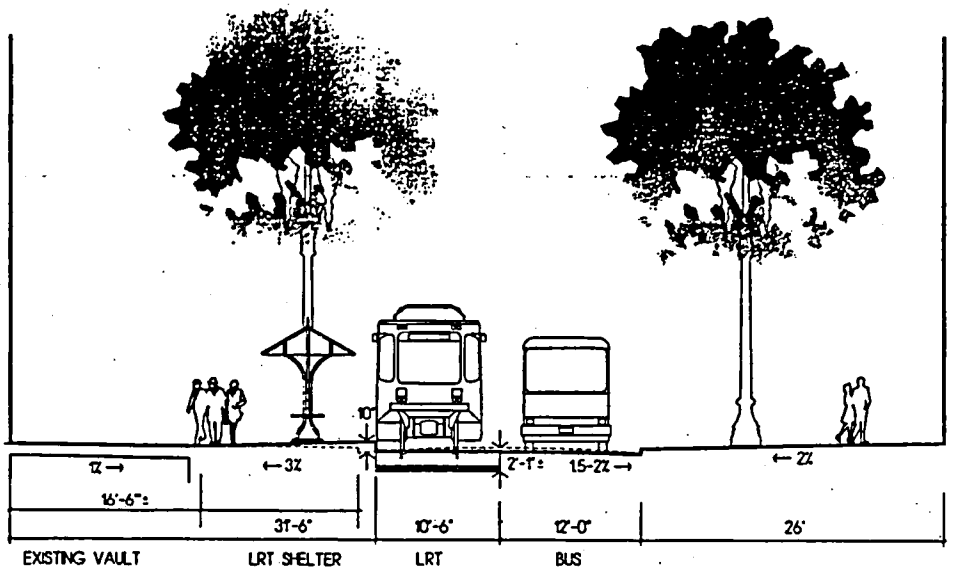
**Central Mall.** Light rail would be located in the center lane of the Central Mall as described under the A-2 Option above (see Figure 9). Of the Central Mall options, the A-2 Option best meets the principles established by Metro Council and the criteria established by the Oversight Committee. A-2 provides the most efficient use for all four modes: buses, light rail, autos and pedestrians; while preserving existing transit ridership capacity; existing auto access; pedestrian circulation; and existing sidewalks, street trees and other amenities. It would entail the least construction impacts and would have the lowest cost because light rail in the center lane can be accommodated with minimum adjustment to existing street and sidewalk alignments and grades; the least amount of utility relocation work and the highest probability of containing most construction work within the street area.

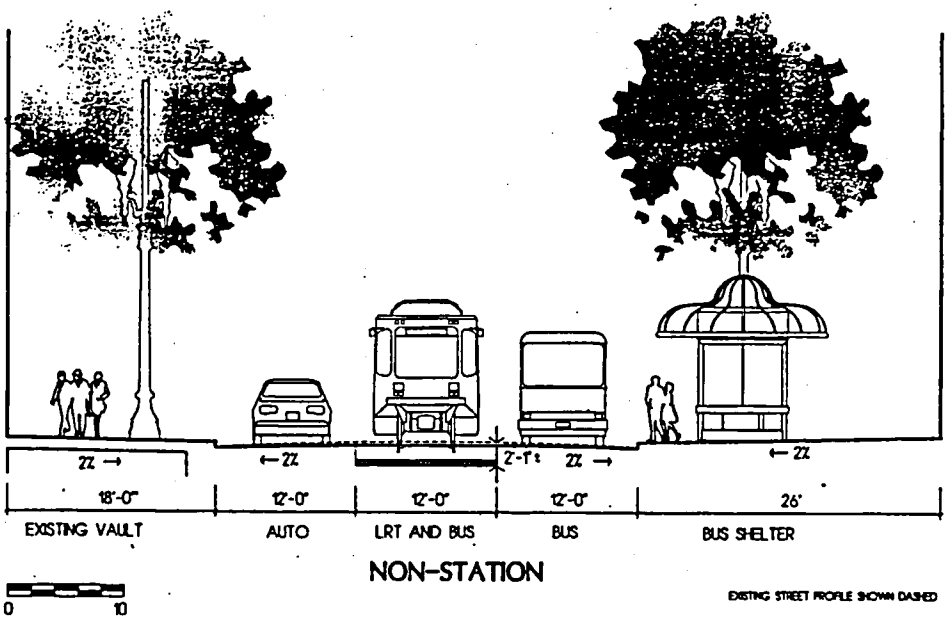
A-1, with its need to widen the street to four lanes and to narrow the sidewalks, would severely impact the mall design and amenities and seriously compromise pedestrian use on the transit mall streets. A-3, with autos sharing the light rail lane, would create serious conflicts with existing auto circulation in auto lanes on the mall and on cross streets and would reduce capacity and degrade operations of light rail. Because bus volumes would eliminate autos over time on the Transit Mall, A-4 would not provide for the long-term 24-hour a day, seven day a week provision of an auto lane on 5th and 6th Avenues and therefore, would not meet the established criteria for retaining existing auto traffic patterns.

**North Mall.** Light rail would be located in the left lane on 5th and 6th Avenues in the North Mall with buses and autos sharing the right lane, as described under the B-3 option above (Figure 10). In 2005 bus volumes on the North Mall are forecast to be approximately one-half of what they are today and, in combination with the A-2 Option on the Central Mall, may further be reduced as light rail frequencies increase over time and buses on 5th and 6th Avenues are routed on other streets. Accordingly, the limited number of autos projected to be using N.W. 5th and 6th should be able to use the right lane. However, auto use of the 5th Avenue bus lane in the light rail station block between W. Burnside and N.W. Couch may not be feasible due to potential conflicts with loading light rail vehicles. The issues of auto use in this block and the stacking of buses on 5th Avenue will be studied further during the EIS process. To further minimize conflicts with light rail, buses and auto circulation on 5th and 6th, alternative provisions on side streets would be made for any businesses presently using 5th and 6th for loading or access. Those improvements to private property would be included in the project scope and budget.

**South Mall.** Light rail would be placed in the left lane on 5th and 6th Avenues in the South Mall with autos and buses sharing two general purpose lanes as described under the C-1 Option above (see Figure 11). C-1 would entail reconstructing 5th and 6th Avenues between Madison and Harrison with improvements similar to those used on the Central Mall, fulfilling a long standing desire to extend the transit mall the full length of the downtown from Union Station at the north end to Portland State University at the south.

**Figure 9**




[redacted]

# SURFACE LRT OPTIONS
## PORTLAND CENTRAL BUSINESS DISTRICT

# A2
## CENTRAL MALL

**North Entry.** The N-1 (Glisan) and N-2 (Irving/Union Station) north entry options for connecting light rail from the Steel Bridge to 5th and 6th Avenues will be further studied during the EIS. In order to make a choice between these options, more information is needed about the Union Station developments, high speed rail, intermodal ridership and transfers, cost, the 3rd Avenue rail crossing, the impacts of each alternative on the neighborhood due to property acquisitions and other factors.

Both North Entry alternatives may involve impacts to private property. In the N-1 (Glisan) Option, widening of Glisan for two light rail tracks and to maintain two lanes of auto traffic west of 4th Avenue could require the acquisition of the Beaver Hotel. The Greyhound depot building may be adequately set back from its south property line to avoid similar impacts. It is possible that the parking lot and Comedy Club building on the southeast corner of the intersection of 5th Avenue and Glisan and 6th Avenue and Glisan could be impacted to make room for tracks turning from Glisan onto 5th Avenue and from 6th Avenue onto Glisan.

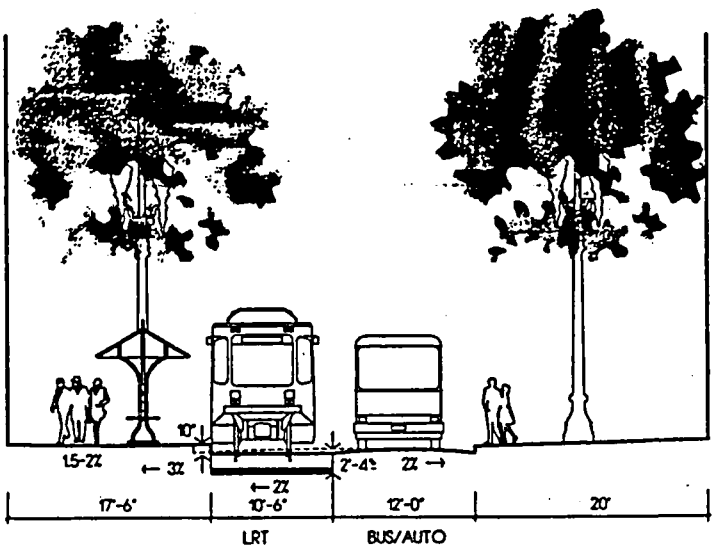
The N-2 (Irving/Union Station) Option would require the acquisition of the block between Glisan, Hoyt, 3rd and 4th and likely require the redevelopment of the existing Tri-Met bus layover facility between Irving, Hoyt, 4th and 5th Avenues. It is also likely that Hoyt Street between 4th and 5th Avenues would be vacated, impacting access to the Classic Chauffeur building. Under the N-2 (Irving/Union Station) Option, an outbound station could be located diagonally across the northern half of the Greyhound depot as described above, impacting that property.

If the N-2 (Irving) Option is selected, its configuration should be carefully designed to avoid conflicts with the proposed 3rd Avenue rail crossing connecting 3rd with Front Avenue and McCormick Pier and the Union Station Housing north of the railroad tracks.

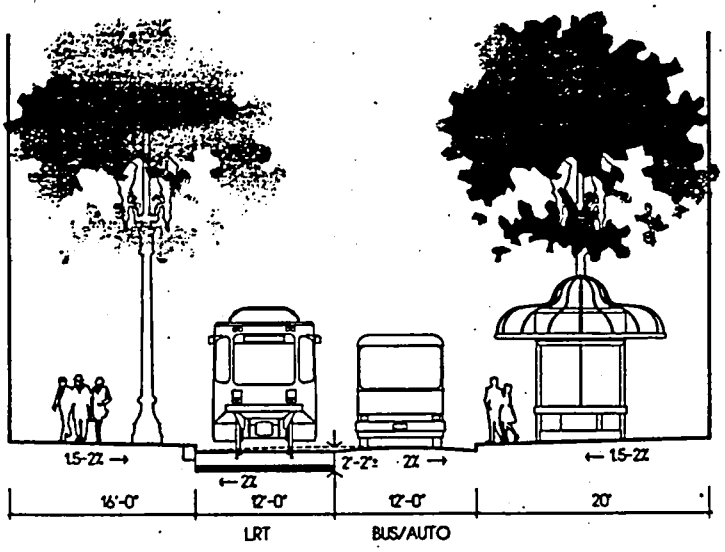
**South Entry.** Light rail would be placed in the median of Harrison Street between 1st and 4th Avenues as described under the S-1 option above (see Figure 12). Of the South Entry Options, the S-1 (Harrison) Option would provide the best service to the University District, South Auditorium area and RiverPlace/South Waterfront area at the least cost and operating time. As described above, the S-1 (Harrison) Option was developed with a station located on the bridge structure over Harbor Drive intended to serve both the South Auditorium and RiverPlace/South Waterfront areas. During the EIS process, access to this station and possible alternative locations for this station and/or other stations for better service for South Auditorium and RiverPlace/South Waterfront area residents and workers will be examined.

The operating time and cost of all three South Entry alternatives, assuming a Caruthers/Marquam Crossing from OMSI to the PSU station on 6th Avenue north of S.W. Montgomery Street were estimated by project staff. The operating times for the S-2 (Lincoln) and the S-3 (I-405) Options were estimated to be 20 seconds and 40 seconds longer than the S-1 (Harrison) Option, respectively. The projected capital cost would be $30 million and $14 million more than the E-1 (Harrison) Option, respectively. Unlike the S-3 (I-405) Option, the S-1 (Harrison) Option could be connected to either the Ross Island or the Caruthers/ Marquam Willamette River crossings.

