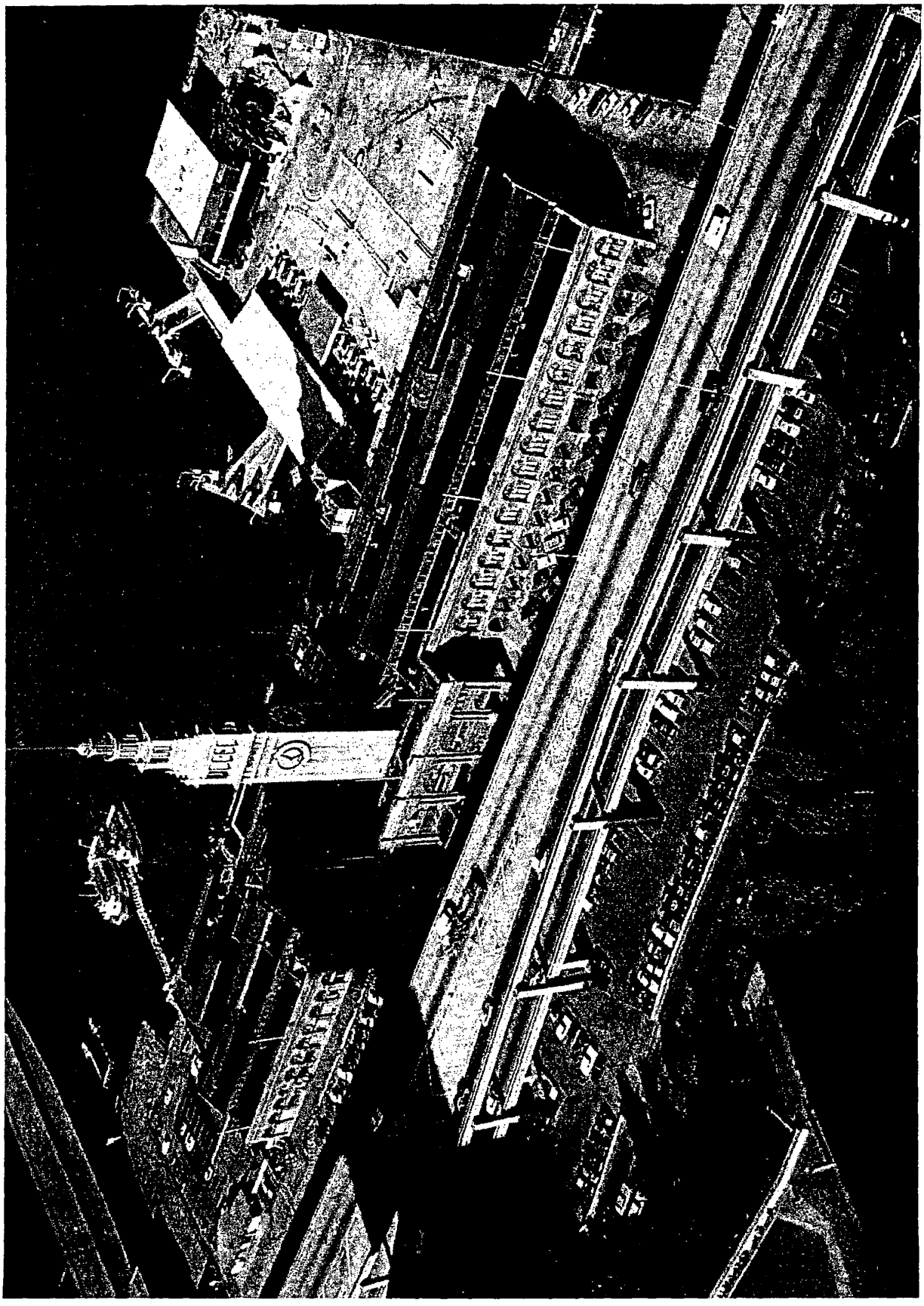
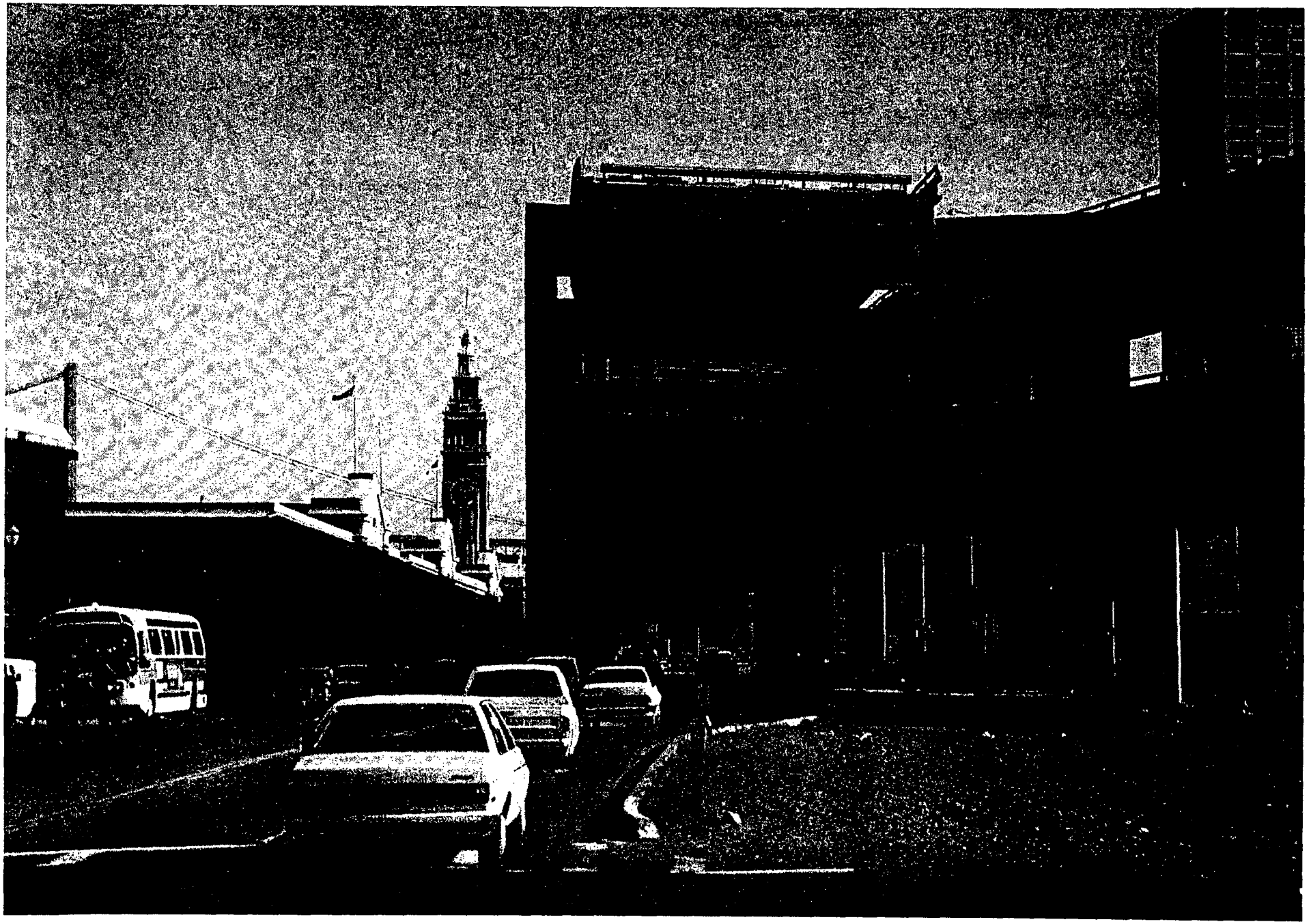
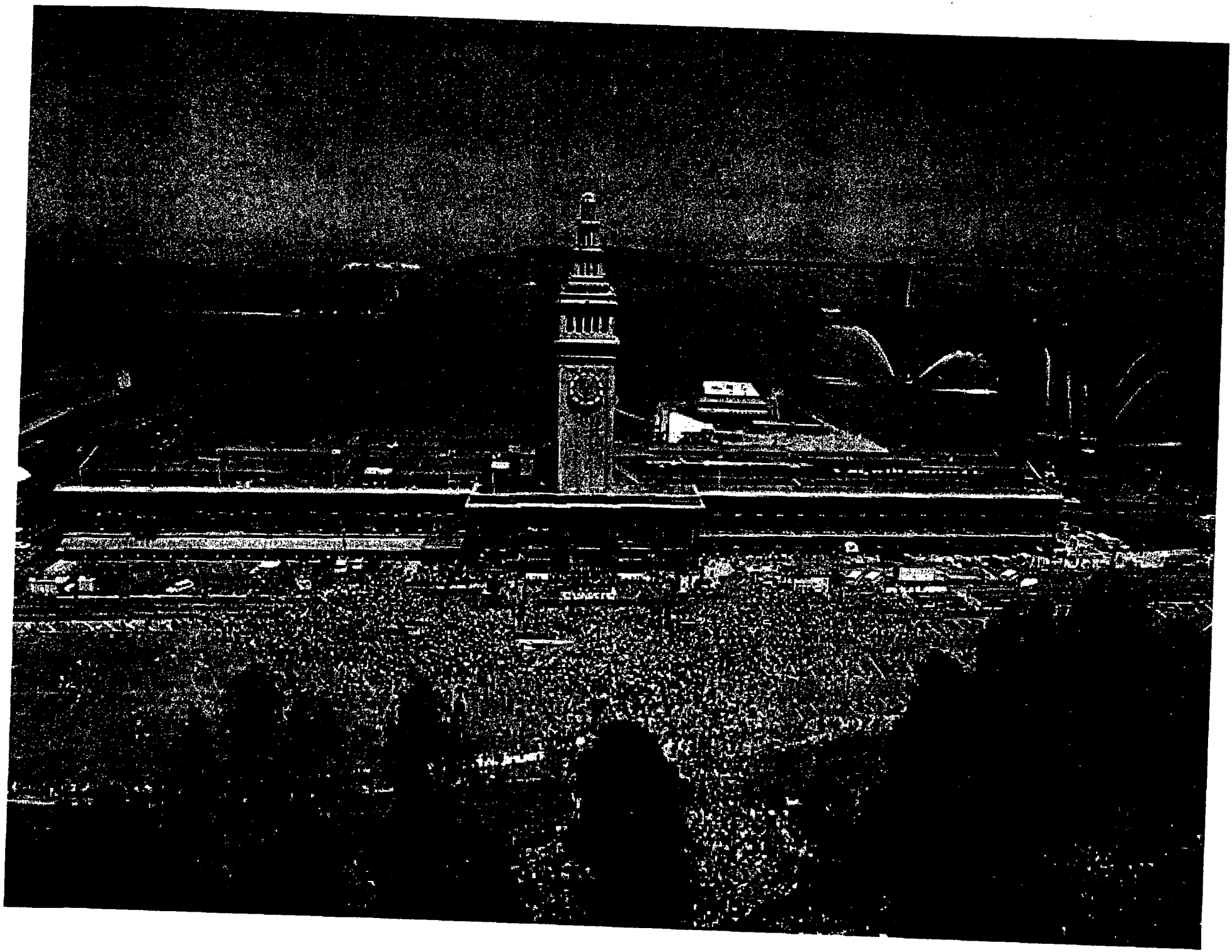
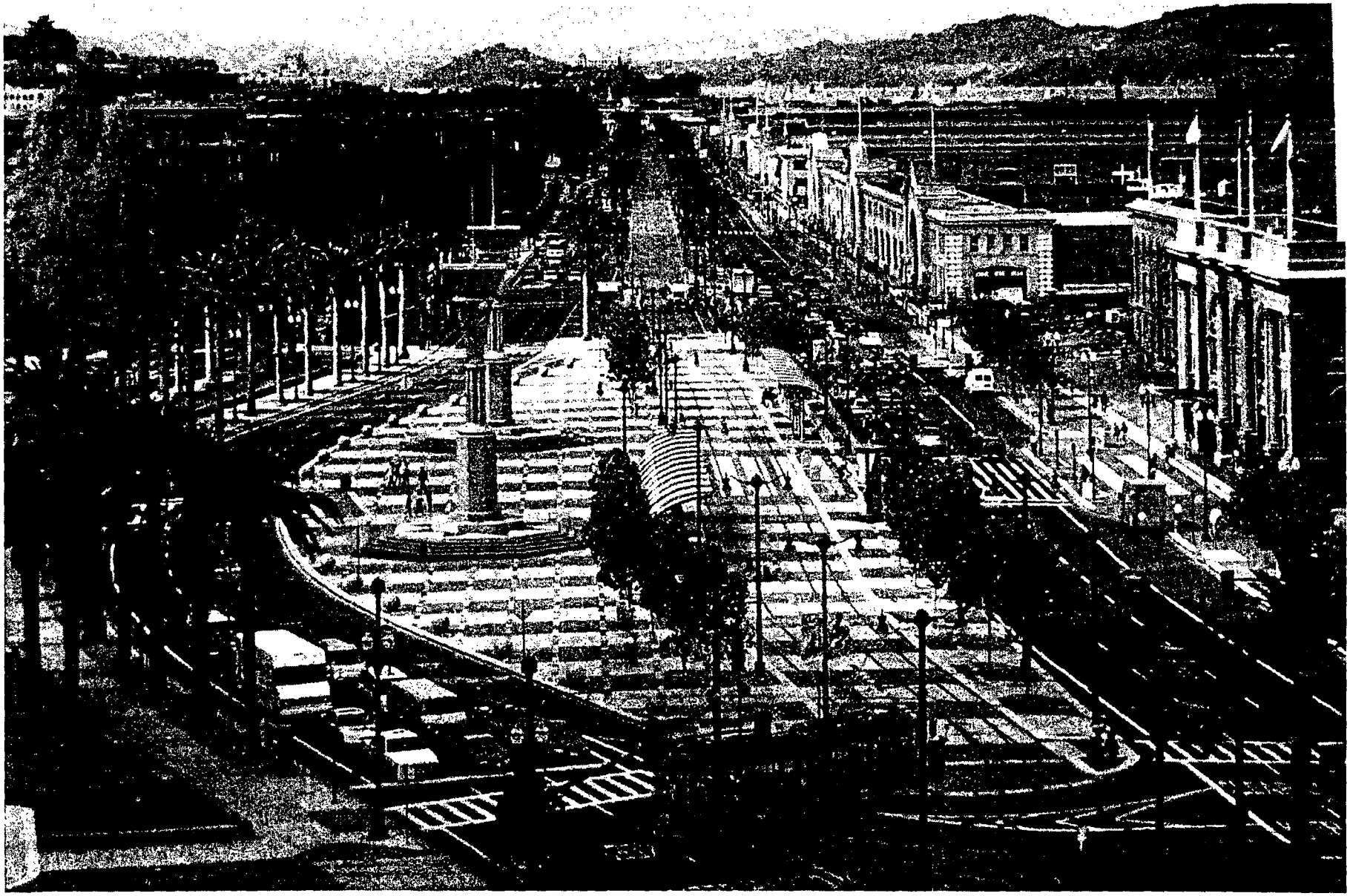
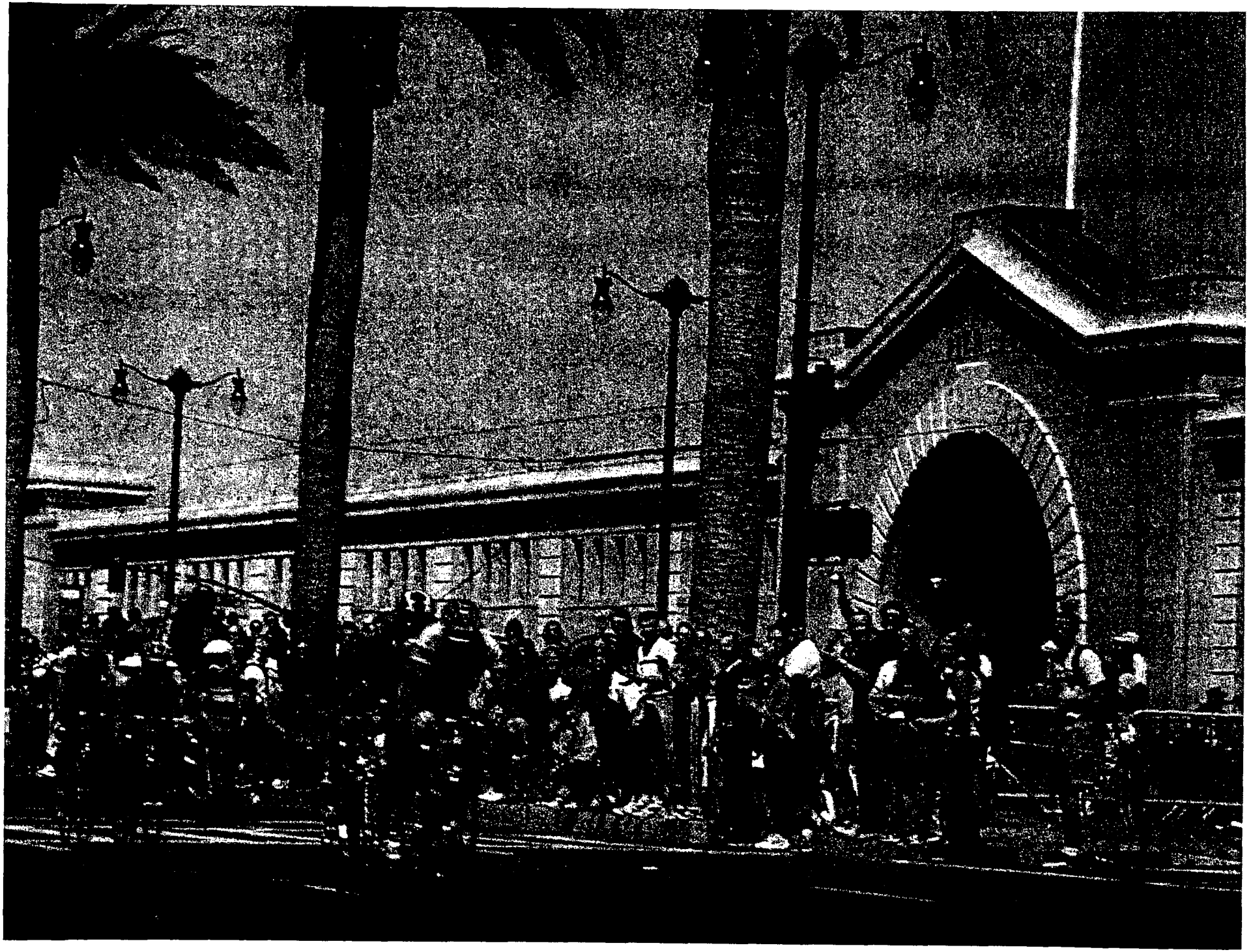






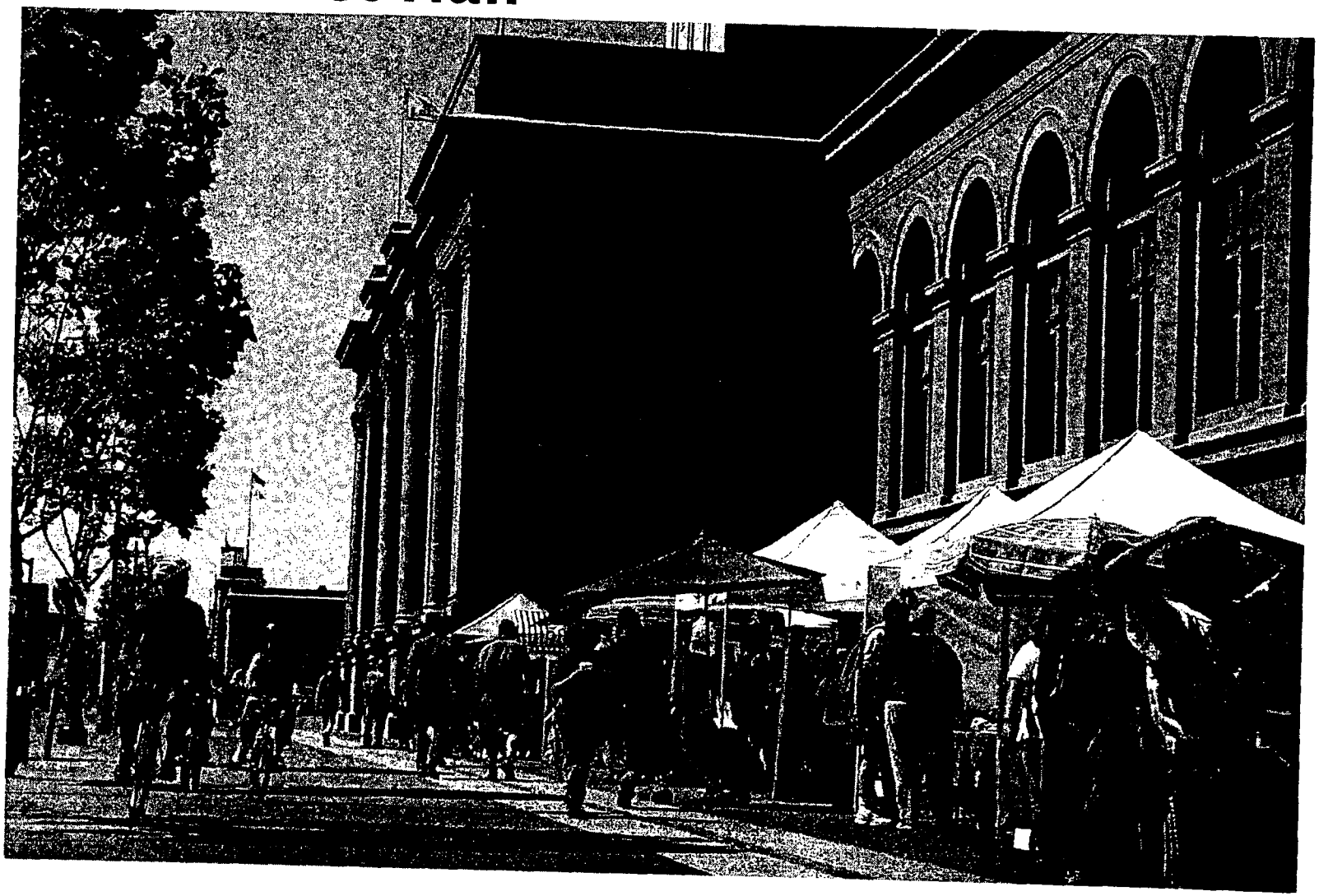
Embarcadero Roadway and Plaza at Ferry Building

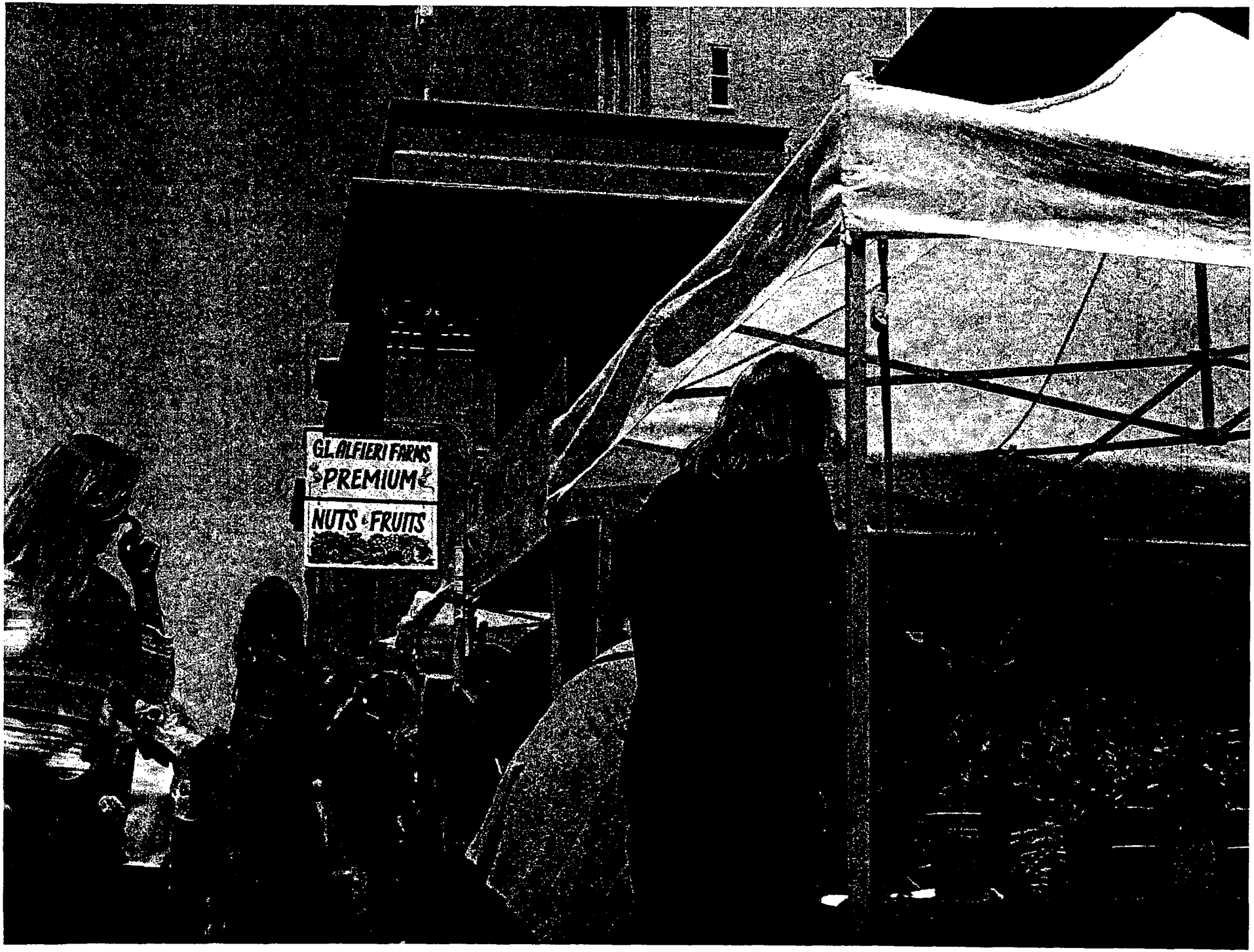




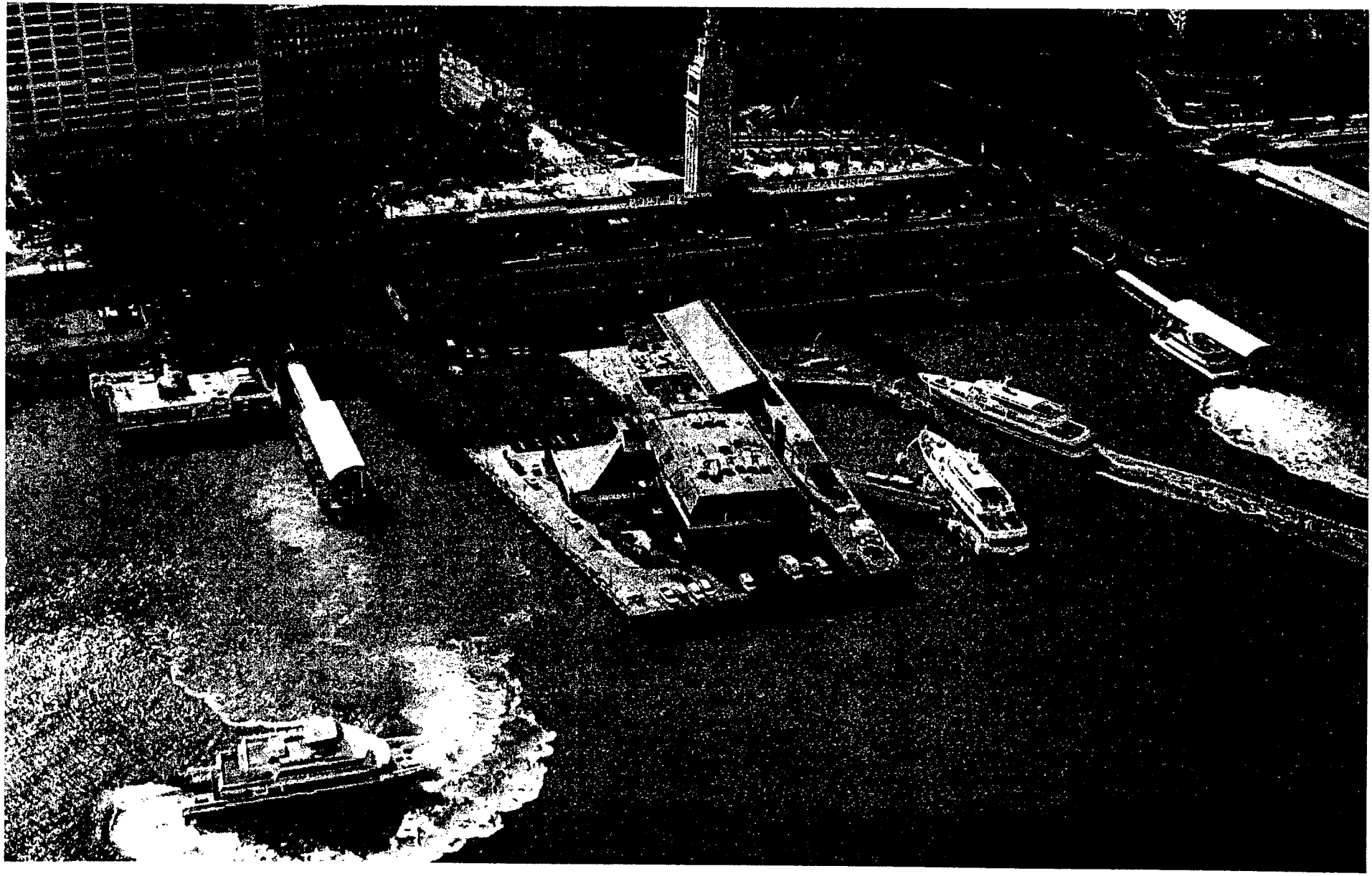
Ferry Building

- National Landmark Renovation
- Market Hall




G.L. ALFIERI FARMS
PREMIUM
NUTS & FRUITS

Downtown Ferry Terminal

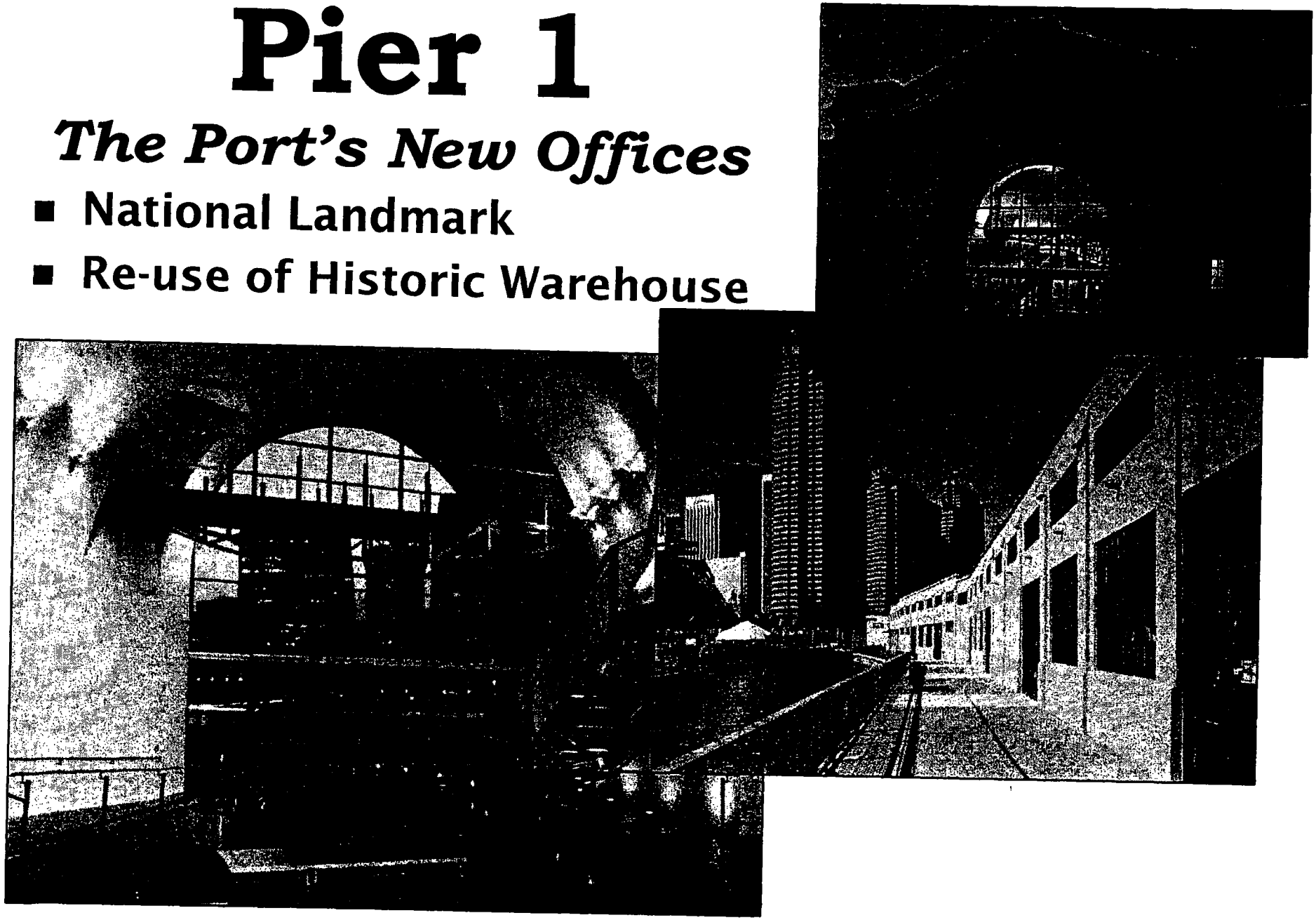


Downtown Ferry Terminal

Pier 1

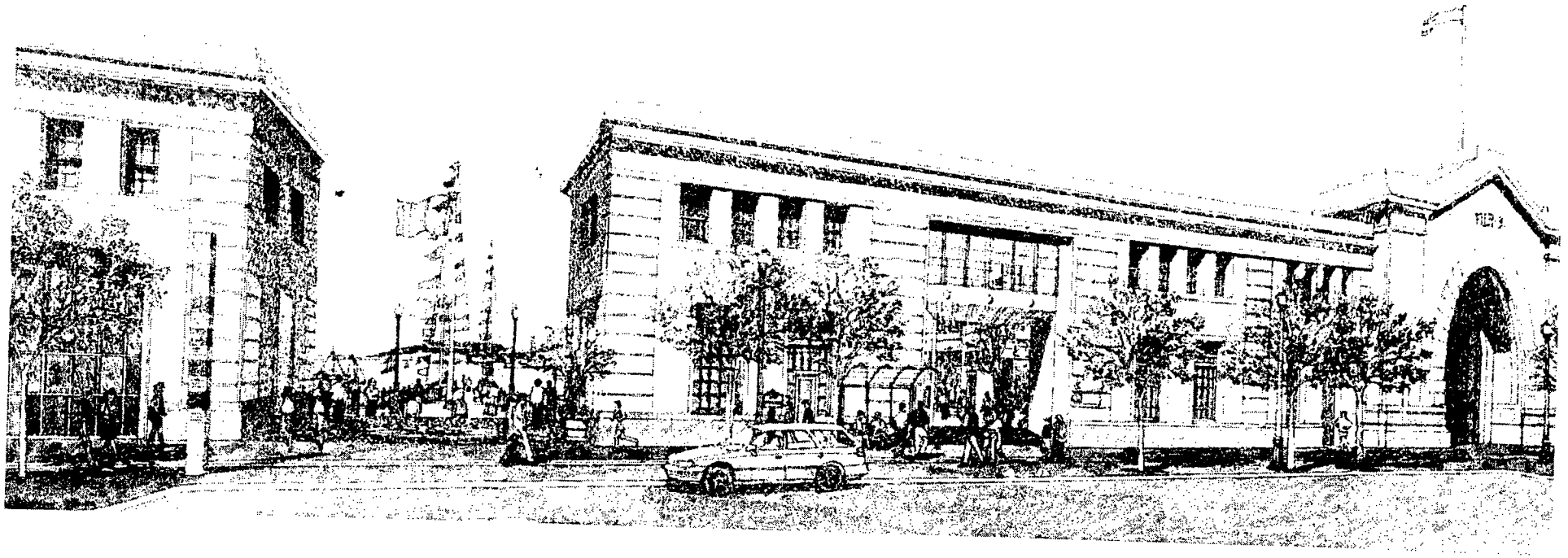
The Port's New Offices

- National Landmark
- Re-use of Historic Warehouse



Piers 1½, 3, 5

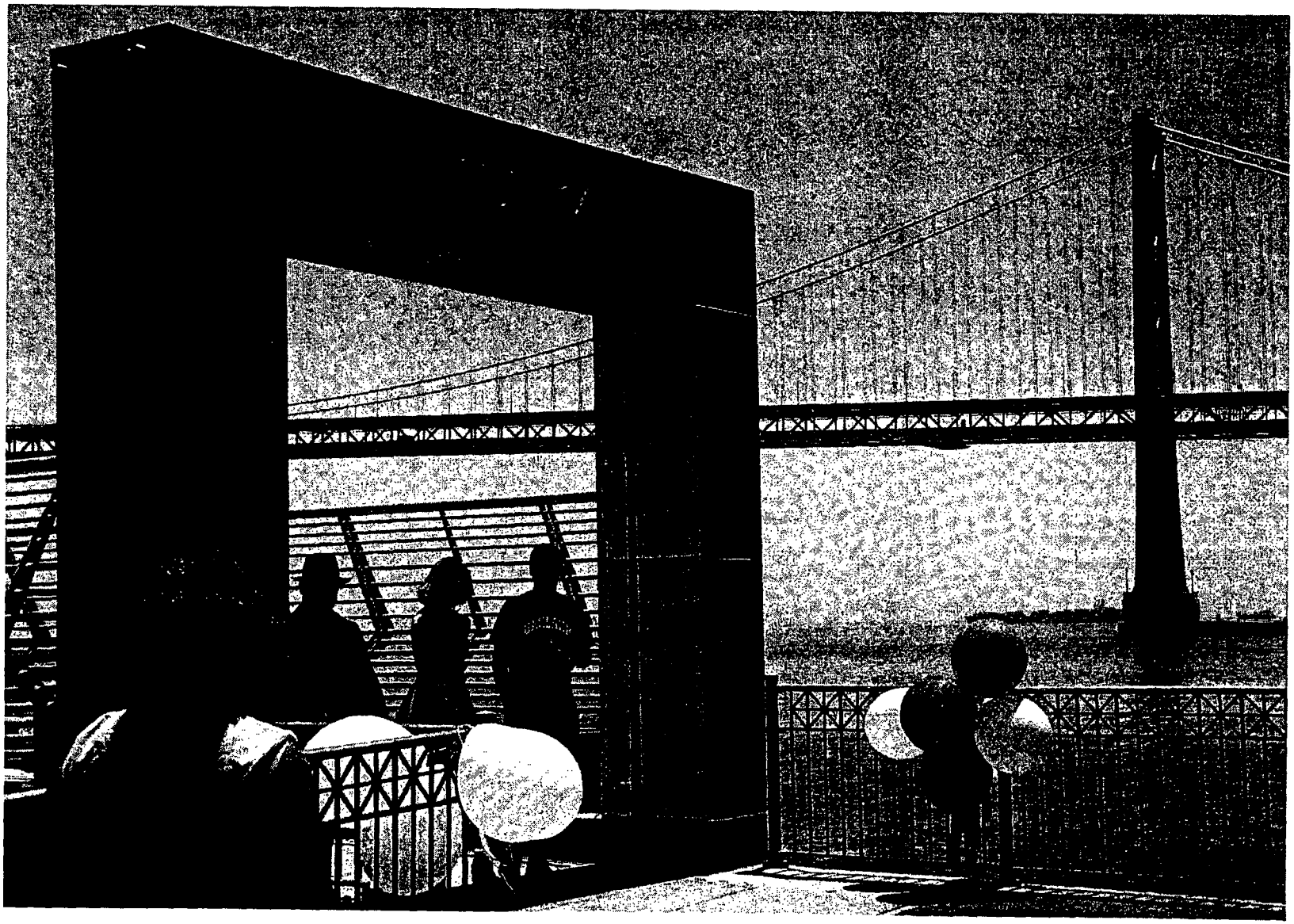
- Historic Preservation
- Restaurants and Offices
- Guest Berthing



