

# I-5 Lid - Madison Street to Spring Street Conceptual Study



Prepared by:

**CH2MHILL**

March 2009

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## Background

In downtown Seattle, Interstate 5 (I-5) bisects the business district west of I-5 from First Hill to the east. In the area of Madison and Spring Streets, the I-5 corridor is approximately 300 feet wide and is depressed about 20 to 25 feet below the city streets. The northbound lanes of I-5 in this area consist of elevated bridge structures spanning over reversible traffic lanes. There are existing bridge crossings over I-5 at Madison Street and Spring Street, each consisting of cast-in-place concrete box girder bridges. The Madison Street Bridge is 5 lanes wide (with one lane used for parking) and has sidewalks on each side. The Spring Street Bridge carries 3 lanes of traffic and also has sidewalks on each side. The bridges are about 270' apart. In addition to the bridge crossings, there is an existing on-ramp to southbound I-5 at Spring Street adjacent to 6<sup>th</sup> Avenue that crosses under the Madison Street Bridge. Photos of the project area are shown in Appendix A and as-built plans of the existing bridges are included in Appendix B.

Over the past several years, the City has considered ways to better connect First Hill to the central downtown core in the vicinity of Madison and Spring Streets. These studies have focused on improving pedestrian amenities by widening the Madison Street bridge overcrossing. A study by the Department of Planning and Development (DPD) evaluated options ranging from narrowing the roadway on the bridge and widening the sidewalks to widening the overall footprint of the bridge and has considered landscaping and commercial retail amenities at the bridge.

The purpose of this conceptual study is to identify and evaluate options for covering I-5 between Madison and Spring Streets with a structural lid to improve the connection between First Hill and downtown Seattle. This is a planning-level effort that considered several options for lidding the highway. Visualizations were developed to compare lid concepts and comparative-level cost estimates were prepared for the lid concepts and for options for widening the Madison Street Bridge.

## Lid Concepts

Concepts were developed that cover the entire space between Madison Street and Spring Street over the I-5 corridor. The presence of the existing Spring Street on-ramp to southbound I-5 interferes with a lid, so two options were developed: a complete lid requiring the removal of the existing ramp, and a partial lid constructed around the ramp.

### Option 1 – Complete Lid over I-5

In the first option, the Spring Street on-ramp would be removed to allow space to place a lid that completely covers the area bounded by Madison and Spring Streets. It is assumed that the local street system along 6<sup>th</sup> Avenue would need to be reconfigured to direct traffic south to the on-ramp near Cherry Street.

The lid would consist of a 3-span prestressed concrete girder structure with span lengths matching those of the existing bridges. The interior piers would be aligned with the existing piers. Expansion joints would be located at the edges of the structure adjacent to the existing bridges to isolate the lid from the bridges. It is anticipated that the existing bridges would not need to be modified except for removal of the barriers along the edges. The abutments of the lid would likely be constructed behind the existing concrete cantilever retaining walls

along 6<sup>th</sup> and 7<sup>th</sup> Avenues so that the walls would not have to be replaced. The abutments would likely be supported by drilled shaft or pile foundations to prevent inducing lateral loading on the existing retaining walls. Removal of the on-ramp would entail demolishing the bridge and removing the approach fill embankment and retaining walls.

### **Option 2 – Partial Lid over I-5**

In the second option, the Spring Street on-ramp would be left in place and the lid would be built around it. Because the ramp is located completely within the end span of the lid structure, it would be possible to build the new structure around it up to the edge of the ramp with a conventional framing system. The lid structure would be essentially the same as that for Option 1, consisting of a 3-span prestressed girder structure. Construction of the piers along the existing on-ramp approach embankment would likely require temporary partial removal of the embankment wall along I-5 to provide space for new columns.

### **Lid Amenities**

For each of the two lid options, three different alternatives for amenities were considered:

- Option A – Basic park amenities with landscaping, lawn, trails, benches, and lighting.
- Option B – Park/plaza with landscaped areas, lawns, pathways, seating, areas to gather for performances, public art, and lighting.
- Option C – Commercial retail buildings integrated into park/plaza with many of the same amenities identified in Option B.

Visualizations of these options are shown in Appendix C.

In Option A, only basic amenities were assumed to provide a baseline cost. These features consist mostly of grass lawns and a network of trails connecting the corners of the lid and adjacent streets. These amenities are shown in Figures C-1 and C-4. Electrical and irrigation services would be needed for the lid, as well as a stormwater drainage system.

In Option B, concepts for a park/plaza have been depicted that would allow pedestrian access over the lid between adjacent streets while providing views towards Mt. Rainier and areas for people to congregate. Landscaped areas would include lawns and groupings of trees and shrubs that visually tie into Freeway Park located to provide both sunny and shady areas. Other amenities would include decorative paving, areas of gravel or permeable paving, benches and seats, raised planters, locations for public art, and lighting. These layouts are shown in Figures C-2 and C-5.

In Option C, a portion of the lid would be used for commercial retail space as well as a park/plaza. Electrical, water, fire protection, stormwater, and sewer services would be needed for the lid. The amenities described above for Option B would also be included in this option adjacent to the retail buildings. These layouts are shown in Figures C-3 and C-6.