**Figure 10**




STATION




NON-STATION

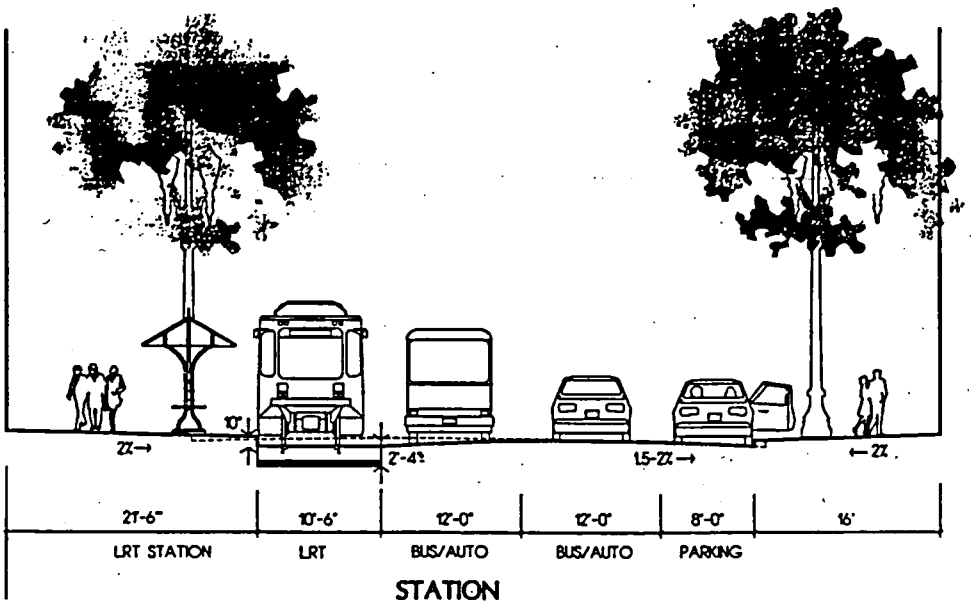
0 4 10

EXISTING STREET PROFILE SHOWN DASHED

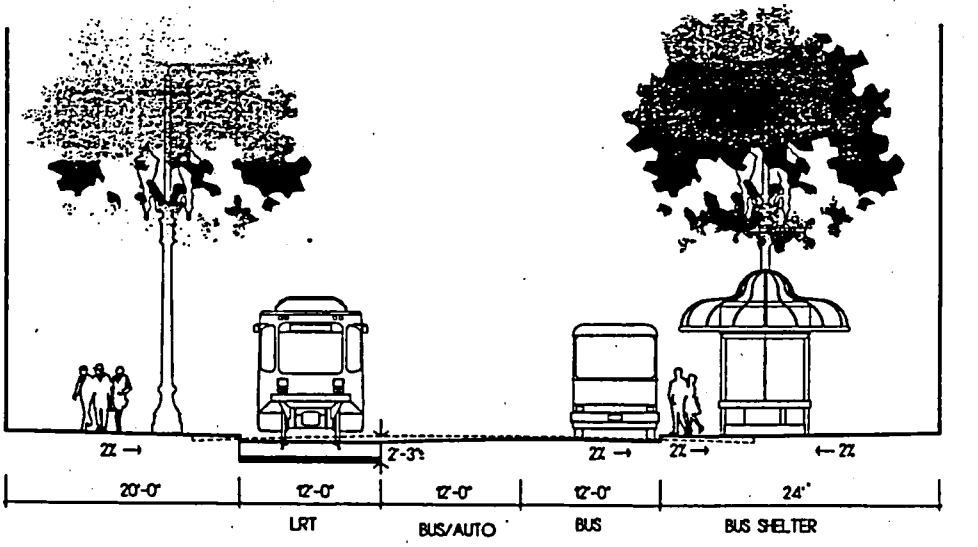
# SURFACE LRT OPTIONS
## PORTLAND CENTRAL BUSINESS DISTRICT

# B3
## NORTH MALL

**Figure 11**




STATION




NON-STATION

0 10

EXISTING STREET PROFILE SHOWN DASHED

DRAFT
3-23-95

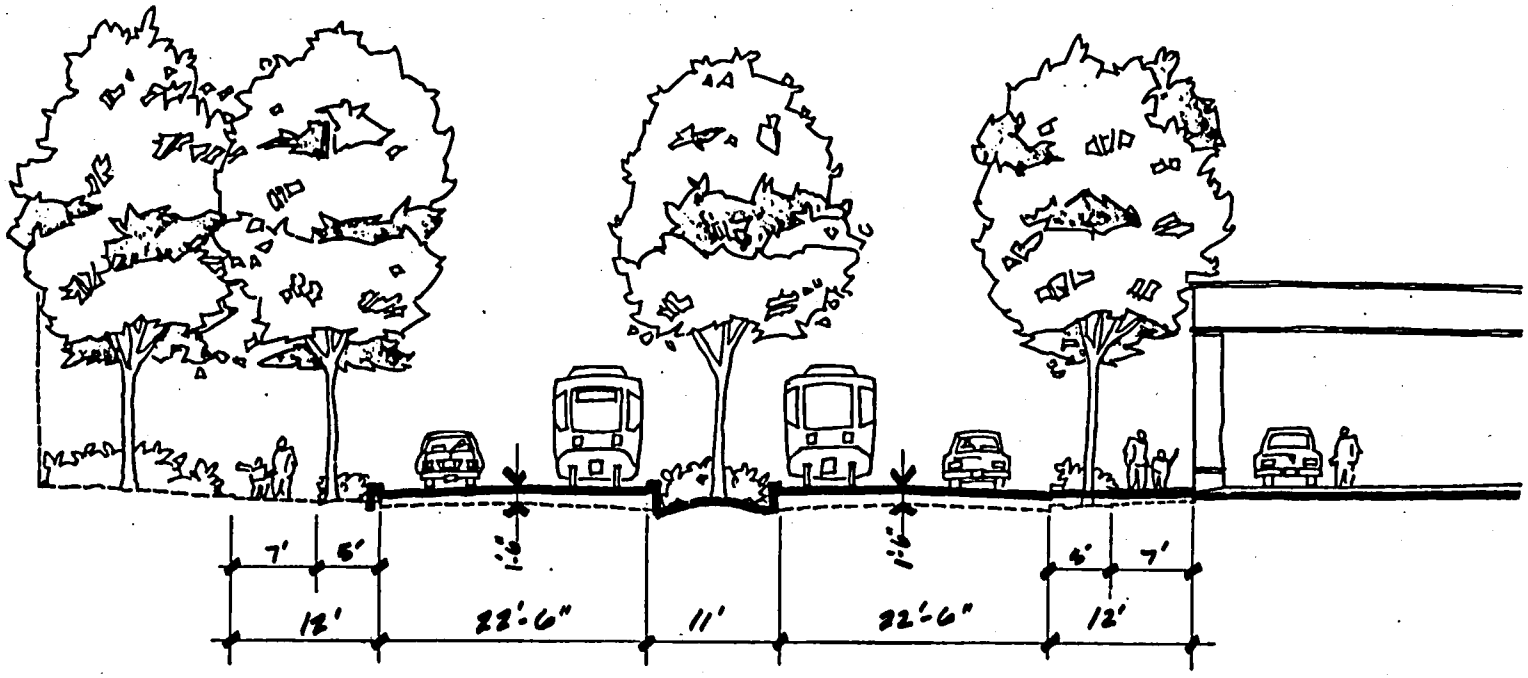
# SURFACE LRT OPTIONS
## PORTLAND CENTRAL BUSINESS DISTRICT

C1
SOUTH MALL

The station location of the S-2 (Lincoln) and S-3 (I-405) Options would be less desirable than in the S-1 (Harrison) Option. In the S-2 (Lincoln) Option, RiverPlace and the north part of the South Waterfront area would not be well served with an elevated station at the eastern end of the bridge structure over Harbor Drive and Moody. The location of this station would be further to the south, and even less accessible to RiverPlace, if the alignment is shifted to the south of the substation as has been suggested by the Portland Development Commission. The station on the S-3 (I-405) Option serving the South Waterfront area would also not be as convenient, located on the bridge structure approximately 30 to 35 feet above grade adjacent to the Marquam Bridge.

The three South Entry Options would have varying impacts on private property. Under all three options, light rail turning from Harrison onto 5th and from 6th onto Harrison would impact the property on the northeast corner of the intersection at 6th Avenue and Harrison, the PSU Center of Advanced Technology and at 5th and Harrison, the apartment building.

In the S-1 (Harrison) Option, the property on the south side of Harrison between First and Front Avenues would be impacted by the widening of Harrison to accommodate four (or five) traffic lanes and light rail on the north side of the street. On the S-2 (Lincoln) and S-3 (I-405) Options, properties would be impacted on Harrison between 4th and 5th Avenues and along 4th Avenue, south of Harrison. The right-of-way of 4th Avenue would likely have to be widened, impacting a number of properties on the west side of the street between Harrison and Lincoln. Texaco and Budget Rent-a-Car may be impacted even without a right-of-way expansion due to conflicts with the light rail trackway and their driveway accesses. On the S-2 (Lincoln) Option, the radio station would be impacted by the extension of the Lincoln right-of-way east of First Avenue. On the S-3 (I-405) Option, the beauty supply building on 4th Avenue and an apartment building and two small commercial buildings on Caruthers could be impacted.




4.
HARRISON ST. LOOKING WEST
PROPOSED, BETWEEN 1ST & 2ND STREETS

Figure 12

# VI. Transit Operation Conclusions

## Capacity and Ridership

Transit ridership to, from and through the CBD is projected to dramatically increase over the next two decades. With the Banfield and the completion of the Westside and South/North Light Rail Projects, there will be four major light rail trunk lines serving the CBD. The projected increased ridership should mostly be carried on light rail. Bus service and bus ridership to the downtown will diminish over what exists today. Total ridership to, from and through Downtown is set out in Table 2 below:

**Table 2**
**Portland CBD Transit Ridership**
(to, from and through CBD, excludes intras)

| Year | P.M. Peak Hour Riders |
|---|---|
| 1997 | 16,000 |
| 2005 | 19,100 |
| 2015 | 30,500 |

Consistent with future transit ridership patterns in the Central City, the A-2 Option in the Central Mall calls for a transition from exclusive bus use to a combined light rail and bus operation on the Transit Mall. Table 3 sets out the capacity and the projected volumes of light rail vehicles and buses over the 20 year period.

The ability of the 5th and 6th transit mall to accommodate both light rail trains and buses is one component of the overall downtown transit capacity. The downtown transit capacity includes the transit mall, Banfield LRT, Westside LRT and buses on off-mall streets. Buses can be accommodated on a number of other streets in the downtown such as 2nd, 3rd, 10th, 11th, Washington, Salmon, Jefferson and Columbia.

The patron capacity of the transit mall is based on the number of buses and trains that can pass through two lanes during the peak hour after taking into account traffic signal progressions and bus delays. For this analysis, the patron capacity of the off-mall transit streets is based on the number of buses that are unable to operate on the transit mall. The total transit capacity of these off mall streets to accommodate more buses per hour has not been estimated but would be more than indicated in Table 3.

For simplicity, the volumes listed below include trips only in the peak hour in one direction. The actual volumes on the mall would include trips leaving town in both directions. For instance, light rail trips on South/North would likely be 20 trains going north and 20 trains going south in the peak hour.

## Table 3

**Projected Transit Vehicle Volumes/Patron Capacity**
(One Direction Only)

| Year | Buses/Hour | LRV's/Hour | LRT Headway | Patron Capacity |
|---|---|---|---|---|
| **1997** | | | | |
| Transit Mall | 143 | 0 | 0 | 8,580 |
| Off-Mall | 29 | 13 | 4.5 min | 5,640 |
| Total | 172 | 13 | | 14,220 |
| **2005** | | | | |
| Transit Mall | 105-110 | 8 | 7.5 min | 9,000 |
| Off-Mall | 29 | 15 | 4 min | 6,240 |
| Total | 139 | 23 | | 15,240 |
| **2015** | | | | |
| Transit Mall | 95-100 | 10 | 6 min | 9,000 |
| Off-Mall | 59 | 15 | 4 min | 8,040 |
| Total | 159 | 25 | | 17,040 |
| **Beyond 2015** | | | | |
| Transit Mall | 75-80 | 20 | 3 min | 10,800 |
| Off-Mall | 79 | 20 | 3 min | 10,740 |
| Total | 159 | 40 | | 21,540 |

On the Central Mall there presently are 171-178 buses during the peak hour. This volume is expected to be decreased to 143 buses per hour when the Westside Light Rail begins revenue service in 1997 or 1998. When the South/North Light Rail begins revenue service in 2005, the bus volumes on the Central Mall are expected to be further decreased to 106 buses during the peak hour. Then, as light rail and bus ridership continues to grow, these volumes are projected to be increased to 125-130 buses per hour by 2015.

When the South/North Light Rail begins revenue service in 2005, trains would operate at approximately 15-minute frequencies during off-peak hours. However, during the peak hours, service would be increased to approximately 7-1/2 minute frequencies, a rate of 8 trains per hour. By 2015, the peak hour service is expected to increase to 6 minute frequencies, a rate of 10 trains per hour. The ultimate capacity of the system will be about 3 minute frequencies, a rate of 20 trains per hour, which if fulfilled would occur beyond the current 20 year planning time period.

Under the recommended A-2 Option, buses using the Central Mall would no longer operate in the leap-frog fashion as they do today. They would move in single file in the right lane and utilize the

center light rail lane to pass buses that are delayed. Because of the reduced number of buses and the reduced number of bus routes (approximately half of the 80-82 routes currently) buses on the Central Mall would only need to stop at one location on each block. Accordingly, the mid-block bus stop in each block of the Central Mall would be eliminated. In addition, all bus stops would be eliminated in blocks in which light rail stations are located, which would be every fourth block on the Central Mall. Buses would be organized into two rather than four groups. Each group would stop in every other block or every third block depending on the location of the bus stop relative to the light rail station blocks where all stops are eliminated. The mixed two and three block stopping frequency would result in buses stopping at fewer locations on the transit mall. This should reduce the operating times, and therefore operating cost for buses below what they are today on the mall.

Not only bus demand, but also bus capacity of the mall would be reduced because of inability to freely use the second lane for passing. This capacity would decrease as light rail frequencies increase. It is estimated that the capacity of the mall would be 105-110 buses per hour with light rail trains at 7 1/2 minute frequencies, 95-100 buses per hour with light rail trains at 6 minute frequencies and 75-80 buses per hour with light rail trains at 3 minute frequencies. In 2005, on the day that light rail begins operating on the mall, there would be adequate bus capacity to handle all of the projected mall bus volumes. However, during the following ten years, sometime between 2005 and 2015, light rail and bus volumes are projected to increase above capacity, to a point in 2015 when 25-35 buses per hour (during the peak hour) would have to be displaced to other streets. It is expected that the off-mall bus service may experience some increased operating time and cost caused by operating in mixed traffic rather than in exclusive bus lanes on the mall.

As explained, sometime between 2005 and 2015, Tri-Met would be required to initiate a series of bus system changes to implement off-mall service as the service requirements, demand projections and market conditions change in developing areas of the downtown. Tri-Met may choose to implement some of this service earlier, perhaps in conjunction with bus system changes that will be necessary during construction of South/North Light Rail or even sooner.

The *Regional Transportation Plan* (RTP; Metro: 1992, revised 1995) anticipates a long-term expansion of both the bus network and the light rail system. In addition to extensions of the east, west, south and north light rail lines, the RTP has identified the southwest corridor as a possible future light rail line. The southwest corridor could be served by either a radial line (out Barbur Boulevard to Tigard or out Macadam Avenue to Lake Oswego) or by an extension of the eastside light rail line (south on Highway 217 to Washington Square, Tigard and Tualatin). To date, travel demand forecasts have indicated that either of the radial lines would carry less than half the riders than would be carried by the east, west, south or north radial lines. An additional light rail extension could be an east side connection linking the south and north corridors between the Rose Quarter area and the south Willamette River crossing.

While the timing and configuration of these possible future extensions is uncertain, analysis done to date indicates that the Transit Mall could accommodate South/North Light Rail through to the year 2040. If the radial Barbur Corridor is built connecting to the transit mall, mall capacity

would be available through to the year 2020 (*South/North Tier I Technical Summary Report*; Metro: 1994). The eastside connection could provide additional long-term capacity in Downtown Portland by reducing the number of South/North trains that would need to enter the Portland CBD. Finally, an additional radial corridor into the Portland CBD may not be necessary if the Westside extension down Highway 217 is selected to serve the southwest corridor.

### Downtown Bus Circulation Concept

Transit service in Downtown Portland should be viewed as part of a continuum to implement the Downtown Plan vision for an attractive, active and pedestrian-friendly district. The combination of Portland plans and policies has created an environment supportive of transit throughout the downtown area. The creation of the Transit Mall was part of this continuum to focus office development, improve transit ridership and enhance livability. In the future, the Transit Mall will continue to be the primary corridor for employment. The major focus for development activities should occur along the high-density spine which parallels the Transit Mall as well as the edges and corners of downtown, such as South Waterfront, University District, River District and the Willamette River Bridgeheads. Figure 13 illustrates a conceptual downtown bus circulation plan. This circulation plan could complement the South/North Light Rail A-2 downtown alignment recommendation and the downtown land use concepts expressed in the original Downtown Plan, the Central City Plan and the Central City Transportation Management Plan.