Pier 7

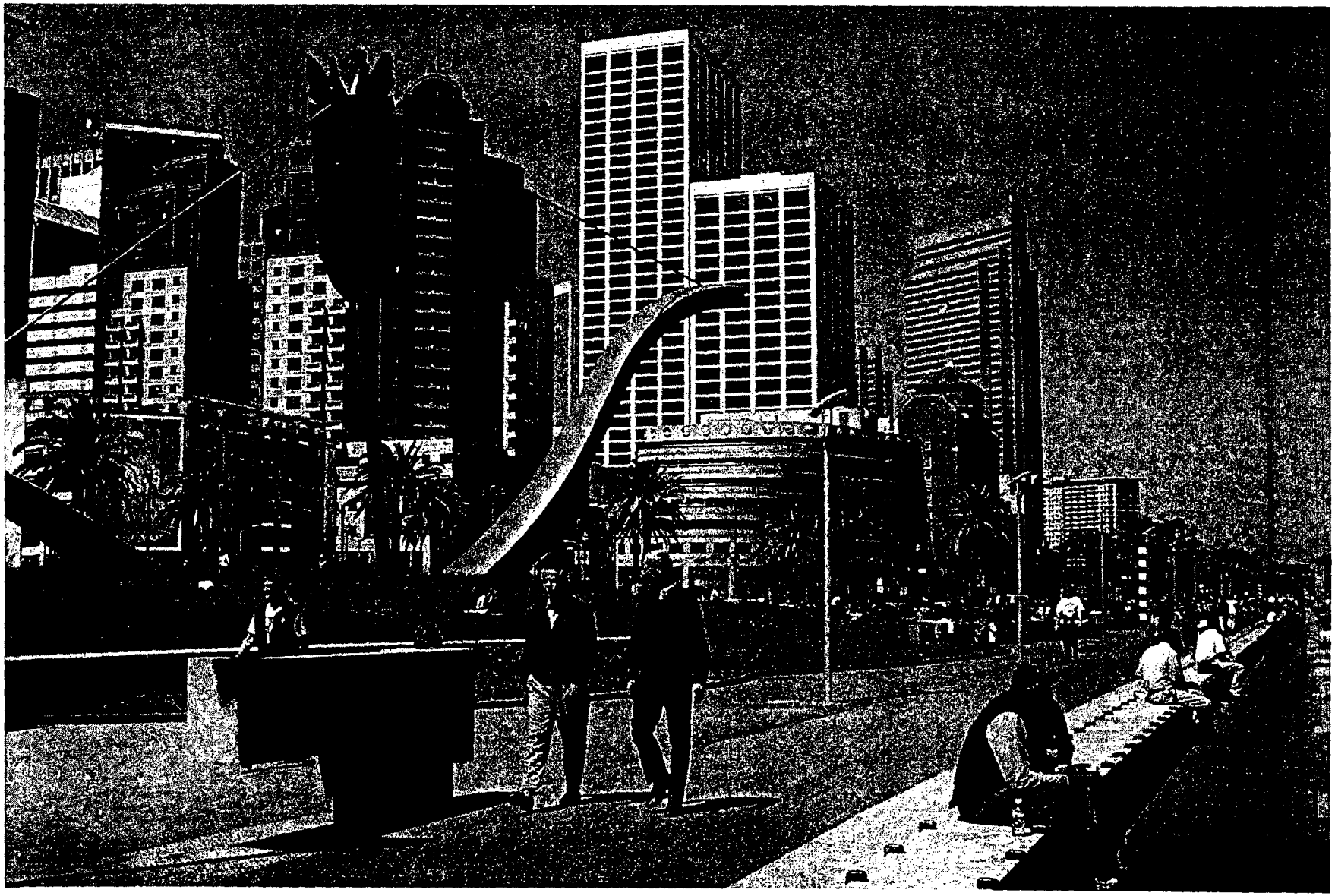
Pier 14 Public Pier

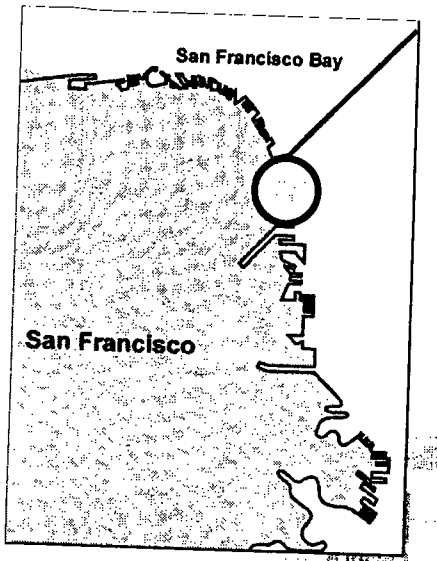
- New 637-foot Public Pier



Rincon Park

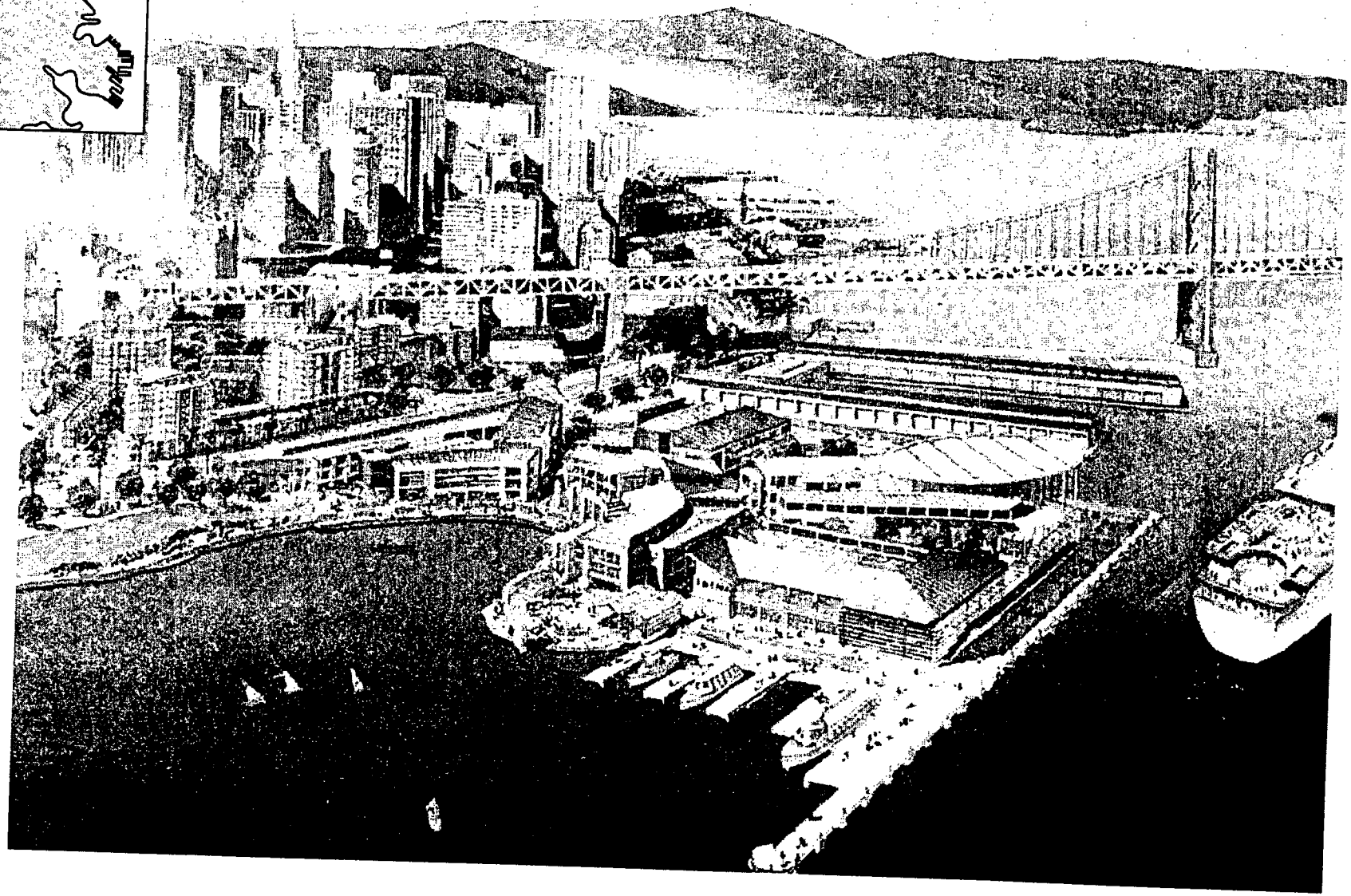
- New 2-Acre Landscaped Park





Bryant Street Pier

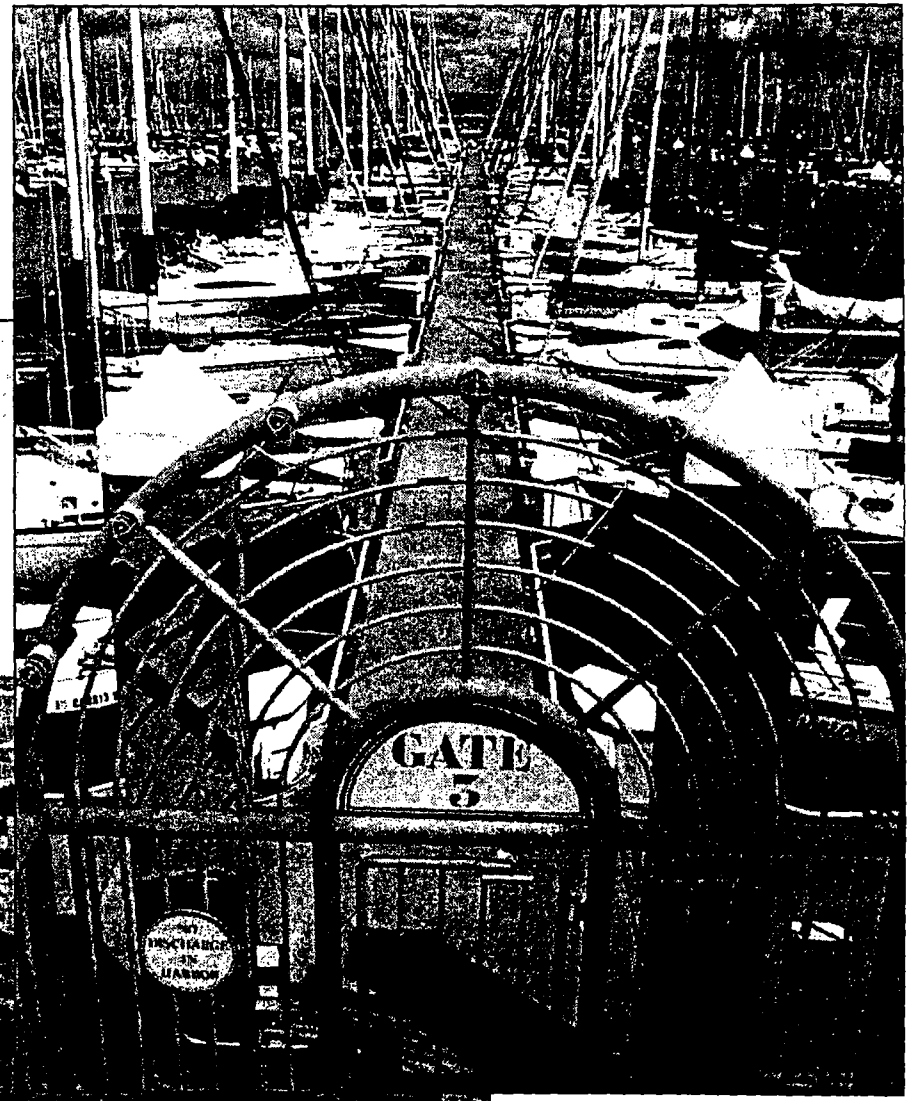
- Planned – Bryant Street Pier Mixed-Use Cruise Terminal



AT&T Park

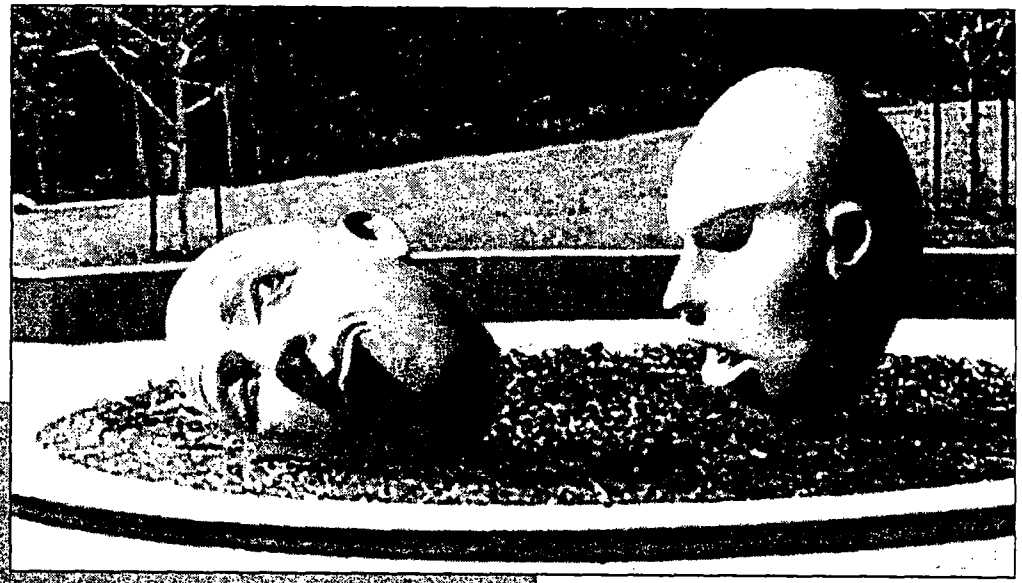
South Beach Park & Harbor

- 700 Berth Marina
- Promenade and Public Pier

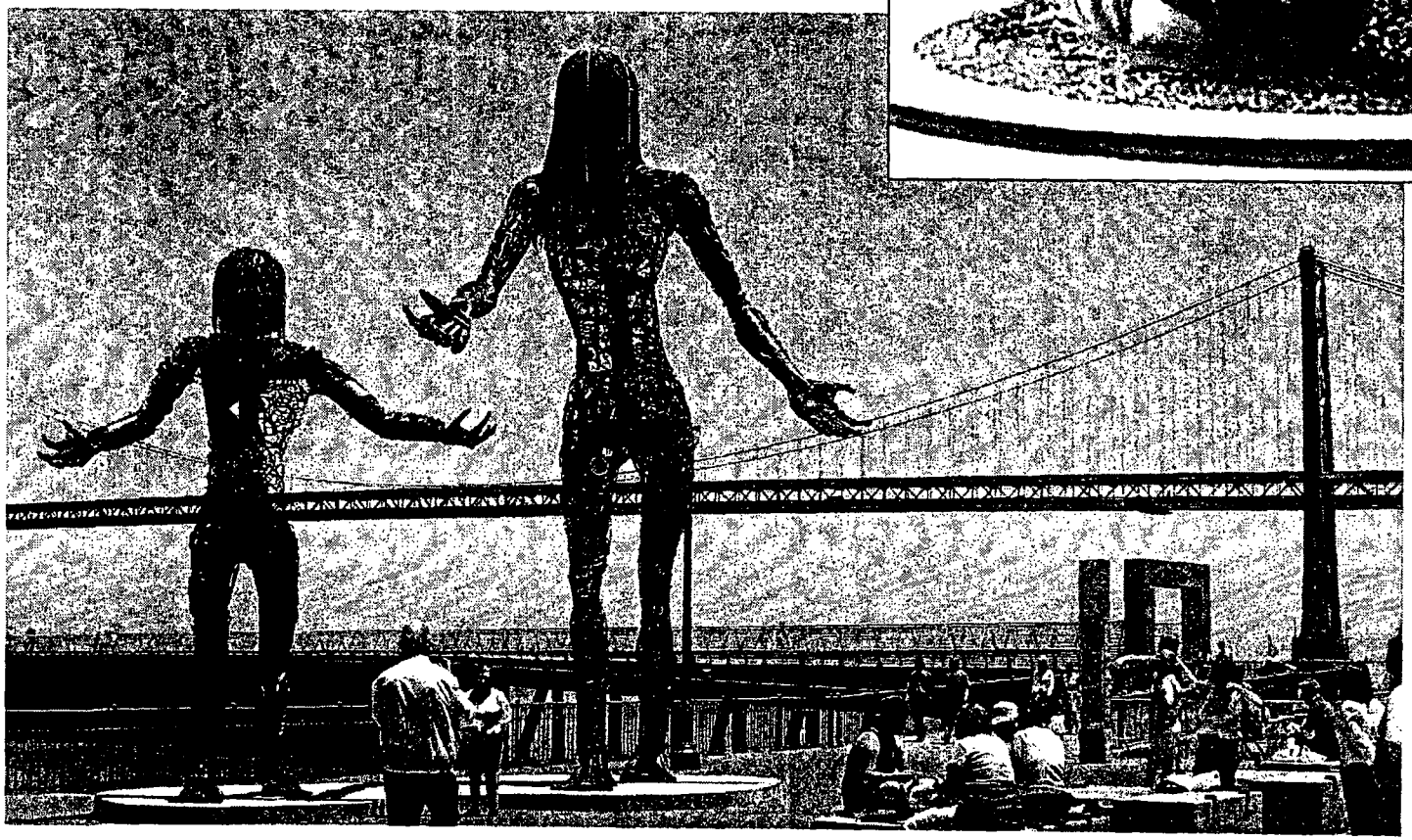


Public Art

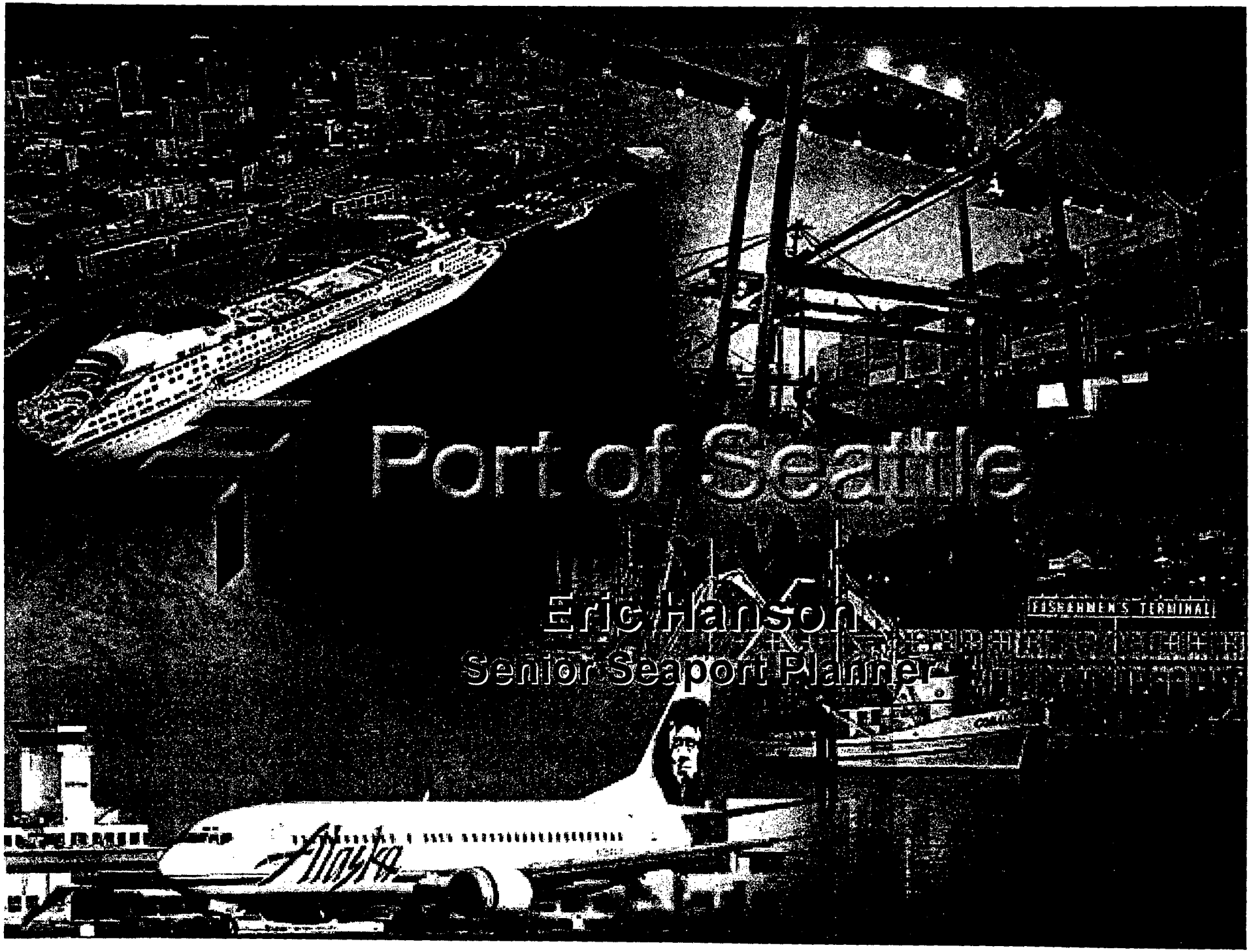
- **Yin & Yang** – Arneson Sculpture



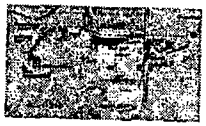
- **Passage** – Black Rock Arts Foundation.



Port of San Francisco


Port of Seattle
Eric Hanson
Senior Seaport Planner
FISHERMEN'S TERMINAL
Alaska

Study Goal



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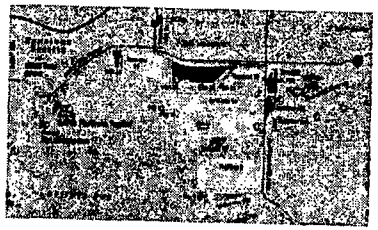

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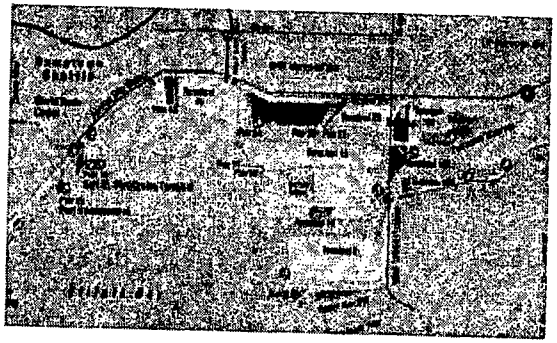
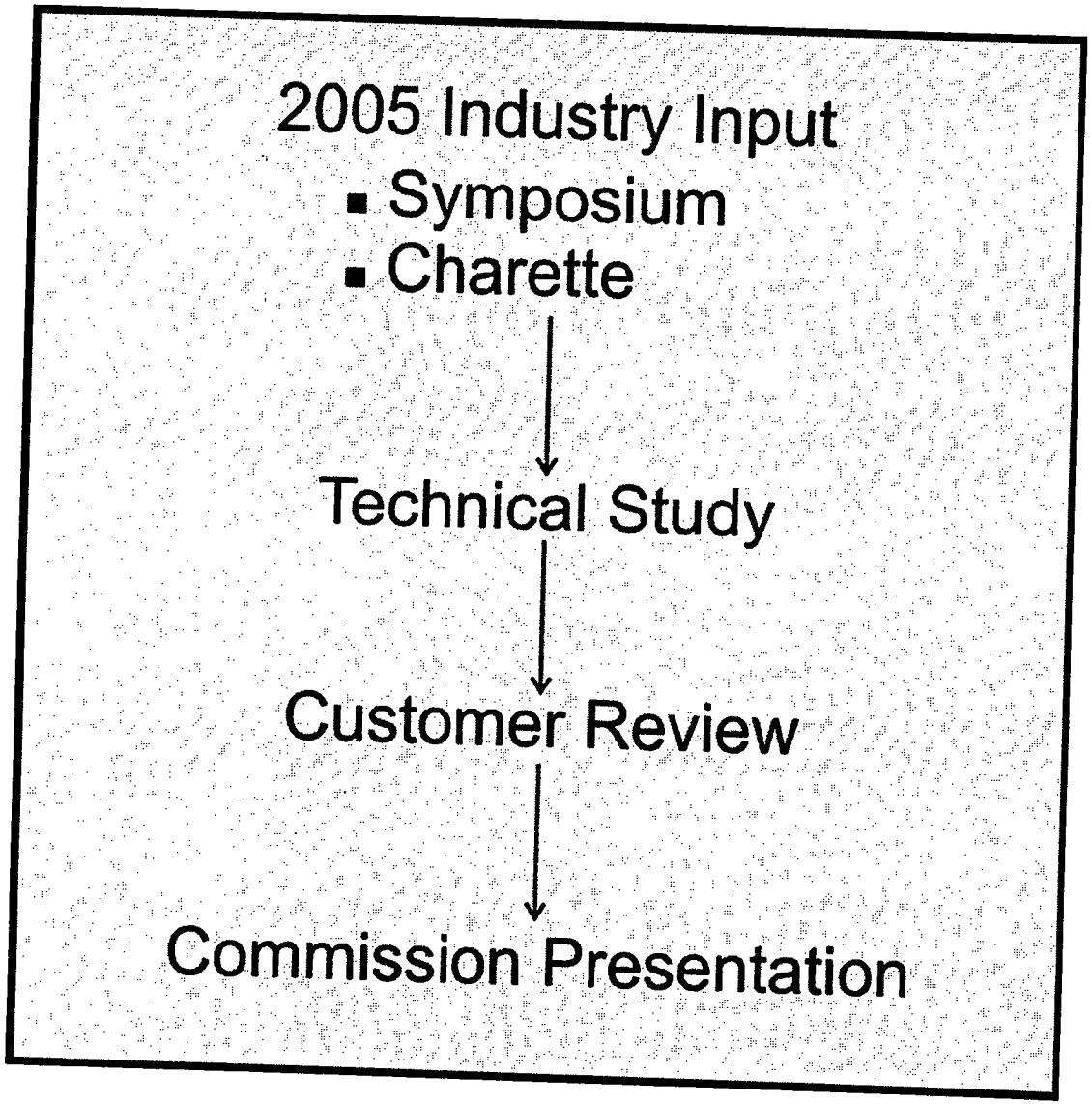


???

What is the Maximum Port Volume based on balanced system?