### **Madison Street Bridge Widening Concepts**

In addition to considering lid concepts over the area between Madison and Spring Streets, an evaluation of concepts for widening the Madison Street Bridge was conducted. Three options were considered, based on an earlier study by the Department of Planning and

Development (DPD) that considered concepts for widening the bridge for pedestrian and possible commercial retail use. Renderings of these options from the DPD study are shown in Appendix D.

### **Option 1 – Unchanged Bridge Footprint with Widened Sidewalk**

In this option, shown in Figure D-1, the footprint of the 75-foot wide Madison Street Bridge would be unchanged and the 8-foot wide parking lane on the south side of the bridge would be replaced with sidewalk. The existing planters in the sidewalks would be left in place. These changes would result in a 20-foot wide sidewalk on the south side of the bridge in addition to the existing 12-foot wide sidewalk on the north side. The widened sidewalk would present opportunities for landscaping and screening of I-5 below.

It is assumed that the additional weight of the new sidewalk could be added to the existing structure without the need to strengthen the superstructure. It is also assumed that no seismic retrofit of the bridge would be needed since, aside from adding a small percentage of dead load, the bridge would not be structurally modified. The bridge was constructed in 1962 and likely has seismic vulnerabilities due to the fact that it was constructed prior to the advent of modern seismic detailing practice.

### **Option 2 – Widened Bridge with Landscaping**

For the second option, the bridge would be widened by constructing new independent structures on each side of the existing bridge as shown in Figure D-2. For the purposes of this study, it is assumed that each structure would be 20 feet wide with filleted corners at the ends.

The structures would be the same type as that of the lid, consisting of 3-span prestressed concrete girder bridges with span lengths that match that of the existing bridge. Expansion joints would be located at the edges of the structure adjacent to the existing bridge to isolate the new bridges from the existing bridge. The existing bridge would not need to be modified except for removal of the barriers. It is assumed that no seismic retrofit of the existing bridge would be needed. With new bridges on each side of the existing structure, the overall sidewalk widths would be approximately 32 feet, allowing for landscaping and screening opportunities.

### **Option 3 – Widened Bridge with Retail Space**

The third option is similar to Option 2 except that the new structures on each side of the existing bridge are assumed to be 75 feet wide to provide sufficient room for retail space. This option is shown in Figure D-3.

## **Cost Estimates**

Planning-level cost estimates were developed for the lid concepts and the Madison Street Bridge widening concepts. Both construction and right-of-way costs were considered. Other project costs, including design, environmental documentation/permitting, construction engineering, and administration were determined as percentages of the construction cost. Life cycle costs and maintenance costs have not been considered. The cost estimates are shown in Appendix E and summarized in Tables 1 and 2 below.

**TABLE 1**  
Conceptual-Level Costs of Lid Options (Millions)

Option	Option A Basic Amenities	Option B Landscaping	Option C Retail
<b>Full Lid</b>			
Design/Construction	\$ 81.1	\$ 83.2	\$ 99.4
ROW	\$ 16.4	\$ 16.4	\$ 16.4
Total	\$ 97.5 Million	\$ 99.6 Million	\$ 115.8 Million
<b>Partial Lid</b>			
Design/Construction	\$ 72.8	\$ 74.7	\$ 89.2
ROW	\$ 14.9	\$ 14.9	\$ 14.9
Total	\$ 87.7 Million	\$ 89.6 Million	\$ 104.1 Million

**TABLE 2**  
Conceptual-Level Costs of Madison Street Bridge Widening

Option	Option 1 Unchanged Bridge Footprint with Widened Sidewalk (no Landscaping)	Option 2 Widened Bridge with Landscaping	Option 3 Widened Bridge with Retail
<b>Madison St Bridge Widening</b>			
Design/Construction	\$ 228,000	\$ 12.7	\$ 55.8
ROW	\$ 0	\$ 2.6	\$ 9.1
Total	\$ 228,000	\$ 15.3 Million	\$ 64.9 Million

### Construction Costs

The main contributors to the construction cost are the cost of the structure and traffic control, which combine to make up approximately 80 to 90 percent of the total construction cost. For the options in which commercial retail was considered, the costs of the services to the lid and the retail space itself were significant, although it is recognized that the cost of developing retail space would likely be borne by others. At this level of study, it was assumed that the retail space would occupy one half of the total area of the lid.

### Right-of-Way Costs

Because the I-5 corridor in downtown Seattle is owned by the State of Washington, the City might have to pay for air rights for a new crossing structure. A preliminary assessment found that the State could be obligated to charge fair market value for use of the property unless it is used as a public space. Additional research suggested that a fee equivalent to one third of the market value of the surrounding land might be charged, regardless of how the space is used. For the purposes of this conceptual study, it was assumed that the City would have to pay for air easement rights at a cost of \$200 per square foot. Since the resulting cost is in the range of \$16 million for the lid concepts and \$2 to \$9 million for the Madison Street Bridge widening concepts, this issue will need to be further evaluated.

## Constraints/Issues of Lid Concepts

In developing the concepts for lidding I-5 or widening the Madison Street Bridge, several constraints and issues were identified that will need to be more fully explored in a subsequent phase of project development. These issues are summarized below.