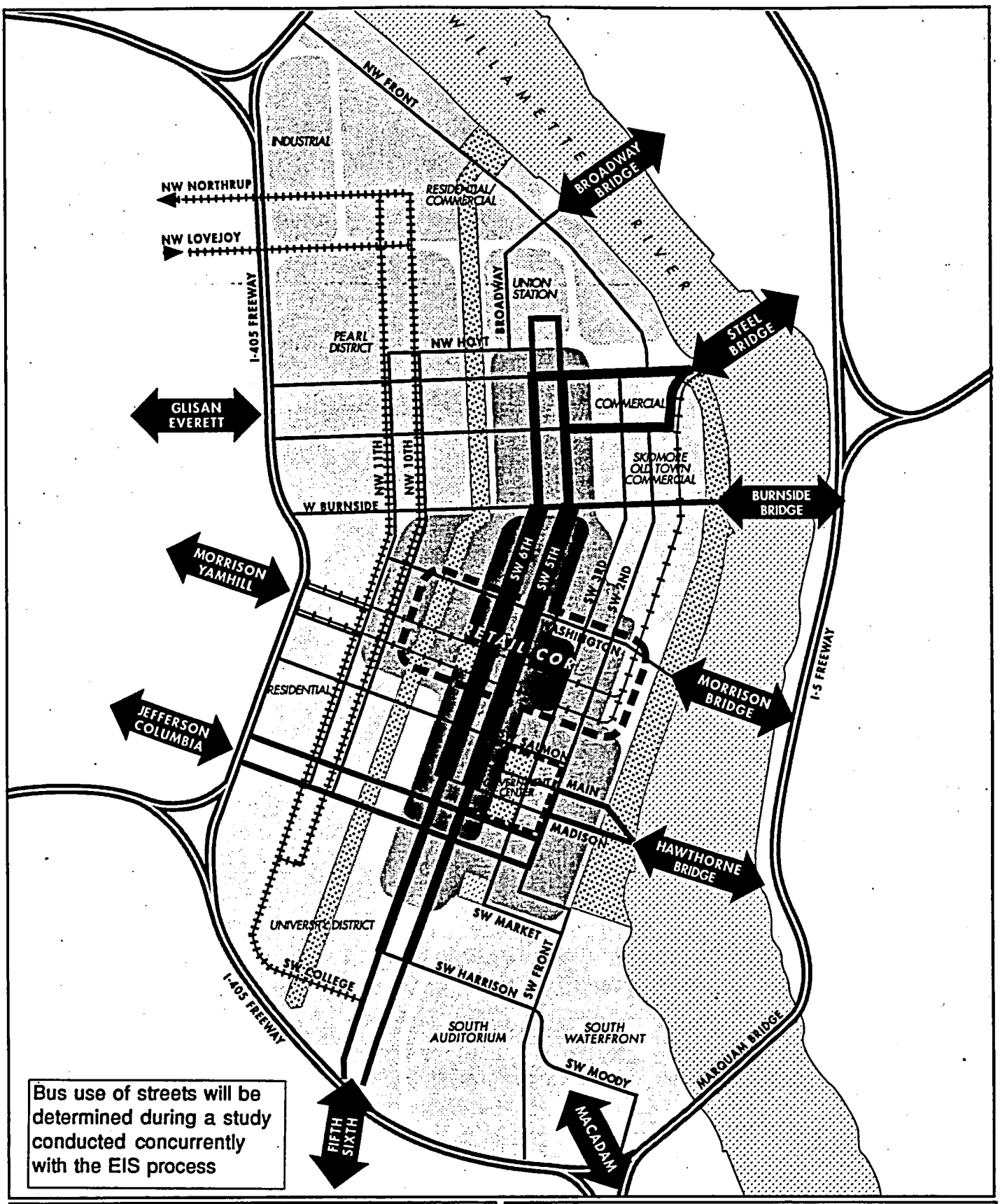
### Off-Mall Bus Operational Requirements

The study has focused a considerable effort toward the analysis of the alignment options, particularly the Central Mall options, to ensure that transit operations within the downtown meet acceptable cost, ridership and operation efficiency criteria. Tri-Met has determined that implementation of the recommendations for the bus operations set out in this section, the designation of downtown streets for off-mall bus service in the following section and the package of specific infrastructure improvements in the section following that are essential to ensure successful downtown transit operations and their acceptance of the recommended A-2 Central Mall Option.

### Bus Operation Conclusions

The following bus operation conclusions are made in conjunction with the A-2 Central Mall and other South/North Light Rail alignment recommendations:

Concurrently with the EIS process, Tri-Met, the City of Portland, Metro and business community/property owners will work together to continue to refine the conceptual plan shown in Figure 13. This will include the development of transit service plans, the streets in the downtown to be designated for transit, the design and location of improvements associated with off-mall bus service and the schedule for implementing the improvements and service plans.




## DOWNTOWN BUS CONCEPT

**BUS VOLUMES**

- Highest
- High
- Medium
- Low

- Streetcar
- East/West LRT

**Figure 13**

## DOWNTOWN LAND USE CONCEPT

- High Density Commercial
- Medium Density Commercial
- Land Use as Labeled
- Retail Core
- Major Open Space
- Government Center

Office of Transportation, City of Portland

In advance of the time that the South/North light rail begins, consideration should be given to operation of some buses on 10th and 11th, Jefferson and Columbia, Burnside, Everett and Glisan, Lovejoy and other east-west streets that are recommended for future bus service. This off-mall service should be designed to improve service in areas of the Central City where service presently is not provided, to facilitate convenient transfers and to provide efficient direct service for users. Minimum service levels should be established to ensure adequate frequency for good intra-downtown circulation during the off-peak hours. On the other hand, volumes of service should also be limited, particularly on busy traffic streets such as 2nd and 3rd, to minimize conflicts between buses and general traffic.

A bus service plan should be coordinated and integrated with the Central City Streetcar on 10th and 11th Avenues with ongoing planning for service to Northwest Portland, the River District and the University District and possible extensions to Oregon Health Sciences University and the North Macadam area.

The objectives should be to preserve existing ridership, identify opportunities for increased circulation in the Downtown, open new markets in Central City centers and meet the capacity requirements of the A-2 Central Mall alternative.

**Bus Street Designations**

Figure 6 indicates streets having a transit designation in the Central City Transportation Management Plan recently adopted by the Portland Planning Commission and by the City Council. The City, in cooperation with Tri-Met, Metro, the business community and others should review these designations to ensure that they are consistent with the light rail alignment decision and revisions in the bus service plan to accommodate the A-2 Central Mall Option recommendation. As described above, this process will take place concurrently with the EIS process. During this process, the following streets should be considered for off-mall bus service to provide improved circulation in other development areas of the downtown:

**Jefferson and Columbia.** Columbia and Jefferson are presently designated in the CCTMP as transit streets. Changes in their present classification may be warranted based on the abandonment of these streets for light rail and the possible future use of these streets for off-mall bus service.

**Main and Madison.** Main and Madison are designated as transit streets and are likely to continue to be used by buses using the Hawthorne Bridge.

**Salmon and Washington.** Concurrently with the EIS process, an off-mall bus routing study effort will be undertaken to identify the preferred operating corridor for buses in the major cross-mall retail corridor. Currently two bus lines operate approximately 24 buses during the peak hour on Salmon and Washington Streets acting as a couplet five blocks apart. Consideration should be given to the potential for using alternative or additional streets, reducing the volumes on the existing couplet, reducing the distance between the couplet, improving bus operations and minimizing existing auto conflicts, taking into account all modes

of transportation. Consideration should be given to Salmon and Taylor, Alder and Washington, and Stark and Oak. It is recommended that the City consider amending transit access street designations in conjunction with the FEIS based upon results of the off-mall bus routing study.

**Burnside.** Burnside currently is designated as a transit street, a designation that may remain unchanged by the A-2 alignment recommendation.

**Everett and Glisan.** Everett and Glisan are designated as transit street and likely will continue to carry off-mall bus service.

**2nd and 3rd Avenues.** 2nd and 3rd Avenues are not presently designated as transit streets, but may be desirable as streets for limited bus service to serve as an intra-downtown transit connection between Old Town and the South Auditorium area. Limitations on the volume of service would be appropriate.

**10th and 11th Avenues.** 10th and 11th Avenues are presently designated as transit streets and are excellent candidates for off-mall bus service. This service would complement and be operated in conjunction with Central City Streetcar presently being planned with a 10th and 11th Avenues alignment.

**Off-Mall Bus Improvement Conclusions**

Following are specific improvements that will be evaluated, some or all of which should be included in the South/North Light Rail Project scope and budget.

- Bus stop improvements including facilities such as shelters, benches, transit information and other improvements.

- Curb extensions to replace some existing curb side bus zones and at bus zones on newly designated off-mall bus streets. These extensions will eliminate some on-street parking, but less parking than curb side bus zones requiring additional space for buses to pull in and out. They also will speed up bus loading and unloading and provide additional space for bus shelters and pedestrians to wait away from adjacent storefronts.

- Design improvements to 5th Avenue for two blocks south of Burnside if during the EIS process such improvements prove necessary to meet mall capacity expectations, allow buses to proceed down the mall in an orderly manner and to eliminate current bus bottlenecks.

- Signal prioritization at some locations to allow buses to move more easily through congested intersections.

- Improved pedestrian crossings at key transit transfer connections where bus line cross.

- Transit and pedestrian improvements on 10th/11th Avenue in coordination with the Central City Streetcar project.

## VII. Urban Design Conclusions

Urban design features incorporated into a light rail project can significantly affect the interaction of the facility with its local environment. Following are considerations of urban design that should be taken into account by Metro, Tri-Met and the City of Portland as the project proceeds. Final determination of urban design elements to be incorporated into the project will depend upon feasibility, costs, funding, local jurisdiction and property and business owner preferences, and transit operations constraints.

### Portland Transit Mall

For nearly twenty years, the Portland Transit Mall has served as the centerpiece of Portland's downtown and Central City rejuvenation. It has received national acclaim for its design excellence. The Transit Mall has served as a model for downtown transportation projects that have followed it.

In Portland, light rail has been successful in operating on surface streets within the Central City, both on the Banfield and soon on the Westside project, largely due to the design sensitivity with which it has been incorporated into the streets. The design of the South/North Light Rail Project should be no less demanding. To the contrary, incorporation of light rail onto 5th and 6th and the 22 blocks of the original Transit Mall and 14 blocks of its northern extension will represent even a greater challenge, for it involves the reconstruction of street improvements of a quality unequaled anywhere in Portland.

The City of Portland recently completed a planning effort proposing to expend over $2 million aimed at restoring the aging Central Mall, suffering under two decades of heavy use. Broken and cracked bricks, crumbling granite, worn asphalt, missing street signs, chipped finishes, unused kiosks and patched paving are among the defects that would be repaired to restore the mall to its original form. The South/North Light Rail Project offers the opportunity to undertake this restoration in a coordinated way and with high-quality results that would not be possible if only local funds are available for the restoration.

In restoring the mall and in extending the street improvements to the South Mall and to the North and South Entries the quality of the design, materials and amenities should be similar to those used in the original transit mall project. Architectural finishes and treatments such as brick paving, granite curbs, gutters and feature strips, street trees, Portland historic ornamental street lighting fixtures, traffic signals, traffic and transit signs, flower pots, waste receptacles, Simon Benson drinking fountains and other features of the original transit mall should be the theme. Overhead train electrification systems should be designed with the same care afforded those installations on the Banfield Light Rail Project on First, Yamhill and Morrison and planned in the downtown and Goose Hollow segments of the Westside Light Rail project, by incorporating supporting the single wire overhead system from extensions on the Portland historic ornamental street lighting fixtures. Use of Portland historic Belgian block in the trackway should be considered, although it is recognized that other treatments may be more appropriate on the North and Central Mall where the trackway will be shared by buses.

### North Entry

The urban design features of the 5th and 6th Transit Mall should be considered for Irving or Glisan. The Steel Bridge ramp should be reconstructed to accommodate pedestrian and bicycle access. A comfortable and defensible environment around and under the Steel Bridge ramp should be designed. In this area, particular attention should be paid to right-of-way design to minimize awkward leftover parcels and to encourage adjacent property redevelopment.

### Harrison Street

Harrison Street has a unique quality created by the street trees, planting strips and median. Light rail should be incorporated to retain and enhance that quality. Despite grade changes required between First and Front Avenues, street trees should be retained by use of low retaining walls to preserve the existing ground level adjacent to them. Turnouts should be incorporated into the sidewalk design to accommodate loading where required and access should be retain to existing residential and commercial parking areas.

### South Entry/Harbor Drive Structure

The bridge structure should be designed to appear as an extension of Harrison Street, with natural and easy pedestrian access over Harbor Drive, to RiverPlace, a task of some challenge given the likelihood of four or five lanes of traffic and lengthy pedestrian crossing at Front and First and Harrison. The station should have the dual function of serving transit riders and pedestrian and bicyclists crossings from Harrison to RiverPlace, over Harbor Drive. Architectural treatment of the bridge structure should complement the surrounding environment, views of the river and city and be inviting to the desired pedestrian uses. Cost sharing for the facility should be evaluated through the EIS and design process.

## VIII. Construction Conclusions

The Metro Council emphasizes the importance of adopting a construction management framework addressing the conclusions contained in this section, including the pursuit of extraordinary means to ensure that impacts of the construction work on businesses in the downtown area are minimized. Every effort should be made by the participating agencies to implement the construction recommendations in this section, recognizing that some of them may require regulatory or policy changes not within the control of the local governments.

While the alignment alternatives selected for further study in the DEIS represent the least construction impact, the South/North Light Rail project construction through the downtown on 5th and 6th Avenues still represents an enormous undertaking. To one extent or another, light rail construction would be occurring in nearly 60 blocks. The project will cost approximately $300 million and will, if the framework given below is adopted, require an overall total of at least 3 years to complete. Following is a general description of the work that is currently anticipated to be performed as part of the S/N downtown construction:

### Utilities

- Relocate manholes, access panels and vents in trackway.
- Relocate utilities from beneath the trackway, not always required but generally desired by the utilities and by Tri-Met.
- Replace waterlines within 100 feet of light rail with coated/bonded piping to meet standards of the Bureau of Water Works.
- Lower utility vaults and duct banks to match new grades or deeper paving structures.
- Install a new electrical duct bank for signals, street lighting, traction electrification and communications.
- Install catch basins and pipe storm drainage except on the North and Central Malls where those systems have been installed and the City has determined that most existing storm drainage pipes including those under the trackways may remain.

### Streets

- Install track slabs to light rail cross and longitudinal grade standards which allow no cross slope and only a very gradual longitudinal slope.
- Replace existing street, intersection slabs and paving to meet the new trackway grades.
- Replace and upgrade the existing paving on the South Mall and North and South entries to Central Mall standards.

**Sidewalks**

- Reconstruct all sidewalks except on North and Central Malls.
- Reconstruct sidewalks on the North and Central Malls for light rail platforms.
- Install strain pole foundations in 3 locations in each block face except on the North Mall which was constructed with suitable foundations.
- Remove certain shelters on the Central Mall including both shelters on LRT station blocks and rear block bus stop locations on all other blocks.

**Finishes**

- Install shelters, transit information and ticket machines.
- Install traffic signals and signs.
- Install overhead electrification systems.
- Install street trees.
- Install kiosks, benches, flower pots, and other miscellaneous street furniture.

**Scheduling/Phasing Construction**

Left to natural forces, construction of the downtown South/North Light Rail alignment could require four or five years. A goal should be established to complete all of the downtown construction work within a three year period. Further, goals should be established for completing work within each block as follows, recognizing that some variation may occur due to variations in the extent of utility work and that light rail station blocks, at least in the North and Central Mall may require longer than other blocks involving minimum sidewalk reconstruction.

North Mall: 3-4 months for each block

Central Mall: 4-5 months for each block

South Mall, North and South Entries: 6-7 months for each block

During the EIS process, scheduling and phasing options for the work will be carefully assessed. Consistent with achieving the goals for completing the overall project in 3 years and for completing work in any one block within the time limits set out above, consideration will be given to meeting some or all of the following with regard to the overall phasing of the work:

- Completing work in one segment of the project before commencing another, by for example completing the North Mall before beginning the Central Mall;

- Completing work on one street before commencing another; and

- Avoiding construction work concurrently on both sides of any single block, particularly buildings such as U.S. Bancorp Tower, Meier & Frank, Standard Insurance Plaza, Orbanco and a number of others with frontage on both 5th and 6th Avenues.

### Special Downtown Construction District

It is concluded that the entire area of construction of the South/North Light Rail Downtown alignment should be designated as a Special Downtown Construction District. This should geographically include all construction areas on light rail streets (Glisan/Irving, 5th, 6th and Harrison), adjacent cross streets, staging and storage areas in the downtown and streets where any off-mall bus improvements will be constructed concurrently with light rail.