- Container Terminals
- Railyards
- Main Line Rail
- Off-Dock Support Yards
- Roadways

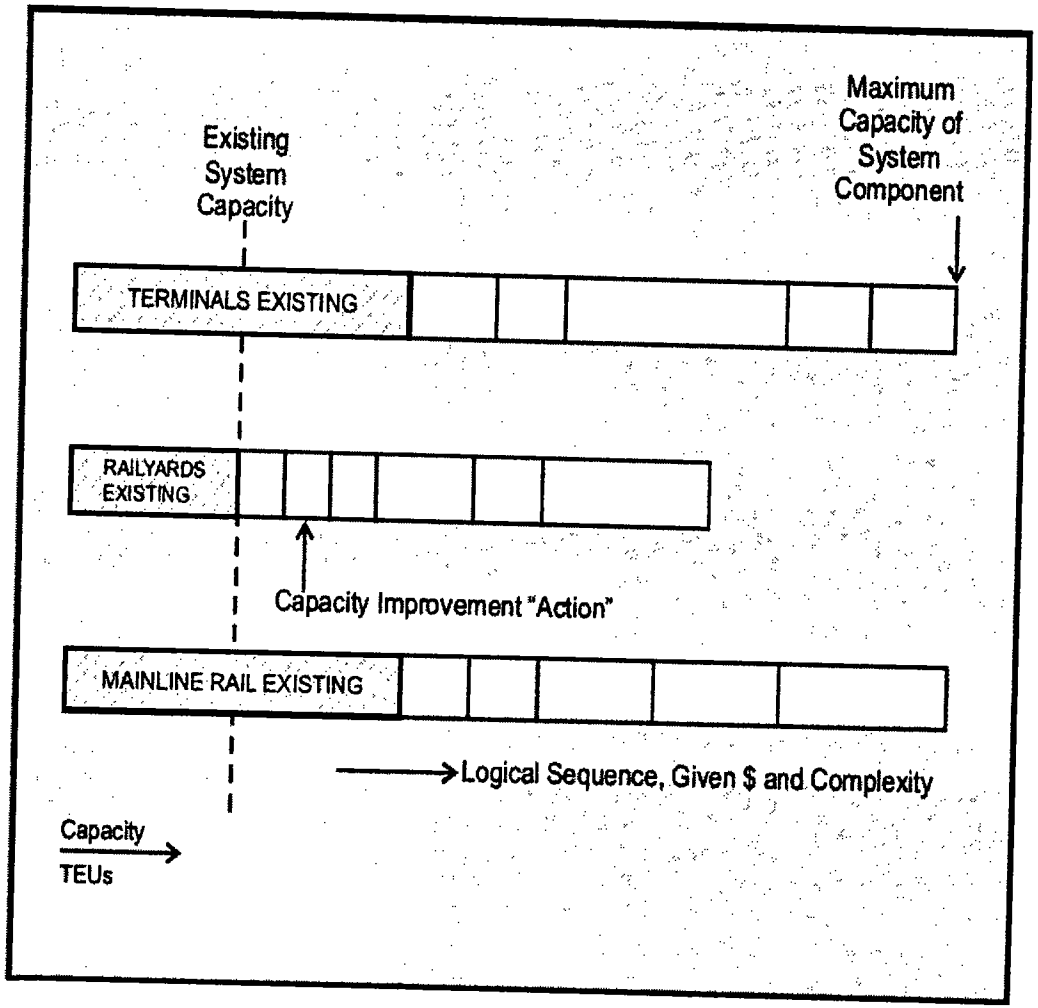
The Study Process



Key Study Assumptions

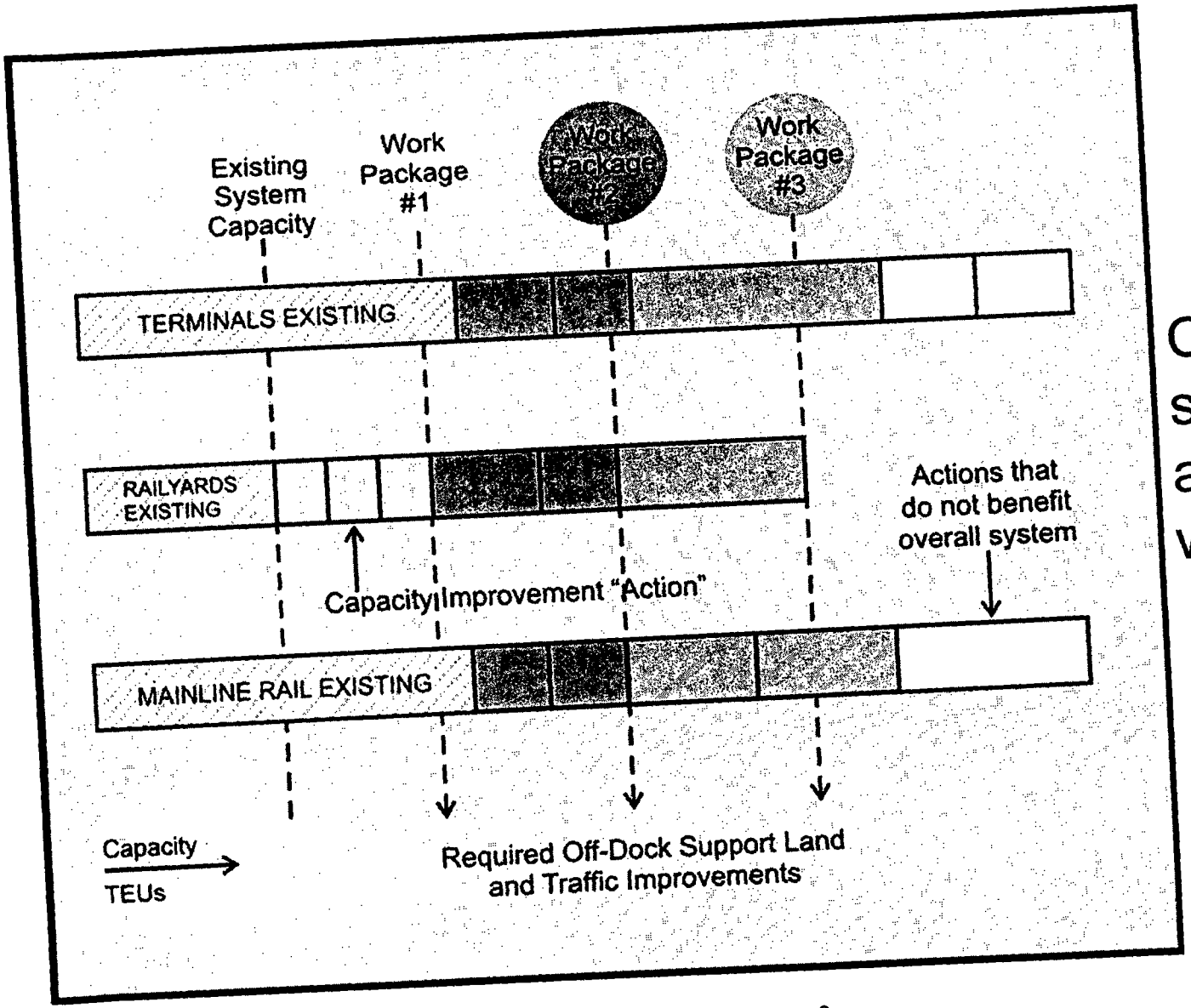
- Growth Responsible to "Triple Bottom Line"
  - Air Quality and Traffic Congestion
    - Mitigation is Essential at All Steps
- Cargo volumes are "Unlimited"
  - Constrained by Infrastructure Limitations
- Improvements in Terminal Productivity Over Time
- High Level Study—Big Picture Analysis

Evaluation of System Components



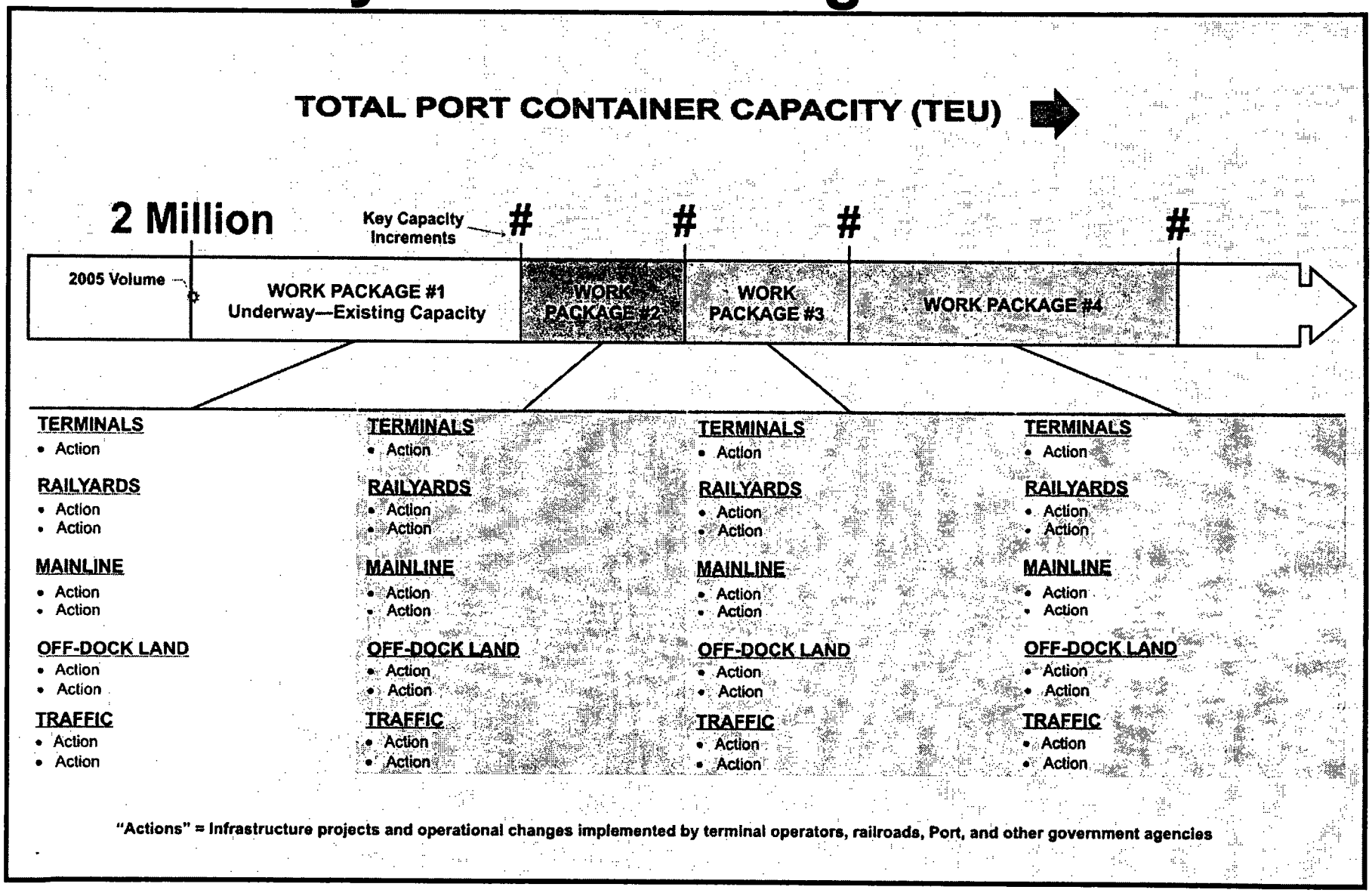
- Container Terminals
- Harbor Area Railyards
- Mainline Rail

"Balanced System"



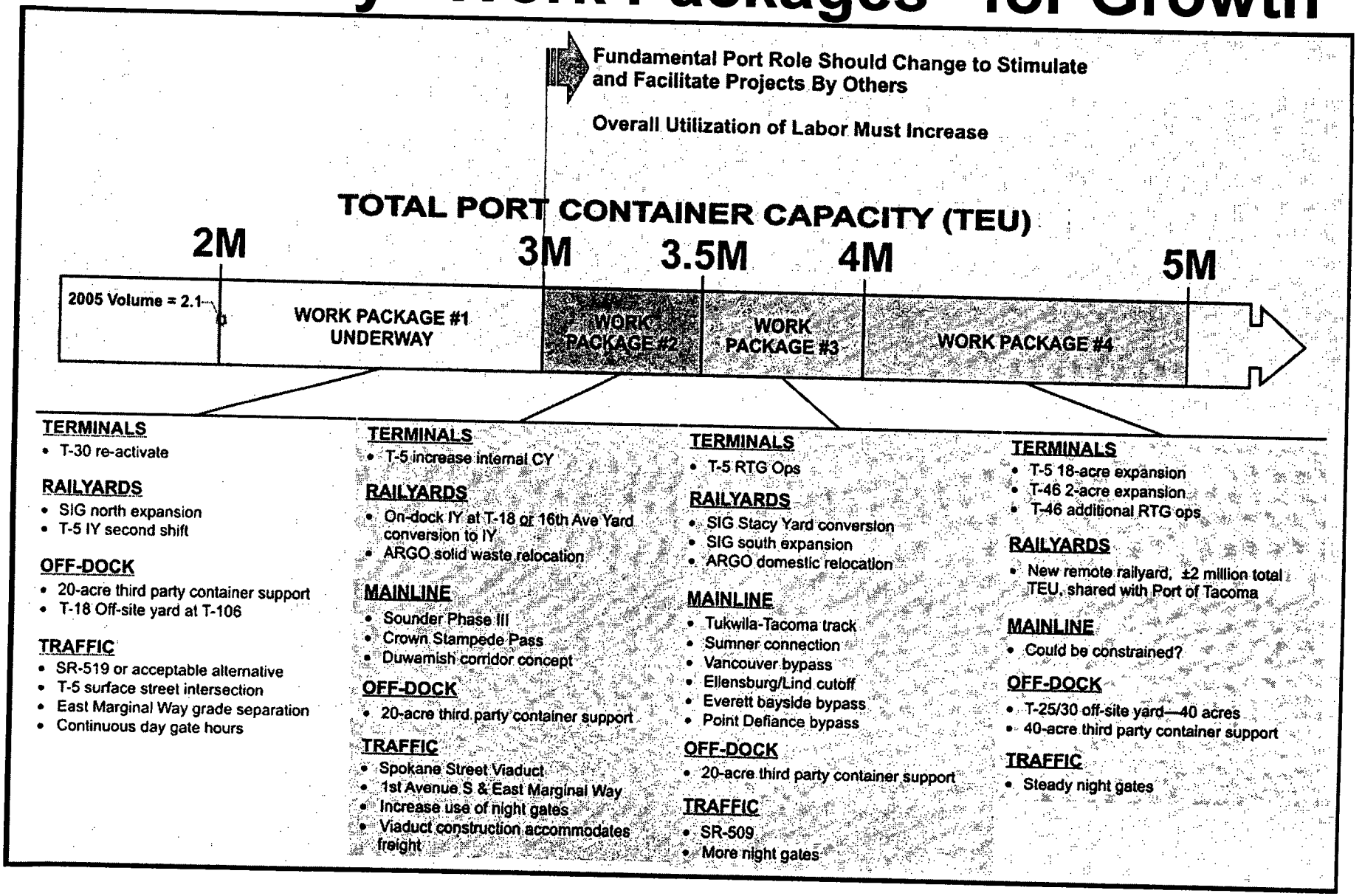
Capacity of the system is only as great as the weakest link

Multi-Party "Work Packages" for Growth

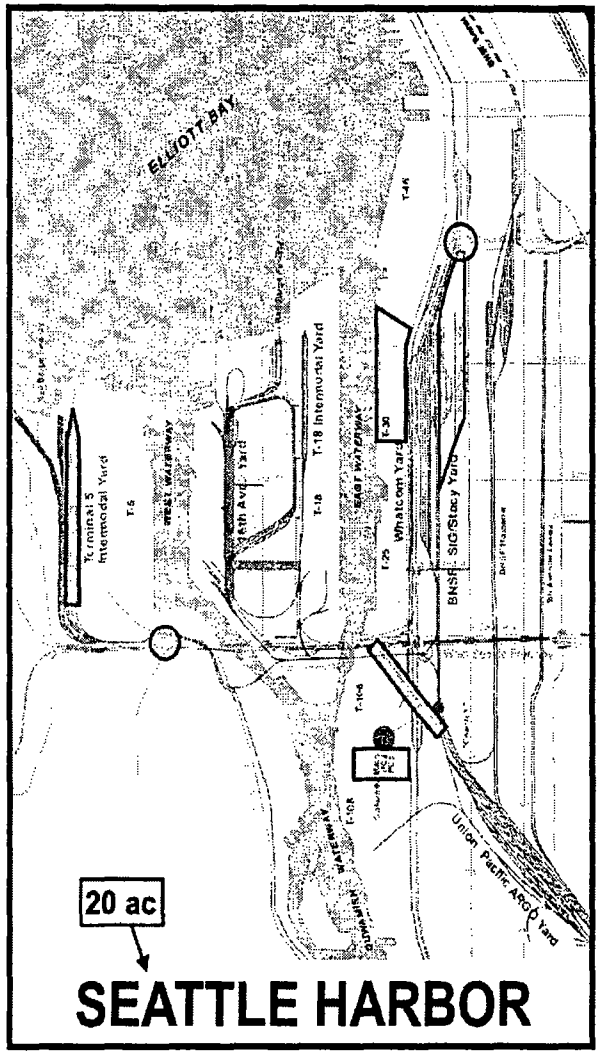


STUDY FINDINGS

Multi-Party "Work Packages" for Growth



3M TEU Work Package



Terminals

- T-30 Reactivate ($120M)

Railyards

- SIG North Expansion & Upgrades ($45M)*
- T-5 IY Second Shift

Off-Dock Land

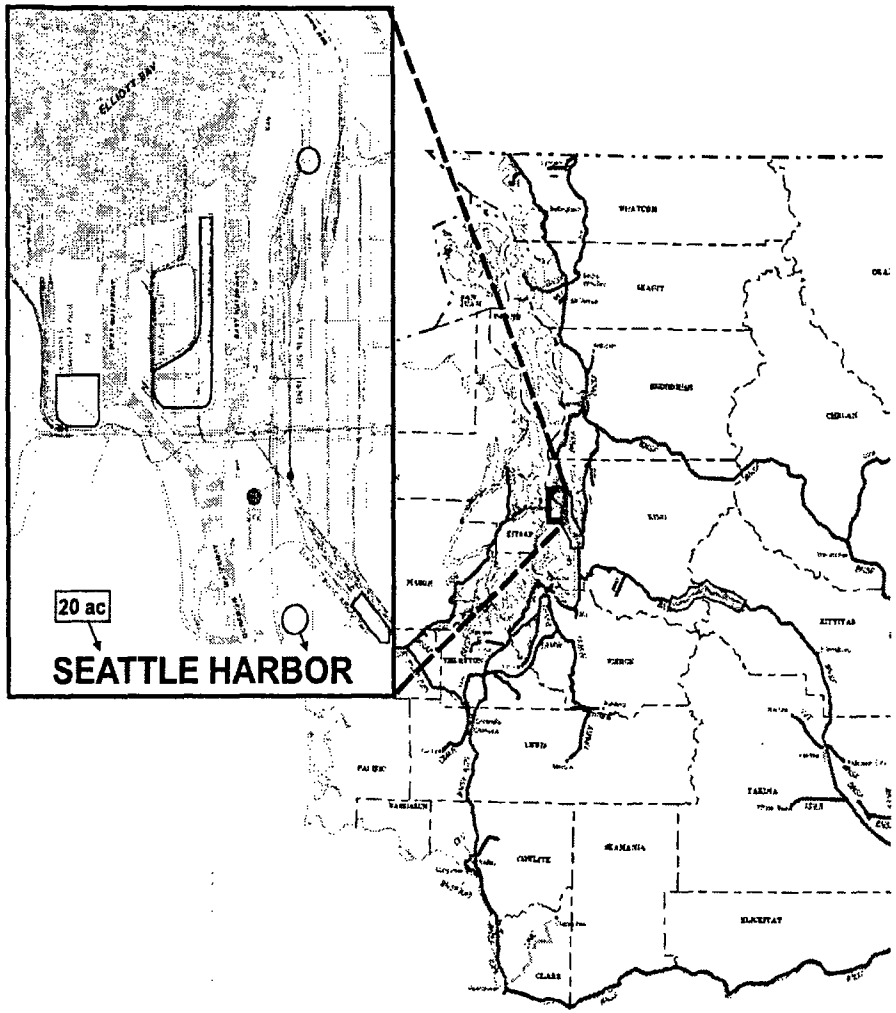
- 20 Acre 3rd Party Container Support ($20M)*
- T-18 Off-Site Yard at T-106 ($9.5M)

Traffic

- SR-519 or Acceptable Alternative
- T-5 Surface Street Intersection
- East Marginal Way Grade Separation
- Continuous day gate hours

*Costs shown are construction order of magnitude, all parties

3.5M TEU Work Package



WESTERN WASHINGTON

Terminals

- T-5 Increase Internal CY ($5M)*

Railyards

- On-Dock IY at T-18 or 16th Ave. Yard Conversion to IY
- Argo Solid Waste Relocation

Mainline

- Sounder Phase III
- Crown Stampede Pass
- Duwamish Corridor Concept

Off-Dock Land

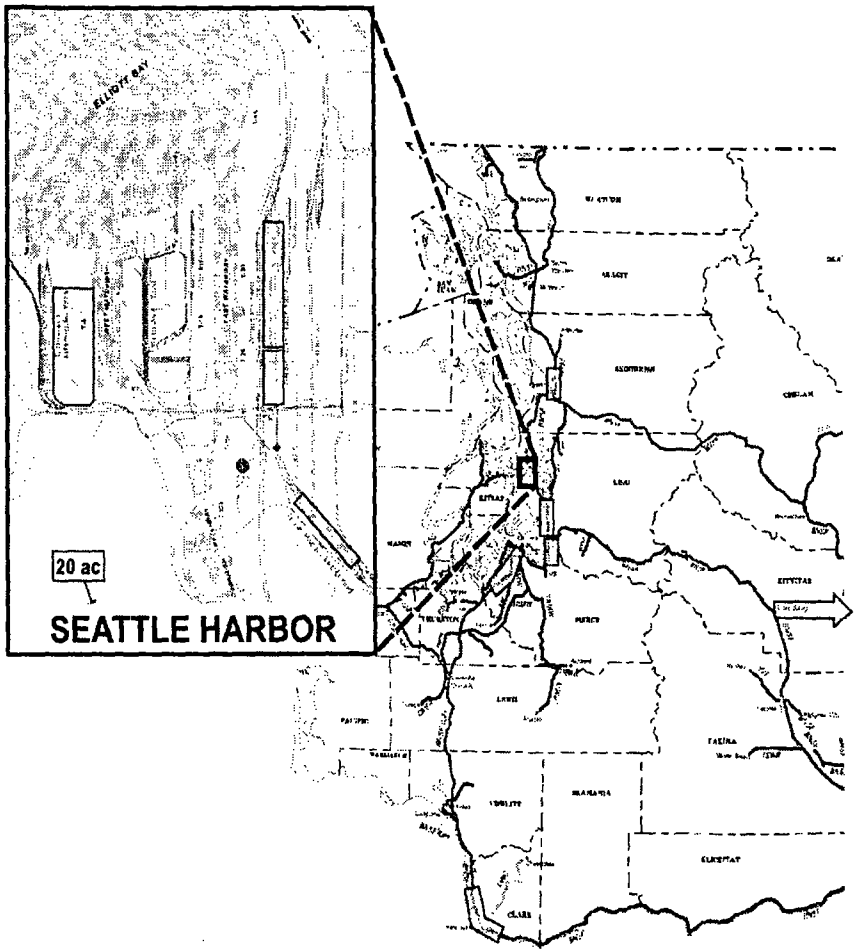
- 20-acre 3rd Party Container Support ($20M)*

Traffic

- Spokane St. Viaduct
- 1st Ave S. & East Marginal Way
- Increase Use of Night Gates
- Viaduct construction accommodates freight

*Costs shown are construction order of magnitude, all parties

4M TEU Work Package



WESTERN WASHINGTON

Terminals
- T-5 Switch to Stacked, RTG Ops ($21M)*

Railyards
- SIG Stacy Yard Conversion ($60M)*
- SIG South Expansion ($60M)*
- ARGO Domestic Relocation ($20M)*

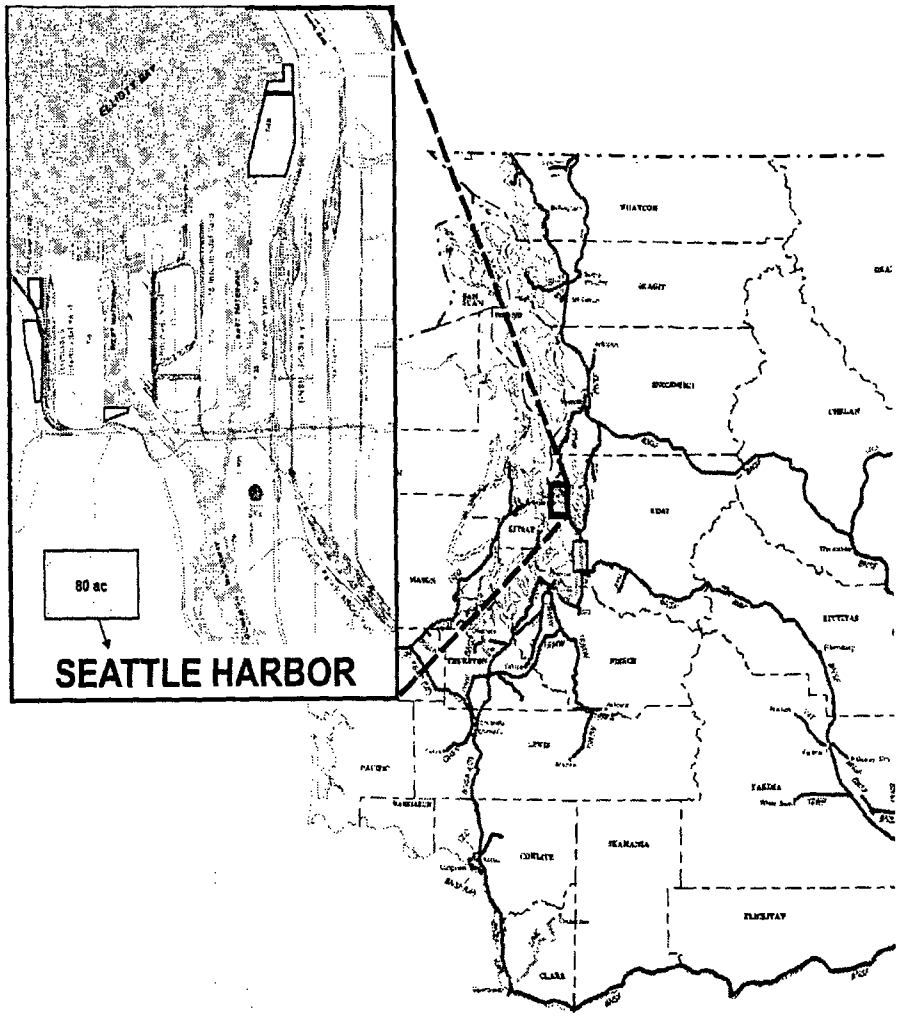
Mainline
- Tukwila–Tacoma Track
- Sumner Connection
- Vancouver Bypass
- Ellensburg–Lind Cutoff
- Everett Bayside Bypass
- Point Defiance Bypass

Off-Dock Land
- 20-acre 3rd Party Container Support ($20M)*

Traffic
- SR-509
- More Night Gates

*Costs shown are construction order of magnitude, all parties

5M TEU Work Package



WESTERN WASHINGTON

Terminals

- T-5 18-Acre Expansion ($15M)*
- T-46 2-Acre Expansion ($2M)*
- T-46 Additional RTG Ops ($1.5M)*

Railyards

- New Remote Railyard ~ 200 acres, shared with Port of Tacoma ($200M)*

Mainline

- Could be constrained?

Off-Dock Land

- T-25/30 Off-Site Yard 40 Acres ($60M)*
- 40 Acre 3rd Party Container Support ($40M)*

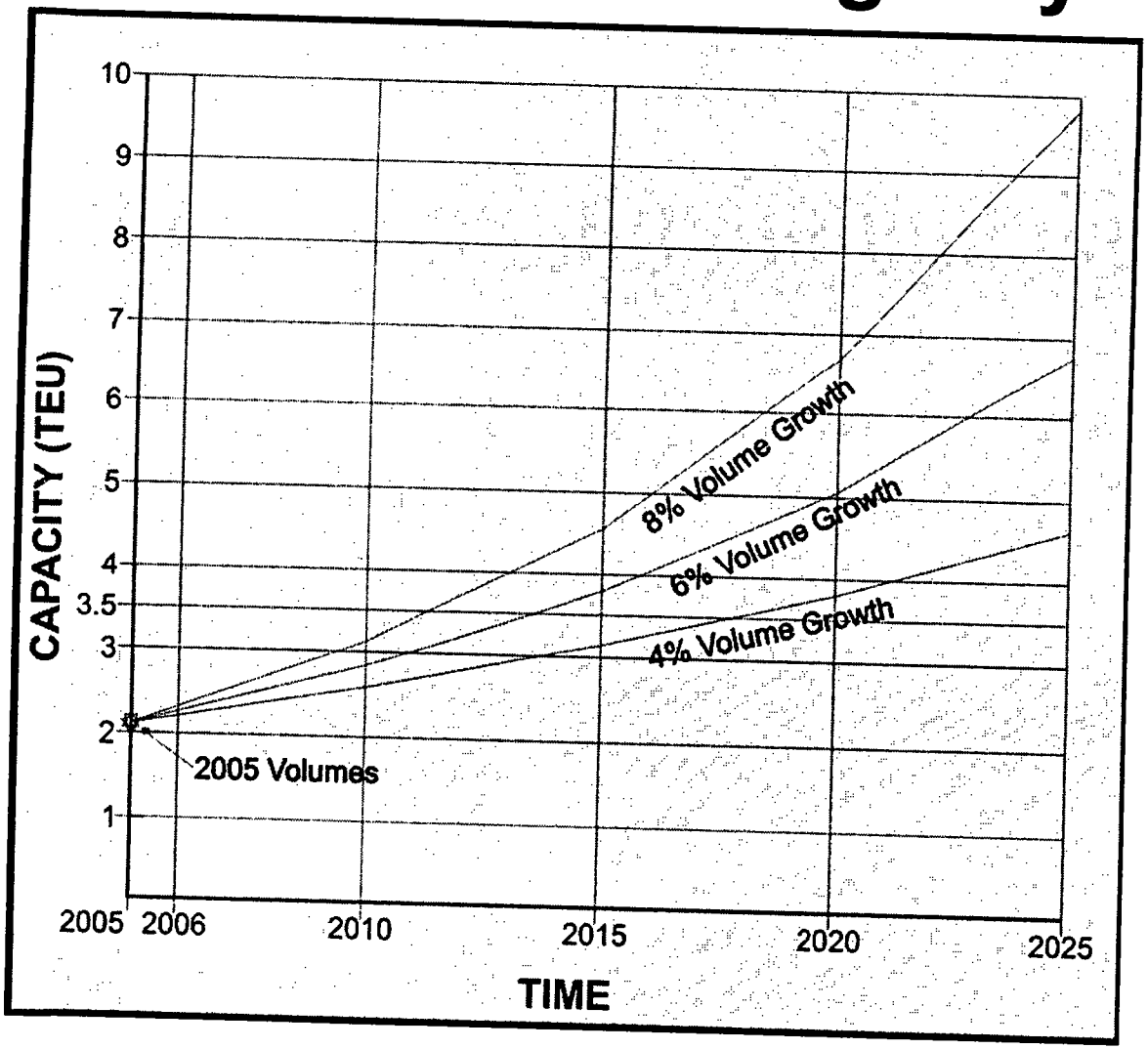
Traffic

- Steady Night Gates

*Costs shown are construction order of magnitude, all parties

STUDY SUMMATION

Urgency



- Planning and Deployment of Work Packages Should Start Soon to Accommodate Growth
- Volume Growth May Exceed Ability to Deploy Needed Infrastructure

Key Overall Messages

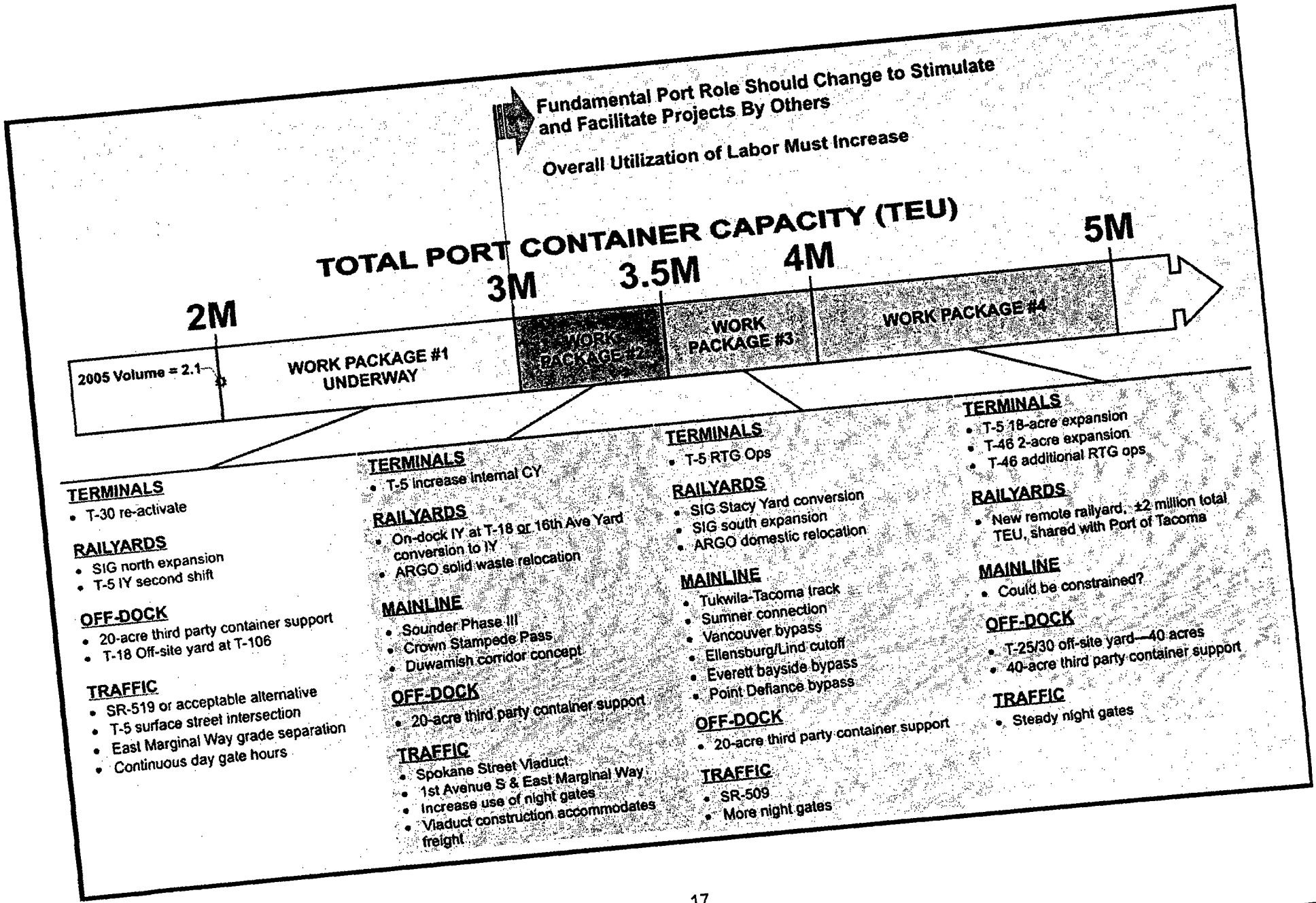
- Capacity Constraints
  - Marine Terminals are not the Constraint
  - Partnering with Labor for Increased Productivity Required
- Primary Capacity Constraint
  - Harbor Area Railyards
- Secondary Capacity Constraints
  - Mainline Rail
  - Off-Dock Support
- Changing Port Role to Achieve More Than 3M

Catalyst?

Facilitator?

Partner?

Contributor?