### Structural

The constructability of the lid structure is an important consideration in the overall feasibility of the project. It will be important to verify the foundation type and size, especially at the interior piers where construction will need to be performed within the I-5 corridor. In addition, the type, size, and condition of the existing retaining walls along 6<sup>th</sup> and 7<sup>th</sup> Avenues needs to be verified to ensure that new bridge abutments can be constructed behind the walls without adversely impacting them. It would be difficult to temporarily shore or replace these walls without having a significant impact on traffic operations and cost.

Maintaining adequate vertical clearances over I-5 with a new overhead structure is also a concern. There is currently inadequate vertical clearance at the Seneca Street off-ramp below the Spring Street Bridge. The existing clearance is 15.79 feet, according to the as-built plans shown in Appendix B, which is less than the minimum required vertical clearance of 16.50 feet. The new lid structure could likely be constructed using prestressed concrete girders that are shallower than the existing Madison Street and Spring Street bridges, although this needs to be further evaluated. In addition, there is inadequate vertical clearance at the southbound off-ramp adjacent to 6<sup>th</sup> Avenue below both existing bridges (15.26 feet at the Madison Street Bridge and 16.32 feet at the Spring Street Bridge). This ramp might need to be regraded to provide adequate vertical clearance.

There is a risk that the existing Madison Street and Spring Street bridges would need to be retrofitted or replaced as a result of this project. The bridges were constructed in 1962 and appear to be in good condition; however, it is likely that they are seismically vulnerable. To mitigate the possibility of having to address the vulnerability of the bridges, the concept for the lid and Madison Street Bridge widening is to construct independent structures adjacent to the existing bridges and provide expansion joints between the new and existing structures.

Another issue concerns the existing northbound I-5 bridge structures spanning over the reversible traffic lanes that would be located under the lid. These structures were constructed in the early 1960's and have used up a significant portion of their useful life. WSDOT might have plans to seismically retrofit or replace these structures in the future. Constructing a lid over these structures would make it more difficult to replace them, due to limited headroom for construction equipment.

### Communications, Ventilation, and Life Safety Systems

There are several systems that are needed for tunnels or lids over highways, including communications, ventilation, and life safety systems. The need for these systems is dependent in part on the length of the lid. For the concepts considered in this study, the lid would be approximately 400 feet long (270 feet between structures plus 75-foot and 58-foot wide existing bridges).

### ***Communications Systems***

For lids exceeding 300 feet in length, a traffic control system is needed to provide a means to stop approaching traffic from entering the lid in case of fire or other emergency. It is assumed that a variable message sign would be needed for northbound traffic. For southbound traffic, it is assumed that a traffic control system is already in place for the Freeway Park lid just to the north of Spring Street. The traffic control system would be connected to WSDOT's fiber communication network and central control facility.

### ***Ventilation Systems***

Generally, mechanical ventilation systems are not needed when there is good air circulation by natural ventilation and the lid is less than 500 feet long. However, ventilation requirements are complicated by the proximity of the Freeway Park lid to the north and by the fact that northbound and southbound lanes of I-5 are not on the same level, as well as the presence of the reversible traffic lanes under the elevated northbound I-5 lanes. These factors would tend to reduce air circulation, which could lead to the need for a mechanical ventilation system. Air circulation modeling is needed to determine whether or not a mechanical ventilation system is required. For the purposes of this study, since the lid is only 400 feet long, it was assumed that a mechanical system is not needed.

### ***Life Safety Systems***

Life safety systems include fire detection, fire suppression, and emergency egress systems:

- Fire detection systems are needed for lids longer than 300 feet and typically include smoke/heat detectors, cameras, emergency phones, and pull alarm stations.
- Fire suppression systems for lids longer than 300 feet include a standpipe and water supply system, a foam and deluge system for fuel tanker trucks, portable fire extinguishers, and a drainage system to collect and treat hazardous and flammable materials.
- Emergency egress systems are needed and would likely consist of stairwells from I-5 to the local street level.

### **Traffic Operations**

There are several traffic operations issues related to construction of a lid over I-5. During construction, there will be disruption to vehicle traffic on I-5 and the local street system. The costs for traffic control are expected to be significant, and specific traffic control approaches need to be evaluated to ensure that the costs have been adequately accounted for.

There will also be permanent impacts to traffic. The addition of a lid several hundred feet in length creates a tunnel for motorists that requires eyesight adjustment when entering and leaving the enclosed space due to abrupt changes in lighting levels. This condition can be mitigated by proper design of lighting under the lid. In addition, the new piers for the lid might interfere with existing or future travel lanes and sight distance for motorists. For the full lid option, the removal of the Spring Street on-ramp would likely have significant impacts to the local street system, especially during the PM peak period, as traffic that typically uses this ramp to access southbound I-5 would need to find another route. Removal of the ramp would also increase traffic demands at the on-ramp near Cherry Street.



## Agency Approvals

The I-5 corridor in downtown Seattle is owned by the State of Washington and approval by the State would be required to construct a new crossing over I-5. The Washington State Department of Transportation (WSDOT) has been considering ways to increase the through-capacity of I-5 through downtown, and it is not clear how a new lid structure over I-5 would affect WSDOT's future plans for this corridor. It is unlikely that WSDOT would be supportive of a lid over I-5 if it limited the ability to widen or reconfigure I-5 in the future.