### Construction Management

Because of the demanding design requirements and potential for construction impacts, a special organization should be established by Tri-Met to oversee light rail work within the Special Downtown Construction District. A Downtown Portland Light Rail Committee of Tri-Met, Metro, City of Portland and business community/property owner leadership representatives should oversee the design, development of contract documents and construction of all work within the Special Downtown Construction District. The project manager for the Downtown light rail work should meet regularly with the Committee. Sufficient funds with contingency should be budgeted to ensure quality of the work and prompt and adequate responses can be made to changed conditions during construction.

Alternative contracting methods for construction within the Portland CBD should be investigated. Because of the growing evidence that, on projects such as this, the lowest initial bid can result in the overall highest cost to the impacted community, it is recommended that consideration be given to selecting contractors by a Request for Proposals (RFP) process. Contractors should not only be selected based on their cost and financial strength, but also based on their experience and qualifications to address the unique requirements of this project. The local public agencies should work with state and federal agencies and the Associated General Contractors to develop an acceptable RFP process for selecting contractors that would assemble the best subcontractor team and carry out the project as a partner with the public and private interests. In addition, the general contractors should be selected early in the final design phase so that they are available to provide input as a part of the design team developing contract documents and requirements for the conduct of construction.

## Temporary Traffic Provisions

General traffic in the construction zones would have significant impact on the duration and cost of completing the work. Accordingly, it is essential that large portions of the light rail streets (Glisan/Irving, 5th, 6th and Harrison) be closed during construction. In addition, it is desirable to close cross streets whenever possible in order to enable the construction of entire intersections at one time rather than in halves. However, it is recognized that some cross streets cannot be closed and must be built in halves including streets crossing 5th and 6th such as Everett and Glisan, Burnside, Alder and Washington, Salmon and Taylor, Jefferson and Columbia and Market and Clay.

Light rail traffic on Yamhill and Morrison would also have to be maintained. Public access to parking garages and hotels such the Hilton Hotel, 6th Avenue Garage, U.S. Bancorp Tower Garage, Broadway Garage on the Central Mall and a number of other properties on other segments of the downtown alignment. On the North and Central Mall, most access conflicts have been removed. On the North and South Entries and on the South Mall, some loading zones, short term parking spaces and other special curbside uses may need to be permanently relocated to side streets. Also, as described for the North Mall above, revisions to private property may be needed in a limited number of cases to eliminate loading docks or other access that potentially conflicts with light rail. To the greatest extent possible, these changes should be made before construction begins in the affected area.

During construction, light rail and bus operations would have to be maintained. The buses on 5th and 6th Avenues will have to be rerouted as segments of those streets are closed for construction. One solution is to, for example, move buses from 5th Avenue onto 6th Avenue with temporary two-way bus operations when segments of 5th Avenue are closed for construction. Temporary two-way bus operations could be improved by delaying reconstruction of the 2-lane blocks in which light rail platforms will be located until one-way operations are restored. This strategy worked successfully during the original mall construction. It also could be supplemented by initiating, either temporary or permanent, bus service on designated off-mall transit streets before construction begins.

## Design and Contracting Requirements

The Contract Documents set out the requirements for conducting construction. As recommended above, the general contractor(s) should be a member of the design team as a party to developing these documents insuring practicality of and commitment to the program. Some of the specific elements that should be considered for inclusion in the documents are:

- Limiting the scope of the construction work, by for example retaining existing sidewalks in the North and Central Malls to the maximum extent;

- Adopting an innovative track stab design that limits its depth (14" to 16") to minimize potential conflicts with existing utilities;

- Including public and private utility work within the scope of work performed by the general contractor so that the utility work can be more close integrated with other construction activities, eliminating time separations, contingencies and the potential for dead time;

- Providing for double and triple shifting, as well as 7-day work weeks, consistent with requirements of adjacent businesses (hotels vs. retailing), manpower availability and critical schedule benefits;

- Re-examining the need to relocate utilities from beneath the light rail track slab and investigating alternative means of accessing the utilities in order to allow them to remain;

- Revising Bureau of Water Works requirements to replace existing lines with new coated and bonded water lines adjacent to and within 100 feet of light rail in addition to cathodic protection built into the light rail track design, using the standard for water line reconstruction used on the downtown Banfield Light Rail project work;

- Providing for contractor incentives and liquidated damages by offering payments to the contractor for early completion and requiring payments by the contractor for late performance;

- Maintaining any required vehicular traffic and all pedestrian access to ground floor entrances and businesses;

- Establishing milestone dates for completing segments in accordance with the phasing and scheduling plan;

- Providing for a Thanksgiving to New Years work moratorium, the Rose Festival and other special events as appropriate; and

- Maintaining site cleanliness and orderliness including separate contractors to perform extraordinary cleaning tasks that may fall outside of the general contractor(s) responsibility.

**Special Programs**

In addition to contract document requirements set out above, the project management organization (the downtown light rail committee described above) should consider undertaking a series of special programs during construction aimed at mitigating the impacts of light rail construction on businesses and properties in the downtown. These should include:

- Conducting regular weekly community meetings to identify, discuss and resolve current construction problems with the project management staff and property and business owners and residents directly affected by the construction

- Assigning several field personnel to facilitate direct on-site communications between the project management staff and business owners and residents directly affected by the construction;

- Establishing a telephone complaint system staffed with personnel assigned on a 24-hour basis and with adequate authority to direct on-site project management and/or contractor supervisory personnel to initiate immediate corrective action;

- Establishing an on-site field office for project management personnel;

- Maintaining a claims processing program that claims for private property damage caused by construction are promptly processed and settled;

- Monitoring the construction work and diligently administering a schedule to enable accurate advanced notification of future construction work on a block-by-block, business-by-business basis;

- Maintaining Downtown Community Relations and Marketing programs for participation in public programs to promote downtown businesses and provide accurate information, heading off inaccurate new stories about downtown construction problems;

- Considering special mitigation programs such as provisions for new parking to replace parking that is permanently or temporarily displaced by construction, reduced parking cost in the vicinity of construction and reduced transit fares to the downtown.

*i:\cler\dtog\cbd121.jf*

# Appendix A

## *Tier I Final Report*: Portland CBD Policy

## 2.5 Portland CBD Alignment Alternative

1. The Surface LRT Alternative on 5th and 6th Avenues within the Portland CBD will be developed in detail for further study within the Tier II DEIS.

2. Because of the critical function that the Portland CBD segment plays in the South/North Corridor, the study of the 5th/6th Avenue Surface Alignment is based upon the following principles:

   [a] To accommodate bus, light rail, general purpose automobile and pedestrian travel on the 5th/6th Avenue Transit Mall.

   [b] To develop for further evaluation Surface LRT Transit Mall design options that accommodate those modes of travel using both a three-lane and a four-lane configuration. The designs will address sidewalk widths, street trees and other amenities which are critical to a pedestrian friendly environment.

   [c] To retain automobile access on essential blocks that directly serve the Hilton Hotel, parking garages that enter and/or exit onto the Transit Mall and other important locations as determined through a collaborative process with interested downtown parties.

   [d] To establish the light rail station locations that will optimize both light rail access and automobile access on the Transit Mall. In general, those locations will be (1) near the PSU campus; (2) near City Hall; (3) near Pioneer Square; (4) south of Burnside; and (5) one or two stations to serve the Old Town, Union Station and north River District areas.

   [e] To work with the Downtown Portland community in developing the Surface LRT Transit Mall options for further study and in selecting the locally preferred alternative.

   [f] To develop the refined surface alternative(s) that address these principles for inclusion in the adoption of the *Detailed Definition of Alternatives Report*, and that if at that time it is concluded that a 5th/6th Avenue Surface Alignment cannot be developed that addresses those principles, other alternatives would be developed for further study within the Draft Environmental Impact Statement.

# Appendix B

# Downtown Portland Oversight Committee Membership and Charge

## Downtown Portland Oversight Committee

W. Charles Armstrong, Chairman, Chief Executive Officer, Bank of America, Chair
Mike Burton, Executive Officer, Metro
Earl Blumenauer, Commisioner, City of Portland
John R. Post, Deputy General Manager, Tri-Met
John Eskildsen, President, US Bank of Oregon
Greg Goodman, Vice President, City Center Parking
Jim Mark, Executive Vice President, Melvin Mark Properties
William S. Naito, Vice President, Norcrest China
Patrick Done, Manager, Pioneer Place
Tammy Hickel, General Manager, Nordstrom - Oregon Region
Lindsay Desrochers, Vice President, PSU Finance and Administration
Philip Kalberer, President, Kalberer Hotel Supply
Vern Rifer, Downtown Community Association
Jordan Schnitzer, Vice President, Harsch Investment
Susan Emmons, Executive Director, Northwest Pilot Projects
E. Kay Stepp, Portland Development Commission
Kerry Kincaid, Downtown Retail Council
Richard Michaelson, President, Planning Commission, City of Portland

## Downtown Portland Technical Committee

Greg Baldwin, Zimmer Gunsul Frasca
Gina Whitehill-Baziuk, Metro
Richard Brandman, Metro
David Calver, Tri-Met
Steve Dotterrer, City of Portland
Steffeni Gray, Association for Portland Progress
Steve Iwata City of Portland
Andrew Janssen, Tri-Met
Chris Kopca, Association for Portland Progress
Wendy Smith Novick, City of Portland
Karen Rabiner, City of Portland
Ross Roberts, Tri-Met
Roger Shiels, Shiels Obletz Johnsen
Leon Skiles, Metro
Dave Unsworth, Metro
Rick Williams, Association for Portland Progress

# Downtown Mall Surface LRT Alignment Study

## Purpose, Oversight Structure and Schedule

### Purpose

- To identify the most promising surface light rail transit (LRT) designs for a surface alignment through downtown Portland within the 5th/6th Avenue Transit Mall between Union Station in the north and I-405 in the south.

- Accomplish this task in accordance with the principles established in the *South/North Tier I Final Report*, including the need to accommodate bus, light rail, auto and pedestrian travel on the Transit Mall.

- Determine whether those most promising alternatives adequately addresses the established criteria. If the criteria are adequately addressed, then only the surface LRT alternative for downtown Portland will advance into the Tier II Draft Environmental Impact Statement (DEIS) for further study.

- If the criteria are not adequately addressed, then one or more other alternatives within downtown Portland will be developed along with the surface alternative for further study within the Tier II DEIS.

### Oversight Structure

Final determination of all alternatives to advance into the Tier II DEIS is made by Metro Council and the C-TRAN Board of Directors. Through their adoption of the *South/North Tier I Final Report* (December 22, 1994), Metro and C-TRAN have directed that a cooperative process be developed between the South/North Study's participating jurisdictions and the downtown Portland community to achieve the purpose described above. As such, Metro Councilor and Chair of the South/North Steering Group, Rod Monroe, has established the Downtown Alignment Oversight Committee and the Downtown Alignment Technical Committee. He has asked that the Oversight Committee be composed of a general cross-section of the downtown community including building owners, retail, business owners, residents from Union Station to Portland State University, Portland State University and the Association for Portland Progress. Their charges is described below:

- **Downtown Alignment Oversight Committee.** The purpose of the Downtown Alignment Oversight Committee is to:

  1) Guide the identification and development of the most promising surface alignments through downtown Portland within the 5th/6th Avenue Transit Mall;

2) Refine the criteria and measures to be used to evaluate the performance of the surface alignment alternatives;

3) Forward a recommendation to the South/North Steering Group on whether the alternatives adequately address those criteria or whether alignment alternatives in addition to the surface alignment on the 5th/6th Avenue Transit Mall should be advanced into the Tier II DEIS.

- **Downtown Alignment Technical Committee.** The purpose of the Downtown Alignment Technical Committee is to manage the preparation of the technical data and documentation that will be prepared to allow the refinement of the downtown surface alignment and that will be used to determine whether the surface alternatives adequately addresses the criteria established by the Oversight Committee. Membership on the Technical Committee includes Metro, Tri-Met and City of Portland staff, Association for Portland Progress Transportation Committee representatives and consultant support.

**Schedule**

It is anticipated that the majority of technical work required to complete the study will be by the end of April 1995. At that time, the Oversight Committee will determine whether there is adequate information to make an assessment of the surface LRT alternatives' performance. If the technical work appears to be adequate, then the decision-making process will be implemented. If the Oversight Committee determines that additional time and technical work would be beneficial in making the choices, then the schedule could be extended by approximately one month. The Oversight Committee is expected to meet every two to three weeks until the end of April 1995 with a total of about five or six meetings.

# Appendix C

# Downtown Portland Oversight Committee *Resolution of Findings and Recommendations*

**Downtown Portland Oversight Committee**

**Resolution of Findings and Recommendations Concerning the South/North Light Rail Alignment in Downtown Portland**

The Downtown Portland Oversight Committee was formed to:

- Identify the most promising surface light rail transit (LRT) designs for a surface alignment through downtown Portland within the 5th/6th Avenue Transit Mall between Union Station in the north and I-405 in the south.

- Accomplish this task in accordance with the principles established in the *South/North Tier I Final Report*, including the need to accommodate bus, light rail, auto and pedestrian travel on the Transit Mall.

- Determine whether those most promising alternatives adequately address the established criteria. If the criteria are adequately addressed, then only the surface LRT alternative for downtown Portland will advance into the Tier II Draft Environmental Impact Statement (DEIS) for further study.

- If the criteria are not adequately addressed, then one or more other alternatives within downtown Portland will be developed along with the surface alternative for further study within the Tier II DEIS.

First and foremost, because of our commitment to managing growth in the region in a way that preserves and improves our economic health and quality of life, the Downtown Portland Oversight Committee strongly supports the construction of the South/North Light Rail line through downtown Portland to Clackamas and Clark Counties. If funding is limited and the first construction segment cannot be a bi-state project, the Committee endorses the segment from the Blazer Arena, through downtown Portland, to Clackamas Town Center followed by a segment extending north.

Second, after working with the South/North Transit Corridor Study between February and June 1995 to develop and evaluate various options, the Downtown Oversight Committee finds that the following combination of alternatives meets the criteria established by the Committee and that more detailed study of other tunnel and surface street alignments is not warranted.

In addition, the Committee makes the following findings and recommendations to the South/North Steering Group. These findings and recommendations are documented in greater detail in the *Downtown Portland Oversight Committee: Central Business District South/North Light Rail Alignment Recommendations* report (June 1995).

**Findings**

The Downtown Portland Oversight Committee has found that the recommended alternative described below:

1) Reinforces the goals and objectives of the Central City Plan by supporting existing and future public and private development and investment in a manner that is consistent with commitments dating back to the Downtown Plan which was adopted over 20 years ago;

2) Maintains existing traffic and access patterns on 5th and 6th Avenues and within the Central Business District which supports existing and future businesses and retailing and adds to the activity and quality of the streets;

3) Provides fast and convenient transit service to existing and future downtown office and commercial uses, delivering the most people to where they want to go, maximizing the potential for increased transit ridership to and from the Central City;

4) Maintains the current pedestrian character of the Transit Mall by retaining the sidewalk widths, pedestrian amenities and trees currently in place on the Central and North Mall.