Fundamental Port Role Should Change to Stimulate and Facilitate Projects By Others
Overall Utilization of Labor Must Increase
TOTAL PORT CONTAINER CAPACITY (TEU)
2M
3M
3.5M
4M
5M
2005 Volume = 2.1
WORK PACKAGE #1 UNDERWAY
WORK PACKAGE #2
WORK PACKAGE #3
WORK PACKAGE #4
TERMINALS
• T-30 re-activate
RAILYARDS
• SIG north expansion
• T-5 IY second shift
OFF-DOCK
• 20-acre third party container support
• T-18 Off-site yard at T-106
TRAFFIC
• SR-519 or acceptable alternative
• T-5 surface street intersection
• East Marginal Way grade separation
• Continuous day gate hours
TERMINALS
• T-5 increase internal CY
RAILYARDS
• On-dock IY at T-18 or 16th Ave Yard conversion to IY
• ARGO solid waste relocation
MAINLINE
• Sounder Phase III
• Crown Stampede Pass
• Duwamish corridor concept
OFF-DOCK
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TRAFFIC
• Spokane Street Viaduct
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TERMINALS
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• Everett bayside bypass
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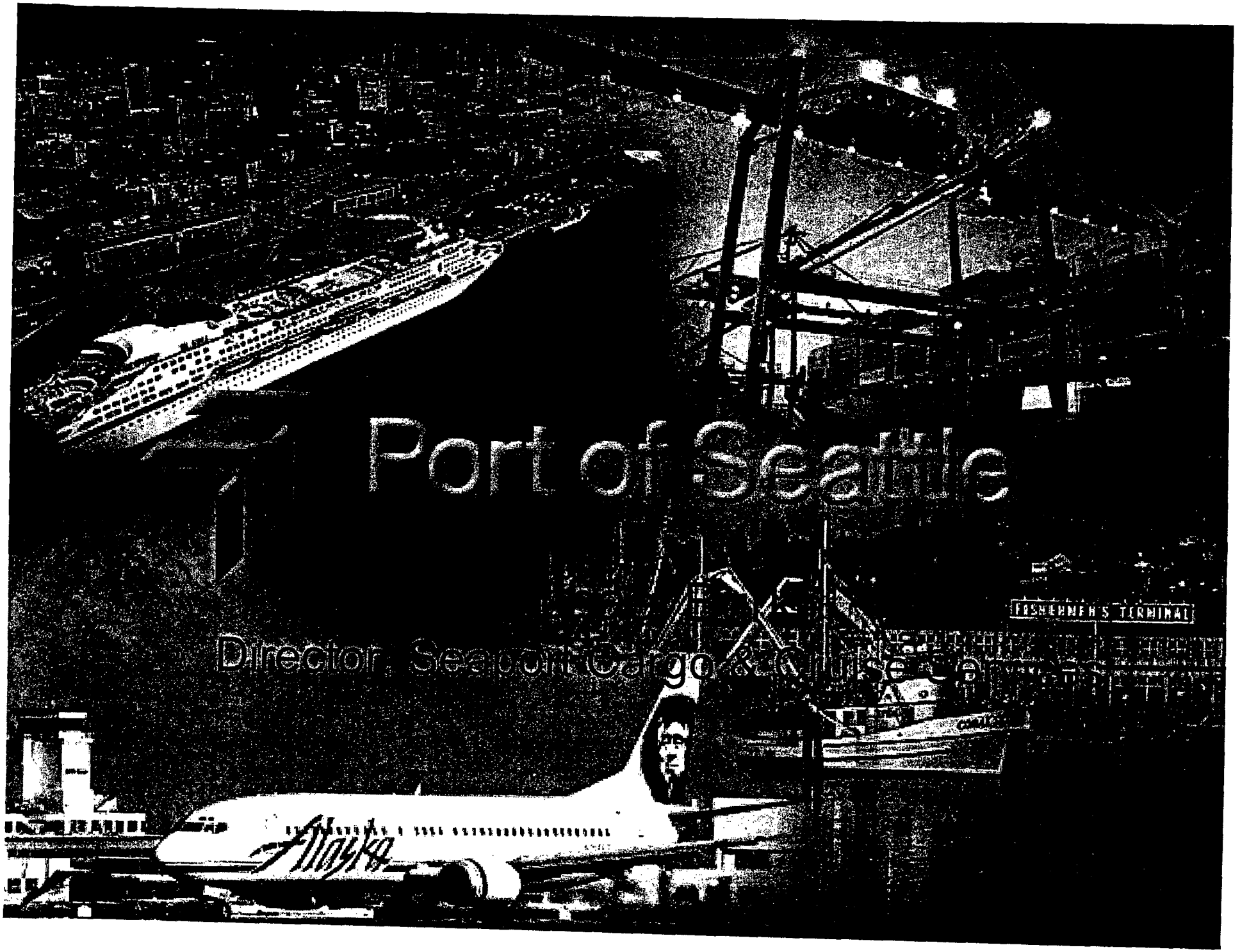
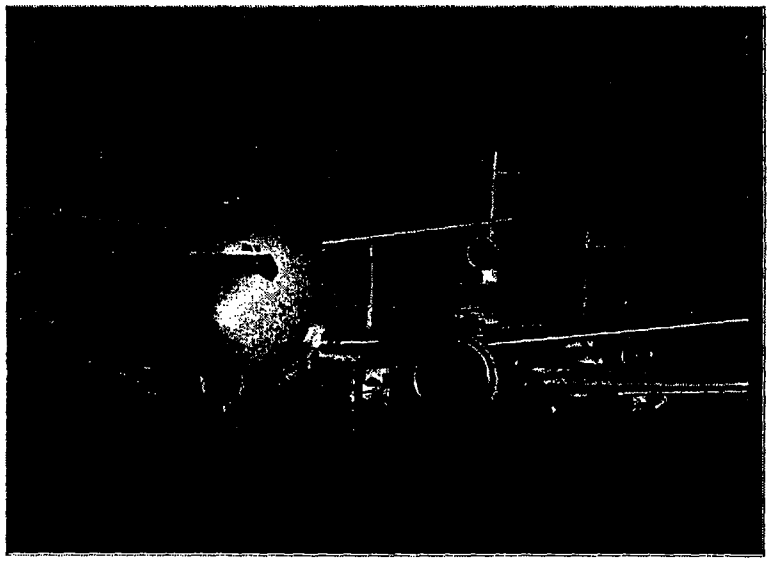
OFF-DOCK
• 20-acre third party container support
TRAFFIC
• SR-509
• More night gates
TERMINALS
• T-5 18-acre expansion
• T-46 2-acre expansion
• T-46 additional RTG ops
RAILYARDS
• New remote railyard, ±2 million total TEU, shared with Port of Tacoma
MAINLINE
• Could be constrained?
OFF-DOCK
• T-25/30 off-site yard—40 acres
• 40-acre third party container support
TRAFFIC
• Steady night gates


Port of Seattle
Questions?
FISHERMEN'S TERMINAL
Alaska

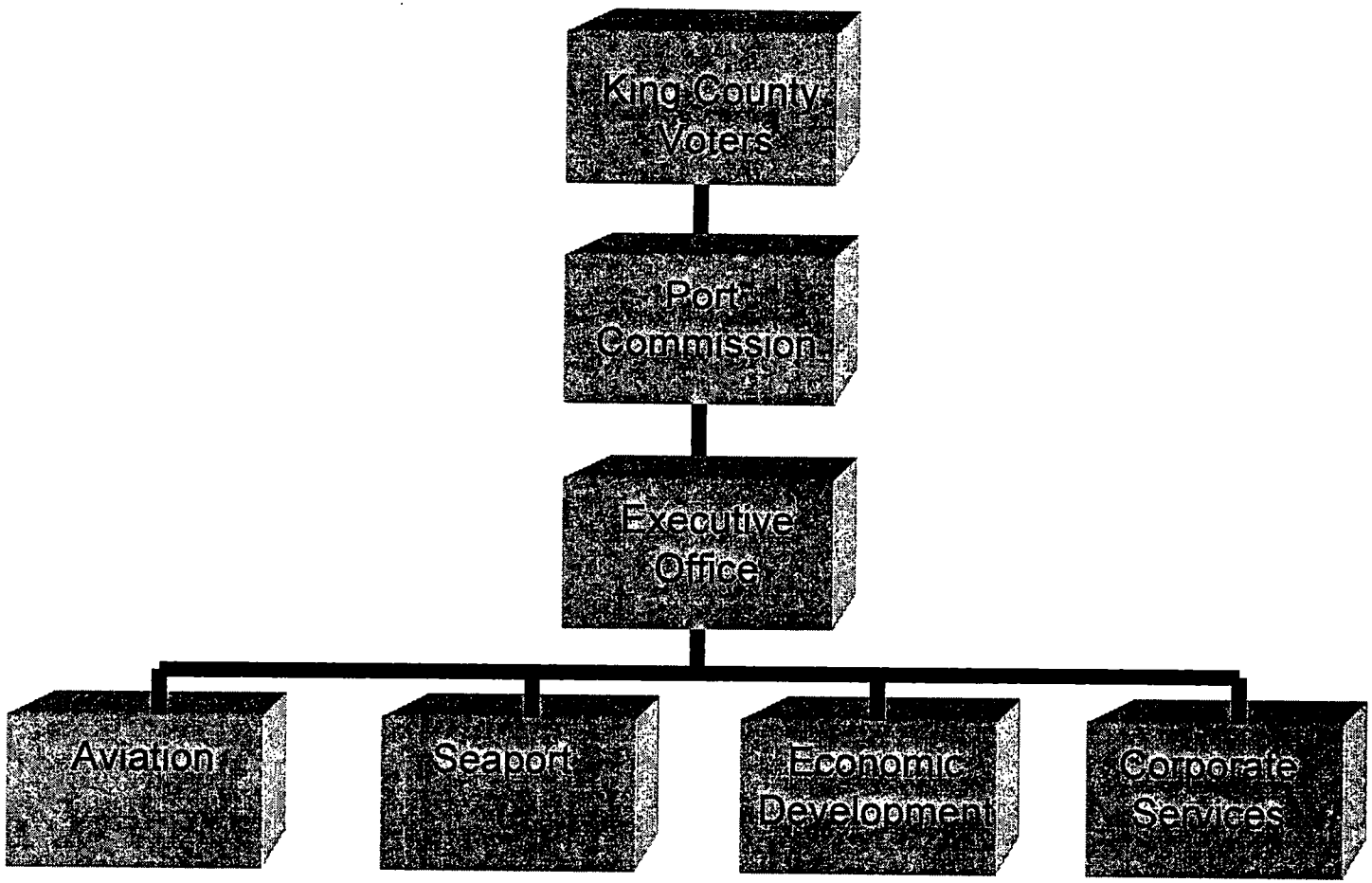

Port of Seattle
Director, Seaport Cargo & Business
FISHERMEN'S TERMINAL
Alaska

Port of Seattle

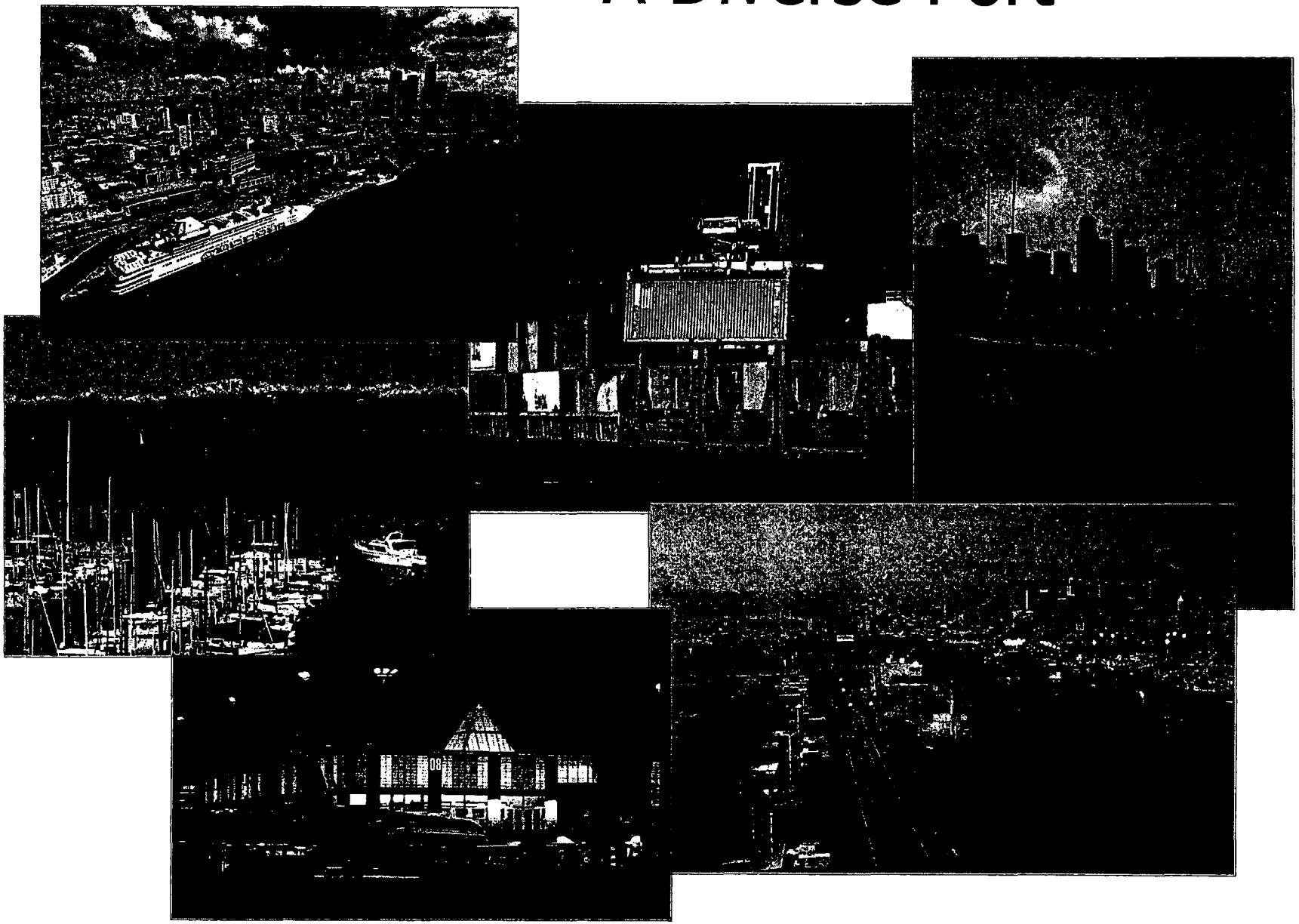
- *Established in 1911*
- *Independent, special purpose district*
- *Boundary co-terminus with King County*
- *Authority granted to develop and operate Sea-Tac International Airport in the 1940's*
- *Nation's third largest consolidated port and airport system*



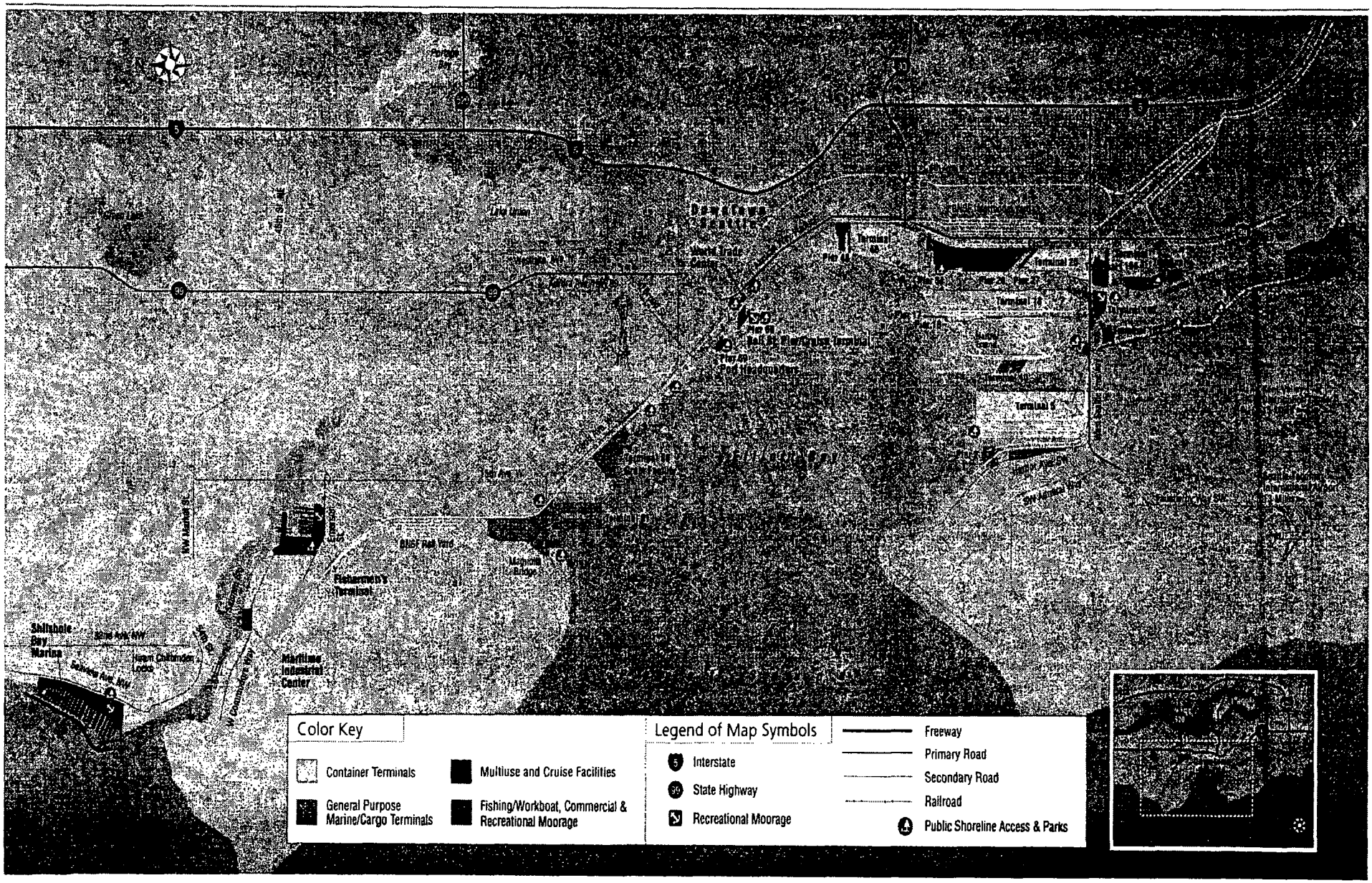
Port of Seattle Organization



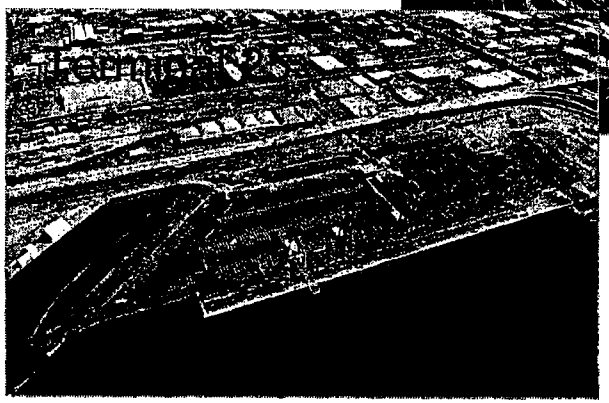
A Diverse Port

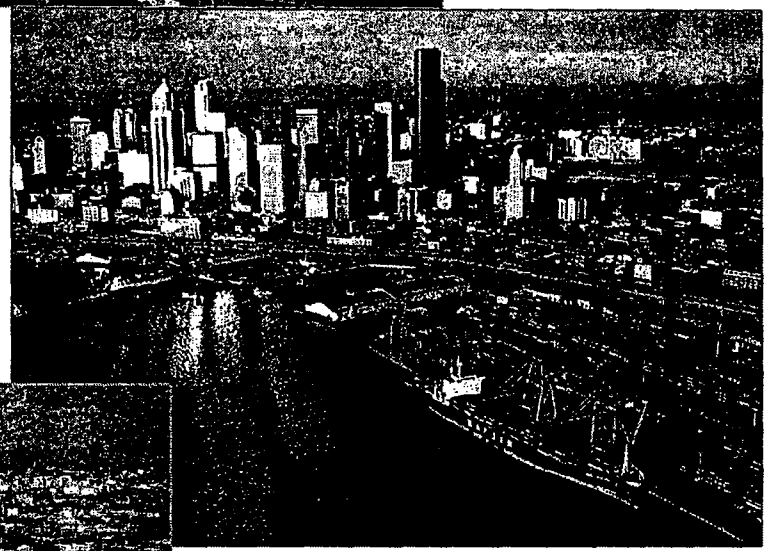


Seaport Facilities

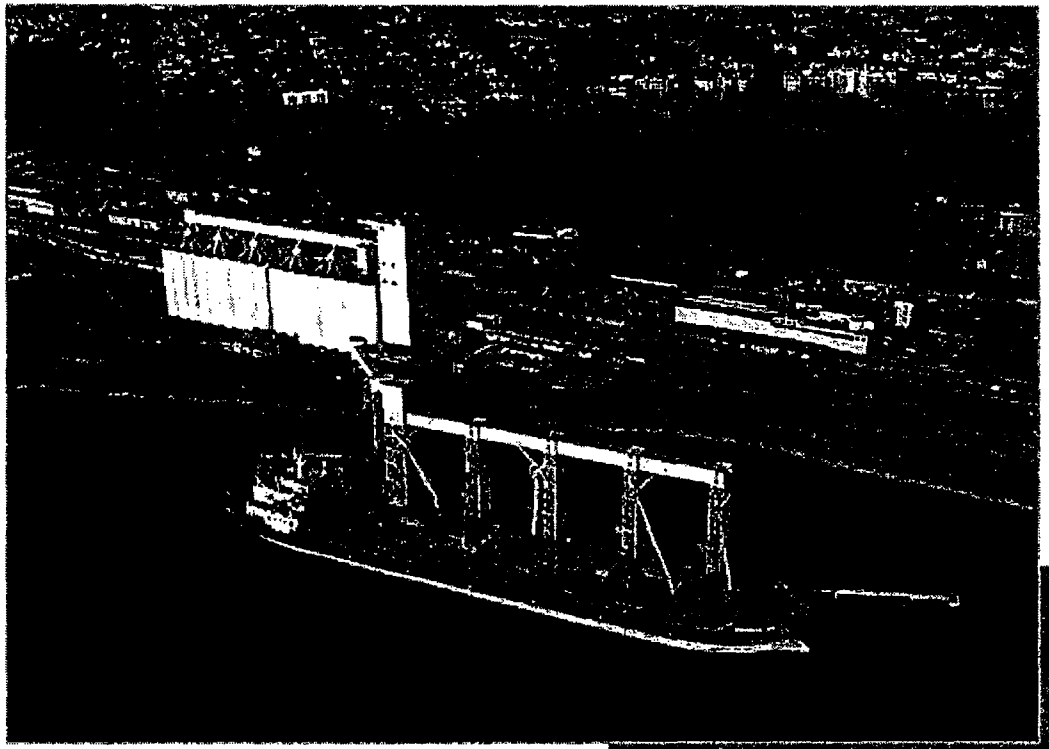


Investing to accommodate growth…

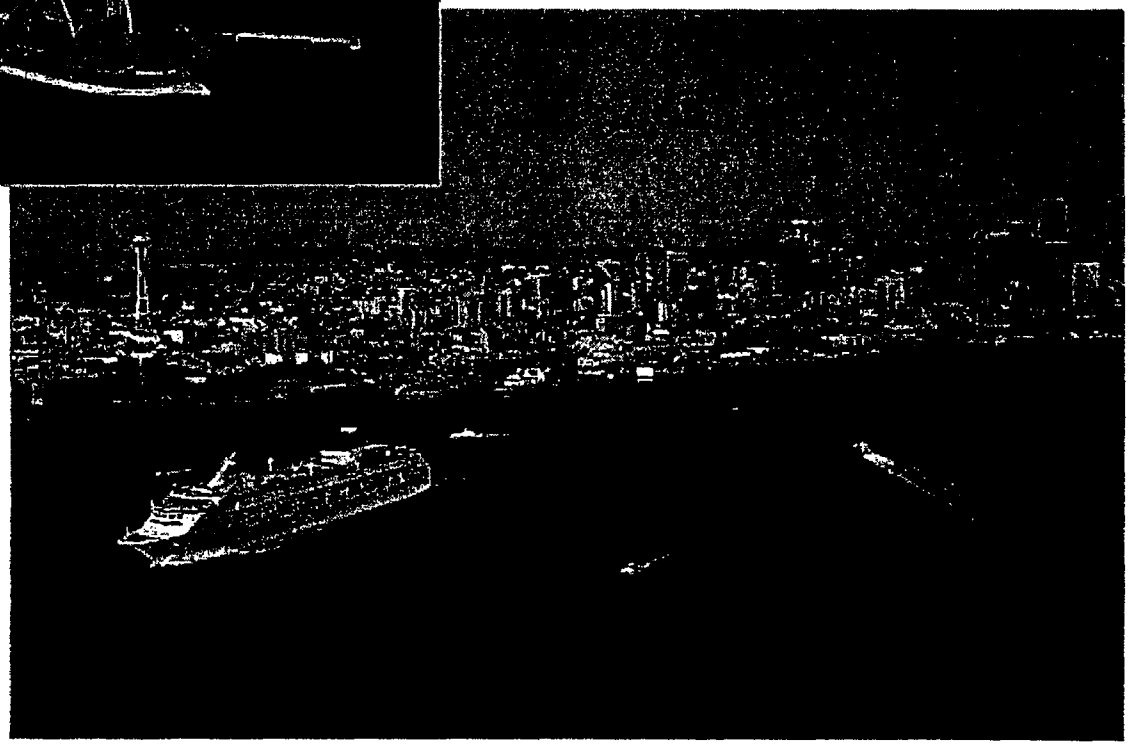




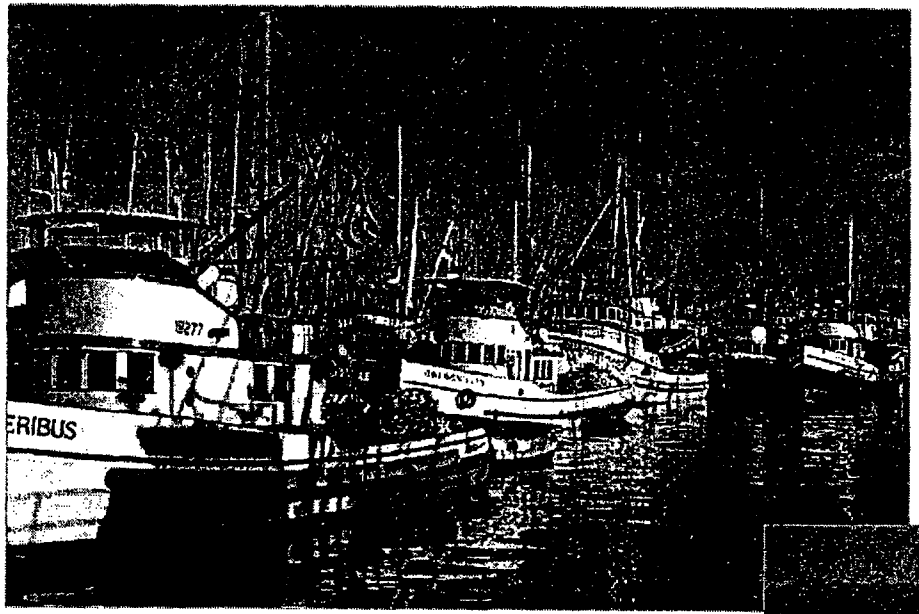
$1 billion in Container Terminal investments



Grain

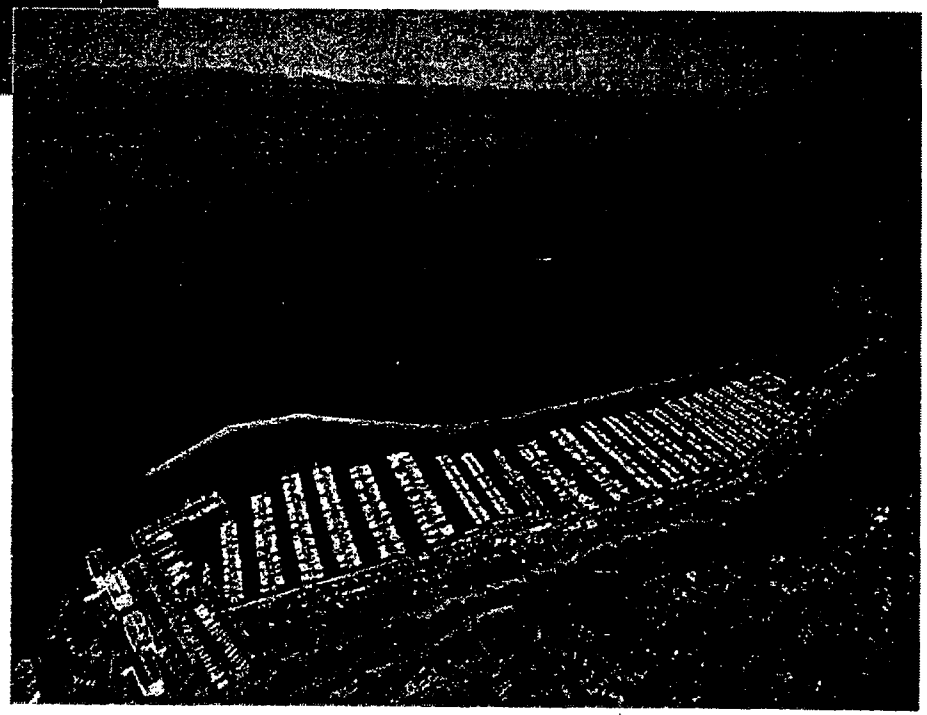


Cruise

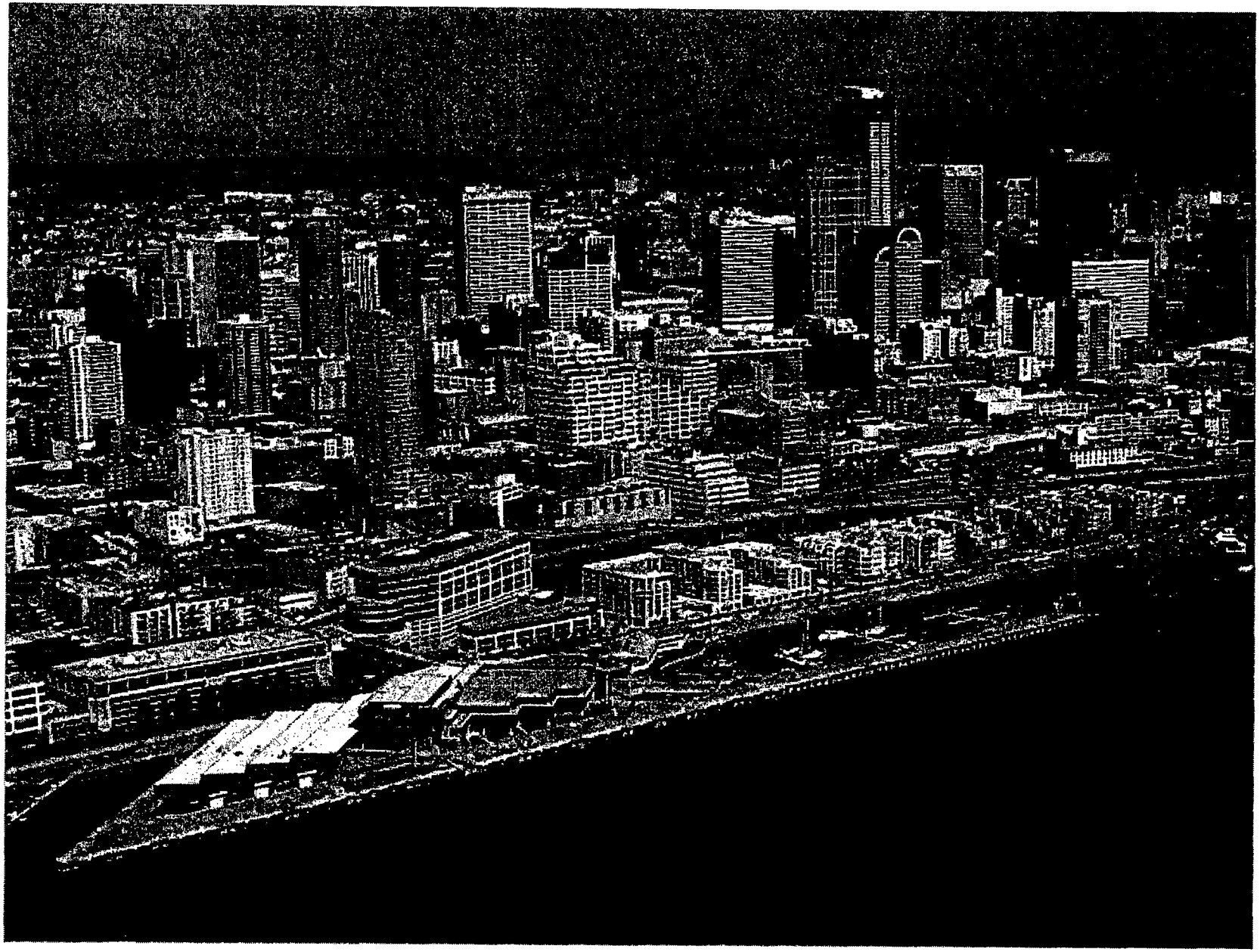


Fishermen's Terminal~

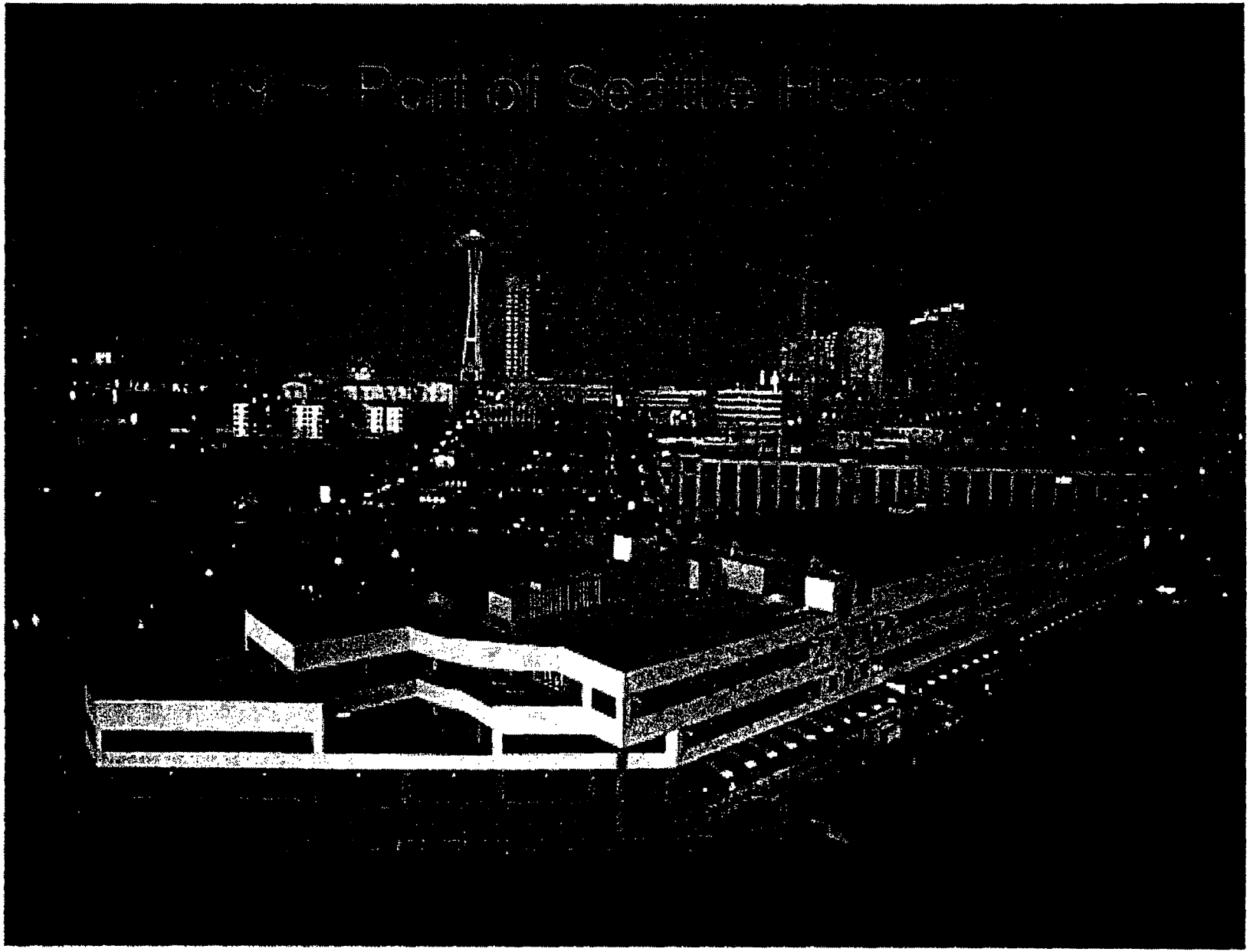
home of the north Pacific Fishing Fleet



Shilshole Bay Marina

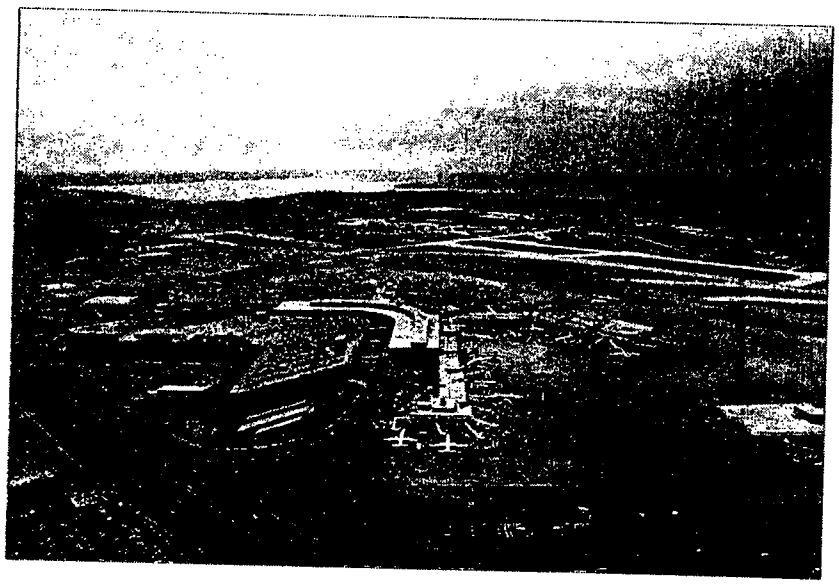


ebay

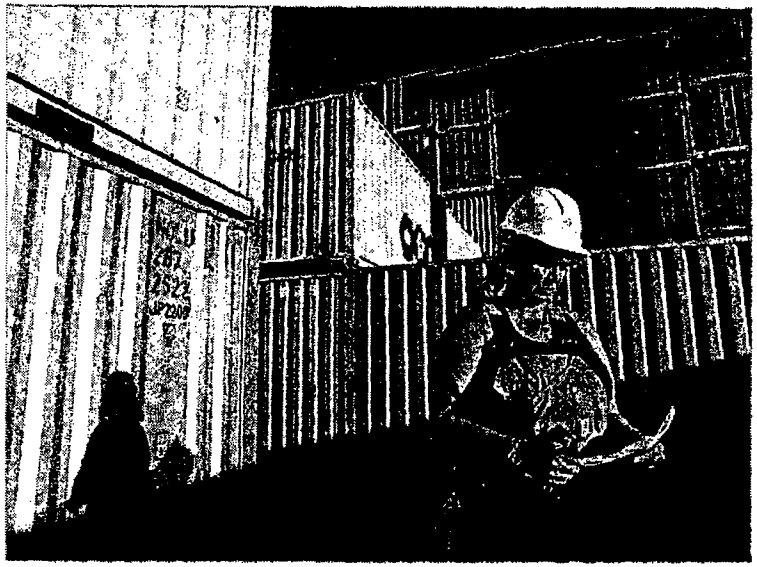


Sea-Tac Airport

- *29.3 million passengers served in 2005*
- *17th largest airport in North America*
- *28 airlines provide scheduled passenger service*
- *Over 500 daily departures*
- *Over 80 destinations*