In addition, the presence of the U.S. federal courthouse on 6<sup>th</sup> Avenue between Madison and Spring Streets might create some security issues for the courthouse, depending on how the space above the lid is used. At present, there is a series of steel bollards along the sidewalk in front of the building along 6<sup>th</sup> Avenue for security protection.

## Other Relevant Lid Projects

As part of this study, an investigation of similar lid projects was conducted to better understand issues, constraints, costs, and construction challenges associated with this type of project. Two projects were identified that served as case studies – the 5<sup>th</sup> Street Bridge in Atlanta, Georgia and the Cap at Union Station in Columbus, Ohio.

### 5<sup>th</sup> Street Bridge – Atlanta, Georgia

This project consisted of the replacement of an existing bridge over the I-75/85 interstate highway in downtown Atlanta with a wider two-span bridge to improve the connection of the Georgia Tech University campus to midtown Atlanta. Georgia Tech had previously expanded the campus to the other side of I-75/85 in an area known as Technology Square in midtown. The 5<sup>th</sup> Street Bridge was the only direct connection between the main campus and Technology Square and consisted of two traffic lanes and narrow sidewalks.

The bridge was replaced with a 125-foot wide structure that included trolley lanes, bike lanes, widened sidewalks, landscaping, and noise attenuation walls. Photos of the new bridge are shown in Appendix F. Construction was completed in 2006 as a design-build project administered by the Georgia Department of Transportation (GDOT) at a cost of approximately \$11 million. The project was paid for by federal gas tax revenue and GDOT local matching funds. The bridge was replaced in stages to keep the bridge operable to local traffic during construction. Temporary impacts to traffic operations on I-75/85 included channelization revisions to allow for construction of the center pier and rolling slowdowns of traffic at night during erection of the bridge girders.

This project was similar to the concept of widening the Madison Street Bridge with landscaping and widened sidewalks (Option 2) in terms of the overall width of structure, pedestrian and landscaping amenities, and the fact that communications, ventilation, and life safety systems were not needed.

### Cap at Union Station – Columbus, Ohio

The other project evaluated was a cover over interstate highway I-670 in Columbus, Ohio that was conceived to improve the connection between the historic neighborhoods north of the interstate and the downtown commercial districts south of the highway, including the Arena District and the Convention Center. The project was developed in response to public

opposition to widening I-670 by the Ohio Department of Transportation (ODOT), in which it was felt that widening the highway from four to eight lanes would further isolate the communities neighboring I-670.

The project consisted of construction of two independent structures, one on each side of the existing 200-foot long highway overcrossing, to create a total lid width of approximately 200 feet. Buildings were constructed on the new lids to create a more pedestrian-friendly streetscape with retail development that would reconnect the economic activity on each side of the freeway. The retail structures were constructed and leased by a private real estate developer. Photos of the lid are shown in Appendix F.

Costs for construction of the lid structures were divided among several parties. ODOT and the City of Columbus shared the cost of the new structures and the City paid for utilities and services to the structures. The City leased the retail space to the developer at essentially no cost in exchange for a percentage of retail profits. Construction of the lid was staged with widening of I-670 and was completed in 2004.

There were several challenges associated with construction of retail space on the highway overcrossings. To address concerns of motorists on I-670, the retail buildings do not have any windows or lighted signs visible to freeway motorists below. In addition, the retail spaces can be closed and evacuated in response to fire or other emergency on I-670. In addition, there is a relatively low level of vibration of the bridges due to vehicle and pedestrian use, although it has not caused any significant difficulties to retail tenants.

## Summary

The location of the lid in the area between Madison and Spring Streets is one of the highest pedestrian demand areas of the city. A properly designed, landscaped, and pedestrian-friendly lid would restore and enhance the connectivity of hospitals, businesses, and the residential neighborhood of First Hill to downtown. The lid would also provide public spaces and an urban oasis and could lead to opportunities for the development of park and retail space in this area.

Case studies of similar lid projects demonstrate that this type of development over urban freeways can be successful. However, the cost of providing lid structures is significant. To cover and develop the entire space between Madison Street and Spring Street is in the range of \$100 million. A less costly approach would be to expand the Madison Street Bridge to improve pedestrian access and create landscaping and retail opportunities. There are many issues and possible constraints that need to be further evaluated to validate the feasibility of this overall concept and to gain better confidence in the expected cost of the project.