5) Improves the role of the Portland Transit Mall as the central pedestrian boulevard and transit spine in the Downtown and CBD by extending it southward and changing its emphasis to light rail;

6) Ensures the least construction impacts and cost by placing light rail in a location where sidewalk reconstruction, street grade changes, utility relocations and other reconstruction work can be minimized and the benefits of past investments in the North and Central Transit Mall utility relocation, strain pole foundations, sidewalk improvements and surface grade adjustments can be utilized;

7) Offers the opportunity to reconfigure the Central City transit circulation plan, utilizing off-mall service (approximately 25-35 buses per hour by 2015) on other streets, most significantly 10th and 11th Avenues, where development can benefit from improved transit connections to the regional system, Central City Streetcar and intra-downtown circulation within Fareless Square;

8) Provides good light rail access to the River District, University District and River Place/South Waterfront area;

9) Reinforces the multi-modal transportation center concept by providing the best opportunity for a good connection at Union Station between light rail, Amtrak, inter-and intra-City buses and future high speed rail;

10) Provides the opportunity to maintain the function of the Portland Transit Mall while improving its aesthetic environment by minimizing the 'sheet metal' affect while simultaneously maximizing its functional passenger capacity.

11) Creates the opportunity for coordination of construction and funding of improvements to the Central Mall and a funding source to insure that 5th and 6th Avenues can be enhanced to the original demanding Central Mall design standards; and,

12) Fulfills an objective of the Central Mall business community to enhance the pedestrian environment by reducing items on the street and increasing visibility of retailing along 5th and 6th Avenues by removing over half of the existing bus stops, shelters and related items.

**Recommendations**

The Downtown Portland Oversight Committee makes the following recommendations to the South/North Steering Group (illustrated in Figure 1):

1) That the South/North Light Rail project, between the Clackamas and Clark Counties be funded and constructed and that South/North Light Rail be extended through downtown Portland and if funding is limited and the first construction segment cannot be a bi-state project, the Committee endorses the segment from the Blazer Arena, through downtown Portland, to Clackamas Town Center followed by a segment extending north;

2) That the A-2 Central Mall, B-3 North Mall, C-1 South Mall, S-1 South Entry and N-1 and N-2 North Entry (which is the current preference of the Committee) options meets the criteria established by the Oversight Committee and should be selected for further study within the DEIS;

3) That convenient, readily accessible service be provided to all Central City districts including Riverplace, South Auditorium, Portland State University, Central Business District, Old Town/Chinatown and Union Station. Station stops at these locations should be established even if central city travel time for the LRT is lengthened.

4) That Tri-Met, the City of Portland, Metro and the Downtown Portland business community work to develop a plan for the central city streetcar and a central city transit circulation and facility plan that would spread transit access throughout more of the central city area based upon the results of the DEIS and completed in conjunction with the FEIS.

5) That a high level of urban design standard be developed and implemented guiding the design and construction of the light rail alignment throughout the central city area;

6) That a detailed construction management and mitigation plan be developed for the central city area that would create a *Downtown Portland Construction District.* In addition, a Downtown Portland LRT Committee should be formed to oversee the design, development of contract documents and construction of all work within the Special Downtown Portland

Construction District. Alternative contracting methods should be employed so that a contractor would be selected based upon their experience and qualifications to address the unique requirements of this project (including but not limited to the need to avoid disruption to adjacent businesses, minimize the duration of construction and avoiding displacements), which could mean that the low bidder may not be selected. Finally, the project should implement a temporary traffic management plan and a variety of special programs to mitigate the construction impacts on the central city.

These methods should be based on criteria to be established by the Downtown Portland LRT Committee. Criteria to be considered include a) negotiated rather than low bid contracting, b) incentive and penalty clauses, and c) use of a single prime contractor for LRT and utility construction.

7) Construction time be limited to three months per block in the North Mall, four months per block in the Central Mall, and six months per block in the South Mall and south portals. Major parallel sections of SW 5th and 6th Avenues in the Central Mall shall not be under construction at the same time.

8) The entire central city construction plan, including major utility reconstruction, shall be approved by City Council, such action having been taken after a public hearing.

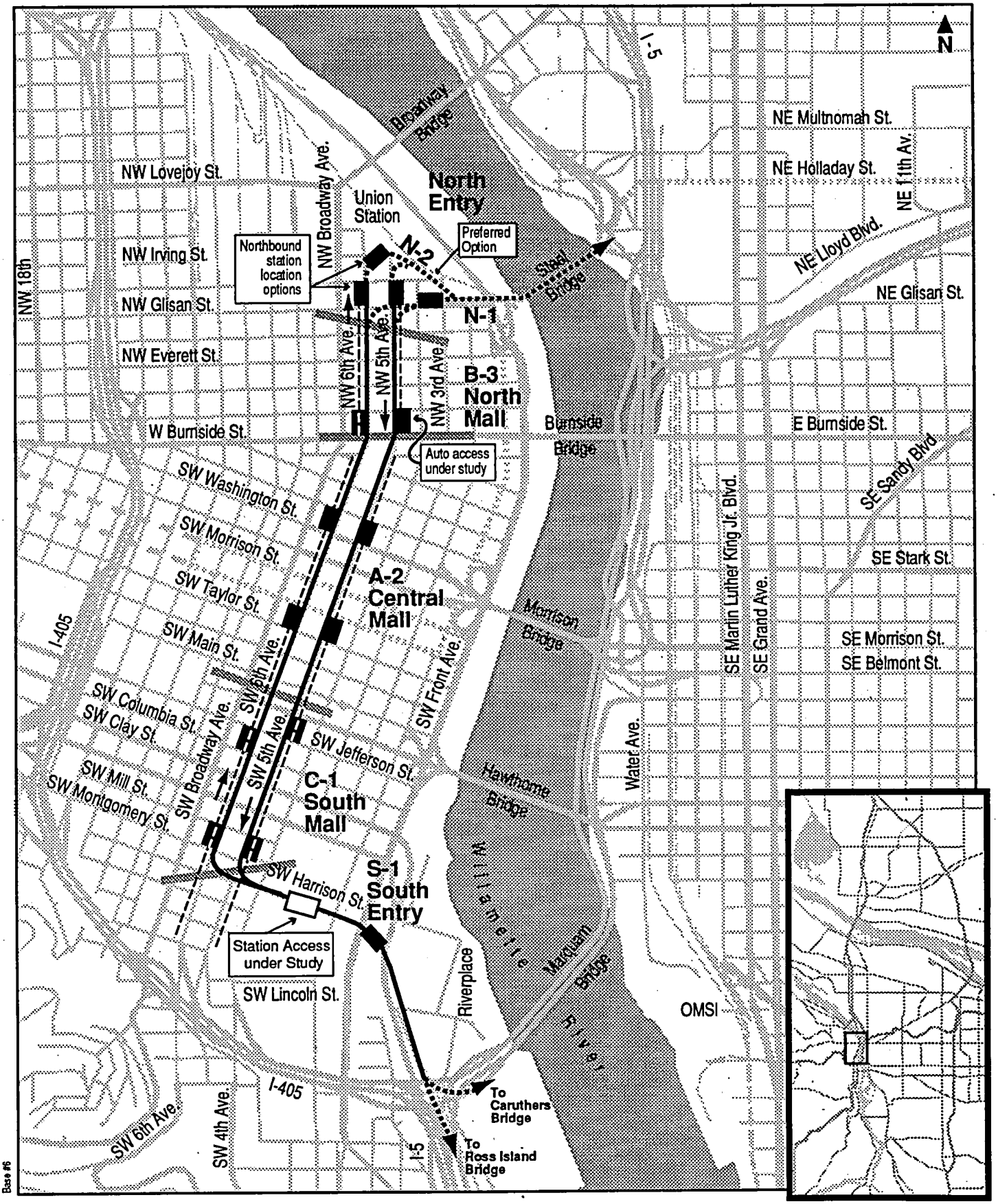
Adopted

June 29, 1995

W. Charles Armstrong, Chair

June 29, 1995

t:\dtresol.rev




South North Transit Corridor Study

**Light Rail Design Option:**

# Downtown Portland

**5th/6th Avenue Surface Couplet**

November 1995

- Light Rail Transit (LRT) alignment
- LRT alignment options
- MAX
- Westside LRT
- Existing railroad
- Mall auto access
- Station with no auto access on mall
- Station with auto access on mall

**Note:** Alignment, station and park and ride locations are currently under study and may change.

0 1/8 1/4

MILE

Downtown Portland Oversight Committee

# Appendix D

# South/North Project Management Group Downtown Portland Recommendation

600 NORTHEAST GRAND AVENUE | PORTLAND, OREGON 97232 2736
TEL 503 797 1700 | FAX 503 797 1797

METRO

Date: October 27, 1995

To: South/North Steering Group

From: Richard Brandman, Chair
South/North Project Management Group

Re: Recommendations for Portland Central Business District

The purpose of this memorandum is to advise you that on October 19, 1995 the South/North Project Management Group (PMG) unanimously endorsed the Downtown Portland Oversight Committee's recommendations concerning light rail alignments in the Portland Central Business District (CBD) to be advanced into the Draft Environmental Impact Statement (CBD) for further study.

The Oversight Committee's recommendation, adopted unanimously on June 30, 1995, and its accompanying technical findings report, are enclosed. The Oversight Committee and its technical committee spent six months thoroughly evaluating a wide range of options for providing light rail transit (LRT) on the mall while accommodating buses, automobiles and pedestrians. The Committee adopted a wide range of criteria, identified in the report, and examined each of the options based upon those criteria. The Committee also considered public comment received at community meetings and written comments received during the study period.

Both the Oversight Committee and the PMG found that the recommended options in downtown Portland meet those criteria and would provide for an efficient transit system while preserving and enhancing the economic health and livability of downtown Portland. In addition, the PMG echoed the recommendation of the Oversight Committee that as the project moves toward construction Tri-Met needs to develop and implement a construction management plan that minimizes both the duration and extent of construction impacts within the downtown Portland. The report identifies a wide range of elements that should be considered for inclusion within the construction management plan.

The two Committees also reviewed previous actions taken by the region to narrow the downtown alignment to surface operations on the 5th/6th Avenue Transit Mall and found that no other surface street or subway alignment within downtown Portland provides a promising alternative to the Mall alignment. Therefore, both Committees recommend that only the surface alignment on the Transit Mall be forwarded into the DEIS for further study.

I look forward to discussing with you these recommendations and the technical work that lead to their adoption. If you have any questions concerning downtown Portland prior to the Steering Group Work Session (Thursday, November 2, 1995, 7:30 - 10:00 a.m.) please contact me at 503/797-1749.

Attachments

*i:\cl\mtgs\sg1026.mmo.jf*

Recycled Paper

# Appendix E

# South/North Citizens Advisory Committee Downtown Portland Recommendation

South North Transit Corridor Study

**South/North**
*Citizen Advisory Committee*

*Rick Williams*
*Chair*

*Karen Ciocia*
*Vice-Chair*

*Lynn Bonner*

*Bob Elliott*

*Jane Floyd*

*Giles Gibson*

*Dorothy Hall*

*Winzel Hamilton*

*Frank Howatt*

*Champ Husted*

*Jim Justice*

*Stanley Lewis*

*Gina Maloney*

*Michael Mulkey*

*Irene Park*

*Larry Quilliam*

*Dellan Redjou*

*Marc Veneroso*

*Barbara Yasson*

*Staff*
*Gina Whitehill-Baziuk*
*Metro*
*503/797-1746*

November 10, 1995

To: Rod Monroe, Chair
South/North Steering Group

From: Rick Williams, Chair
South/North Citizens Advisory Committee

Re: **Downtown Portland Alignment Alternative Recommendation**

Over the past year, the South/North Citizen Advisory Committee (CAC) has been receiving technical information and public testimony concerning a light rail alignment within downtown Portland. On Thursday, November 9, 1995, the CAC adopted its recommendation to the South/North Steering Group for the light rail alignment within downtown Portland that should be studied further within the Draft Environmental Impact Statement (DEIS). The recommendation is the result of the Committee's: 1) review of the technical analysis prepared by project staff; 2) review of the recommendations adopted by the Downtown Portland Oversight Committee and the South/North Project Management Group; and, 3) consideration of public comment.

In forming its recommendation, the CAC first discussed the proposed options for the surface alignment on the 5th/6th Avenue Transit Mall. The range of options considered is outlined in the Oversight Committee's *Portland Central Business District South/North Light Rail Alignment Recommendations* report. The CAC agreed with the Oversight Committee's proposal and voted to recommend the same Transit Mall alignment options to the Steering Group for further study within the DEIS. Following is a summary of the alignment(s) recommended by the CAC for each segment of downtown Portland:

- **Central Mall.** *A-2*: This segment is between Madison Street and Burnside Street. The recommended option would place light rail in the center lane of 5th and 6th Avenues. The center lane would be shared between light rail vehicles and buses. The left lane would be dedicated to general automobile travel (closed at light rail station locations). The right lane would be available for exclusive bus use.

- **North Mall.** *B-3*: This segment is north of Burnside Street to either Glisan or Irving Street near Union Station. The preferred option

**South/North**
*Citizen Advisory Committee*

*Rick Williams*
*Chair*

would place light rail in the left lane of 5th and 6th Avenues. The right lane would be shared by buses and automobiles.

- **South Mall.** *C-1*: This segment is south of Madison Street to the Portland State University Campus at Harrison Street. The recommended option would place light rail generally on the left side of 5th and 6th Avenues. Buses and automobiles would share two or three lanes (depending upon the block) to the right of the light rail tracks.

- **North Entry.** *N-1 and N-2*: This segment would connect the Mall alignment with the Steel Bridge. N-1 would place light rail in the left lane of Glisan Street and would retain two lanes for automobile traffic on the right. N-2 would extend the light rail alignment past Union Station near Irving Street.

- **South Entry.** *S-1*: This segment connects the Mall alignment with Riverplace. The preferred option would place light rail in a median within Harrison Street.

Second, the CAC considered whether any other option, in addition to the Surface 5th/6th Avenue Transit Mall alignment alternative, should be studied further within the DEIS. The CAC concluded that the proposed Transit Mall alignment adequately addresses the principles and criteria established by Metro Council in December 1994 and by the Downtown Oversight Committee in March 1995. Further, the CAC discussed other surface street alignment options and other subway options and concluded that there were no other promising alignment alternatives within downtown Portland that should be advanced into the DEIS for further study. Therefore, the CAC recommends to the Steering Group that only the Surface Transit Mall alignment alternative with the design options outlined above be carried forward into the DEIS for further study.

In making its recommendations, the CAC noted the wide breadth and high quality of technical analysis that was conducted by the project staff. The CAC was also impressed by the efforts made by the project to involve the downtown community in the study process. Finally, the CAC found that the high level of public comment and attention to the downtown Portland alignment accurately reflects the level of importance of the segment to the downtown community, to the transit system and to the region.

In conclusion, I would like to thank you for your consideration of these recommendations and I look forward to discussing the recommendations and the rationale behind them at your meeting on November 20, 1995. If you have any questions about CAC recommendations prior to that meeting, please contact me at 503/282-3949.

cc: South/North Project Management Group

# Appendix F

# South/North Steering Group *Resolution of Findings and Recommendations*

# I. RESOLUTION OF FINDINGS AND RECOMMENDATIONS CONCERNING THE SOUTH/NORTH LIGHT RAIL ALIGNMENT IN DOWNTOWN PORTLAND

## Introduction

In December 1994, the Metro Council and C-TRAN Board of Directors adopted the *South/North Tier I Final Report.* That report identified a surface alternative on the transit mall as the preferred Downtown Portland Light Rail Alignment that should be developed for further study in the Draft Environmental Impact Statement (DEIS). The report further determined that prior to initiating work on the DEIS, the design of the 5th/6th Avenue alignment should be developed in detail to determine whether that alignment adequately addresses various principles also outlined in the report.