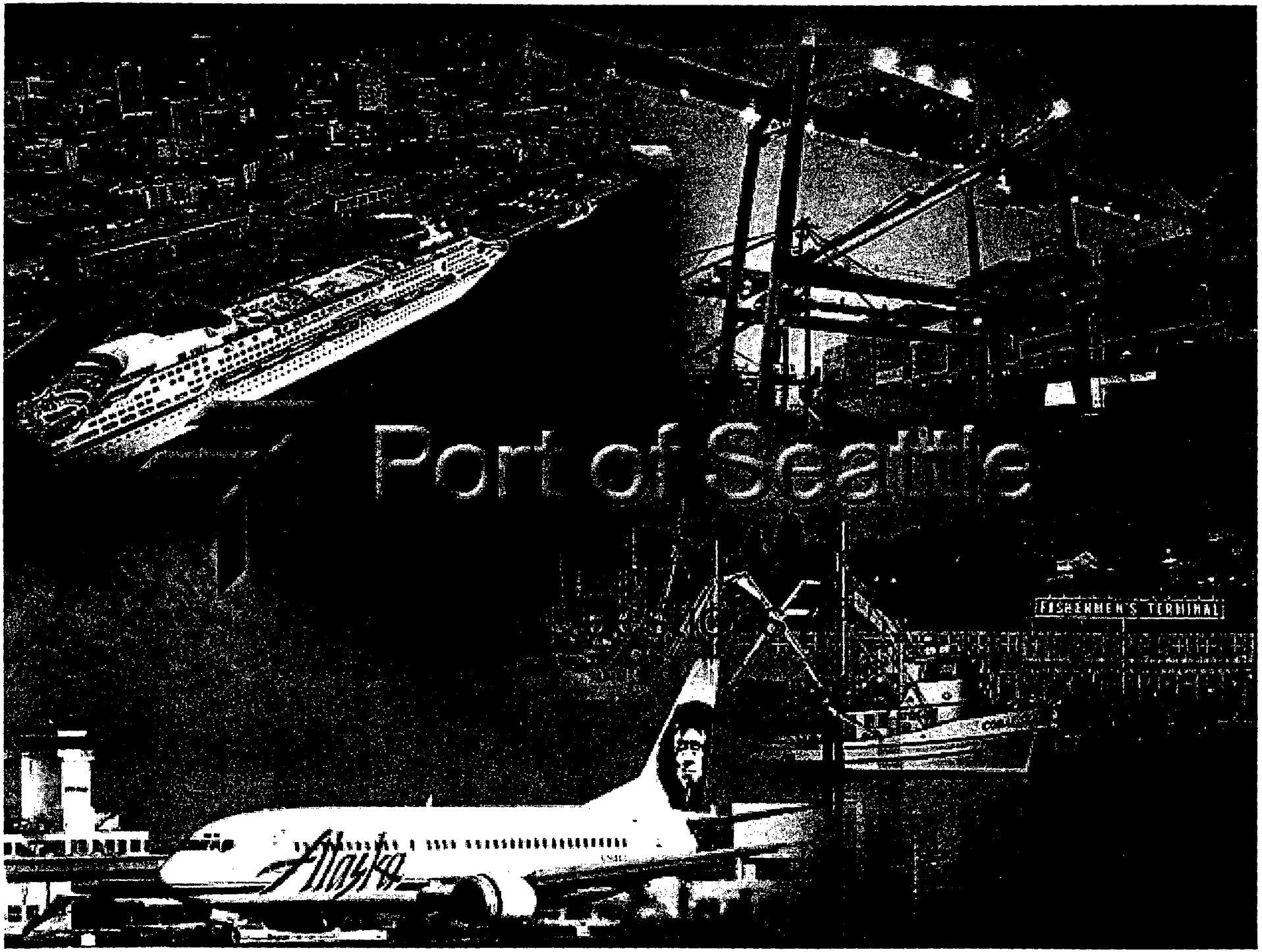


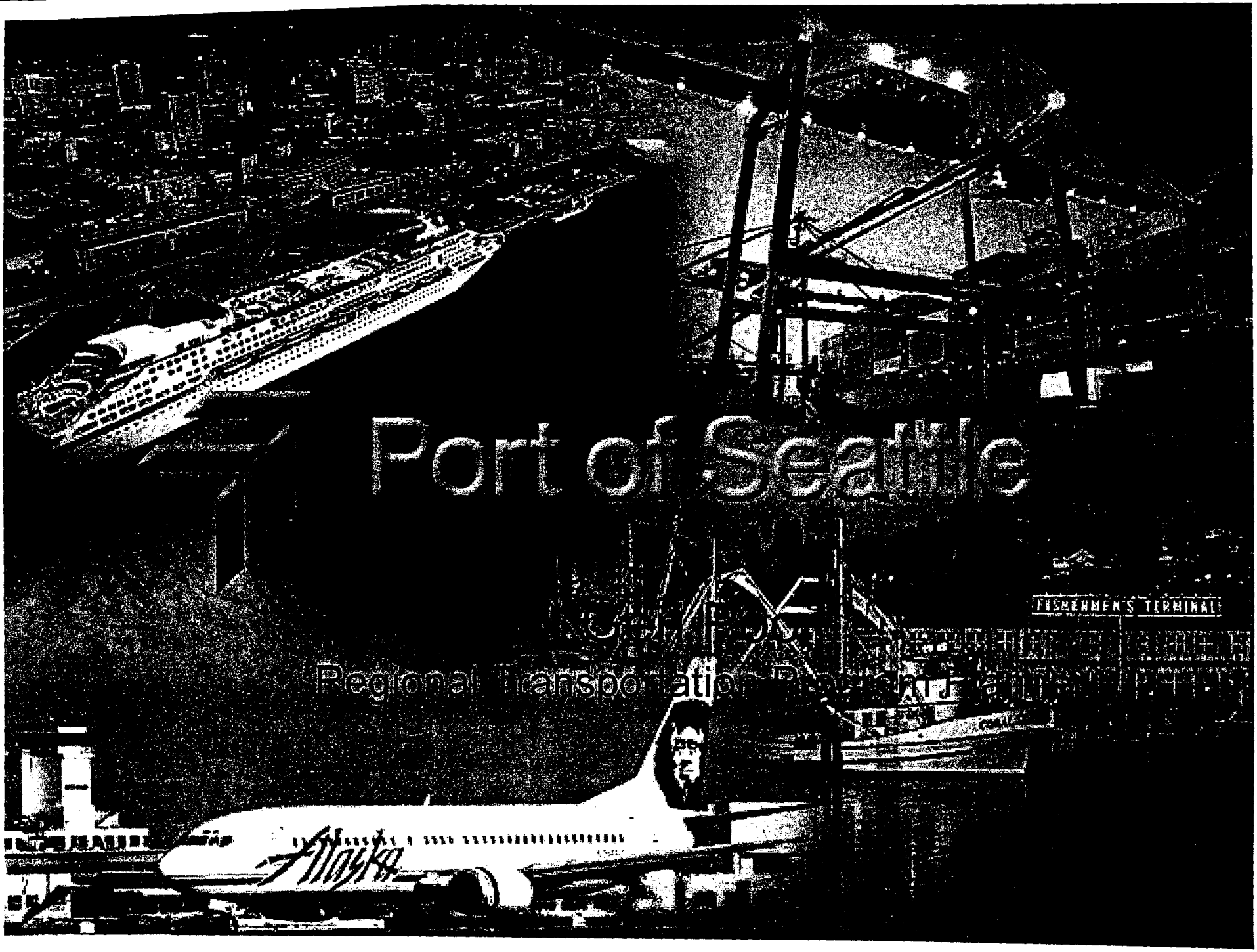
The Port as an economic engine



Port activities support:

- Over 36 thousand direct jobs
- $3 billion in direct employee payroll
- Over $3 billion in local spending
- $626 million of state and local taxes


Port of Seattle
FISHERMEN'S TERMINAL
Alaska


Port of Seattle
Regional Transportation
FISHERMEN'S TERMINAL
Alaska

Port of Seattle
Mission and Strategies

Mission:

Creating Economic Vitality HERE.

Strategies:

- *Ensure Airport and Seaport Vitality*
- *Develop new Economic Opportunities*
- *Enhance Public Understanding of the Port*
- *Be a catalyst for Regional Transportation solutions*
- *Be a leader in transportation Security*
- *Exhibit Environmental Stewardship*
- *Be a High Performance Organization*

POS Regional Transportation Objectives

*Be a **catalyst** for regional transportation **solutions***

- Ensure long-term effective access to airport and seaport facilities
- Provide access to future land development projects
- Promote regional economic competitiveness

New Roles in Regional Transportation

Old Model:

Investments stop at property line

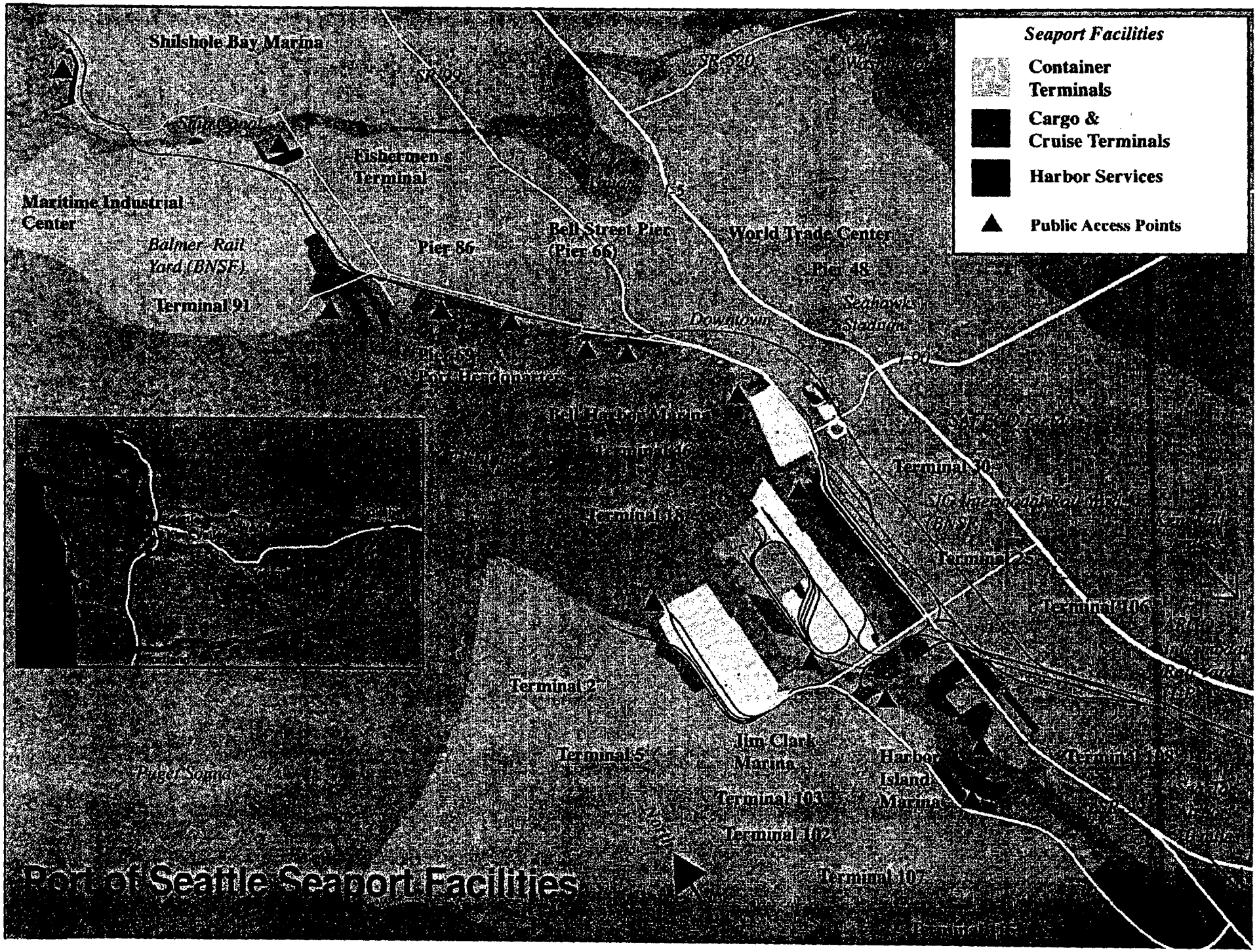
- Port = terminals
- City = arterials
- State = highways
- Feds = interstates
- Railroads = tracks

New Model:

Port contributes to jointly funded project.

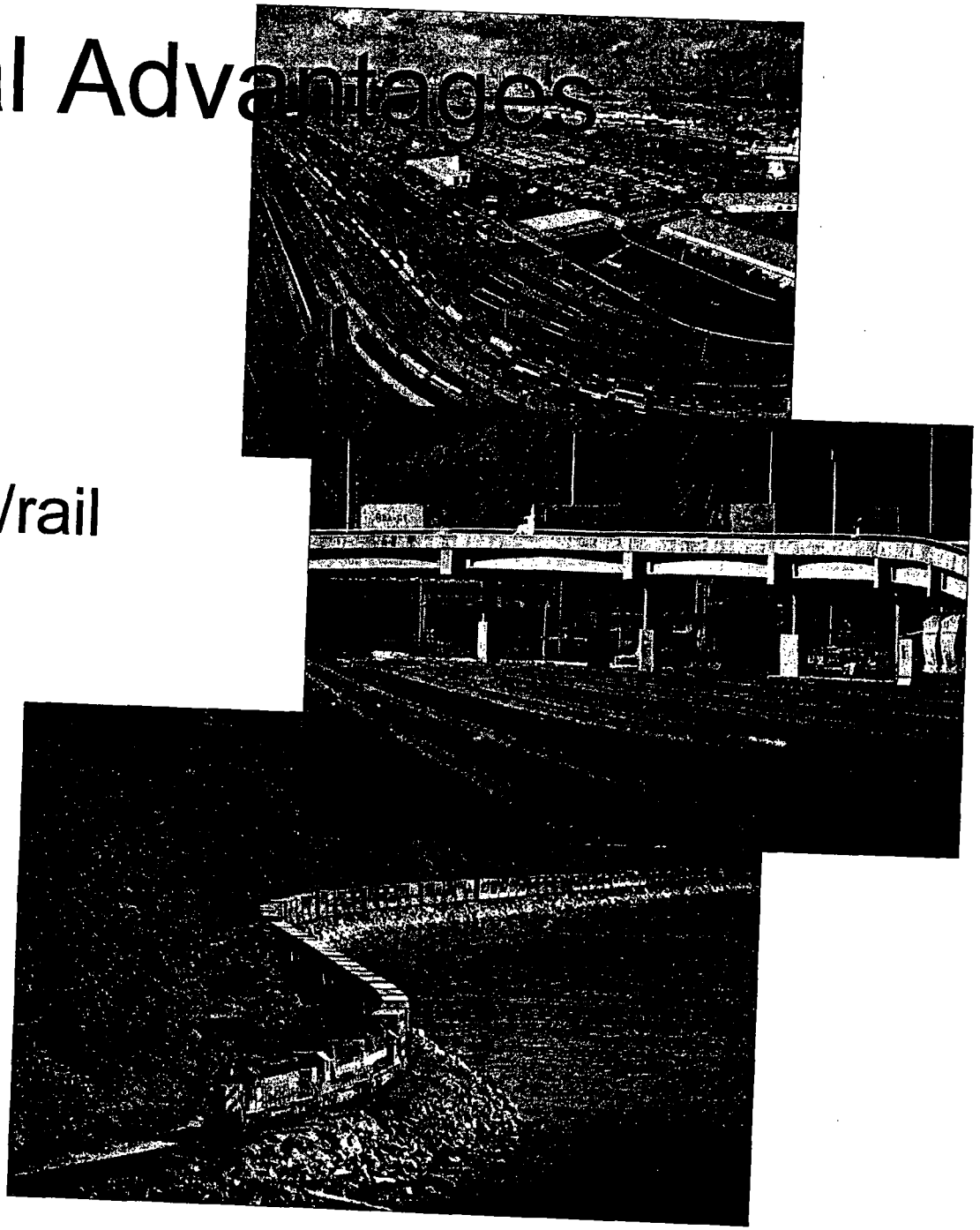
Leverages our investments, influences:

- What is planned
- How it's designed
- When it's constructed

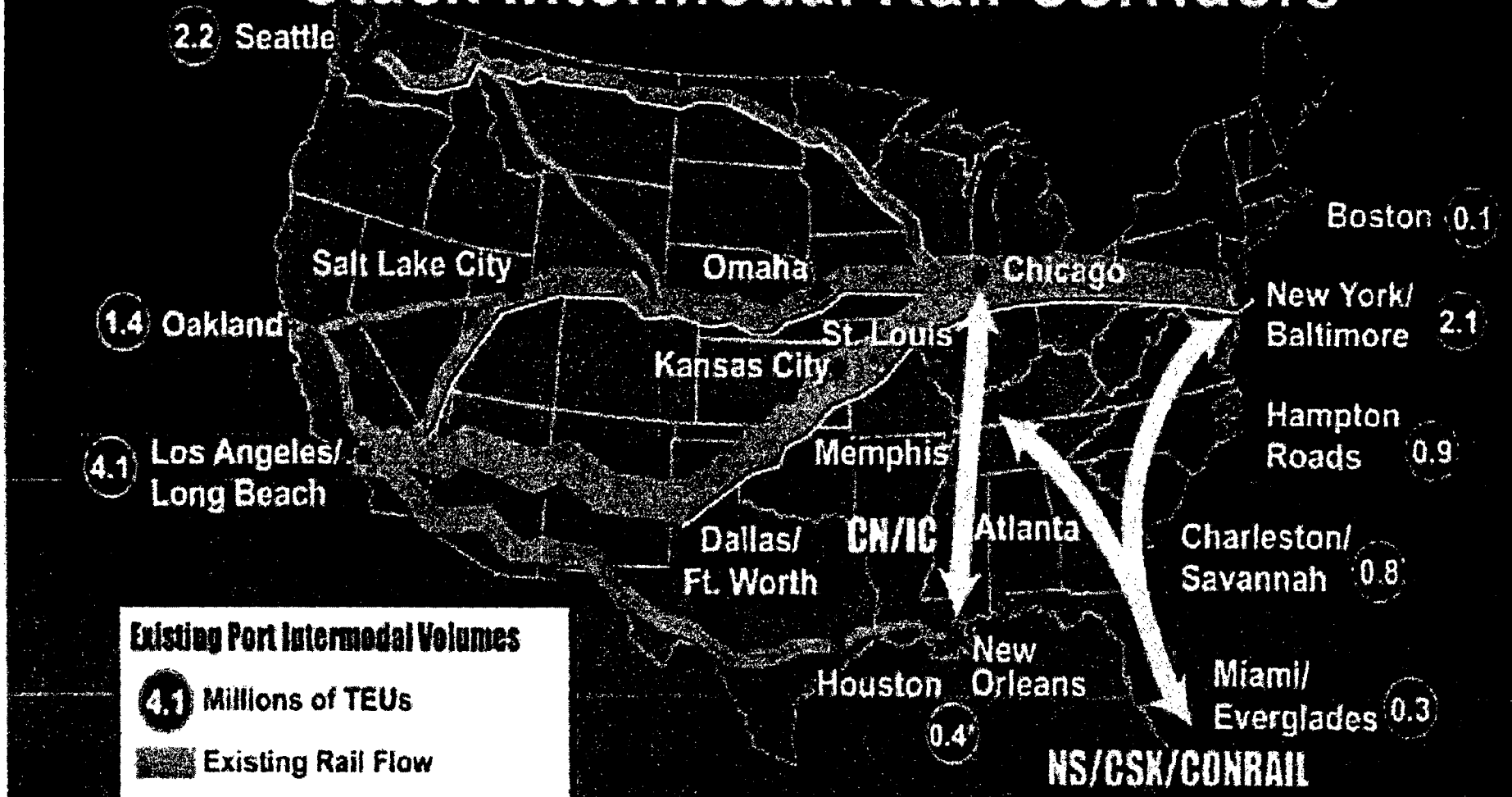

Seaport Facilities
Container Terminals
Cargo & Cruise Terminals
Harbor Services
Public Access Points
Shilshole Bay Marina
Fishermen's Terminal
Maritime Industrial Center
Balmer Rail Yard (BNSF)
Terminal 91
Pier 86
Bell Street Pier (Pier 66)
World Trade Center
Pier 48
Seahawk Stadium
Downtown
Port Headquarters
Terminal 30
Terminal 25
Terminal 106
Terminal 2
Terminal 5
Jim Clark Marina
Terminal 103
Terminal 102
Harbor Island Marinas
Terminal 107
Terminal 108
Puget Sound
Port of Seattle Seaport Facilities

Intermodal Advantages

- Congestion free terminals
- Superior intermodal/rail access
- Transportation investments
- Partnerships & Communication



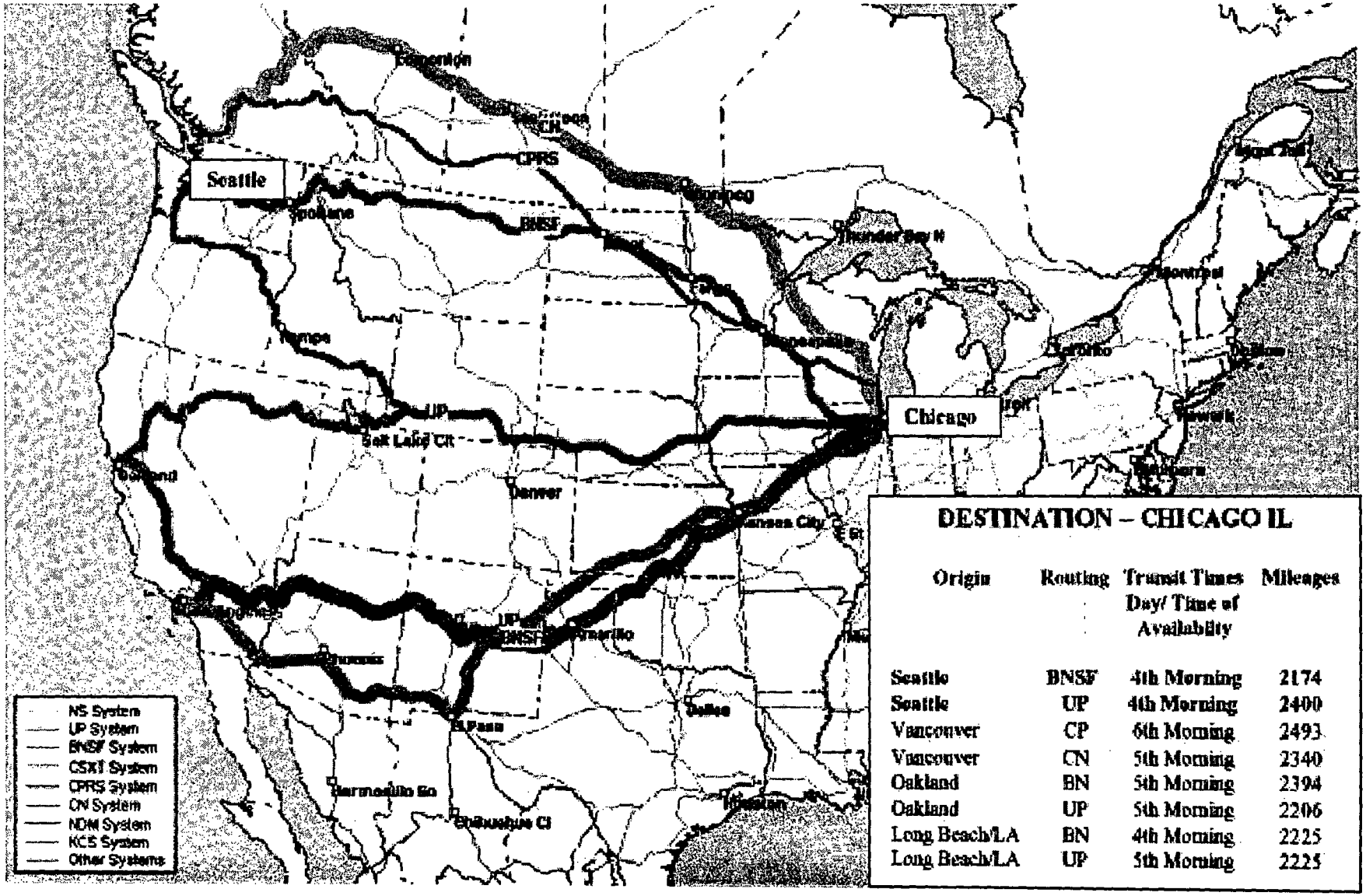
Emerging New North-South Double - Stack Intermodal Rail Corridors



Source: Double-Stack Container Systems: Implications for U.S. Railroads and Ports, U.S. DOT/VZM/TranSystems

TRANSYSTEMS

COMPARISON OF RAIL MILEAGES AND TRANSIT TIMES
PORT OF SEATTLE

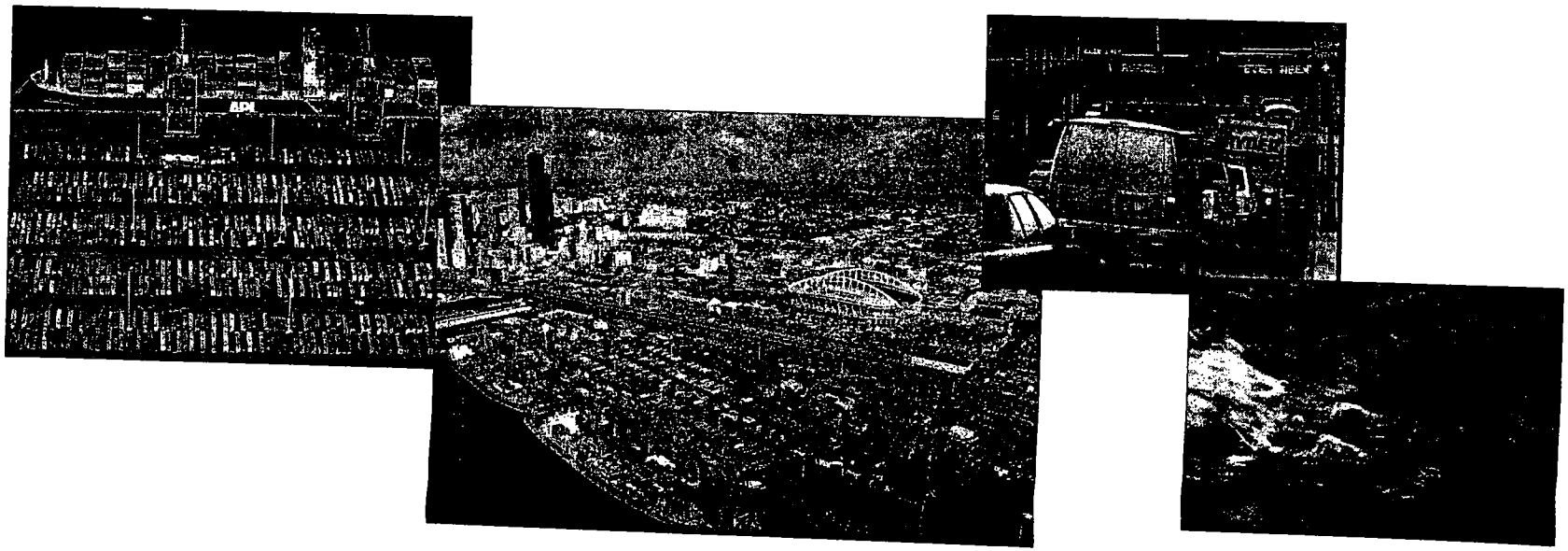


DESTINATION – CHICAGO IL

Origin	Routing	Transit Times Day/ Time of Availability	Mileages
Seattle	BNSF	4th Morning	2174
Seattle	UP	4th Morning	2400
Vancouver	CP	6th Morning	2493
Vancouver	CN	5th Morning	2340
Oakland	BN	5th Morning	2394
Oakland	UP	5th Morning	2206
Long Beach/LA	BN	4th Morning	2225
Long Beach/LA	UP	5th Morning	2225

Transportation Pressures

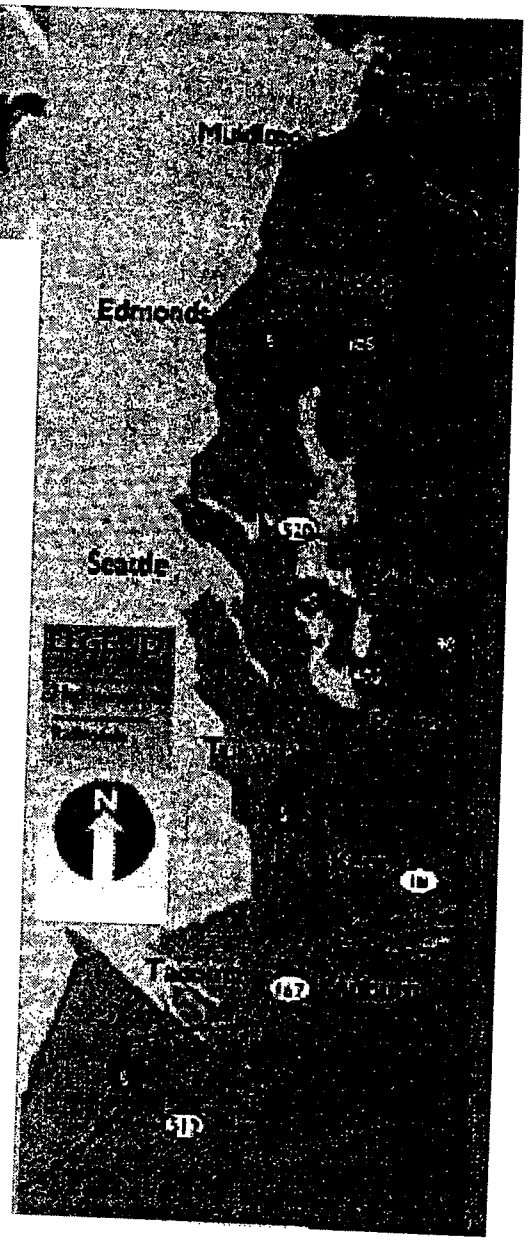
- Bigger ships, more containers
- Commuter rail
- Urban infringement and increased trips
- Poor maintenance in industrial areas
- Government regulation



FAST Corridor

FAST focuses on Puget Sound freight corridors linking:

- Three deep-water international ports
- The major Pacific NW rail corridor for freight and passengers
- Roads to and from port terminals and other freight facilities (intermodal connectors)

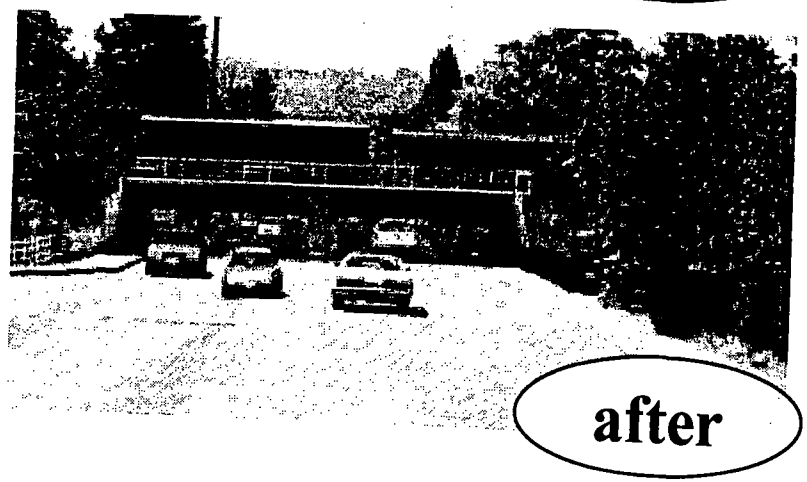


FAST Corridor

FAST Partnership Provides Unique Role

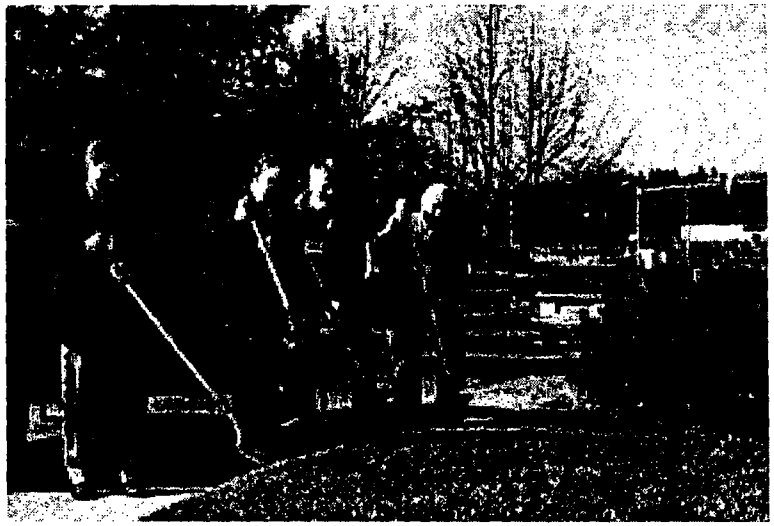
- FAST projects address system gaps where no single entity "owns" the problem. The 20 FAST partners combine funds and prioritize the many local projects to fill these gaps (e.g. grade separation shown at right).