## Appendices

### **A Photos of Project Site**

Figure A-1 Aerial of Project Site

Figure A-2 Madison Street Bridge

### **B As-Built Plans of Existing Bridges**

Madison Street Undercrossing

Spring Street Undercrossing

### **C Visualizations of Lid Concepts**

Figure C-1 Option 1A - Complete Lid with Basic Amenities

Figure C-2 Option 1B - Complete Lid with Landscaping

Figure C-3 Option 1C - Complete Lid with Retail

Figure C-4 Option 2A - Partial Lid with Basic Amenities

Figure C-5 Option 2B - Partial Lid with Landscaping

Figure C-6 Option 2C - Partial Lid with Retail

### **D Madison Street Bridge Widening Concepts**

Figure D-1 Option 1 - Unchanged Bridge Footprint with Widened Sidewalk

Figure D-2 Option 2 - Widened Bridge with Landscaping

Figure D-3 Option 3 - Widened Bridge with Retail

### **E Cost Estimates**

Cost Estimate of Lid Concepts

Cost Estimates of Madison Street Bridge Widening Concepts

### **F Examples of Other Lid Projects**

5<sup>th</sup> Street Bridge – Atlanta, Georgia

The Cap at Union Station – Columbus, Ohio

APPENDIX A  
PHOTOS OF PROJECT SITE



**Figure A-1 Aerial of Project Site**



**Figure A-2 Madison Street Bridge**

**APPENDIX B**  
**AS-BUILT PLANS OF EXISTING BRIDGES**

**MADISON STREET UNDERCROSSING**



Note: Grade elevations shown are finish grades on @ of Bridge, equal to profile grade which is carried along @ Street.

SEC. 32 T.25 N. R.4 E.W.M.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
8	WASH.	E81-5-3 (156)165	354	412	

CURVE DATA

	SOUTHBOUND	NORTHBOUND	NBCD	SBCD	REVERSIBLE
PI	2204-24.71	2214-17.97	2207-88.62	2202-80.36	2205-01.30
A	45° 49' 30"	44° 24' 30"	6° 08' 26"	4° 29' 57"	4° 15' 02"
D	5' 00' 00"	3' 10' 00"	3' 70' 00"	1' 00' 00"	3' 00' 00"
R	1309.86	1309.34	1309.34	5729.53	1309.86
T	367.33	302.01	1129.80	223.03	70.87
L	1407.50	1273.70	190.58	449.92	141.68
S	0.05/FT	0.05/FT	0.05/FT	0.02/FT	0.04/FT
CA	42° 13' 30"	40° 23' 30"	6° 02' 06"		
B	2.5	2.5	2.5		
DE	1' 48' 00"	1' 00' 20"	1' 00' 20"		
Ls	12000	12667	12667		