The Downtown Portland Oversight Committee was formed in response to those principles to ensure downtown Portland community involvement in developing the surface light rail Transit Mall alignment options for further study and in selecting the locally preferred alternative. In particular, the charge of the oversight committee was to:

- Identify the most promising surface light rail transit (LRT) designs for a surface alignment through downtown Portland within the 5th/6th Avenue Transit Mall between Union Station in the north and I-405 in the south.

- Accomplish this task in accordance with the principles established in the *South/North Tier I Final Report*, including the need to accommodate bus, light rail, auto and pedestrian travel on the Transit Mall.

- Determine whether those most promising alternatives adequately address the established criteria. If the criteria are adequately addressed, then only the surface LRT alternative for downtown Portland will advance into the Tier II Draft Environmental Impact Statement (DEIS) for further study.

- If the criteria are not adequately addressed, then one or more other alternatives within downtown Portland will be developed along with the surface alternative for further study within the Tier II DEIS.

The findings and recommendations of the Oversight Committee were unanimously adopted on June 29, 1995 and are documented in: 1) *Resolution of Findings and Recommendations Concerning the South/North Light Rail Alignment in Downtown Portland: Downtown Portland Oversight Committee*; and 2) *Central Business District, Portland, Oregon, South/North Light Rail Alignment Recommendations Report.* Recommendations for the Downtown Portland Alignment were also adopted by the South/North Project Management Group (PMG) on October 19, 1995 and by the South/North Citizens Advisory Committee (CAC) on November 9, 1995. Those findings and recommendations form the basis of the South/North Steering Group's recommendation for downtown Portland.

In summary, the South/North Steering Group finds that the following combination of alternatives meets the principles established by the Metro Council and the C-TRAN Board and that more detailed study of other tunnel and surface street alignments is not warranted. In addition, the Steering Group makes the following findings and recommendations to the Metro Council. These findings and recommendations are documented in greater detail in the following chapters of this report.

**Findings**

The South/North Steering Group has found that the recommended surface LRT Transit Mall alternative and design options:

1) Reinforce the goals and objectives of the Central City Plan by supporting existing and future public and private development and investment in a manner that is consistent with commitments dating back to the Downtown Plan which was adopted over 20 years ago;

2) Maintain existing traffic and access patterns on 5th and 6th Avenues and within the Central Business District (CBD) which supports existing and future businesses and retailing and adds to the activity and quality of the streets;

3) Provide fast and convenient transit service to existing and future downtown office and commercial uses, delivering the most people to where they want to go, maximizing the potential for increased transit ridership to and from the Central City;

4) Maintain the current pedestrian character of the Transit Mall by retaining the sidewalk widths, pedestrian amenities and trees currently in place on the Central and North Mall;

5) Improve the role of the Portland Transit Mall as the central pedestrian boulevard and transit spine in the Downtown and CBD by extending it southward and changing its emphasis to light rail;

6) Ensure the least construction impacts and cost by placing light rail in a location where sidewalk reconstruction, street grade changes, utility relocations and other reconstruction work can be minimized and the benefits of past investments in the North and Central Transit Mall utility relocation, strain pole foundations, sidewalk improvements and surface grade adjustments can be utilized;

7) Offer the opportunity to reconfigure the Central City transit circulation plan, utilizing off-mall service (approximately 25-35 buses per hour by 2015) on other streets, most significantly 10th and 11th Avenues, where development can benefit from improved transit connections to the regional system, Central City Streetcar and intra-downtown circulation within Fareless Square;

8) Provide good light rail access to the River District, University District and River Place/South Waterfront area;

9) Reinforce the multi-modal transportation center concept by providing the best opportunity for a good connection at Union Station between light rail, Amtrak, inter- and intra-city buses and future high speed rail;

10) Provide the opportunity to maintain the function of the Portland Transit Mall while improving its aesthetic environment by minimizing the 'sheet metal' affect while simultaneously maximizing its functional passenger capacity;

11) Create the opportunity for coordination of construction and funding of improvements to the Central Mall and a funding source to insure that 5th and 6th Avenues can be enhanced to the original demanding Central Mall design standards; and,

12) Fulfill an objective of the Central Mall business community to enhance the pedestrian environment by reducing items on the street and increasing visibility of retailing along 5th and 6th Avenues by removing over half of the existing bus stops, shelters and related items.

**Recommendations**

The South/North Steering Group makes the following recommendations to the Metro Council (illustrated in Figure 1):

1) That the South/North Light Rail project, between Clackamas and Clark Counties, be funded and constructed and that South/North Light Rail be extended through downtown Portland;

2) That the A-2 Central Mall, B-3 North Mall, C-1 South Mall, S-1 South Entry and N-1 and N-2 North Entry options meet the principles established by the Metro Council and should be selected for further study within the DEIS;

3) That convenient, readily accessible service be provided to all Central City districts including Riverplace, South Auditorium, Portland State University, Central Business District, Old Town/Chinatown and Union Station. Station stops at these locations should be established even if central city travel time for the LRT is lengthened. (The number and location of stations will be determined following publication of the DEIS and prior to publication of the FEIS.)

4) That Tri-Met, the City of Portland, Metro and the Downtown Portland business community work to develop a plan for the central city streetcar and a central city transit circulation and facility plan that would spread transit access throughout more of the central city area based upon the results of the DEIS and completed in conjunction with the FEIS.

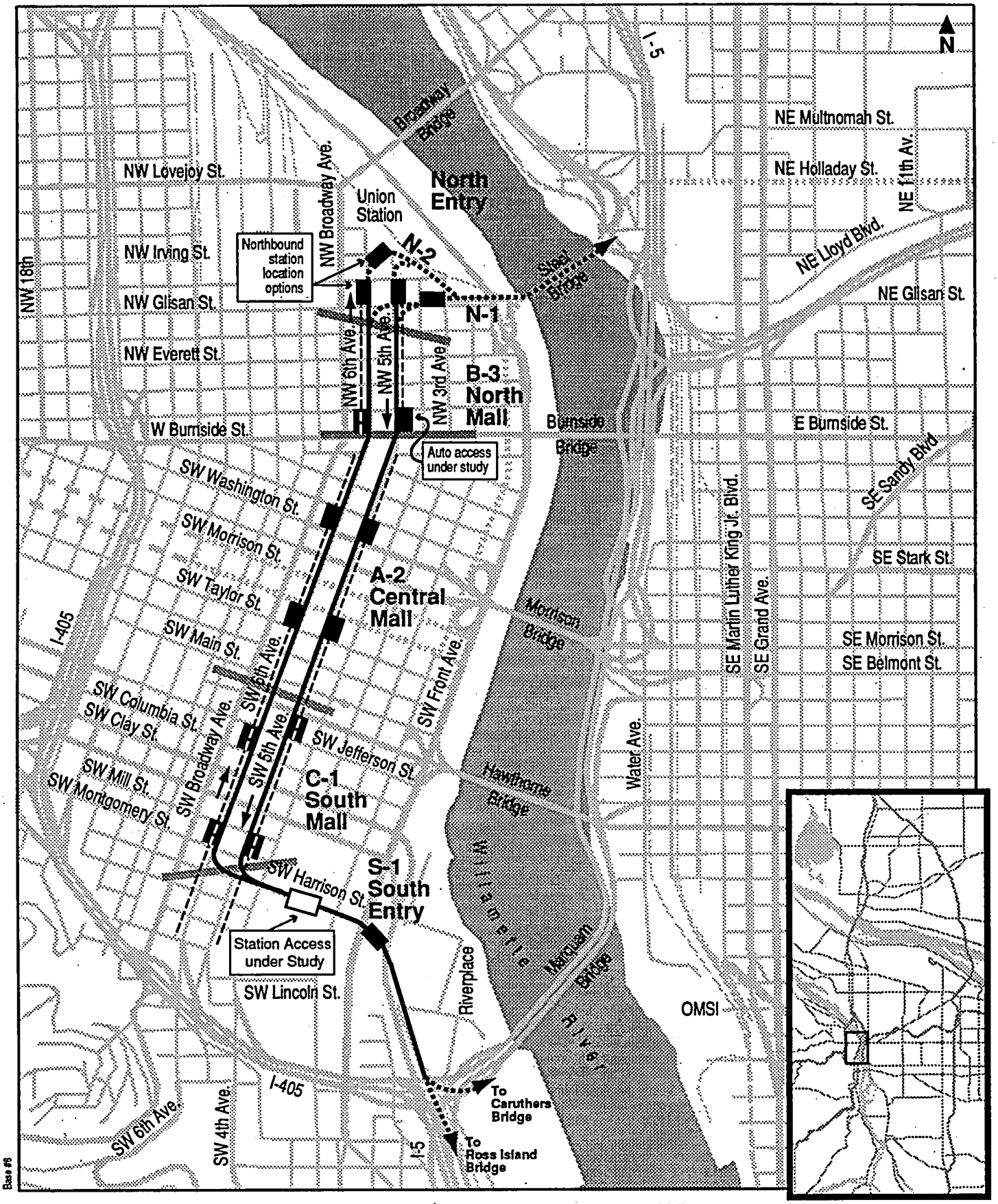
5) That a high-level, urban design standard be developed and implemented guiding the design and construction of the light rail alignment throughout the central city area;

6) That a detailed construction management and mitigation plan be developed for the central city area that would create a *Downtown Portland Construction District.* In addition, a Downtown Portland LRT Committee should be formed to oversee the design, development of contract documents and construction of all work within the Special Downtown Portland Construction District. Alternative contracting methods should be employed so that a contractor would be selected, based upon their experience and qualifications, to address the unique requirements of this project (including but not limited to the need to avoid disruption to adjacent businesses, to minimize the duration of construction and to avoid displacements); consequently, the low bidder may not be selected. Finally, the project should implement a temporary traffic management plan and a variety of special programs to mitigate the construction impacts on the central city.

   These methods should be based on criteria to be established by the Downtown Portland LRT Committee. Criteria to be considered include: a) negotiated rather than low-bid contracting; b) incentive and penalty clause; and, c) use of a single prime contractor for LRT and utility construction.

7) Construction time should be limited to three months per block in the North Mall, four months per block in the Central Mall, and six months per block in the South Mall and south portals. Major parallel sections of SW 5th and 6th Avenues in the Central Mall should not be under construction at the same time.

8) The entire central city construction plan, including major utility reconstruction, should be approved by Portland City Council, such action having been taken after a public hearing.




South North Transit Corridor Study

**Recommended Light Rail Design Options:**

# Downtown Portland

**5th/6th Avenue Surface Couplet**

November 1995

Figure A

- Light Rail Transit (LRT) alignment
- LRT alignment options
- MAX
- Westside LRT
- Existing railroad
- Mall auto access
- Station with no auto access on mall
- Station with auto access on mall

**Note:** Alignment, station and park and ride locations are currently under study and may change.

0 1/8 1/4 MILE

**Downtown Portland Oversight Committee**

# Appendix G

# Participating Jurisdiction Recommendations

## RESOLUTION 95-11-98

**RESOLUTION 95-11-98 OF THE TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON (TRI-MET) ENDORSING THE STEERING GROUP RECOMMENDATIONS ON DESIGN OPTION NARROWING FOR THE SOUTH/NORTH TRANSIT CORRIDOR STUDY**

**WHEREAS,** In April 1993, the Metro Council adopted Resolution No. 93-1784 and the C-TRAN Board of Directors adopted Resolution BR-93-004 selected the Milwaukie and I-5 North Corridors as the region's next high-capacity transit priority for study and combined them into the South/North Transit Corridor to be studied within a federal Draft Environmental Impact Statement; and

**WHEREAS,** In October 1993, the Federal Transit Administration approved the South/North application to initiate Alternatives Analysis/Draft Environmental Impact Statement and the South/North Preliminary Work Plan, and issued notification of intent in the *Federal Register* to publish a South/North Environmental Impact Statement; and

**WHEREAS,** The role of the Steering Group in terminus and alignment alternative narrowing process is to forward its recommendations to participating jurisdictions for their consideration, that participating jurisdictions are to forward their commendations to the C-TRAN Board of Directors and the Metro Council who are to make the final determination of the alternatives to advance into the Draft Environmental Impact Statement for further study; and

**WHEREAS,** The role of the South/North Steering Group in the design option narrowing for the selected terminus and alignment alternatives is to consider recommendations from the South/North Project Management Group and Citizen Advisory Committee and to finalize which design option(s) will advance into the Draft Environmental Impact Statement for further study; and

**WHEREAS,** In December 1994, the Metro Council adopted Resolution No. 94-1989 and the C-TRAN Board of Directors adopted Resolution No. BR-94-011 which identified the Phase One terminus alternatives and selected alignment alternatives to advance into the Draft Environmental Impact Statement for further study; and

**WHEREAS,** In December 1994 within the same resolution the Metro Council and the C-TRAN Board of Directors also determined that within the Portland central business district, a surface light rail transit alternative on 5th and 6th Avenues shall be developed based upon several principles. if prior to initiation of the Draft Environmental Impact Statement it is concluded that a 5th/6th Avenue alignment cannot be developed that addresses those principles, other alternatives will be developed for further study in the Draft Environmental Impact Statement; and

**WHEREAS,** In March 1995, the South/North Steering Group determined that both the Caruthers and Ross Island Crossing alternatives and that both the I-5 and Interstate Avenue alignment alternatives would advance into the Draft Environmental Impact Statement for further study; and

**WHEREAS,** In August 1995, the C-TRAN Board of Directors adopted resolution No. 95-048 which amended the Phase One northern terminus from the vicinity of 99th Avenue in Hazel Dell, Washington to the Veterans Administration Hospital/Clark College in Vancouver, Washington; and

**WHEREAS,** The alignment design options currently under study have been developed and evaluated based upon the criteria and measures from the *Evaluation Methodology Report* and documented within various technical memoranda, including the *South/North Design Option Narrowing Report* and the *Design Option Briefing Document*; and

**WHEREAS,** A comprehensive public involvement program for the design option narrowing process was developed and implemented by the South/North Study that included, but was not limited to, numerous community meetings, a 45-day public comment period, public meetings for the Steering Group to receive oral comment and an ongoing Citizens Advisory Committee that provided regular public comment opportunities; and

**WHEREAS,** Various options for a 5th/6th Avenue surface light rail alignment were evaluated by the Downtown Portland Oversight Committee which determined that the recommended design option on 5th/6th Avenues adequately addresses the criteria established by Metro Council, the C-TRAN Board of Directors and the Oversight Committee and should therefore be exclusively studied further within the Draft Environmental Impact Statement; and

**WHEREAS,** In October and November 1995, the Project Management Group and the Citizens Advisory Committee formed independent design option narrowing recommendations and downtown Portland alignment alternative recommendations and forwarded them to the Steering Group for consideration; and

**WHEREAS,** In November 1995, the Steering Group adopted the South/North *Design Option Narrowing Final Report* which identifies the design options that best meet the project's adopted goal and objectives and that will advance into the Draft Environmental Impact Statement for further study; and

**WHEREAS,** In November 1995, the Steering Group adopted the proposed light rail alignment design for 5th/6th Avenues in downtown Portland; and

**NOW, THEREFORE BE IT RESOLVED,** That the Tri-Met Board supports the Steering Group's recommendation that the downtown Portland design option which would generally retain current automobile access and pedestrian facilities, which would generally provide for a lane of joint bus and light rail operations and a lane of exclusive bus operations on 5th/6th Avenues adequately addresses the criteria

established by Resolution No. 94-1989 as adopted by the Metro Council and the C-TRAN Board of Directors, and should therefore be exclusively studied further within the Draft Environmental Impact Statement and the Steering Group *South/North Tier I Final Recommendation Report* should be adopted by Metro Council as the *South/North Downtown Portland Tier I Final Report.*
And further,

**NOW, THEREFORE BE IT RESOLVED,** That the Tri-Met Board supports the design options selected by the South/North Steering Group for further study within the Draft Environmental Impact Statement as described in the *Design Option Narrowing Final Report* which are generally as follows:

1. *Minimum Operable Segments.* (a) A full-length project from the vicinity of the Clackamas Regional Center, through downtown Milwaukie, Portland and Vancouver, to the vicinity of the Veterans Administration Hospital/Clark College; (b) a bi-state minimum operable segment from the vicinity of downtown Milwaukie/Market Place station and park-and-ride lot to the vicinity of the Veterans Administration Hospital/Clark College; and (c) three Oregon-only minimum operable segments each with a southern terminus in the vicinity of the Clackamas Regional Center and a northern terminus at : a) the vicinity of the Rose Quarter; b) the vicinity of the Edgar Kaiser Medical Center; or, c) the vicinity of the Expo Center.