- Fast has leveraged federal funds: providing $500 million worth of projects in return for a total federal investment of $150 million.



FAST Corridor

FAST Partners *Dig In...*



FAST partners include:

- **Federal – Federal government**

- **State**
  - **Dep't of Transportation**
  - **Freight Mobility Strategic Investment Board**
  - **Transportation Improvement Board**

- **Local – 12 cities, 3 counties, 3 ports**

- **Businesses – BNSF Railway, Union Pacific Railroad, Washington Trucking Association**

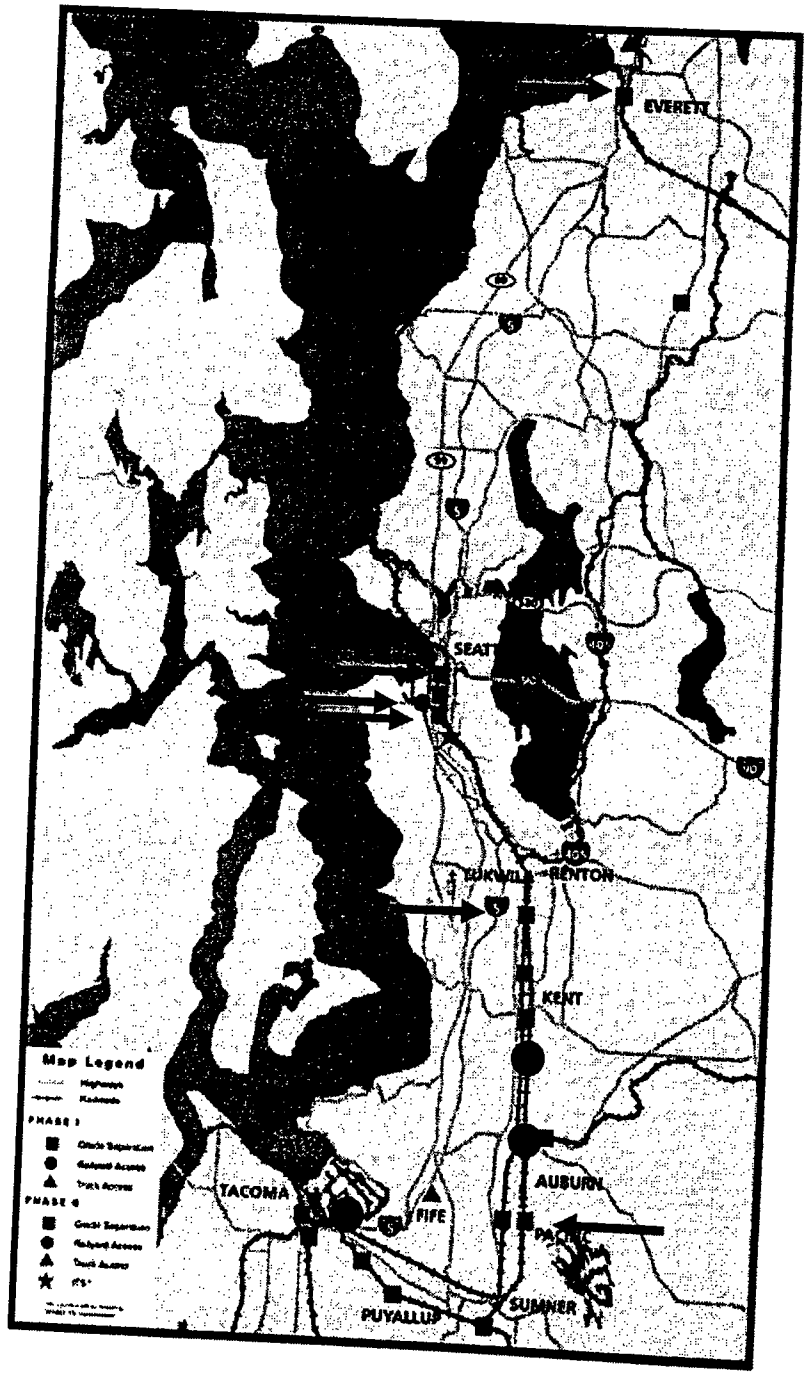
FAST Corridor

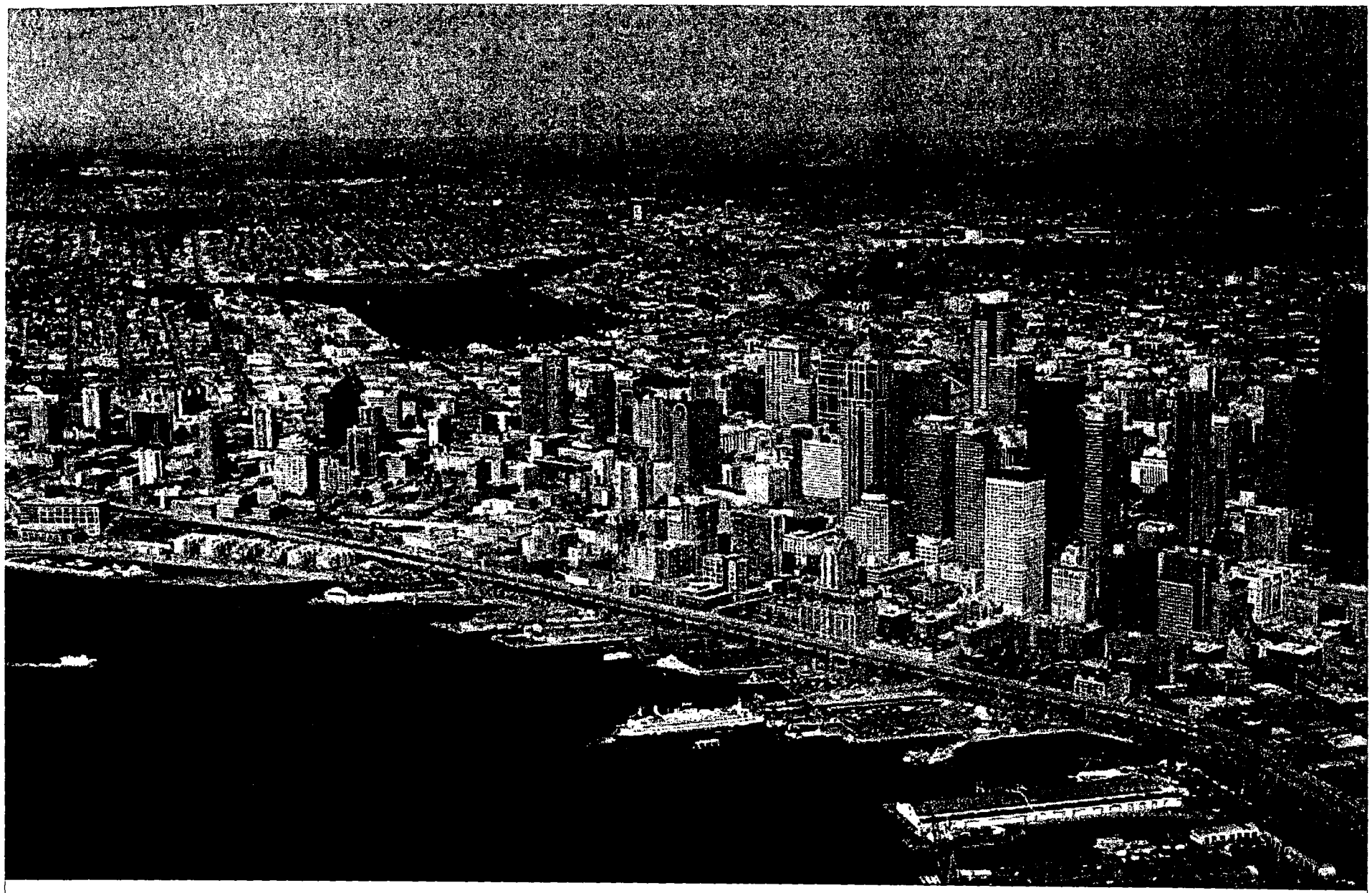
FAST partners deliver:

Ten of 15 projects in Phase I are complete or nearly complete:

- **Complete ●**
- **Under construction →**

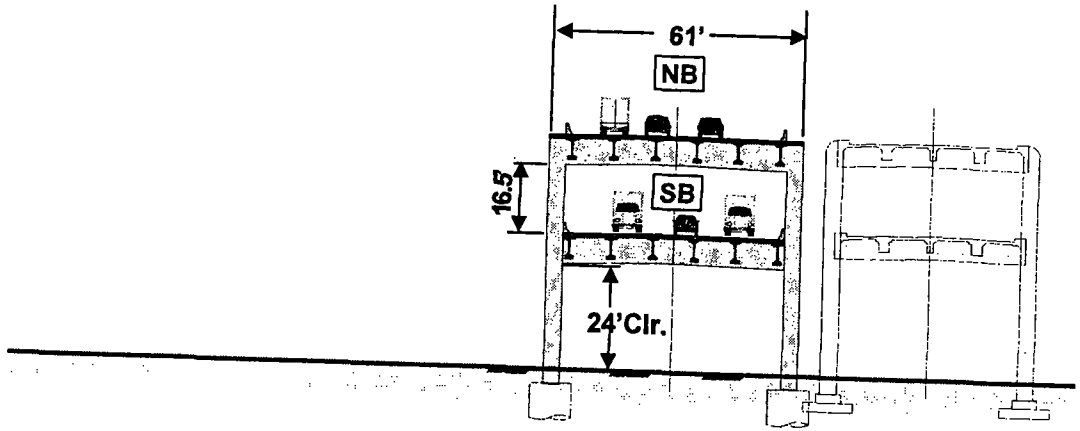
The rest are scheduled for implementation in 2003-06, depending on funding.



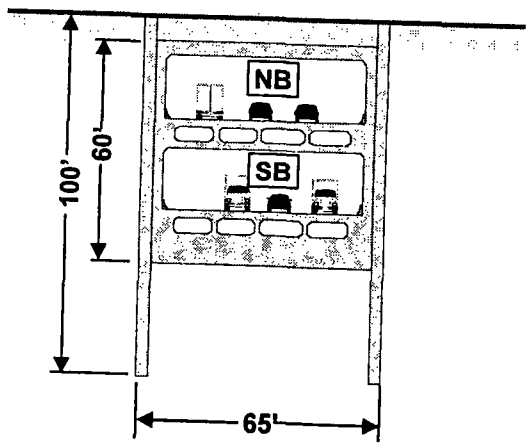


Alaskan Way Viaduct and Seawall Replacement Project

What are the conceptual alternatives?

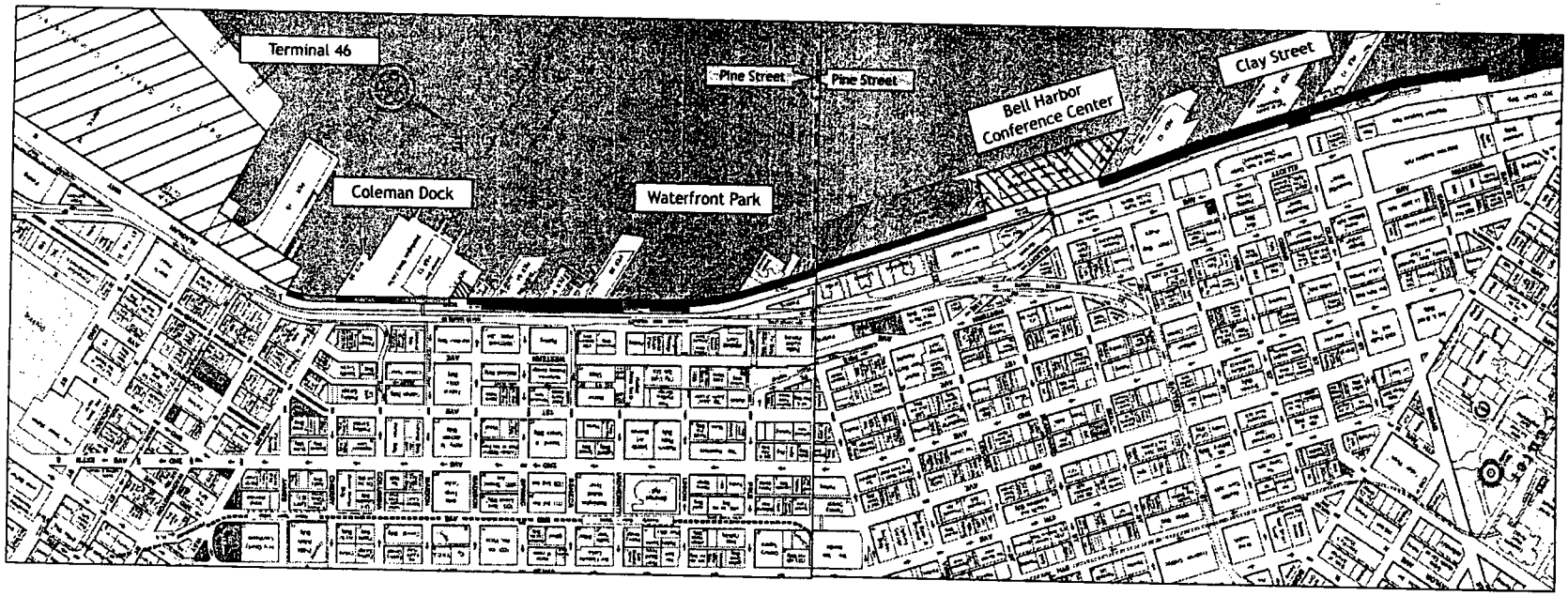


Aerial Structure



Cut & Cover Tunnel

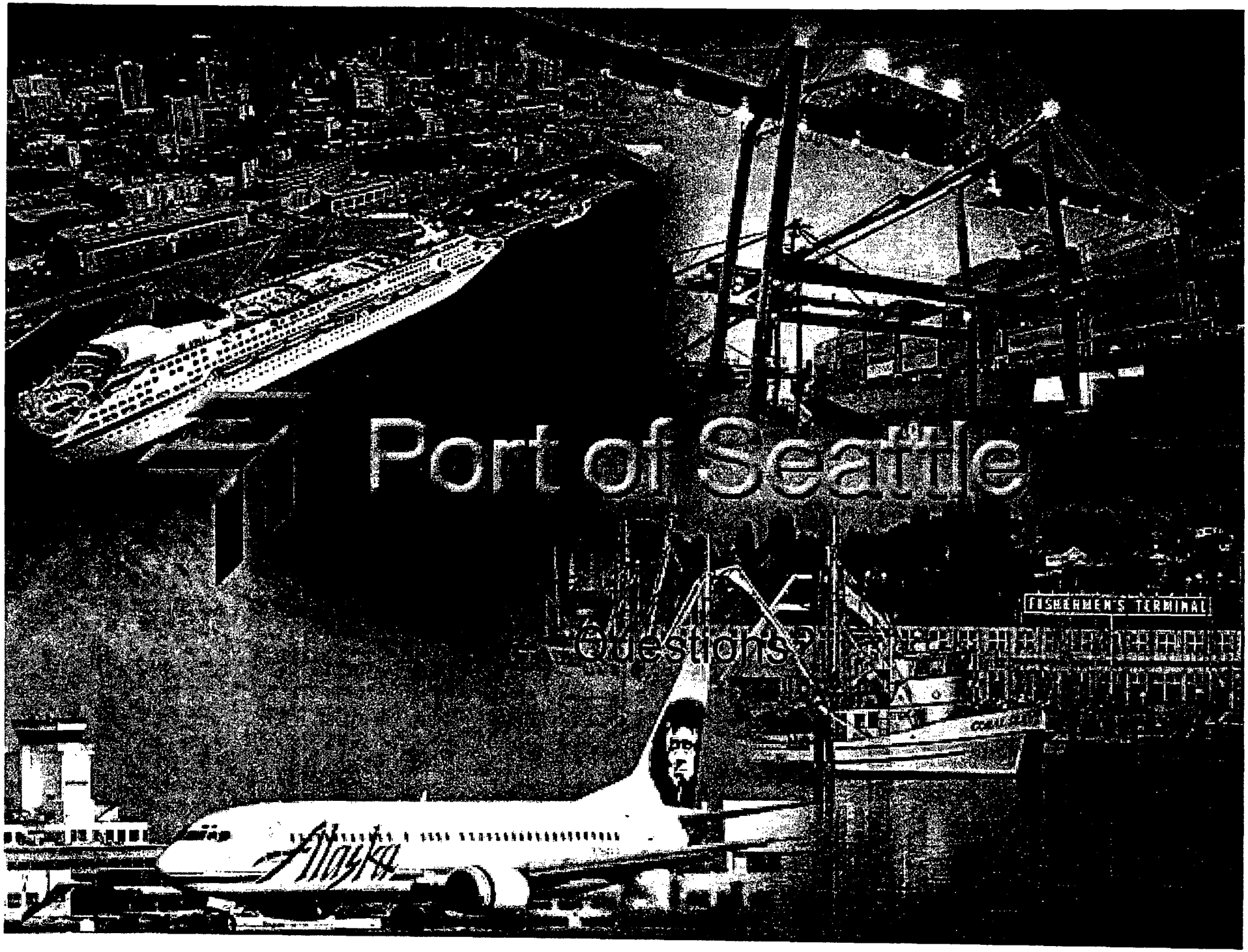
Seawall Along Waterfront



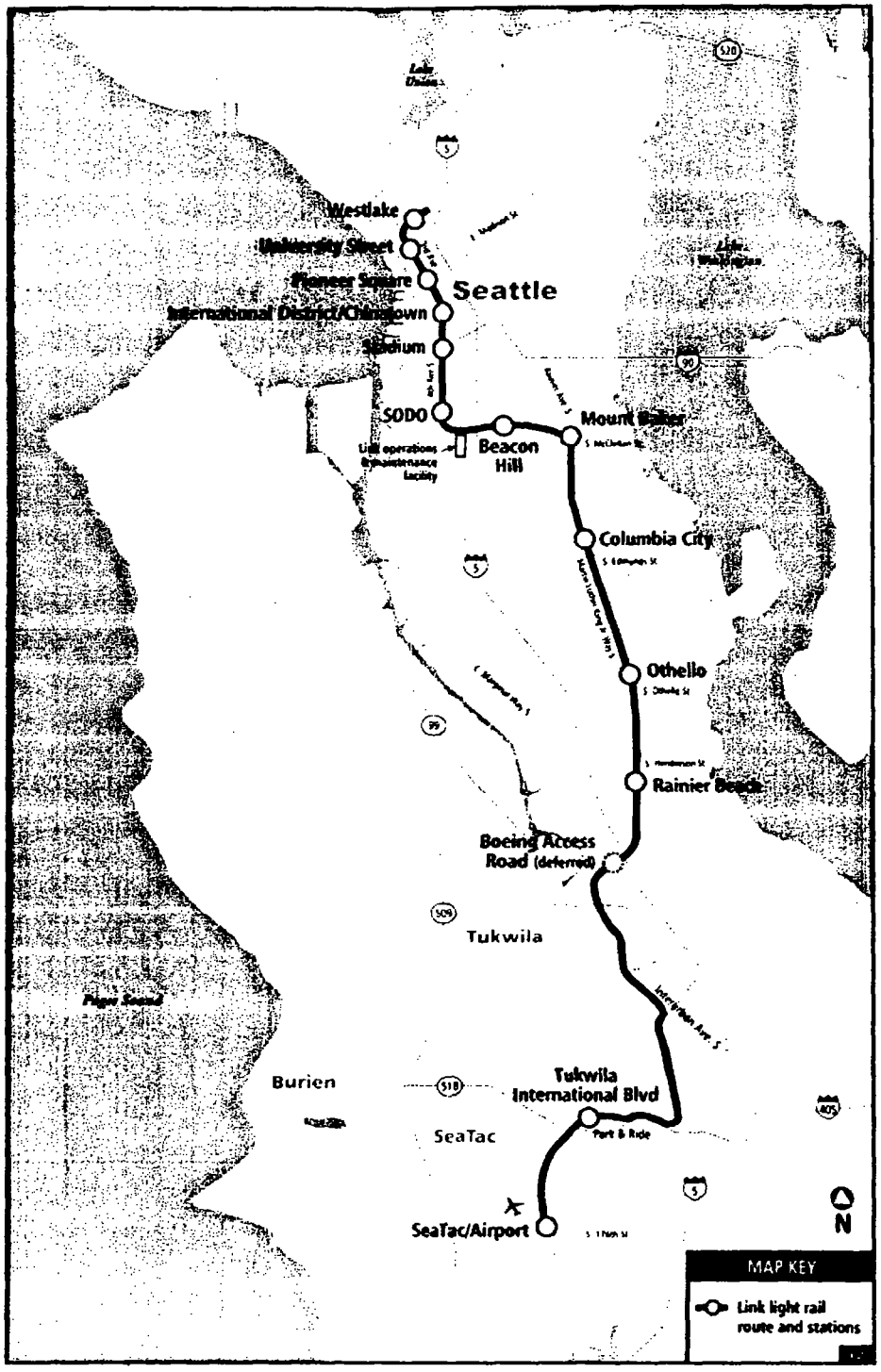
LEGEND - Port of Seattle Facilities	City of Seattle Facilities
Fill With Sheetpile Bulkhead	Fill With Sheetpile Bulkhead
	1915 Pile Supported Gravity Wall
	1915 Pile Supported Frame Rebuilt in 1989
	1934 Seawall/Relieving Platform Type "A"
	1934 Seawall/Relieving Platform Type "B"

Regional Transportation Key Issues

- Federal funding reauthorization (6 years)
- State studies: Rail, aviation, tolling
- Potential voter initiatives
- Regional governance and funding
- Ongoing forums and comprehensive plans


Port of Seattle
Questions?
FISHERMEN'S TERMINAL
Alaska

Sound Transit
Link Light Rail Initial Segment



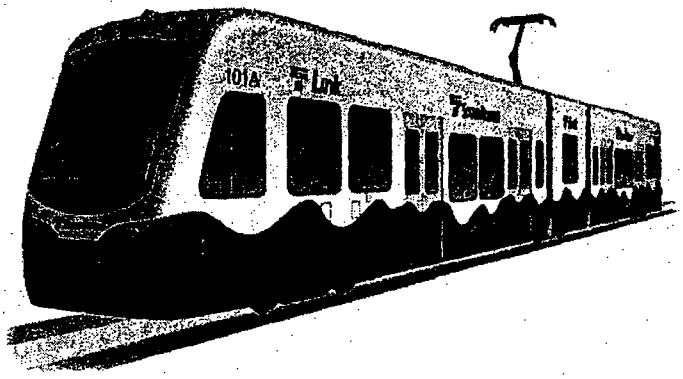
Link Light Rail Construction Tour
Summer 2006

VEHICLE SPECIFICATION SHEET

Central Link Trains

PROVIDED BY SOUND TRANSIT | DATE: April 2005

SOUNDTRANSIT
RIDE THE WAVE



Central Link cars are now under construction

Sound Transit is purchasing 31 new, modern low-floor light rail cars from Kinkisharyo/Mitsui. The first light rail car will be delivered by fall 2006. By 2009, these cars will run along the light rail route from downtown Seattle to the Seattle-Tacoma International Airport and will operate with trains of one to four cars.

Central Link light rail train vital statistics

Length: 95 feet
Weight: Estimated between 105,000 and 109,000 pounds
Width: 8.7 feet
Total Cost: $125 million for 31 trains
Capacity: 200 passengers
Air conditioning
Cloth seats
Wheelchair and stroller access
Powered by electrical-1500 volts D.C. traction power system
Low-floor design
Bicycle space
Driving cabs at both ends

Operating speed

Central Link cars will have a maximum speed of 55 mph. The light rail line will run at street level, on elevated trackways as well as underground.

Manufacturer

Kinkisharyo is headquartered in Japan. The car frames and shells will be built in Osaka, Japan while the final assembly will be done locally, providing jobs in the region. Kinkisharyo has supplied light rail vehicles to four other transit agencies in the United States: New Jersey Transit, Massachusetts Bay Transit Authority in Boston, Dallas Area Rapid Transit and Valley Transit Authority in San Jose, California.

Central Link Light Rail
Westlake Station to Airport Station
Station to Station Passenger Travel Times (minutes)
Joint Bus/Rail Operations in the DSTT
Effective March 14, 2005

Station	Westlake	University Street	Pioneer Square	IDS	Stadium	SODO	Beacon Hill	Mount Baker	Columbia City	Othello	Rainier Beach	Tukwila Int'l Blvd.	Airport
Westlake		2	4	6	8	10	12	14	17	22	25	34	36
University Street	2		2	4	6	7	10	12	15	19	23	32	34
Pioneer Square	4	2		2	4	6	8	10	13	18	21	30	32
IDS	6	4	2		2	4	6	8	11	16	19	28	30
Stadium	8	6	4	2		2	4	6	9	14	17	26	28
SODO	10	7	6	4	2		3	5	8	12	16	24	27
Beacon Hill	12	10	8	6	4	3		2	5	9	13	21	24
Mount Baker	14	12	10	8	6	5	2		3	8	11	20	22
Columbia City	17	15	13	11	9	8	5	3		5	8	17	19
Othello	22	19	18	16	14	12	9	8	5		4	12	15
Rainier Beach	25	23	21	19	17	16	13	11	8	4		9	11
Tukwila Int'l Blvd.	34	32	30	28	26	24	21	20	17	12	9		3
Airport	36	34	32	30	28	27	24	22	19	15	11	3	

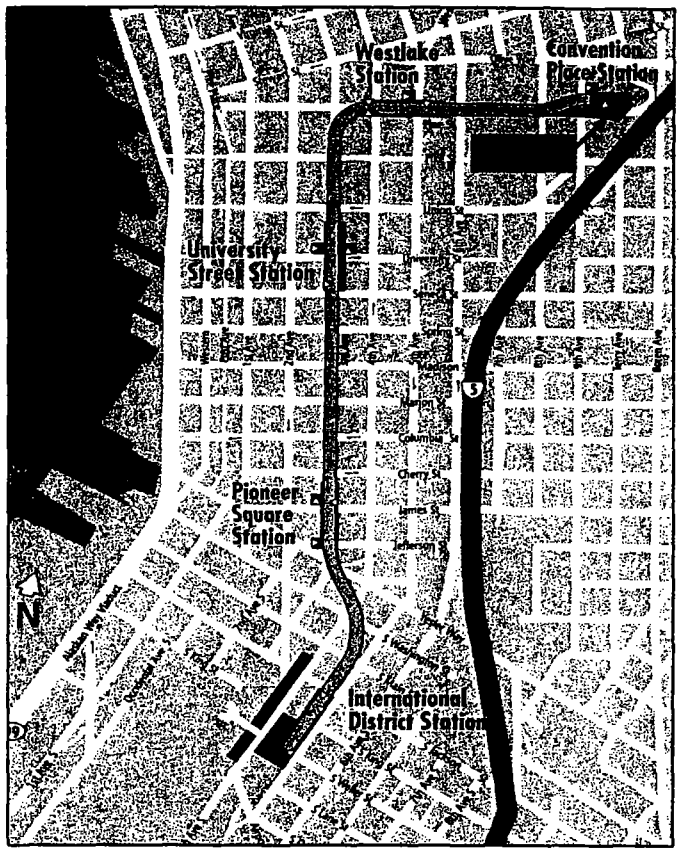
Note:

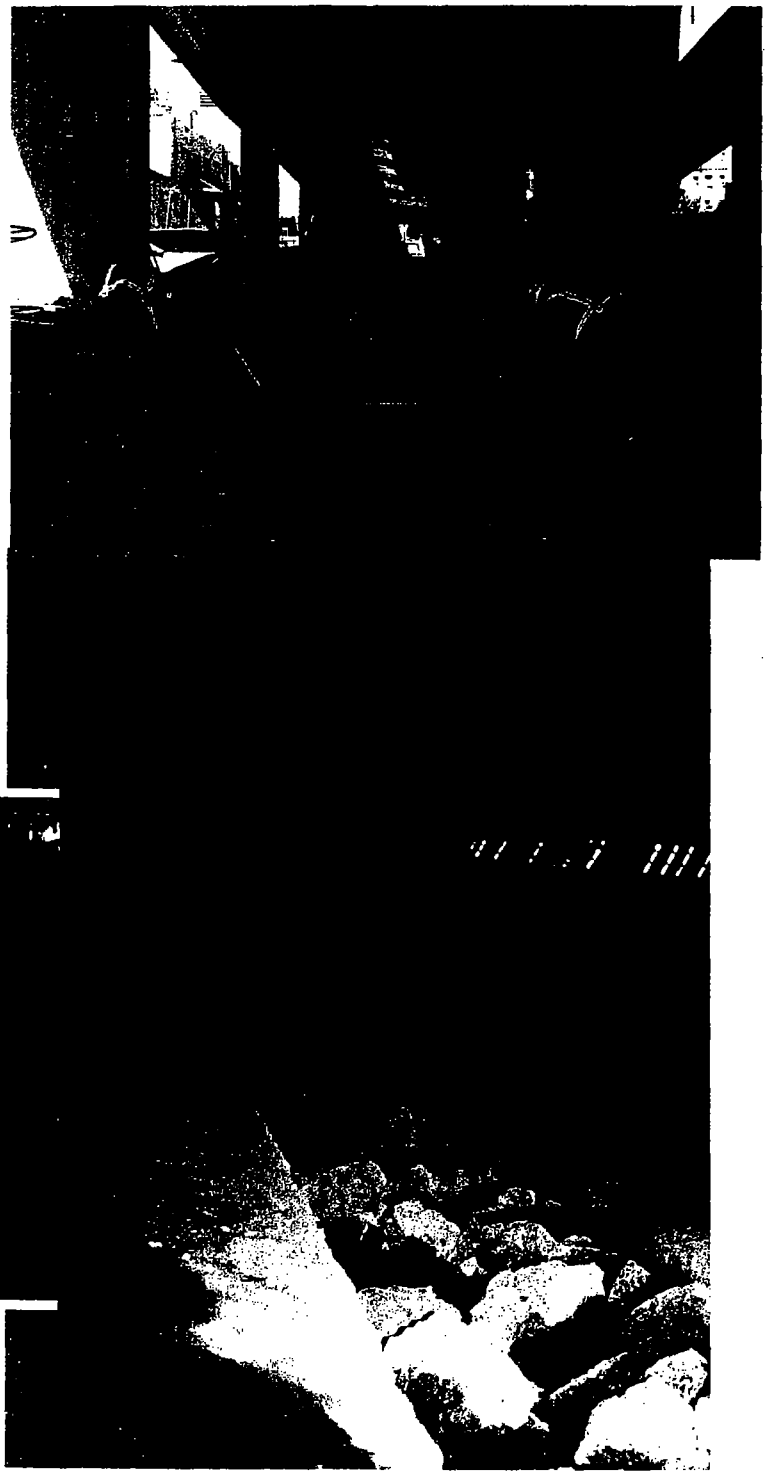
1. Travel times includes time for station dwell and potential traffic delays on MLK
2. This matrix replaces the previous one which showed Westlake to Tukwila International Blvd. as 33 mins and to the Airport as 35 mins
3. Updated matrix factors in Stadium Station as a passenger station stop which accounts for the increase in run time by one minute.