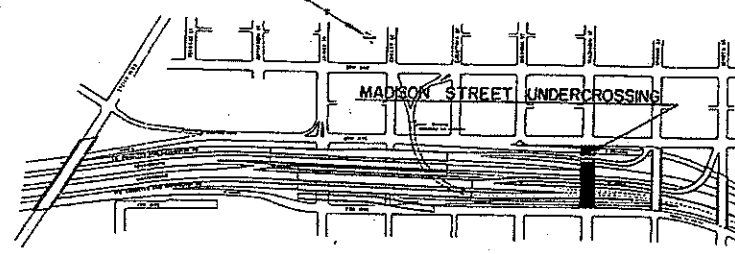
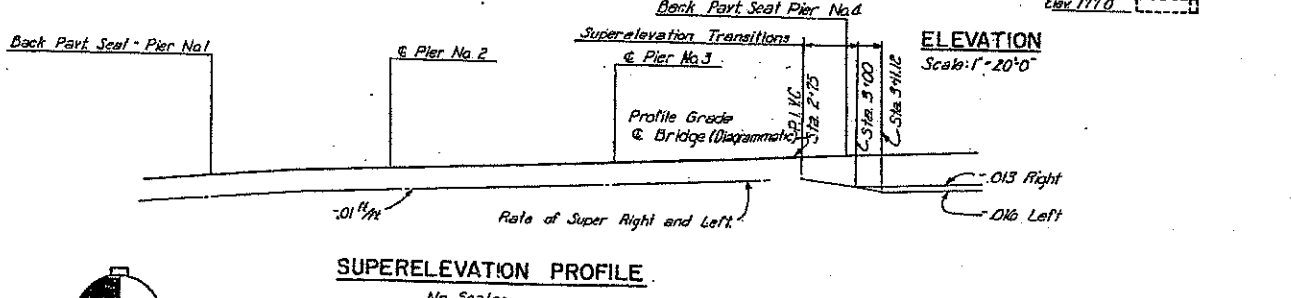
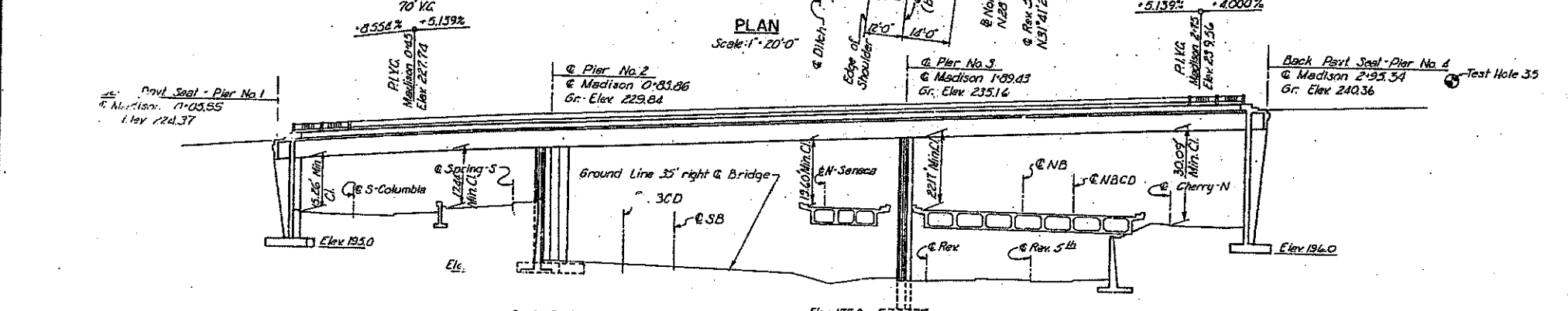
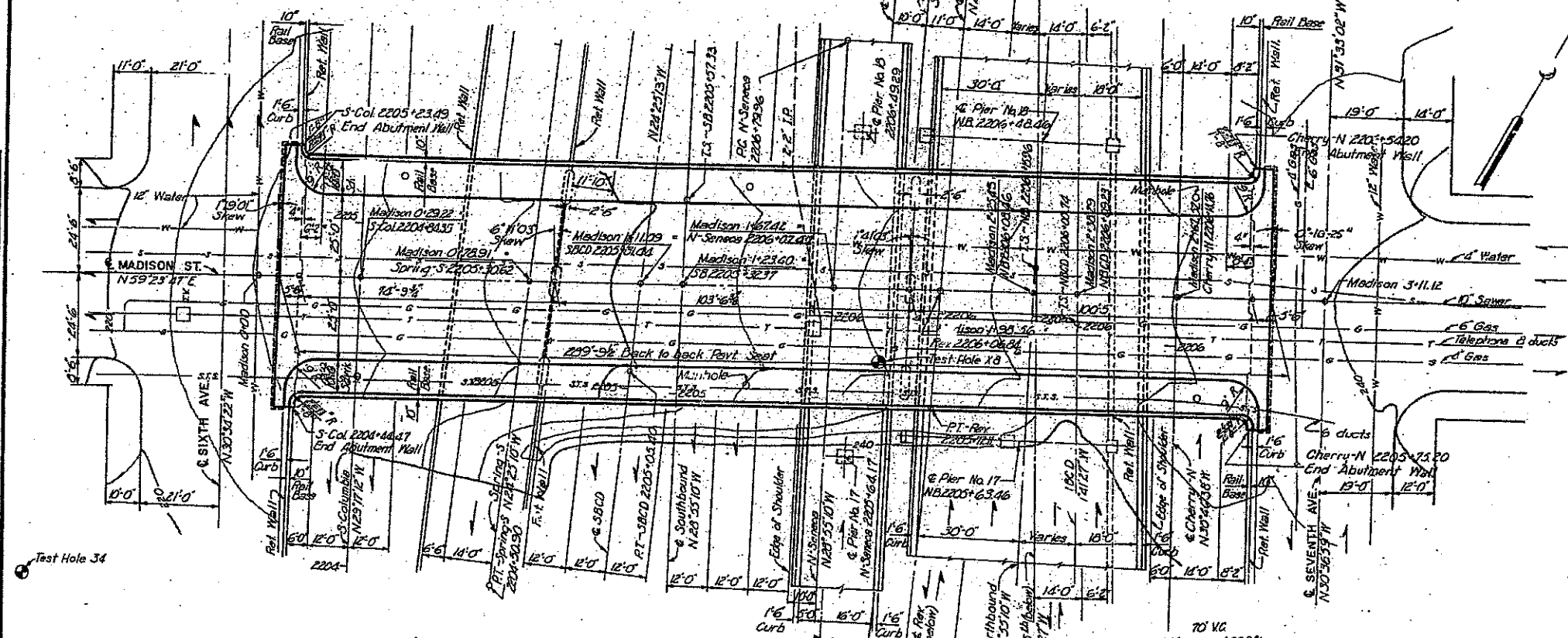
**GENERAL NOTES**  
 All material and work shall be in accordance with the requirements of the State of Washington, Department of Highways, Standard Specifications for Road and Bridge Construction, dated July 1957.  
 Footing elevations are subject to change depending upon foundation material encountered and reinforcing steel for footings and walls shall not be cut until final footing elevations have been determined in the field.  
 The concrete in the footings shall be Class B mix and all other concrete shall be Class AX mix, except as noted.  
 Falsework shall not be released in any span until all concrete has been in place the required length of time and has developed sufficient strength as outlined in the specifications. Falsework shall be carefully released to prevent impact or undue stresses in the structure.  
 The maximum allowable soil pressure per square foot is four (4) tons. For boring logs see Test Hole Layout and Log Sheets.

APPROXIMATE QUANTITIES

DESCRIPTION	TOTAL	UNITS
Structure Excavation	3,600	Cu. Yds.
Furn., Place, and Comp. Selected Backfill Mat'l.	1270	Cu. Yds.
Superstructure	Lump Sum	Lump Sum
Standard Bridge Railing Type No. 3-A	572	Lin. Ft.
Standard Bridge Railing Type No. 1-B	46	Lin. Ft.
Concrete Class AX	564	Cu. Yds.
Concrete Class B	321	Cu. Yds.
Steel Reinforcing Bars	263,000	Lbs.
Downspouts	80	Lin. Ft.
Cofferdam Type J	14,800	Sq. Ft.
Architectural Treatment	490	Sq. Yds.