2. *South Terminus.* North of Clackamas Town Center alignment with a Sunnyside Park-and-Ride Terminus east of I-205; and, South of Clackamas Town Center alignment with an 93rd Avenue Town Center Area Terminus.

3. *Railroad Avenue/Highway 224.* Alignment adjacent to Railroad Avenue.

4. *Downtown Milwaukie.* McLoughlin Boulevard/Main Street with a Monroe Street Alignment; and, Southern Pacific Branch Line with a Monroe Street alignment.

5. *Ross Island Crossing.* North Ross Island Crossing alignment with a West of McLoughlin Boulevard sub-option.

6. *Caruthers Crossing and Southeast Portland.* Caruthers Modified with a West of Brooklyn Yards alignment.

7. *Steel Bridge to Kaiser.* East I-5/Kerby Avenue alignment; and, Wheeler Avenue/Russell Avenue alignment.

8. *North Portland.* All-I-5 alignment; and, All-Interstate Avenue. (Following completion of the Results Reports for the Draft Environmental Impact Statement, staff will report back to the Project Management Group, the Citizen's Advisory Committee and the Steering Group to determine which crossover warrants further study in the environmental impact statement.

9 *Hayden Island.* West of I-5 (under ramps).

10. *Columbia River Crossing.* Low-level lift span.

11. *Downtown Vancouver.* Two-way on Washington Street.

Dated: November 22, 1995

Presiding Officer

Attest:

Recording Secretary

Approved as to Legal Sufficiency:

Legal Department

# RESOLUTION NO. 35473

Adopt the South/North Steering Group's design option recommendations for further study within the Tier II, Draft Environmental Impact Statement Process. (Resolution)

WHEREAS, in April 1993, the Metro Council adopted Resolution No 93-1784 and the C-TRAN Board of Directors adopted Resolution No. BR-93-9404 which selected the Milwaukie and I-5 North Corridors as the region's next high-capacity transit priority for study and combined them into the South/North Transit Corridor to be studied within a federal Draft Environmental Impact Statement; and

WHEREAS, in October 1993, the Federal Transit Administration approved the South/North application to initiate Alternatives Analysis/Draft Environmental Impact Statement and the South/North Preliminary Work Plan, and issued notification of intent in the *Federal Register* to publish a South/North Environmental Impact Statement; and

WHEREAS, the role of the South/North Steering Group in terminus and alignment alternative narrowing process is to forward its recommendations to participating jurisdictions for their consideration, that participating jurisdictions are to forward their commendations to the C-TRAN Board of Directors and the Metro Council who are to make the final determination of the alternatives to advance into the Draft Environmental Impact Statement for further study; and

WHEREAS, the role of the South/North Steering Group in the design option narrowing for the selected terminus and alignment alternatives is to consider recommendations from the South/North Project Management Group and Citizen Advisory Committee and to finalize which design option(s) will advance into the Draft Environmental Impact Statement for further study; and

WHEREAS, in December 1994, the Metro Council adopted Resolution No. 94-1989 and the C-TRAN Board of Directors adopted Resolution No. BR-94-011 which identified the Phase One terminus alternatives and selected most of the alignment alternatives to advance into the Draft Environmental Impact Statement for further study; and

WHEREAS, in December 1994 within the same resolution the Metro Council and the C-TRAN Board of Directors also determined that within the Portland central business district, a surface light rail transit alternative on 5th and 6th Avenues shall be developed based upon several principles and that if prior to initiation of the Draft Environmental Impact Statement it is concluded that a 5th/6th Avenue alignment cannot be developed that addressed those principles, other alternatives will be developed for further study in the Draft Environmental Impact Statement; and

WHEREAS, in March 1995, the South/North Steering Group determined that both the Caruthers and Ross Island Crossing alternatives and that both the I-5 and Interstate Avenue alignment alternatives would advance into the Draft Environmental Impact Statement for further study; and

WHEREAS, in August 1995, the C-TRAN Board of Directors adopted resolution No. 95-048 which amended the Phase One northern terminus from the vicinity of 99th

35473

Avenue in Hazel Dell, Washington to the Veterans Administration Hospital/Clark College in Vancouver, Washington; and

WHEREAS, the alignment design options currently under study have been developed and evaluated based upon the criteria and measures from the *Evaluation Methodology Report* and documented within various technical memoranda, including the *South/North design Option Narrowing Report* and the *Design Option Briefing Document*; and

WHEREAS, a comprehensive public involvement program for the design option narrowing process was developed and implemented by the South/North Study that included, but was not limited to, numerous community meetings, a 45-day public comment period, public meetings for the Steering Group to receive oral comment and an ongoing Citizens Advisory Committee that provided regular public comment opportunities; and

WHEREAS, various options for a 5th/6th Avenue surface light rail alignment were evaluated by the Downtown Portland Oversight Committee which determined that the recommended design option on 5th/6th Avenues adequately addresses the criteria established by Metro Council, the C-TRAN Board of Directors and the Oversight Committee and should therefore be exclusively studied further within the Draft Environmental Impact Statement; and

WHEREAS, in October and November 1995, the Project Management Group and the Citizens Advisory Committee formed independent design option narrowing recommendations and downtown Portland alignment alternative recommendations and forwarded them the Steering Group for consideration; and

WHEREAS, in November 1995, the Steering Group adopted the *South/North Design Option Narrowing Final Report* (Exhibit A) which identifies the design options that best meet the project's adopted goal and objectives and that will advance into the Draft Environmental Impact Statement for further study; and

WHEREAS, in November 1995, the Steering Group adopted the proposed light rail alignment for 5th/6th Avenues in downtown Portland;

THEREFORE, BE IT RESOLVED, by the Council of the City of Portland, a municipal corporation of the State of Oregon, has determined that the downtown Portland design option which would generally retain current automobile access and pedestrian facilities, which would generally provide for a lane of joint bus and light rail operations and a lane of exclusive bus operations on 5th/6th Avenues adequately addresses the criteria established by Resolution No. 94-1989 as adopted by the Metro Council and the C-TRAN Board of Directors and shall therefore be exclusively studied further within the Draft Environmental Impact Statement, and that Exhibit B is adopted as the *South/North Downtown Portland Tier I Final Report*; and

BE IT FURTHER RESOLVED, that the Council supports amending the South/North Phase One northern terminus to be in the vicinity of the Veterans Administration Hospital and Clark College in Vancouver, Washington; and

BE IT FURTHER RESOLVED, that the Council concurs with the design options selected by the South/North Steering Group for further study within the Draft Environmental

35473 !

Impact Statement as described in the *Design Option Narrowing Final Report* (Exhibit A) which are generally as follows:

1. *Minimum Operable Segments*. (a) A full-length project form the vicinity of the Clackamas Regional Center, through downtown Milwaukie, Portland and Vancouver, to the vicinity of the Veterans Administration Hospital/Clark College; (b) a bi-state minimum operable segment form the vicinity of downtown Milwaukie/Market Place station and park-and-ride lot to the vicinity of the Veterans Administration Hospital/Clark College; and (c) three Oregon-only minimum operable segments each with a southern terminus in the vicinity of the Clackamas Regional Center and a northern terminus at: a) the vicinity of the Rose Quarter; b) the vicinity of the Edgar Kaiser Medical Center; or, c) the vicinity of the Expo Center.
2. *South Terminus*. North of Clackamas Town Center alignment with a Sunnyside Park-and-Ride Terminus east of I-205; and, South of Clackamas Town Center alignment to S.E 93rd Avenue Clackamas Town Center area Terminus.
3. *Railroad Avenue/Highway 224*. Alignment adjacent to Railroad Avenue.
4. *Downtown Milwaukie*. McLaughlin Boulevard/Main Street with a Monroe Street Alignment; and, Southern Pacific Branch Line with a Monroe Street alignment.
5. *Ross Island Crossing*. North Ross Island Crossing alignment with a West of McLoughlin Boulevard sub-option.
6. *Caruthers Crossing and Southeast Portland*. Caruthers Modified with a West of Brooklyn Yards alignment.
7. *Steel Bridge to Kaiser*. East 1-5/Kerby Avenue alignment; and, Wheeler Avenue/Russell Avenue alignment.
8. *North Portland*. All-I-5 alignment; and, All-Interstate Avenue (Metro work with Tri-Met and City staff to evaluate, as soon as the technical data for the DEIS is available, which North Portland crossover option warrants further study; and staff will report back to the South/North Project Management Group, Citizen Advisory Committee and Steering Group).
9. *Hayden Island*. West of I-5 (under ramps).
10. *Columbia River Crossing*. Low-level lift span.
11. *Downtown Vancouver*. Two-way on Washington Street; and

Adopted by the Council, DEC 0 7 1995

Commissioner Earl Blumenauer
Stephen Iwata

By Auditor of the City of Portland
Deputy

December 7, 1995

# Appendix H

# Metro Council Resolution No. 95-2243 and Staff Report

STAFF REPORT

CONSIDERATION OF RESOLUTION NO. 95-2243 FOR THE PURPOSE OF STUDYING THE SOUTH/NORTH DOWNTOWN PORTLAND ALIGNMENT OPTIONS AND AN AMENDED NORTH TERMINUS OPTION IN THE DEIS, CONCURRING WITH THE SOUTH/NORTH STEERING GROUP'S SELECTION OF DESIGN OPTIONS, AND ADOPTING THE MAJOR INVESTMENT STUDY FINAL REPORT

Date: November 30, 1995 Presented by: Richard Brandman

PROPOSED ACTION

Adoption of this resolution would:

1. Determine the alignment alternative and design options within downtown Portland that will be studied further within the Draft Environmental Impact Statement (DEIS);

2. State Metro Council's concurrence with the design options selected by the South/North Steering Group for further study within the DEIS;

3. Determine, consistent with an action previously taken by the C-TRAN Board of Directors, that the Phase One terminus for study within the DEIS will be in the vicinity of the Veterans Administration Hospital and Clark College until the Clark County Transportation Futures process concludes; and

4. Adopt the *Major Investment Study Final Report* documenting the South/North Tier I process, reports and conclusions, which included the locally preferred design concept and scope for the South/North Corridor.

5. Direct staff to prepare travel demand forecasts for the South/North DEIS that use as a basis the 2015 household and employment forecast completed in December 1995 which assumes a 4,000-5,000-acre Urban Growth Boundary (UGB) expansion.

TPAC has reviewed the proposed South/North LRT options and accompanying reports and recommends approval of Resolution No. 95-2243.

The South/North Steering Group unanimously recommends approval of Resolution No. 95-2243.

BACKGROUND

Resolution No. 95-2243 would address four issues related to the South/North Transit Corridor Project: 1) Downtown Portland alignments; 2) Design option narrowing; 3) The northern Phase One

terminus for study in the DEIS; and 4) The *Major Investment Study Final Report*. Following is a discussion of each of those issues as they relate to the proposed resolution.

**Downtown Portland Alignments**

During the South/North Preliminary Alternatives Analysis, the Scoping Process and Tier I, a wide range of alternatives within downtown Portland was evaluated and screened from further study. That screening process reached a major milestone in December 1994, when the Metro Council and the C-TRAN Board of Directors adopted Resolution No. 94-1989 and Resolution No. BR-94-011, respectively, and the *Tier I Final Report*. Within the *Final Report*, the Metro Council and the C-TRAN Board selected a surface light rail alignment on 5th and 6th Avenues (the Transit Mall) as the alternative alignment within downtown Portland to advance into the DEIS for further study. The Tier I narrowing process also concluded that a subway alternative should be removed from further consideration.

In selecting the surface light rail alignment on 5th and 6th Avenues, Metro Council identified a list of conditions placed upon its action. In summary, it was determined that prior to initiating work on the DEIS, a six-month detailed study of the 5th/6th surface alternative be conducted to ensure that the selected alternative could adequately address various principles, most importantly, that light rail, buses, pedestrians and automobiles could be accommodated on the Transit Mall and that the economic vitality of downtown Portland would be preserved and enhanced. To ensure that a broad base of interests would be addressed in the study, the principles also stated that the downtown alignment study would be performed in close coordination with the downtown Portland community.

In January 1995, the South/North Steering Group initiated the Downtown Portland Alignment Study by appointing the Downtown Portland Oversight Committee. The Oversight Committee was made up of downtown property and business owners and downtown residents. A full listing of the committees' memberships can be found in Exhibit B.

Through the six-month study, the Downtown Oversight Committee adopted criteria and measures, identified design options, developed and evaluated a wide range of technical information on those options, participated in a field trip on the Mall during the peak evening rush hour and conducted a variety of public involvement activities. Details of the study process and results can be found in Exhibit B.

On June 29, 1995, following this extensive and detailed analysis, the Downtown Portland Oversight Committee unanimously adopted its recommendation that the surface light rail alternative on 5th and 6th Avenues be studied within the DEIS and that no other surface street or subway alternatives be studied further. The Committee

also recommended specific design options for each segment of downtown Portland that should be studied in greater detail within the DEIS. A detailed description of those recommended options can be found in Exhibit B.

The Committee based its recommendation on the recognition that the Downtown Portland Plan has been implemented through over 20 years of public and private investments in downtown Portland. Those investments have created a high density spine of development along 5th and 6th Avenues that is designed to be served by the Transit Mall. The Committee also noted strong concern about potential construction impacts. The Committee proposed a wide range of construction management and mitigation techniques that should be considered for inclusion within the South/North construction plan for downtown Portland.

Following the Oversight Committee, the South/North Project Management Group, the Citizens Advisory Committee and the Steering Group unanimously endorsed the Oversight Committee's recommendations. Recommendations from the Tri-Met Board of Directors and the City of Portland are scheduled to be adopted prior to consideration of this resolution by Metro Council.

**Design Option Narrowing**

The purpose of the design option narrowing process is to define in a higher level of detail the alignment options to be studied further within the DEIS. The corridor has been divided into eleven segments, with two to nine alignment design options in each segment. Data on the design options has been developed that addresses the various criteria and measures for design option narrowing, adopted by the South/North Steering Group in the *Tier I Evaluation Methodology Report* (Metro: December 1993). The methods and data are documented in the *Design Option Narrowing Technical Summary Report* and the *Design Option Narrowing Briefing Document*. The draft *Technical Summary Report* was reviewed by the Expert Review Panel in June 1995. The Panel found that the methods and data are appropriate and adequate for making the narrowing choices within this phase of the project. A listing of the design options considered and a summary of the data on each of the options is included within Exhibit A.