This information has been developed and provided by the Link Operations Division

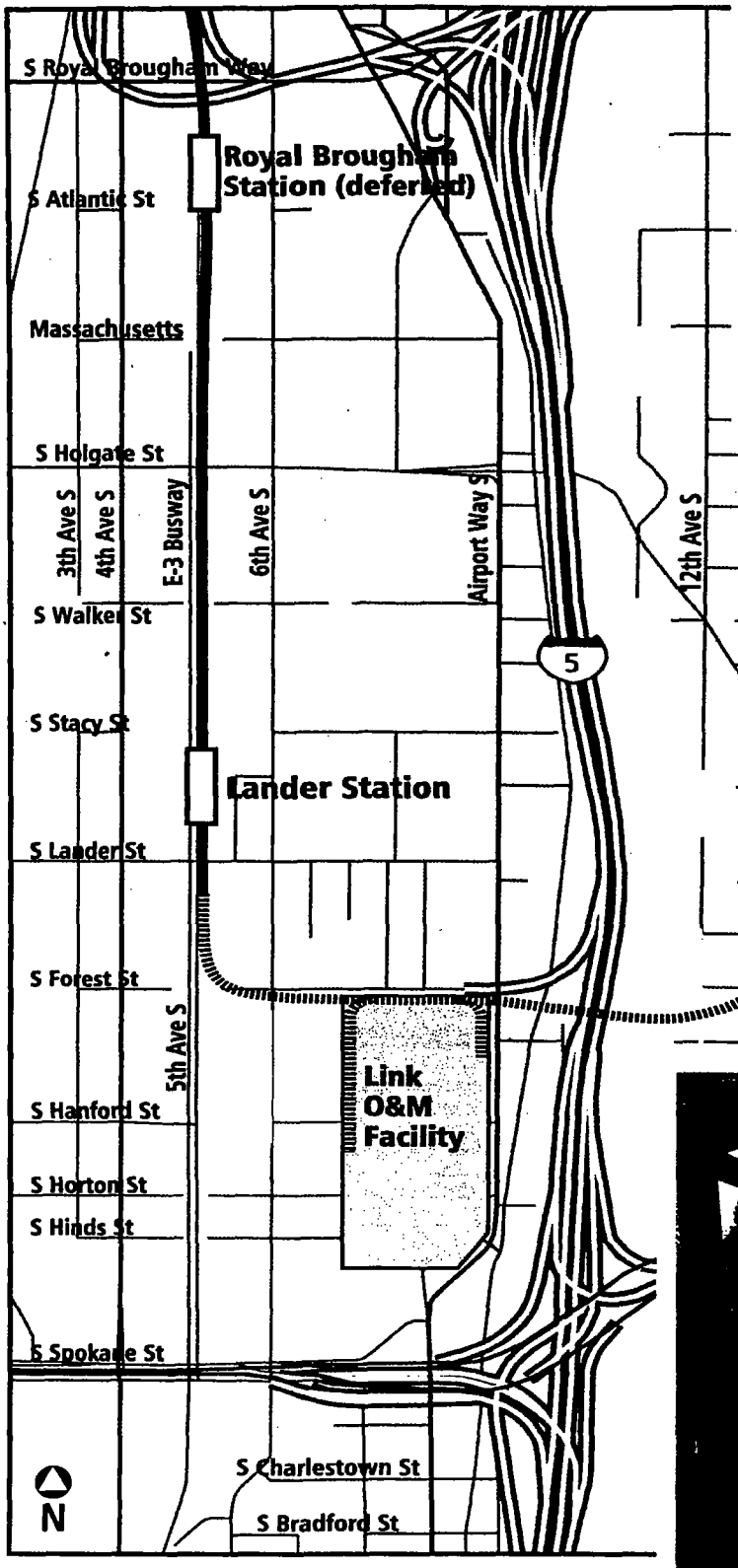
Last Revised March 14, 2005

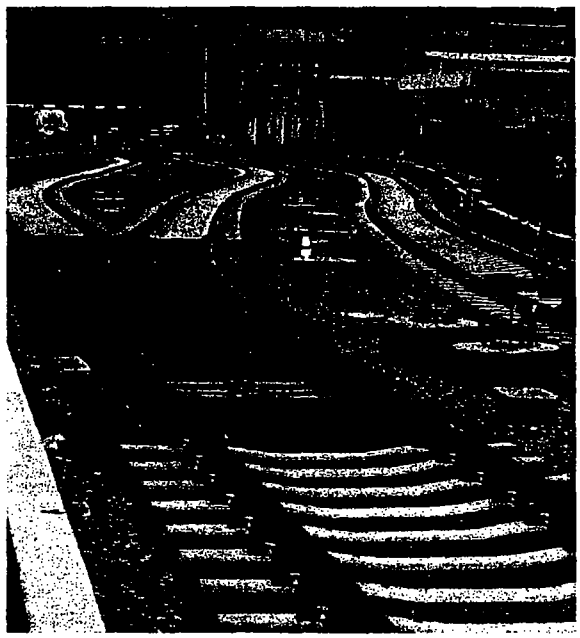
Downtown Seattle



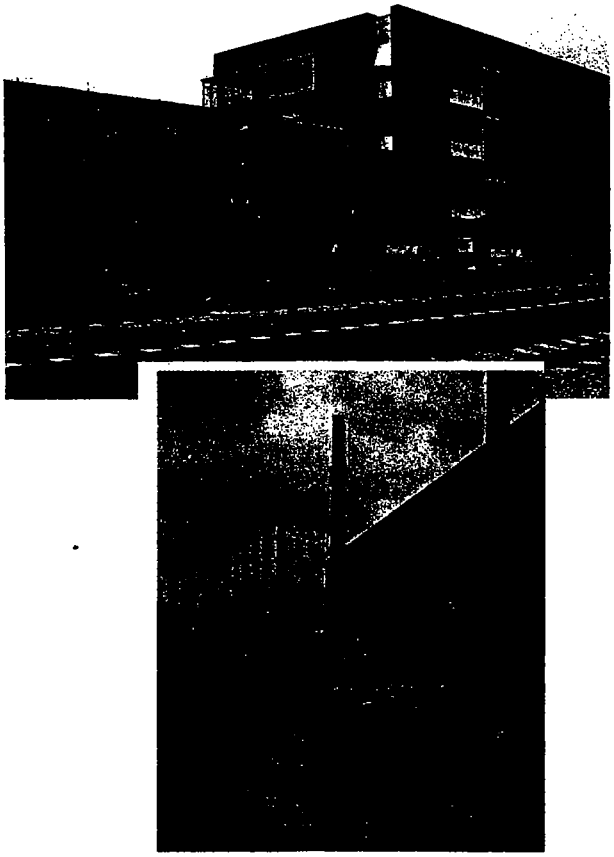


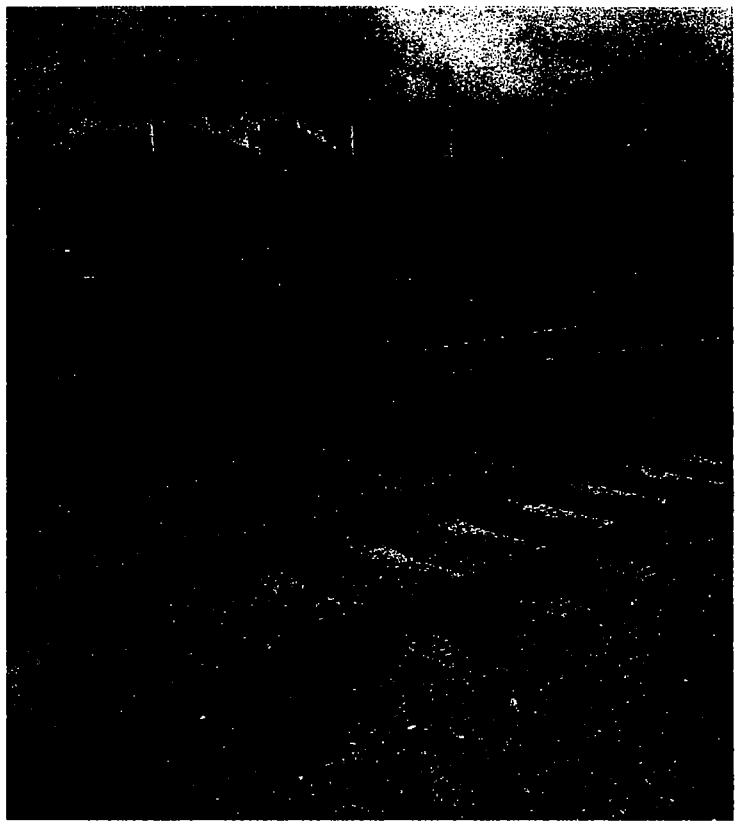
North Duwamish - SODO

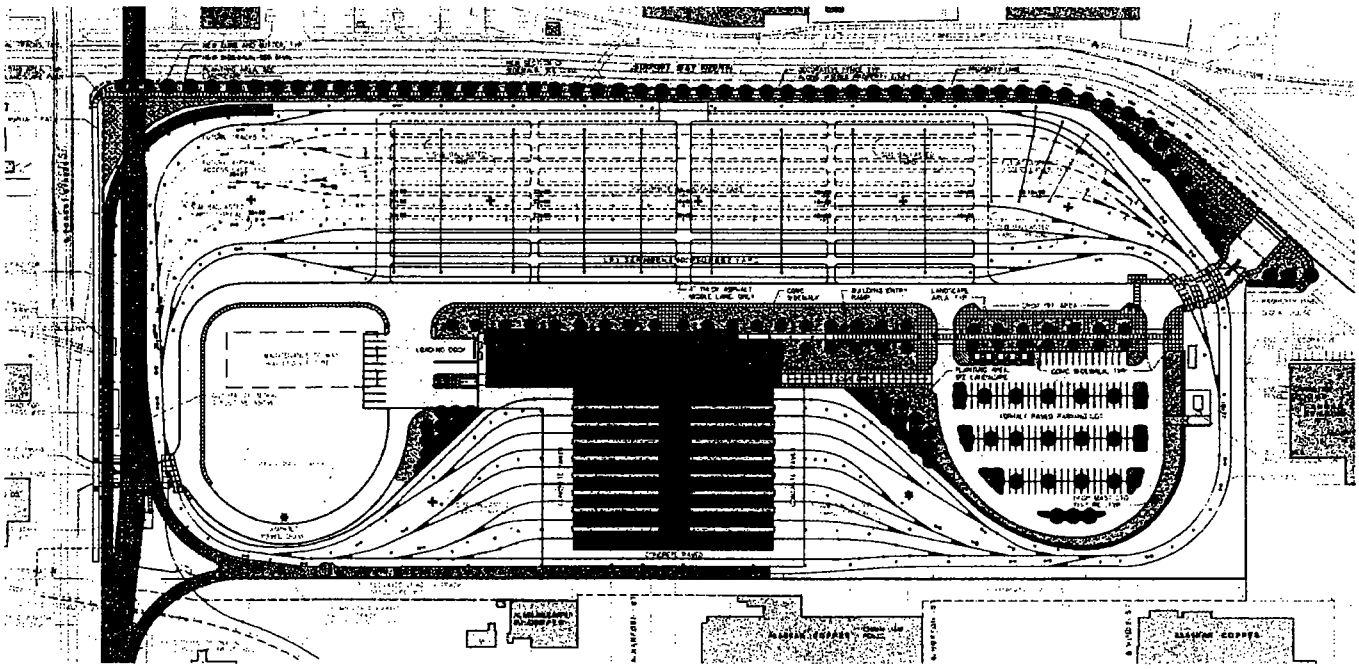




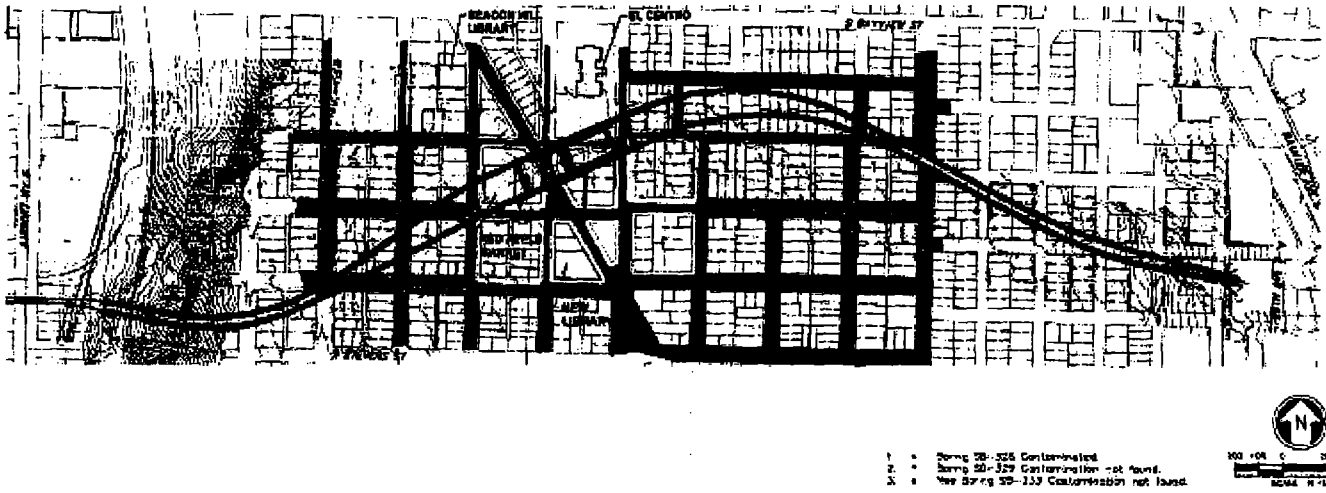
SODO – O&M Facility

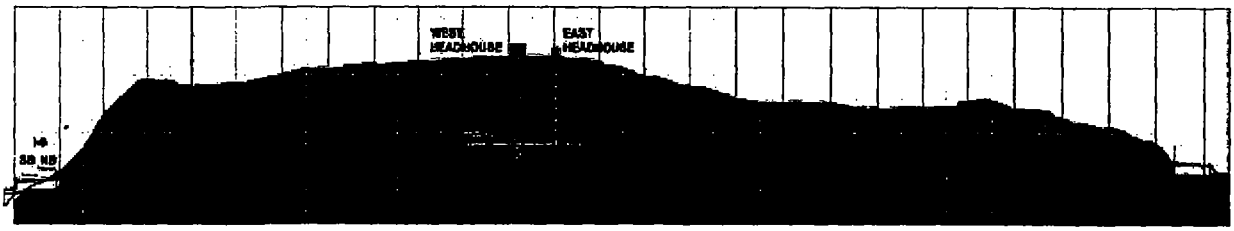




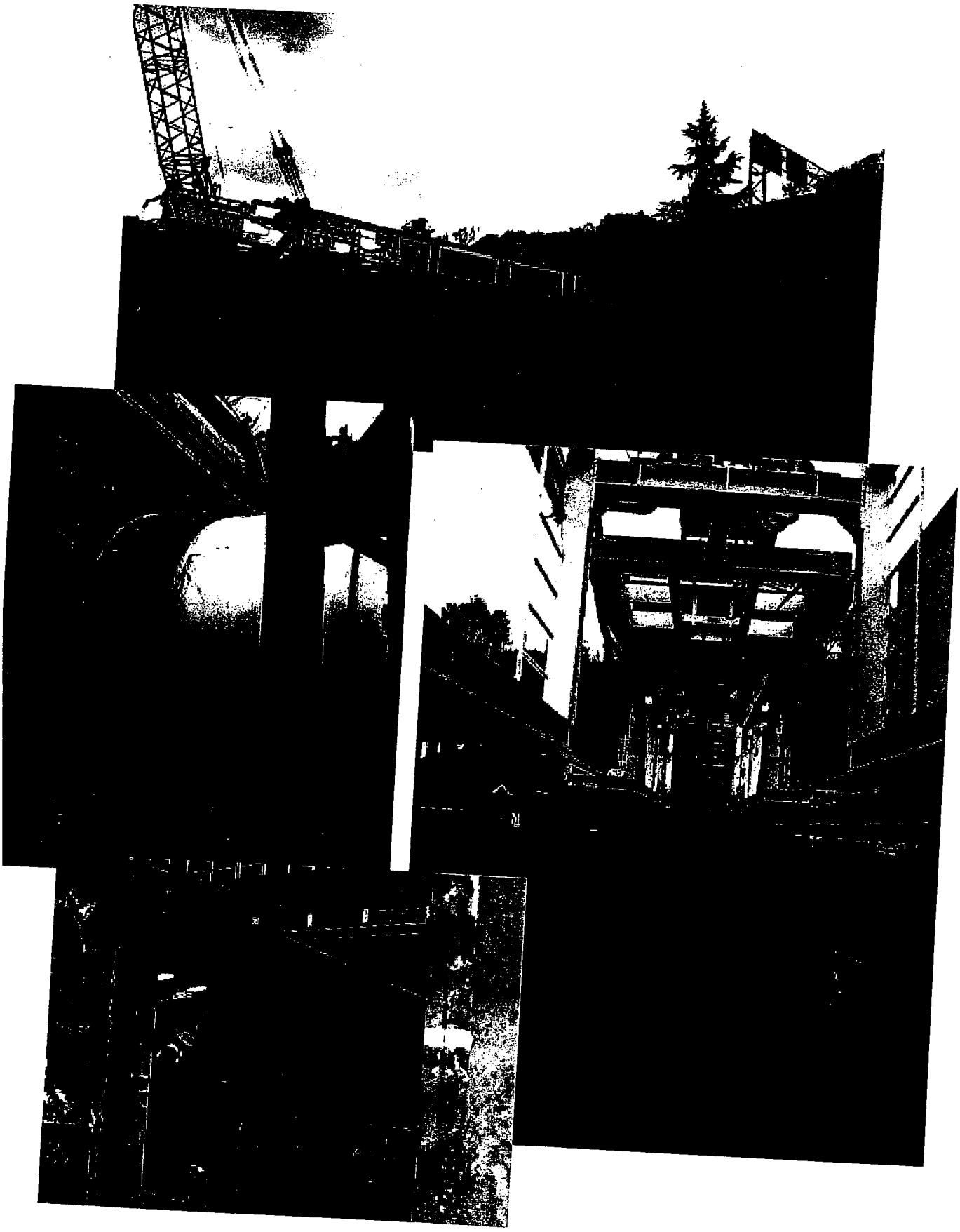


Beacon Hill Tunnel



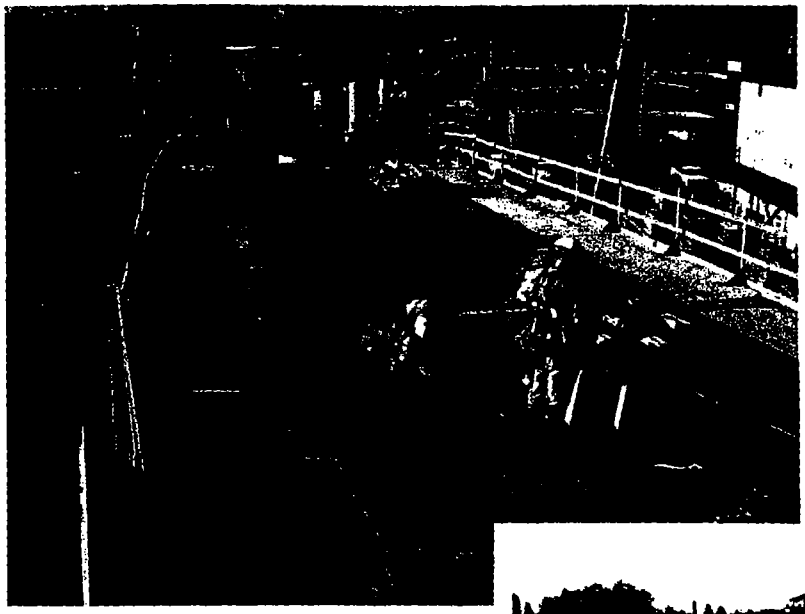


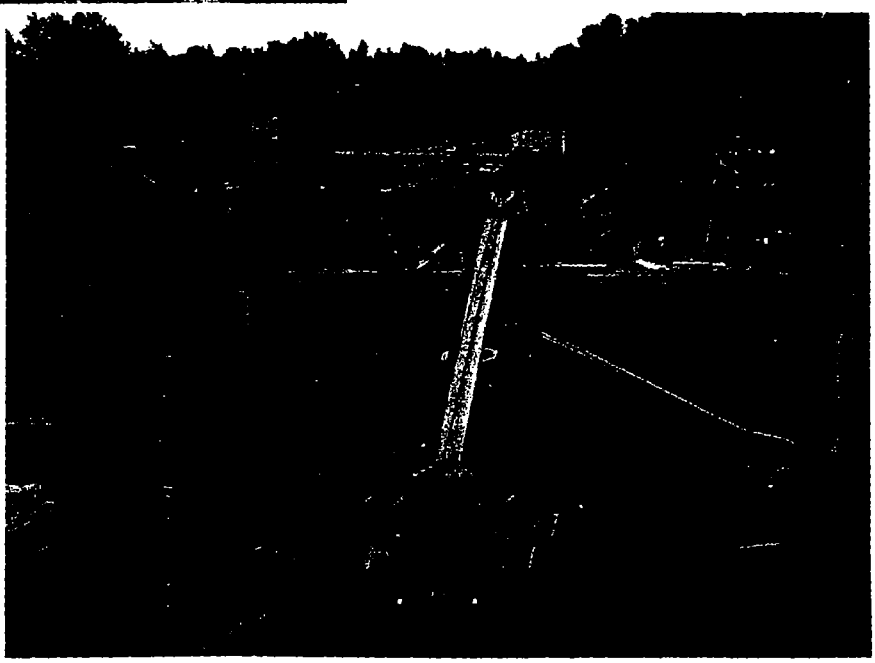
Beacon Hill Tunnel



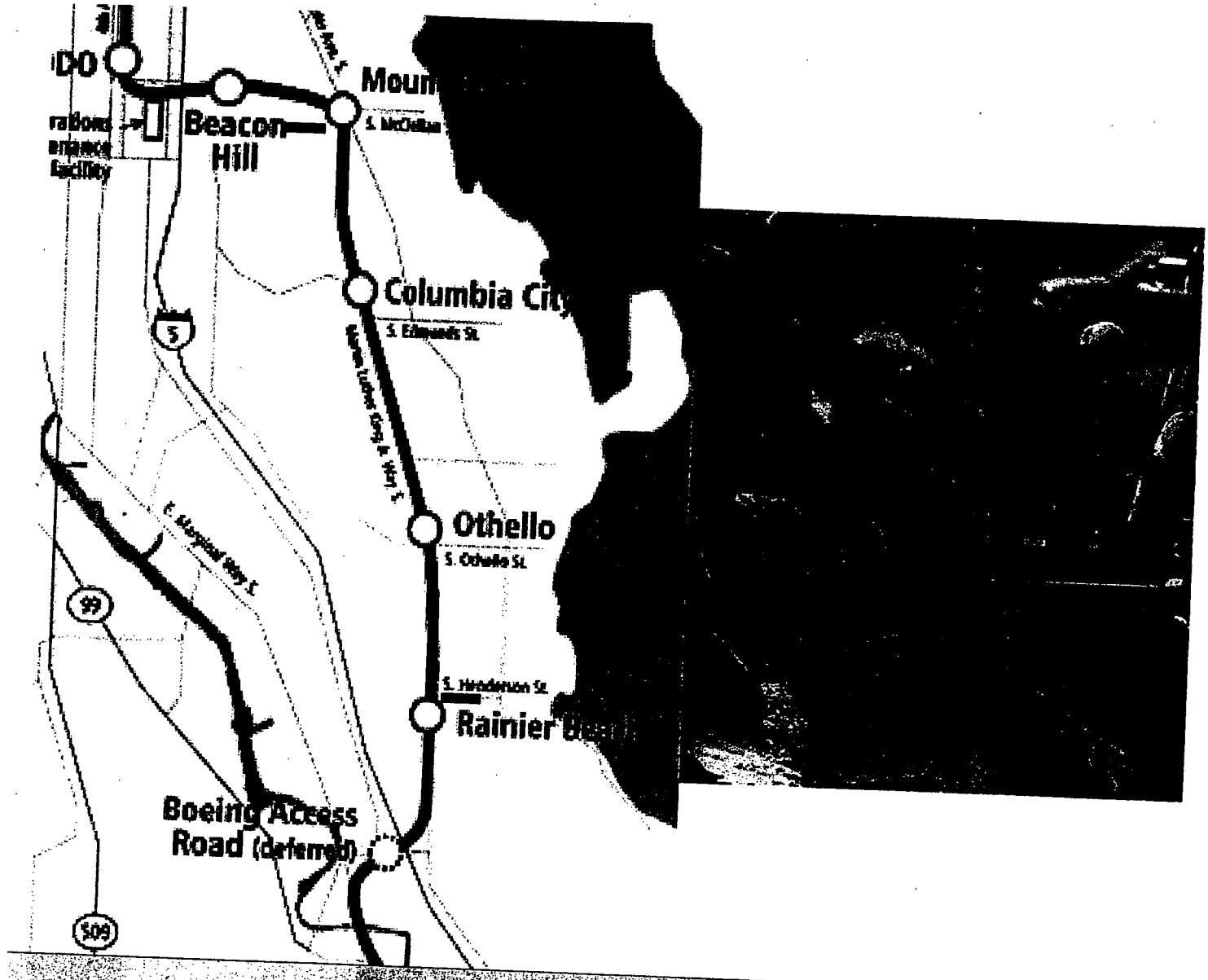
Beacon Hill Tunnel

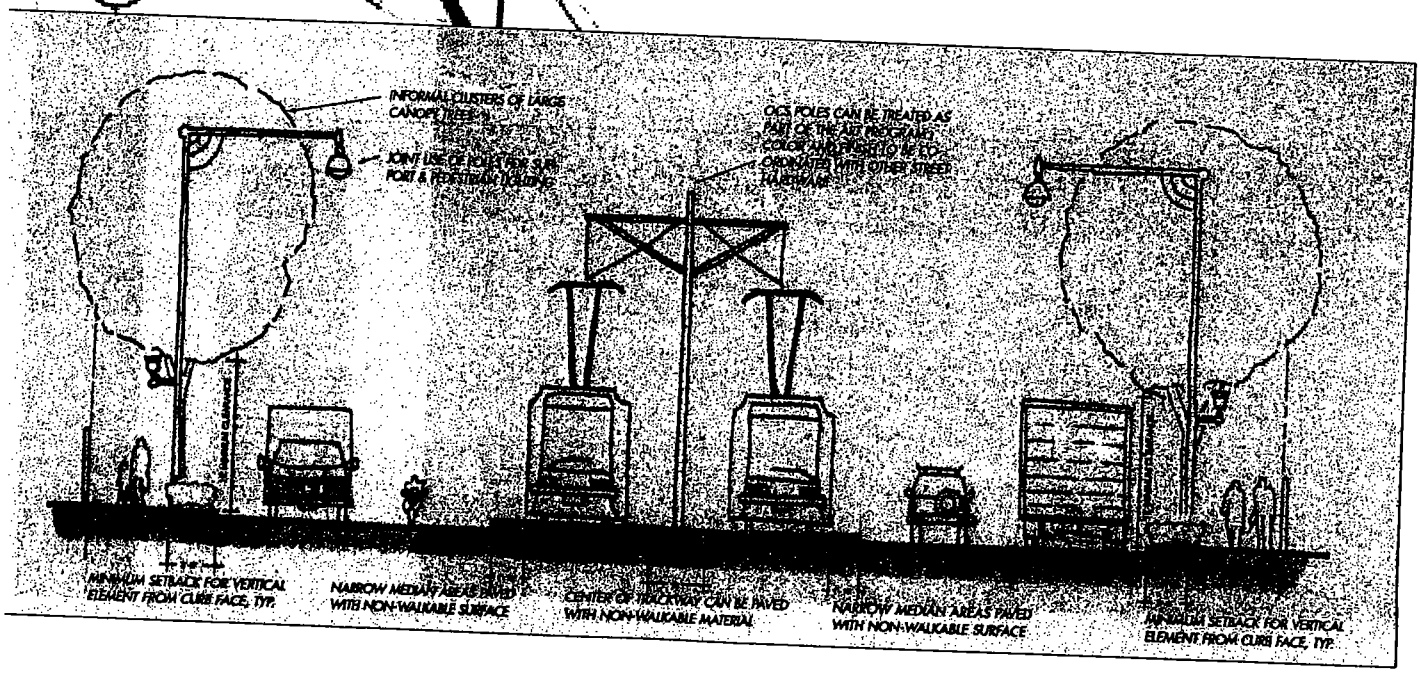
East Portal and Mount Baker



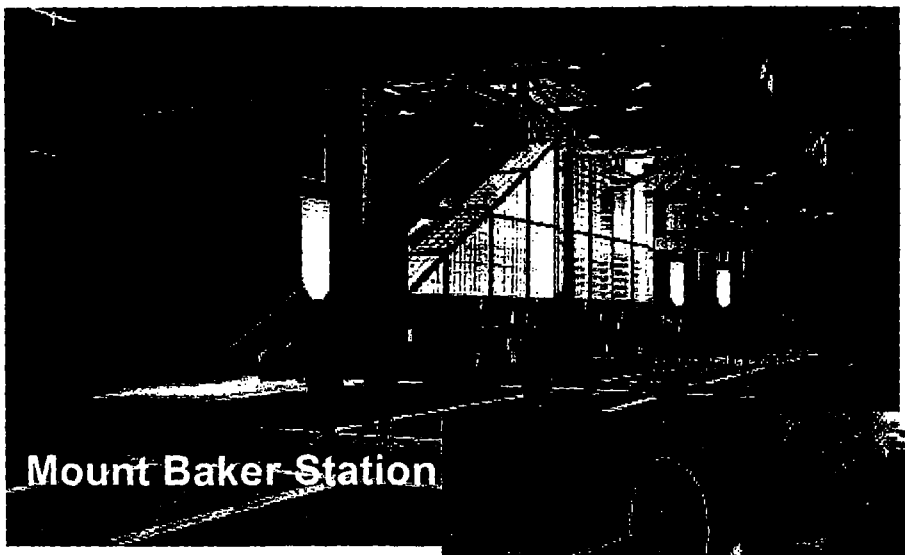


Rainier Valley

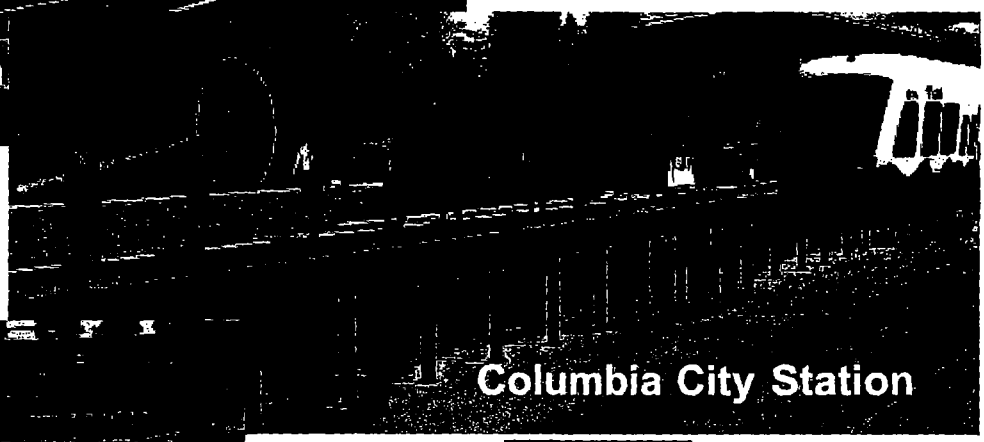




Rainier Valley

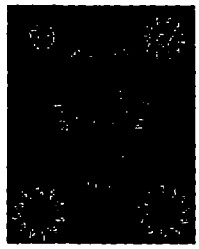


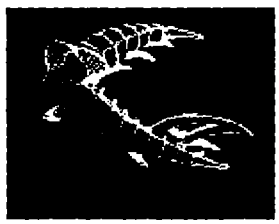
Mount Baker Station



Columbia City Station

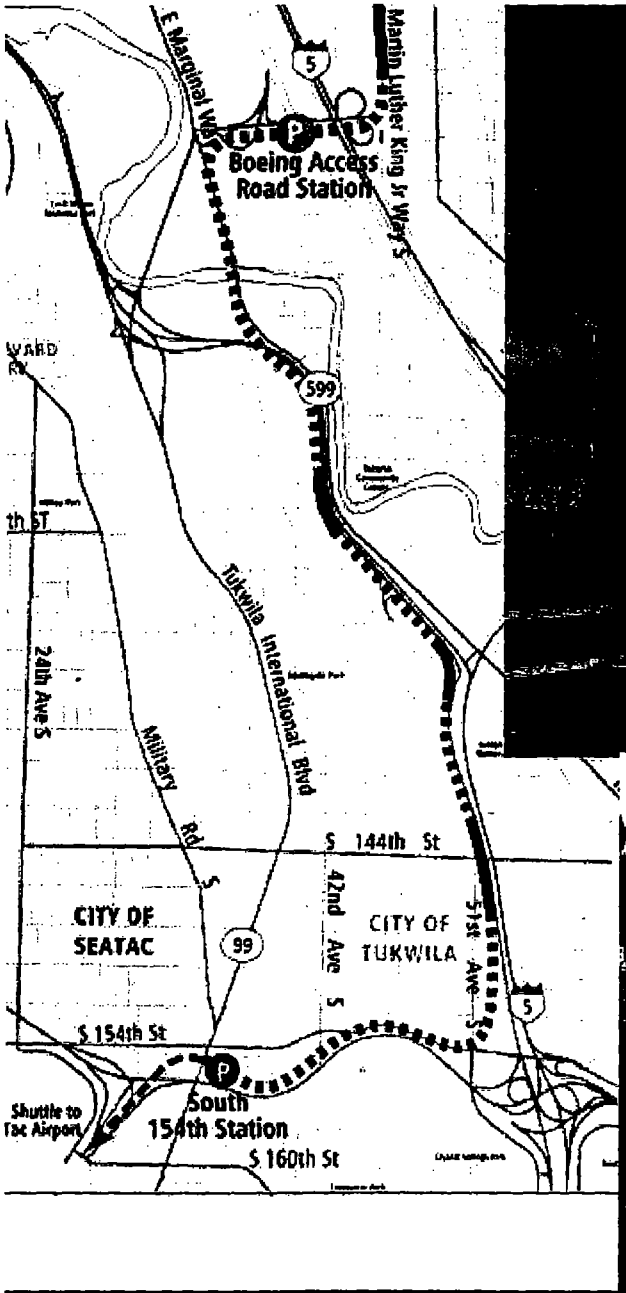
Othello Station

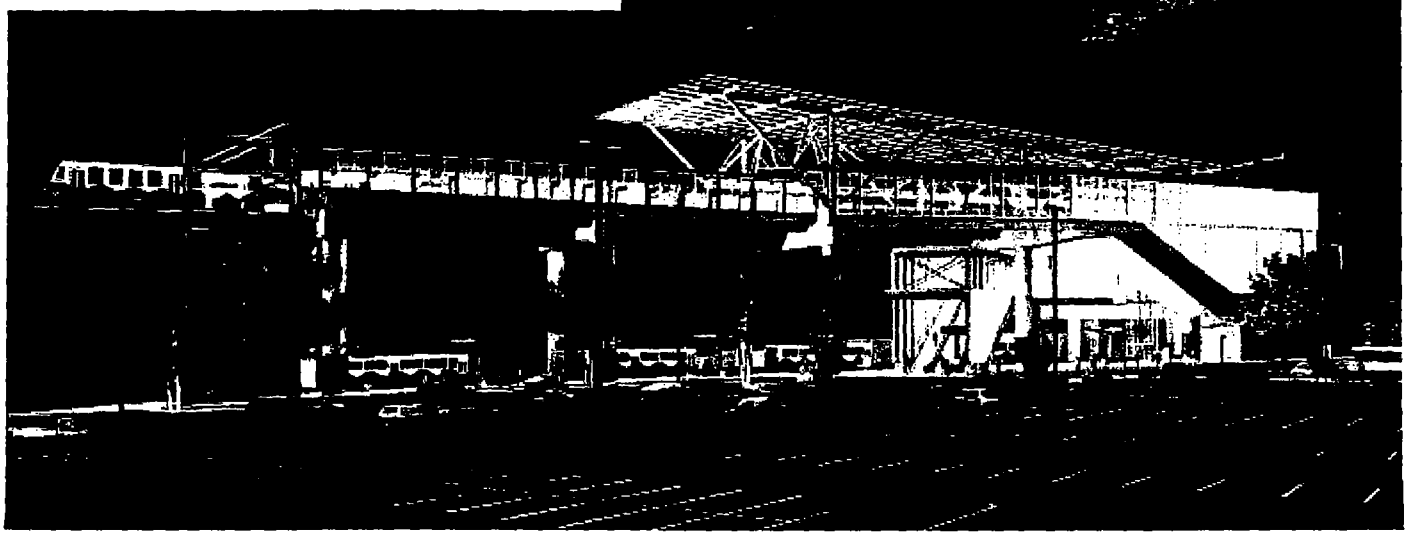




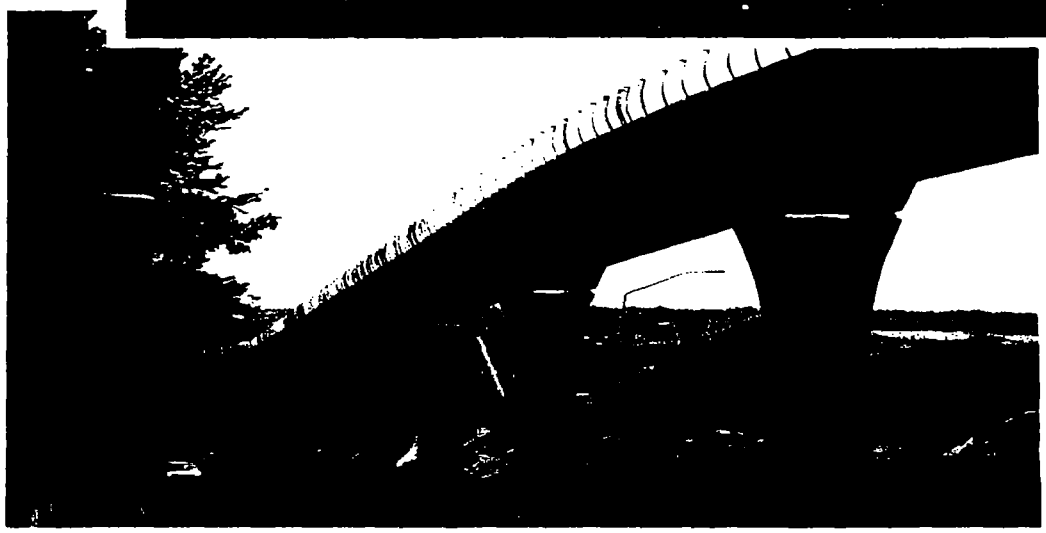
Rainier Beach Station

Tukwila


E Marginal Way S
Martin Luther King Jr Way S
5
Boeing Access Road Station
599
WARD RD
th ST
24th Ave S
Military Rd S
Tukwila International Blvd
S 144th St
CITY OF SEATAC
99
42nd Ave S
CITY OF TUKWILA
51st Ave S
5
S 154th St
Shuttle to Tac Airport
South 154th Station
S 160th St



Tukwila



MAKING CONNECTIONS: ***trains, planes and automobiles***

SOUNDTRANSIT RIDE THE WAVE Port of Seattle

Light rail and roadway improvements coming to Sea-Tac Airport in 2009

The Port of Seattle and Sound Transit are bringing you better roads and new light rail service to improve connections to and from Seattle-Tacoma International Airport.