Note: See Summary of Quantities Sheets for miscellaneous backfill and utility items.

LOADING H20-S16



PRIMARY STATE HIGHWAY NO. 1  
 SEATTLE FREEWAY  
 JAMES STREET TO SENECA STREET  
 KING COUNTY

MADISON ST. UNDERCROSSING  
 BRIDGE LAYOUT

WASHINGTON STATE HIGHWAY COMMISSION  
 DEPARTMENT OF HIGHWAYS  
 OLYMPIA, WASHINGTON

E. J. STEPHAN  
 E. C. HORTON

L. A. COOPER, Chairman  
 C. D. TANK  
 J. R. WARD, Sec.

APPROVED Sept. 21, 1962  
 SHEET 356 OF 412 SHEETS

CONTRACT NO. 7110

A - Built Changes in Red 4-6-67

P/1681- 163/57

NO.	DATE	BY	REVISION
1	7-21-62	WJH	AS BUILT
2	8-10-62	WJH	REVISED
3	7-21-62	WJH	REVISED
4	7-21-62	WJH	REVISED

NO.	DATE	BY	REVISION
1	7-21-62	WJH	AS BUILT
2	8-10-62	WJH	REVISED
3	7-21-62	WJH	REVISED
4	7-21-62	WJH	REVISED

NO.	DATE	BY	REVISION
1	7-21-62	WJH	AS BUILT
2	8-10-62	WJH	REVISED
3	7-21-62	WJH	REVISED
4	7-21-62	WJH	REVISED



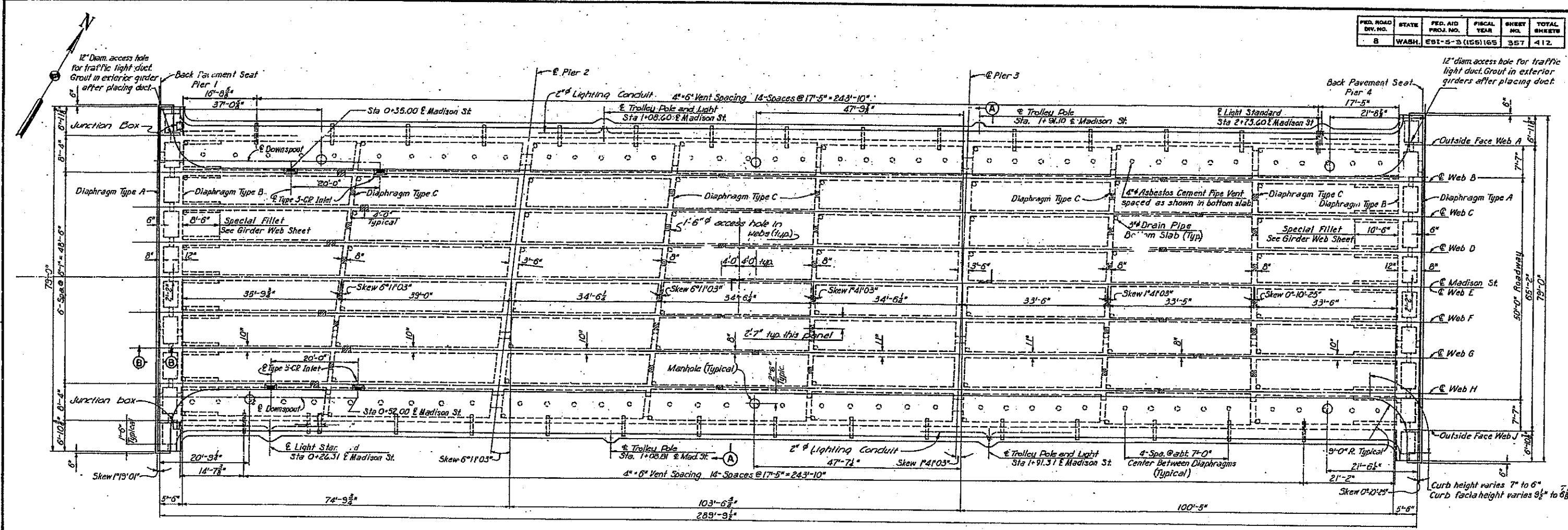
CITY OF SEATTLE



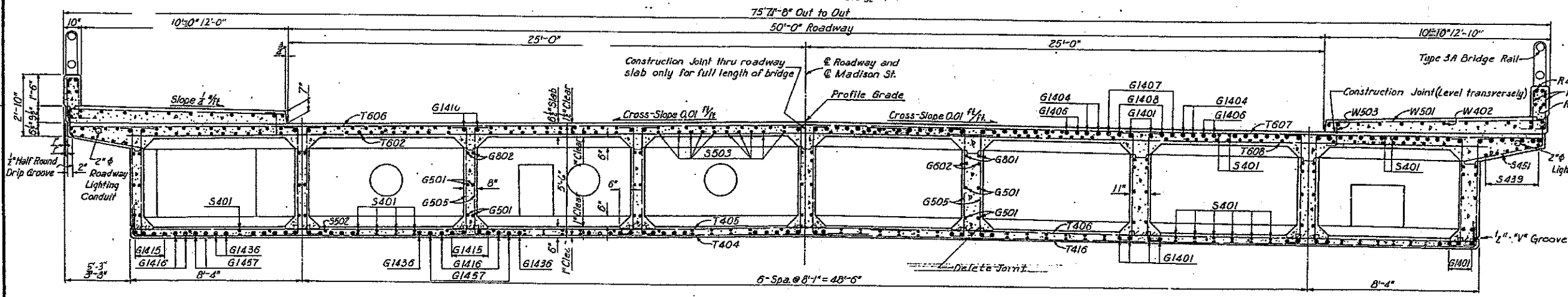
JOSEF SORKIN  
 CIVIL ENGINEER

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
B	WASH.	EB1-5-3 (155)165	357	412	



**FRAMING PLAN**  
Scale 3/8"=1'-0"



**SECTION A-A**  
Scale 3/8"=1'-0"

**Notes:**  
 For lighting details see Misc. Details Sheet.  
 For location of drain holes in end cells see Girder Web Reinforcing Sheet.  
 Web thicknesses shown for Web G are typical for all webs.  