A 45-day public comment period was offered between June 1 and July 15, 1995, which included meetings conducted by the South/North Steering Group to receive public comment. In addition, public comments were received over the Metro Hotline, through the mail, at each of the CAC meetings and through a variety of community meetings held throughout the Corridor. Documentation of comments received concerning design option narrowing can be found in the *Design Option Narrowing Public Comment Report* (Metro: October 1995).

In September 1995, following review of the technical information and public comment, the PMG adopted the *Design Option Narrowing*

*Final Recommendation Report* which identified the design options within each segment proposed by the PMG to be studied further within the DEIS. The CAC considered the PMG recommendations and adopted its own independent recommendations in October 1995. The Steering Group considered both recommendations, public comment and the technical data and adopted the *Design Option Narrowing Final Report* which identifies the design options to advance into the DEIS for further study.

As indicated in the *Evaluation Methodology Report*, the Steering Group has the responsibility to determine which design options are to advance into the DEIS for further study. However, participating jurisdictions were afforded the opportunity to review and comment on those design options. Metro is one of several participating jurisdictions given the opportunity to review and comment on the *Design Option Narrowing Final Report* (Exhibit A). Approval of Resolution No. 95-2243 would voice Metro Council's concurrence with the set of design options selected by the Steering Group.

A detailed description of the options, the rationale for their selection and a listing of issues associated with the options are included within Exhibit A.

**Northern Phase One Terminus**

The *Tier I Final Report* identified the terminus options selected by Metro Council and the C-TRAN Board of Directors to be studied within the DEIS. It also noted that the South/North Corridor would be developed in two distinct phases. The Clackamas Town Center Area and the vicinity of 99th Avenue in Hazel Dell were selected as the southern and the northern termini for Phase One. The Phase Two termini were identified as Oregon City in the south and 134th Avenue in the north.

Subsequently, in August 1995, following an extensive public effort to initiate the Clark County Transportation Futures Process, the C-TRAN Board of Directors amended the Phase One terminus for study within the DEIS to be in the vicinity of the Veterans Administration Hospital and Clark College near I-5 just north of downtown Vancouver until the Transportation Futures Process concludes in 1996. The southern termini and the Phase Two northern terminus were unchanged.

**MIS Final Report**

The South/North Transit Corridor Study was initiated in April 1993 with the selection of the priority corridors by the Metro Council and the C-TRAN Board of Directors. In October 1993, the Federal Transit Administration (FTA) approved Metro's request to advance the Corridor into Alternatives Analysis and issued notification in the *Federal Register* of its intent to publish a South/North DEIS. Subsequently, in November 1993, FTA and FHWA issued the Metropolitan Planning Rule which established

guidelines for the Major Investment Study (MIS) process which replaced the Alternatives Analysis process previously used for light rail planning purposes.

The new guidelines also provided for consultations between local and federal governments to determine how studies initiated under the Alternatives Analysis guidelines (*transitional projects*) should be modified to comply with the MIS requirements. A consultation for the South/North study was held in December 1994, where it was determined that the South/North Study would conclude by addressing the MIS requirements, documented within an *MIS Final Report*. The report would document alternatives previously studied within the Corridor and the locally preferred design concept and scope selected by the study to be included within the Regional Transportation Plan.

The locally preferred design concept and scope was adopted through the Tier I process of Scoping and narrowing of alignment and terminus alternatives. The federally mandated financially constrained Regional Transportation Plan, which includes the locally preferred design concept and scope for the South/North Corridor, was adopted by Metro Council in May 1995.

Resolution No 95-2243 would adopt the *MIS Final Report* (Exhibit C) which documents the Tier I process leading to the selection of the locally preferred design concept and scope for the South/North Corridor, and subsequently included in the Regional Transportation Plan.

**2015 Household and Employment Forecast for South/North DEIS**

The Metro Growth Management staff have recently completed a month's long process in conjunction with the region's jurisdictions and government agencies to prepare a 2015 household and employment forecast that is consistent with the adopted 2040 Concept Plan. As an initial step, this process identified the overall regional level of household and employment growth and reached a regional consensus on the allocation of this growth to 20 districts throughout the region including Clark County, Washington.

Metro staff then worked closely with jurisdiction staff to further refine the growth allocation from the 20-district level to the 1260 transportation analysis zones (TAZ's) used for the travel demand modeling. This TAZ allocation process was completed in early December 1995 with the assumption of a 4,000-5,000-acre expansion of the UGB. Metro staff will continue to work with jurisdiction staff to develop a second round of TAZ growth allocations that are based on an assumption of no expansion of the UGB.

Metro staff have coordinated the development of a 2015 Clark County growth allocation with staff from the Southwest Washington Regional Transportation Council (RTC). RTC has worked with the

jurisdictions in Clark County to prepare a TAZ allocation that is consistent with the allocation prepared for the Oregon portion of the region.

The South/North DEIS work needs to proceed as quickly as possible in order to meet key federal funding deadlines. A critical early task in the preparation of the DEIS is the production of travel demand forecasts. These forecasts are used in a wide range of analyses including traffic impacts, transit impacts, transit ridership, noise and vibration impacts, energy impacts and air quality impacts. For federal purposes, these forecasts could be considered conservative in that a smaller UGB expansion would slightly increase South/North Corridor transit ridership.

Resolution No. 95-2243 would direct staff to use the December 1995 TAZ allocation as the basis for travel demand forecasting for the South/North DEIS. This direction would apply to all of the evaluation measures in the South/North DEIS but would not apply to any other studies at this time. Use of this forecast for the South/North LRT DEIS would not preclude adoption by Metro Council of a forecast that assumes a smaller expansion of the UGB at a later date. The South/North Project Management Group, which consists of all the participating jurisdictions in the project, unanimously recommends this approach.

BEFORE THE METRO COUNCIL

| | |
|---|---|
| FOR THE PURPOSE OF STUDYING THE SOUTH/NORTH DOWNTOWN PORTLAND ALIGNMENT OPTIONS AND AN AMENDED NORTH TERMINUS OPTION IN THE DEIS, CONCURRING WITH THE SOUTH/NORTH STEERING GROUP'S SELECTION OF DESIGN OPTIONS, AND ADOPTING THE MAJOR INVESTMENT STUDY FINAL REPORT | ) RESOLUTION NO. 95-2243<br>)<br>) Introduced by:<br>) Councilor Monroe<br>)<br>)<br>)<br>) |

WHEREAS, In April 1993, the Metro Council adopted Resolution No. 93-1784 and the C-TRAN Board of Directors adopted Resolution No. BR-93-9404 which selected the Milwaukie and I-5 North Corridors as the region's next high-capacity transit priority for study and combined them into the South/North Transit Corridor to be studied within a federal Draft Environmental Impact Statement; and

WHEREAS, In October 1993, the Federal Transit Administration approved the South/North application to initiate Alternatives Analysis/Draft Environmental Impact Statement and the South/North Preliminary Work Plan, and issued notification of intent in the *Federal Register* to publish a South/North Environmental Impact Statement; and

WHEREAS, In November 1993, the Federal Transit Administration and the Federal Highway Administration jointly issued the Metropolitan Planning Rule which included the Major Investment Study guidelines to replace the Alternatives Analysis guidelines and provided for consultations to determine how projects that had been initiated prior to the new rules would comply under the Major Investment Study guidelines; and

WHEREAS, In December 1994, a Major Investment Study consultation was held between Metro, the Federal Transit Administration and the Federal Highway Administration and it was determined that Tier I of the South/North Transit Corridor Study would conclude by addressing the Major Investment Study guidelines documented in a Major Investment Study Final Report; and

WHEREAS, The role of the Steering Group in the terminus and alignment alternative narrowing process is to forward its recommendations to participating jurisdictions for their consideration, that participating jurisdictions are to forward their recommendations to the C-TRAN Board of Directors and the Metro Council who are to make the final determination of the alternatives to advance into the Draft Environmental Impact Statement for further study; and

WHEREAS, The role of the South/North Steering Group in the design option narrowing process is to consider recommendations from the South/North Project Management Group and Citizen Advisory Committee and to select the design option(s) which will be studied further in the Draft Environmental Impact Statement; and

WHEREAS, In December 1994, the Metro Council adopted Resolution No. 94-1989 and the C-TRAN Board of Directors adopted Resolution No. BR-94-011 which identified the locally preferred design concept and scope for the corridor (light rail transit, the Phase One terminus alternatives and alignment alternatives) to advance into the Draft Environmental Impact Statement and

Preliminary Engineering for further study; and

WHEREAS, In December 1994, within the same resolution, the Metro Council and the C-TRAN Board of Directors also determined that within the Portland central business district, a surface light rail transit alternative on 5th and 6th Avenues shall be developed based upon several principles and that if prior to initiation of the Draft Environmental Impact Statement it is concluded that a 5th/6th Avenue alignment cannot be developed that addresses those principles, other alternatives will be developed for further study in the Draft Environmental Impact Statement; and

WHEREAS, In March 1995, the South/North Steering Group selected both the Caruthers and Ross Island Crossing alternatives and both the I-5 and Interstate Avenue alignment alternatives for further study in the Draft Environmental Impact Statement; and

WHEREAS, In May 1995, Metro Council adopted Resolution No. 95-2138A which approved the federally-required financially constrained Regional Transportation Plan which included the locally preferred design concept and scope for the South/North Corridor; and

WHEREAS, In August 1995, the C-TRAN Board of Directors adopted resolution No. 95-048 which amended the Phase One northern terminus for study in the Draft Environmental Impact Statement from the vicinity of 99th Avenue in Hazel Dell, Washington to the Veterans Administration Hospital/Clark College in Vancouver, Washington until the Clark County Transportation Futures Process concludes; and

WHEREAS, The alignment design options currently under study have been developed and evaluated based upon the criteria and measures from the *Evaluation Methodology Report* and documented within various technical memoranda, including the *South/North Design Option Narrowing Report* and the *Design Option Briefing Document*; and

WHEREAS, A comprehensive public involvement program for the design option narrowing process was developed and implemented by the South/North Study that included, but was not limited to, numerous community meetings, a 45-day public comment period, public meetings for the Steering Group to receive oral comment and an ongoing Citizens Advisory Committee that provided regular public comment opportunities; and

WHEREAS, Various options for a 5th/6th Avenue surface light rail alignment were evaluated by the Downtown Portland Oversight Committee which concluded that the recommended design option on 5th/6th Avenues adequately addresses the criteria established by Metro Council, the C-TRAN Board of Directors and the Oversight Committee and should therefore be exclusively studied further within the Draft Environmental Impact Statement; and

WHEREAS, In October and November 1995, the Project Management Group and the Citizens Advisory Committee formed independent recommendations for both design option narrowing and the downtown Portland alignment alternative and forwarded them to the Steering Group for consideration; and

WHEREAS, In November 1995, the Steering Group adopted the South/North *Design Option Narrowing Final Report* (Exhibit A)

which identifies the design options that best meet the project's adopted goal and objectives and which will advance into the Draft Environmental Impact Statement for further study; and

WHEREAS, In November 1995, the Steering Group adopted the proposed light rail alignment design for 5th/6th Avenues in downtown Portland; and

WHEREAS, In December 1994 Metro adopted Resolution 94-2040C and the 2040 Concept Plan and directed staff to prepare 2015 household and employment forecasts consistent with the 2040 Concept Plan; and

WHEREAS, Metro staff coordinated with regional jurisdictions in the development of household and employment forecasts allocated to 1260 transportation analysis zones (TAZ's) and completed these allocations in December 1995 -- as summarized in Exhibit D; and

WHEREAS, The South/North DEIS must commence immediately in order to ensure timely completion; now, therefore

BE IT RESOLVED:

1. That Exhibit B is hereby adopted as the *South/North Downtown Portland Tier I Final Report*.

2. That the Metro Council has concluded in this *Final Report* that the downtown Portland design options, A-2, B-3, C-1, N-1, N-2, and S-1 described in Exhibit B, would generally retain current automobile access and pedestrian facilities; would generally provide for a lane of joint bus and light rail operations and a lane of exclusive bus operations on 5th/6th Avenues; adequately addresses the criteria established by

Resolution No. 94-1989 as adopted by the Metro Council and the C-TRAN Board of Directors; and shall therefore be exclusively studied further within the Draft Environmental Impact Statement.

3. That the Metro Council concurs with the design options selected by the South/North Steering Group for further study within the Draft Environmental Impact Statement as described in the *Design Option Narrowing Final Report* (Exhibit A) which are generally as follows:

a. *Minimum Operable Segments.* (1) a full-length project from the vicinity of the Clackamas Regional Center, through downtown Milwaukie, Portland and Vancouver, to the vicinity of the Veterans Administration Hospital/ Clark College; (2) a bi-state minimum operable segment from the vicinity of downtown Milwaukie/Market Place station and park-and-ride lot to the vicinity of the Veterans Administration Hospital/Clark College; and (3) three Oregon-only minimum operable segments each with a southern terminus in the vicinity of the Clackamas Regional Center and a northern terminus at: a) the vicinity of the Rose Quarter; b) the vicinity of the Edgar Kaiser Medical Center; or c) the vicinity of the Expo Center.

b. *South Terminus.* North of Clackamas Town Center alignment with a Sunnyside Park-and-Ride Terminus east of I-205; and South of Clackamas Town Center alignment with a 93rd Avenue Town Center Area Terminus.

c. *Railroad Avenue/Highway 224.* Alignment adjacent to

Railroad Avenue.

d. *Downtown Milwaukie*. McLoughlin Boulevard/Main Street with a Monroe Street Alignment; and Southern Pacific Branch Line with a Monroe Street alignment.

e. *Ross Island Crossing*. North Ross Island Crossing alignment with a West of McLoughlin Boulevard sub-option.

f. *Caruthers Crossing and Southeast Portland*. Caruthers Modified with a West of Brooklyn Yards alignment.

g. *Steel Bridge to Kaiser*. East I-5/Kerby Avenue alignment; and Wheeler Avenue/Russell Avenue alignment.

h. *North Portland*. All-I-5 alignment; and All-Interstate Avenue (Metro work with Tri-Met and City staff to evaluate as soon as the technical data for the DEIS is available which North Portland crossover option warrants further study; and staff will report back to the South/North Project Management Group, Citizen Advisory Committee and Steering Group).

i. *Hayden Island*. West of I-5 (under ramps).

j. *Columbia River Crossing*. Low-level lift span.

k. *Downtown Vancouver*. Two-way on Washington Street.

4. That, consistent with an action taken by the C-TRAN Board of Directors in August 1995, the South/North Phase One northern terminus to be studied within the Draft Environmental Impact Statement is amended to be in the vicinity of the Veterans Administration Hospital and Clark College in Vancouver, Washington.

5. That Metro Council adopts the *Major Investment Study Final Report* (Exhibit C) documenting the South/North Tier I process, reports and conclusions which selected the locally preferred design concept and scope for the South/North Corridor and led to its inclusion within the Regional Transportation Plan addressing the federal Metropolitan Planning Rule and Major Investment Study guidelines.

6. Staff will prepare travel demand forecasts for the South/North DEIS that use as a basis the 2015 household and employment forecast completed in December 1995 (Exhibit D) which assumes a 4,000-5,000-acre Urban Growth Boundary expansion.

ADOPTED by the Metro Council this _____ day of _____, 1995.

_____
J. Ruth McFarland, Presiding Officer

Approved as to Form:

_____
Daniel B. Cooper, General Counsel

*LS:lmk*
*95-2243.RES*
*12-11-95*