When complete, the upcoming roadway construction project will make it easier to get in and out of the area and prepare the way for Sound Transit's Link light rail connection from downtown Seattle directly to the airport. With trains arriving and departing every 6 minutes during rush hours and every 10 minutes midday, Link light rail will provide a speedy and convenient way for both travelers and employees to get to and from the airport. Light rail service to Sea-Tac Airport is scheduled to start in 2009.

Improvements to the airport drives and roadway system will make it easier to get in and out of the airport and increase capacity to handle traffic in the years ahead.

Expect traffic delays during construction–plan ahead, leave early, and pack your patience!

SeaTac/Airport light rail station

The SeaTac/Airport Station will be located near the northeast corner of the main airport parking garage, just west of the intersection of S. 176th Street and International Boulevard SR 99). There will be a direct pedestrian connection from the station to the airport ticket counters.The walk from the station to the airport terminal building is about 1,000 feet and will take an estimated 4 minutes.

Link light rail

A conceptional drawing of the new SeaTac/Airport Station coming in 2009.

Road improvements

Road improvements will make it easier to get to and from the airport.

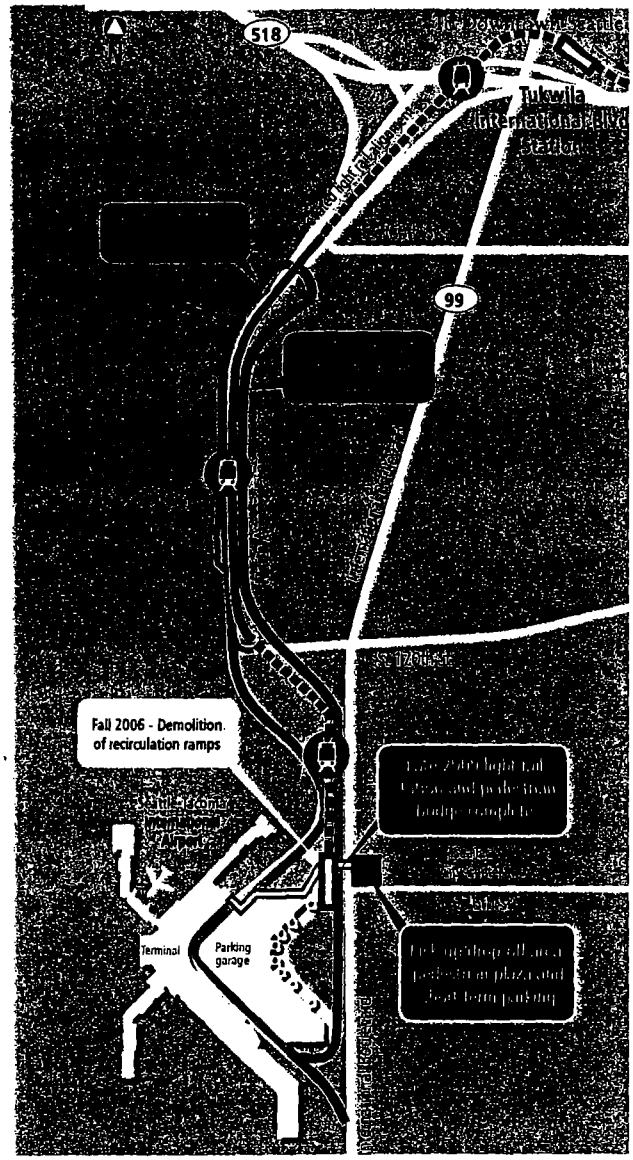
Pedestrian bridge and pick-up/drop-off area

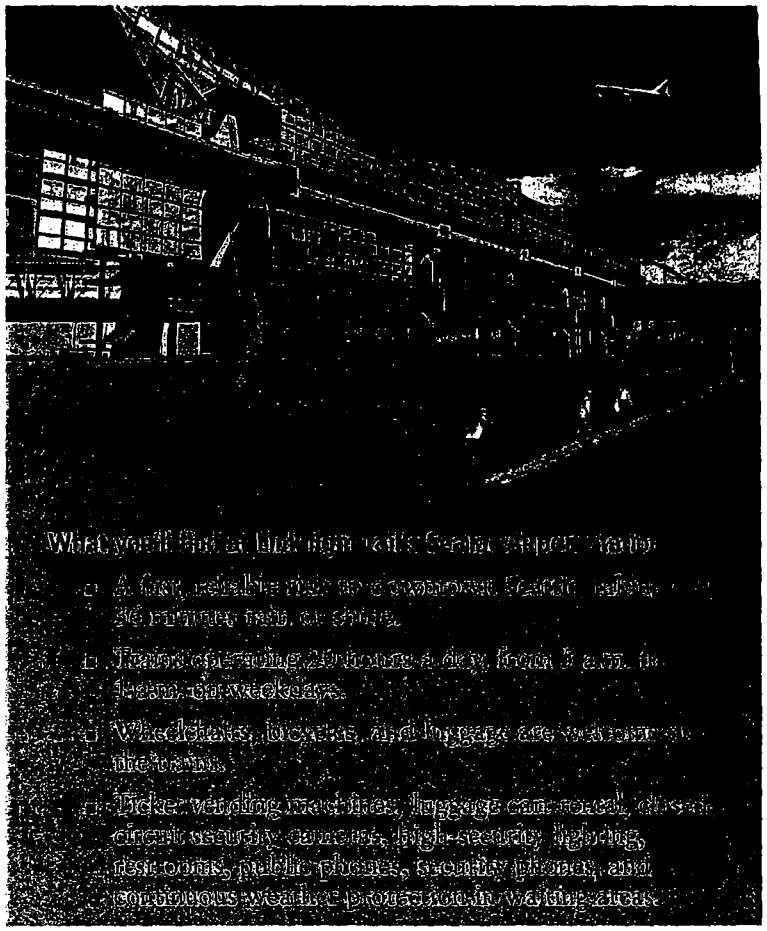
Area residents will have an easy way to pick up and drop off light rail passengers on International Boulevard.

This project is a partnership between Sound Transit and the Port of Seattle.

Port of Seattle For more information or to receive e-mail updates on the roadway improvements, go to www.portseattle.org/seatac/. If you have a comment or question about roadway construction, call (206) 439-7777 or 1-800-408-9886 to leave a message and request a call back.

SOUNDTRANSIT RIDE THE WAVE For more information about Link light rail or the airport extension, please contact Roger Pence, Sound Transit Community Outreach Coordinator, at (206) 398-5465 or pencer@soundtransit.org. Sound Transit, Union Station, 401 S. Jackson St, Seattle WA 98104, (800) 201-4900, 888) 713-6030, main@soundtransit.org, www.soundtransit.org





The above map shows the planned improvements, which will make it easier than ever to get in and out of Sea-Tac Airport.

- **SeaTac/Airport Station and pedestrian bridge.** The architectural theme of the station (pictured above right) is "flight" and its prominent design, together with a dramatic pedestrian bridge over International Boulevard, will strengthen the connection between the airport and the SeaTac community.
- **International Boulevard pedestrian bridge and pick-up/drop-off area** will make it easy for area residents to pick up or drop off light rail passengers and people heading to the airport.
- **Return-to-terminal loop.** The new return-to-terminal loop at S. 160th Street will address congestion on the airport roadways, particularly on the drives in front of the terminal.
- **Airport expressway relocation.** This upgrade will improve traffic flow in and out of the airport's north end as well as accommodate the light rail guideway.

Para mayor información acerca de la construcción de las carreteras y del (tren de) carril ligero en el Aeropuerto Internacional Sea-Tac, por favor llame al (800) 823-9230 durante las horas de oficina normales.

Для получения дополнительной информации о строительных работах на автомобильных и на железной дорогах в районе аэропорта Sea-Tac International Airportобращайтесь по телефону (800) 823-9230 в рабочее время.

Muốn biết thêm thông tin về đường sá và việc xây cất đường hỏa xa (xe lửa) nhẹ ở Phi Trường Quốc Tế Sea-Tac xin vui lòng gọi điện cho chúng tôi tại (800) 823-9230 trong giờ làm việc thông thường.

Sea-Tac 국제공항에서 하는 도로와 경전철 (열차) 공사에 관한 정보를 원하시면 정규 근무 시간에 (800) 823-9230 으로 전화주십시오.

Para sa karagdagang impormasyon sa mga isinasagawang konstruksiyon sa lansangan at "light rail" (tren) sa Sea-Tac International Airport, paki tawagan ang numero bilang (800) 823-9230 sa panahon ng regular na oras ng negosyo.

如欲查詢 Sea-Tac 國際機場道路及輕鐵（列車）工程相關詳情，請在正常辦公時間致電 (800) 823-9230。

Sea-Tac 国際空港における道路工事、ライトレール（電車）路面工事に関する詳細は、営業時間内に (800)823-9230 までお電話でお問い合わせください。

Vejdirektoratet
Trafikafdelingen

STE
Dato: 7. august 2006

Notat:

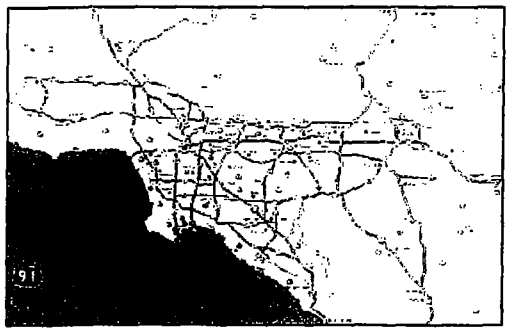
Motorvej/infrastruktur/trængselsproblematikker herunder Highway 91

Grundlaget for det amerikanske motorvejsnet blev lagt af præsident Dwight D. Eisenhower i 1956, selvom idéen om et nationalt vejnet opstod allerede i 1930'erne. Planen var at etablere et samlet motorvejsnet på 65.000 km, der forbandt alle større byer i USA. Vejsystemet fik navnet National System of Interstate and Defense Highways eller i kortform Interstate Highway System. Nettet var færdigbygget i begyndelsen af 1990'erne og består i dag af ca. 75.000 km motorvej. Den højeste trafikmængde er registreret på I-405 ved Los Angeles med en gennemsnitlig døgntrafik på 377.000 i 2002 (DK: Køge Bugt Motorvejen ved Hundige 102.000 i 2005). Den generelle hastighedsgrænse på interstate-motorvejene fastsættes af de enkelte delstater. Hastighedsgrænser i åbent land varierer fra 105 til 130 km/t. Motorveje i Interstatesystemet projekteres, finansieres, anlægges og vedligeholdes af delstaterne men med nationalt tilskud.

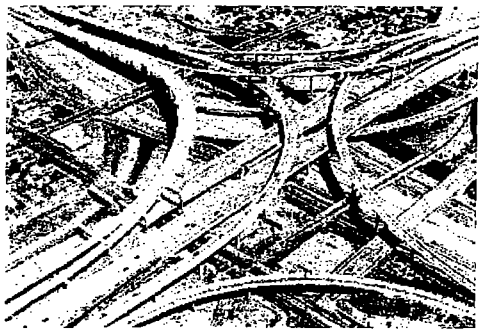
Udbygningen af motorvejsnettet i USA har sammen med den øgede bilrådighed (pt. ca. 750 personbiler pr. 1000 indbyggere (DK: 363) medført en betydelig stigning i mobiliteten, som igen har været forudsætningen for en kraftig byspredning, hvor det er meget vanskeligt eller umuligt at etablere et effektivt kollektivt transportsystem. Af denne grund er bilen derfor oftest den eneste mulige transportform både til bolig-arbejdsstedtrafik og til fritidsformål.

I de seneste 20 år antal kørte kilometer i USA vokset med 70 %. Dette har medført stigende fremkommelighedsproblemer specielt i byer og på motorveje omkring storbyerne. Værdien af det samlede tidstab blev i 1999 vurderet til $72 mia. årligt. Til sammenligning er trængselsomkostningerne i hovedstadsområdet vurderet til 6,2 mia. kr. i 2002, dvs. ca. 1,5 % af de samlede skønnede omkostninger for hele USA.

California Highway 91 er en øst-vestgående motorvej i det sydlige Los Angeles. Derved krydser den de nord-sydgående stærkt trafikerede interstates I-405, I-110, I-710, I-5. Alle disse motorveje har 4 eller 5 gennemgående spor pr. retning og motorvejskrydsene bliver derfor store anlæg, typisk i 3-5 etager. Yderligere komplicerende faktorer i disse anlæg er, at der ved kørsel fra en motorvej til en krydsende ofte skal skaffes forbindelse til både motorvejens højre og venstre side i kørselsretningen, enten for at undgå flettende trafik mod en nærliggende frakørsel eller for at skaffe forbindelse til både de normale kørespor og HOV-lanes.

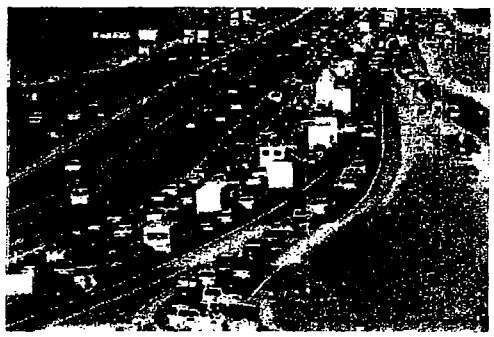


Motorveje i Los Angeles-området. Highway 91 er markeret med rødt.



Motorvejskryds i Los Angeles. Krydsene er normalt i 4 etager med de fleste af ramperne bygget på søjler. (Krydset mellem Interstate 110 og Interstate 405).

Highway 91 ligger i en af Californiens trafikmæssigt set travleste korridorer. På grund af trængselsproblemerne blev der i 1995 etableret 2 ekspresbaner i midterrabatten, der kunne benyttes mod betaling (toll lanes) på en 16 km lang strækning (markeret med rødt på ovenstående kort). Denne strækning har en gennemsnitlig døgntrafik på 250.000-300.000, hvilket er et normalt niveau for motorvejene i Los Angeles-området. Highway 91 har i hver retning 4 gennemgående spor plus 2 betalingsspor mod midterrabatten (se billedet). Taksten for at benytte betalingssporene afhænger af ugedagen og tidspunktet. I retning bort fra Los Angeles (mod øst) er billigste takst $1,15 (kr. 7,00), mens dyreste takst er $8,50 (kr. 50). Taksterne justeres hver 6. måned på baggrund af den registrerede fremkommelighed i de normale kørespor. Princippet er: Jo lavere fremkommelighed, jo højere pris i betalingsbanerne.



Highway 91. Trængsel i de normale kørespor, uhindret kørsel i betalingssporene.

For at tilskynde til mere samkørsel, kan køretøjer med 3 eller flere personer benytte betalingsbanerne gratis med undtagelse af eftermiddagsmyldretiden, hvor der betales halv pris. Bilførere, der ønsker at benytte ekspresbanerne til nedsat betaling på grund af flere personer i bilen, passerer et kontrolpunkt med manuel observation af, om reglerne overholdes. Siden åbningen er både antal brugere og antal passagerer pr. bil øget betydeligt og er nu på ca. 32.000 brugere pr. hverdag. Systemet blev etableret i privat regi i 1995, men blev overtaget af det offentlige i 2003. I 2004-2005 blev der indsamlet i alt $40 mio. Driftsomkostningerne var på $24 mio.

Fordelen for den enkelte trafikant ved at betale for kørsel på strækningen er, at der på den 16 km lange strækning kan spares op mod en time i transporttid i myldretiden. Betaling sker automatisk ved hjælp af en transponder á la brobizzen på Storebælt. Enheden kan benyttes på alle betalingsveje og –broer i Californien. Betalingssystemet benævnes FasTrak (Fast Track = hurtigt spor). Systemet har 1,4 mio. registrerede brugere i Californien.

Vejdirektoratet
Trafikafdelingen

STE
Dato: 7. august 2006

Notat:
HOV-lanes

I USA findes en del motorvejsstrækninger, hvor et eller flere kørespor gennem flaskehalse er reserveret køretøjer med flere end et vist antal antal passagerer. Disse spor benævnes HOV-lanes (High Occupancy Vehicle lanes). På dansk kan det oversættes til noget i retning af "Spor til køretøjer med flere passagerer".

Sporene kan ligge i umiddelbar tilknytning til de øvrige kørespor eller bag langsgående fysiske barrierer. De kan benyttes gratis eller mod betaling. Visse steder findes også kørespor som mod betaling må benyttes af alle uanset antal passagerer i bilen.

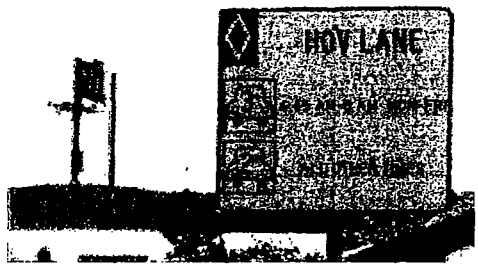
I de senere år er konceptet blevet forfinet i forskellige grader alt efter de lokale forhold og politiske ønsker. Hensigten har været at tilskynde trafikanterne til at køre flere sammen pr. bil og dermed reducere trængselsproblemerne, forbedre fremkommeligheden og reducere miljøgenerne.

Den første HOV-lane blev introduceret i 1973 på Interstate 395 i Virginia syd for Washington DC (billedet nederst til venstre). En 6/8–sporet motorvej blev udbygget med to ekstra spor i midterrabatten. De to kørespor fungerer som reversible (vendbare) kørespor. Herved er der mulighed for at tilvejebringe 3+2 eller 4 +2 spor i den mest belastede retning i myldretiderne mod 3 eller 4 spor i den mindst trafikerede retning. Kravet om flere personer i bilen gælder kun i myldretiderne. Uden for disse tidsrum må alle benytte sporene uanset antallet af personer i bilen. På I-395 afvikles i alt 300-350.000 køretøjer pr. dag.

HOV-baner i midten af vejen på Interstate 395 i Virginia ved Washington.

HOV-bane uden barriere mod den øvrige trafik i samme retning. HOV-baner er markeret med et ruder-symbol.

HOV-baner markeres med et ruder-symbol. Symbolet anvendes også på skilte (Se billedet til højre).



Faciliteter for HOV er vist på skilte, således at trafikanten ikke burde være i tvivl om, hvor mange personer, der skal være i bilen på et givet tidspunkt.

Enkelte steder i USA skal der udover et vist antal passagerer i bilen også betales en afgift for at benytte HOV banerne. I så fald tales om HOT lanes (High Occupancy Toll lanes).

Der findes således flere strategier for styring af trafikken på en motorvej i en flaskehals. Dette benævnes "managed lanes". Den amerikanske nationale vejadministration (FHWA) definerer managed lanes således:

Managed lanes er indretninger af en vej eller et sæt af kørespor, hvor trafikale driftsstrategier er implementeret og styres på baggrund af skiftende trafikale betingelser. Managed lanes adskiller sig fra andre former for styring af spor på en motorvej ved at styringen sker proaktivt og kan indeholde brugen af mere end én strategi.

Eksempler på managed lanes er:

- HOV lanes (spor med et vist antal passagerer i bilen)
- HOT lanes (som HOV lanes men med en tidsafhængig afgift)
- Særlige spor for busser og lastbiler
- Reversible (vendbare) kørespor

Managed lanes kan medvirke til at maksimere kapaciteten (personer/time) i en korridor, styre efterspørgslen efter vejkapacitet, tilbyde trafikanterne et alternativ og skabe et provenu.

Vejdirektoratet
Trafikafdelingen

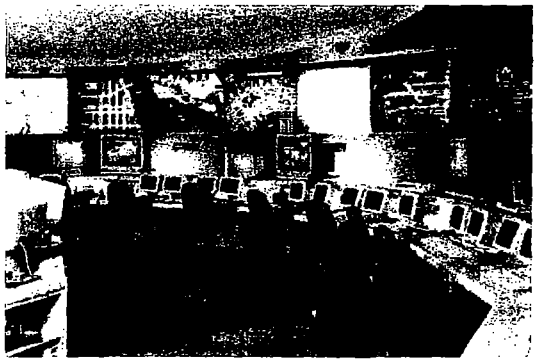
STE
Dato: 7. august 2006

Notat:

Automatisk trafikovervågningssystem, ATSAC

City of Los Angeles har etableret et center under betegnelsen ATSAC til styring og overvågning af byens trafiksignaler. ATSAC står for Automated Traffic Surveilance and Control. ATSAC-centret har lokaler i kælderen under rådhuset og står selv for al projektering af trafiksignaler i Los Angeles.

City of Los Angeles, der kun dækker en mindre del af storbyområdet Los Angeles har ca. 4.300 trafiksignaler, hvoraf 3.100 er tilsluttet ATSAC. (Til sammenligning har Storkøbenhavn ca. 800 signalanlæg). Målet er at alle signalanlæg skal kunne styres og overvåges fra ATSAC-centret inden for nogle få år.



ATSAC-centret til styring og overvågning af trafiksignaler i Los Angeles.

ATSAC er et computerbaseret system til styring og overvågning af trafiksignaler. Sker der fejl på et trafiksignal kan det straks ses fra centret og reparatør kan sendes ud straks eller senere afhængig af fejlens alvorlighedsgrad for trafiksikkerheden og fremkommeligheden.

I alt 50.000 detektorer er tilknyttet systemet. En detektor er en føler i kørebanen, der registrerer køretøjers passage og hastighed. Endvidere er tilsluttet 270 videokameraer, et tal der forventes forøget til 500. Data fra detektorerne om trafikafviklingen sendes kontinuerligt til centret, hvorefter der automatisk tages beslutning, om de grundlæggende signaltider skal ændres. Detektorerne benyttes også til lokal styring i de enkelte kryds. F.eks. kan grøntiderne varieres minut for minut afhængig af den ankommende trafik til et trafiksignal.

Trafiksituationen på det almindelige vejnet vises på internettet på en række kortudsnit. Data indsamles af trafikdetektorer tilknyttet byens trafiksignalsystem, ATSAC.. Kortet viser trafiksituationen en morgen i centrum af Los Angeles. Den aktuelle hastighed er omsat til en farvekode.

Efter etableringen af ATSAC er der på grund af den mere effektive signalstyring registreret en væsentlig bedre trafikafvikling i vejnettet. Rejsetider er reduceret med op mod 12 %, ventetid og antal stop for rødt lys med ca. 30 %. Hertil kommer at luftforureningen er reduceret.

De mange detektorer i vejene frem mod signalanlæggene har gjort det muligt at overvåge trafikafviklingen på størstedelen af vejnettet i den centrale del af Los Angeles byområde. Oplysningerne fra detektorerne omsættes til en trafiktilstand for den pågældende strækning og præsenteres på internettet, så offentlige myndigheder, radiostationer, Tv-kanaler og andre hele tiden har overblik over evt. kødannelser i vejnettet.

NOTAT

Transport- og Energiministeriet

DEPARTEMENTET

Dato 17. august 2006
J. nr. 005-48

Bro- og Havnekontoret

Jess Nørgaard
Telefon 33 92 43 70
jn@trm.dk

Oplysninger om havnene i Los Angeles, San Francisco og Seattle til brug for Trafikudvalgets besøg den 28. august – 2. september 2006

Los Angeles Havn

Havnen ejes af bystyret og drives som en erhvervsdrivende fond (Enterprise Fund). Havnen ledes af en bestyrelse på 5 personer, der er udpeget af borgmesteren. Havnen betaler ikke skat.

Havnen ligger ved San Pedro Bugten ca. 35 km syd for byens centrum. Havnen er under hastig udvikling i godsomsætning, men havnen er i øvrigt kendt for at tage miljømæssige initiativer og sikre rekreative arealer.

Havnen sikrer direkte og indirekte beskæftigelsen for ca. 260.000 personer.

I havnens seneste offentliggjorte regnskabs, der omfattede perioden 1. juli 2004–30. juni 2005, blev der i alt håndteret 162 mio. tons gods i havnen, og den er dermed den 4. største havn i USA. Havnen havde i alt et overskud på ca. 95 mio. USD.

I 2005 håndteredes i Los Angeles Havn 7,5 mio. TEU (20 fods containerenheder), hvilket gjorde havnen til den 10. største containerhavn i verden. I Europa overgås den af havnene i Rotterdam og Hamborg.

Havnens containerdel består af 8 separate terminaler, der betjener forskellige rederier. A. P. Møller-Mærsk driver den ene af terminalerne og betjener blandt andet sine egne skibe. A. P. Møller-Mærsks terminal er den største målt i areal og kajplads og med flest (14) store Panamax-kraner, dvs. kraner der kan betjene de største containerskibe.

I Los Angeles er der etableret en særlig "heavy container" korridor for at sikre fremkommeligheden for lastbiler, der transporterer containere til/fra havnen. Det er sket ved at udpege særlige gader til disse transporter. I den forbindelse er der givet særlige tilladelser til kørsel på vejene til og fra havnen med store og tunge vogntog.

I Los Angeles er vanddybden op til 45 fod (ca. 15 meter), men der arbejdes for en uddybning på op til 53 fod (knap 18 meter).

Ligesom i Danmark er der ønsker om at få byens udvikling til at ske ned mod vandet. Der er etableret et særligt projekt for udvikling af byen langs vandsiden og etablering af åbne arealer, kaldet "San Pedro Waterfront".

Etablering af rekreative arealer med parker og promenader er en del af den opmærksomhed, der er i Los Angeles for at udvikle arealerne langs vandet.

San Francisco Havn

Havnen er en offentlig virksomhed, der er forpligtet til at arbejde for på en afbalanceret måde at varetage maritime, rekreative, industrielle, transportmæssige og kommercielle aktiviteter samt offentlig adgang.

Havnen ledes af en bestyrelse på 5 personer, der er udpeget af borgmesteren. Bestyrelsen er ansvarlig for områderne lang vandet til San Francisco Bugten. Havnens arbejdsområder omfatter jordtilliggender, detailhandel, kontorer, udlejning til erhverv mv., ligesom havnen tager sig af turistattraktionerne langs nogle af de gamle landingsbroer for fiskeri mv. og udvikling af færgeterminaler.

Havnen var tidligere den største og travleste havn på den amerikanske vestkyst, men i dag er denne position overtaget af havnen i Los Angeles.

Havnen håndterede i 2005 ca. 1,8 mio. tons gods. Fra 2005 håndterede havnen ikke længere containere. Containertrafikken synes at være flyttet til den nærliggende havneby Oakland på den anden side af San Francisco Bugten. Her er der mere plads til havneaktiviteter og bedre landtransportforbindelser. Havnen i Oakland håndterede i 2005 knap 2,3 mio. TEU.

San Francisco Havn blev oprindeligt udviklet som en havn med mange anløbsmoler. Nogle af dem er stadig aktive, mens andre helt er overgået til færgeaktiviteter, kommercielle turistformål og kontorer.

I lighed med Los Angeles er der i San Francisco etableret en særlig "heavy container" korridor for at sikre fremkommeligheden for de tungeste transporter gennem byen.

Seattle Havn

Seattle Havn håndterede i 2005 20,6 mio. tons gods, herunder 2,1 mio. TEU. Det gjorde havnen til den 5. største containerhavn i USA. Havnen har siden 2002 oplevet en betydelig vækst. Det skyldes blandt andet Seattles beliggenhed i forhold til det asiatiske marked.

Havnen er en naturlig dybvandshavn og har en vanddybde på 15 meter. Havnen råder over 6 terminaler med i alt 26 containerkraner.

Havnen er en offentlig virksomhed og har en vision om at være den mest effektive og anerkendte udbyder af transportfaciliteter og serviceydelser med henblik på at fremme international handel og være den bedste offentligt ejede katalysator for vedvarende regional fremgang i USA.

For at nå sine mål samarbejder havnen med private virksomheder i partnerskaber. Målet er ikke at kopiere allerede eksisterende serviceydelser/faciliteter, men at udfylde mangler.

Der er fra alle terminaler let adgang til to motorveje. Det gør transporterne hurtige og effektive. Havnen arbejder med korridorbetragtninger for at lette adgangen til og fra havnen.

Havnen ejer og driver også den internationale lufthavn i Seattle-området, Seattle-Tacoma International Airport. Lufthavnen havde i 2005 godt 29 mio. passagerer, hvilket gjorde lufthavnen til den 17. travleste i USA. Det svarer til knap 50 procent flere passagerer end i Københavns Lufthavn, Kastrup. Lufthavnen håndterede i 2005 knap 350.000 tons gods, hvilket svarer til omsætningen i Københavns Lufthavn.

CONGESTION RELIEF ANALYSIS

For the Central Puget Sound, Spokane & Vancouver Urban Areas

Prepared by:
Washington State Department of Transportation

With the assistance of:
Parsons Brinckerhoff Quade & Douglas, Inc.
Mirai Associates
PB Consult
Parametrix
ECONorthwest
Cocker Fennessy
SW Washington Regional Transportation Council
Spokane Regional Transportation Council
Puget Sound Regional Council
Portland Metro

March 2006

Washington State Department of Transportation

Abstract

In response to the issue of roadway congestion and travel delay in urban areas of Washington State, in 2003, the Washington State Legislature asked WSDOT to conduct a congestion relief analysis for the State's three major urban areas: Central Puget Sound, Spokane and Vancouver. The legislature directed that "*the study must include proposals to alleviate congestion consistent with population and land use expectations under the Growth Management Act, and must include measurement of all modes of transportation.*"

The *Urban Areas Congestion Relief Analysis* examined a variety of congestion relief scenarios in the Central Puget Sound, Vancouver, and Spokane regions. Its purpose was to answer the questions, "What would it take to significantly reduce expected future traffic delay due to congestion in the State's major urban areas?" and "What are the associated costs and impacts?" The study was conducted based on adopted regional growth management plans as required by the Growth Management Act of 1990. In addition to those listed on the cover, Sound Transit, King County Metro, Clark County Transit and Spokane Transit also participated in the study.

This study documents the results of computer modeling of a variety of automobile, high-occupancy vehicle (HOV), transit, transportation pricing, and travel demand management scenarios singly and in combinations.[1] The analysis was performed with the assumption that people will continue to make travel decisions in 2025 as they do today, and there will be no significant transportation technology advances from now until then. The results of the computer analysis provide perspectives on how effective strategies limited to these scenarios could be in reducing travel delay[2] relative to the 2025 baseline conditions[3] in Washington State's three largest urban areas. Here are the major conclusions:

Caution should be taken in relying on these results because of the limitations of the travel demand forecast models[1] used in the analysis and uncertainties associated with forecasting travel behaviors far into the future in general.

- **As the urban areas grow, congestion will grow too.** The computer analysis showed that, without a substantial increase in transportation capacity or significant changes in travel behavior, by 2025, total travel delay could increase between 3 to 5 times in the three major urban areas.

- **Large-scale roadway expansion** could reduce travel delay on highways. However, future population and job growth would overwhelm the ability of the most extensive capacity expansion scenarios tested in this study to reduce total regional delay to below today's levels. Furthermore, due to man-made and/or natural environmental constraints, it is estimated that the cost to reduce travel delay in 2025 to below today's level could well exceed $100 billion dollars in the Central Puget Sound region alone.

[1] This analysis is not meant to recommend a specific strategy or to replace, update, or propose a specific local, regional or statewide plan, policy or agreement.

[2] In this analysis, a very basic indicator used to measure congestion is travel delay. Travelers are assumed to be experiencing delay when the traveling average speed is lower than the posted speed limits.

[3] The 2025 baseline conditions included the existing facilities plus projects that had secure funding prior to the 2005 legislative session. Since most analysis was done in 2004, the new transportation projects funded by the 2005 Transportation Partnership Account were not included in the 2025 baseline.

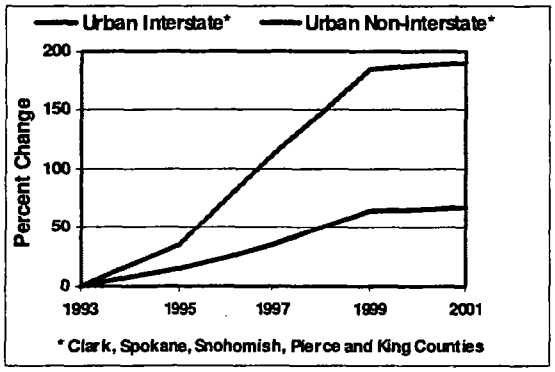
Executive Summary

Why is Congestion Growing in the State? – A Demand /Capacity Imbalance

Roadway congestion is one of the most pressing transportation issues facing some parts of Washington State today. During the past 20 years, traffic congestion has increased substantially in the State's urban areas, where two-thirds of Washingtonians live (Figure 1). Today, congestion in the form of delay exists for several hours each day in the large urban areas.

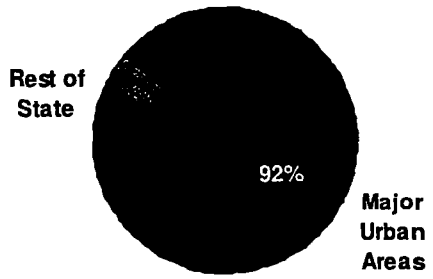
The delay to motorists caused by roadway congestion is most evident on many highways and even arterials in the State's three largest urban areas – Puget Sound, Vancouver, and Spokane. These three major urban areas experienced 92% of the total hours of congestion delay, as shown in Figure 2.

Figure 1: Growth in Daily Hours of Delay



Source: WSDOT

Figure 2: Total Hours of Delay in Washington State (2001)

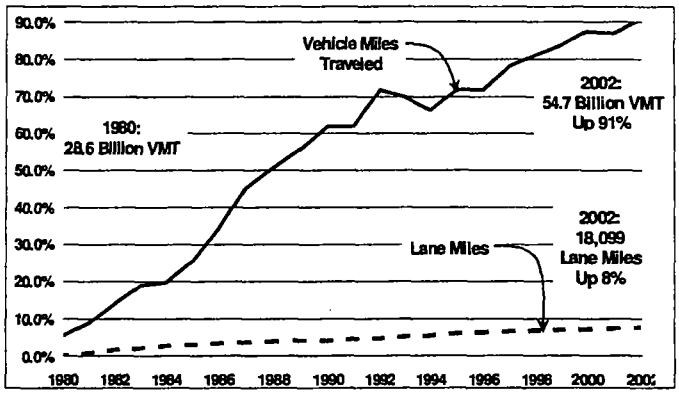


Source: WSDOT

How did we get in this situation? There are several reasons:

- More people are driving and people are driving more.
- Capacity expansion has not kept up with the pace of population and travel demand growth, resulting in an imbalance between demand and capacity.
- Most travelers are auto dependent due to lack of population and employment density, which is essential to make alternative travel options more viable.

Figure 3: Growth in Statewide Vehicle Miles Traveled and Roadway Lane Miles from 1980 to 2002



Source: WSDOT, TDO