 For 4" x 6" Vent details see Miscellaneous Details Sheet.  
 For details of 3" and 4" holes in bottom slab see Miscellaneous Details Sheet.  
 For Manhole details see Miscellaneous Details Sheet.  
 For details of Curb Inlets see Utility Details Sheet.  
 For additional Reinforcing at Access Hole see the Miscellaneous Details sheet.

**PRIMARY STATE HIGHWAY NO. 1  
SEATTLE FREEWAY  
JAMES STREET TO SENECA STREET  
KING COUNTY**

**MADISON ST. UNDERCROSSING  
FRAMING PLAN**

WASHINGTON STATE HIGHWAY COMMISSION  
DEPARTMENT OF HIGHWAYS  
OLYMPIA, WASHINGTON

E. A. ESTON  
E. L. MALSON

E. A. CORWELL, C.E.  
E. S. EMM  
J. R. HALE, JR.

SCALE: APPROVED Sept. 21, 1962  
SHEET 357 OF 412 SHEETS

**Note:**  
 Unless otherwise directed by the engineer all longitudinal concrete pours will be made in a continuous operation. If allowed, transverse construction joints will be made as shown on the miscellaneous details drawing.

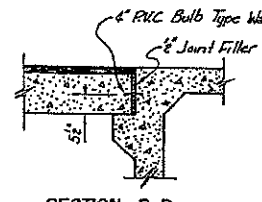
DATE	REVISION	BY
As Built	Changes in Re.	4-6-67
Oct. 31, 1962	Removed Access Doors in Both Slab	WGG
Oct. 31, 1962	Slab Distribution Steel	L.D.R.
	REVISION	

DESIGNED BY	
CHECKED BY	
DRAWN BY	
IN CHARGE	
DATE	

DESIGNED BY	
CHECKED BY	
DRAWN BY	
IN CHARGE	
DATE	

DESIGNED BY	
CHECKED BY	
DRAWN BY	
IN CHARGE	
DATE	

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

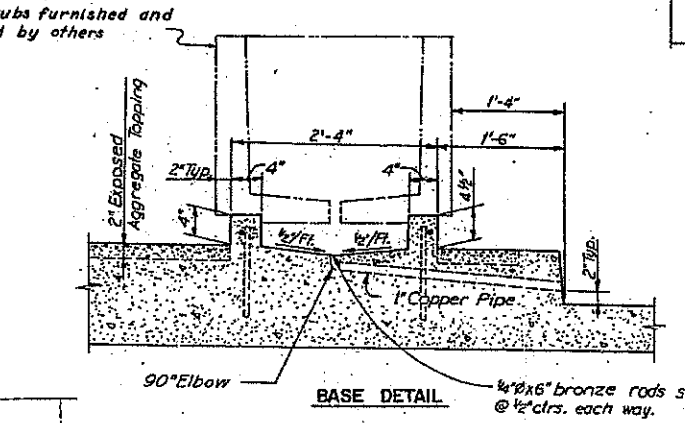
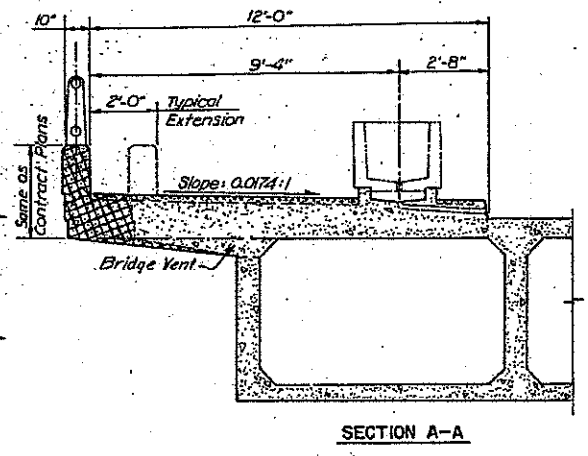
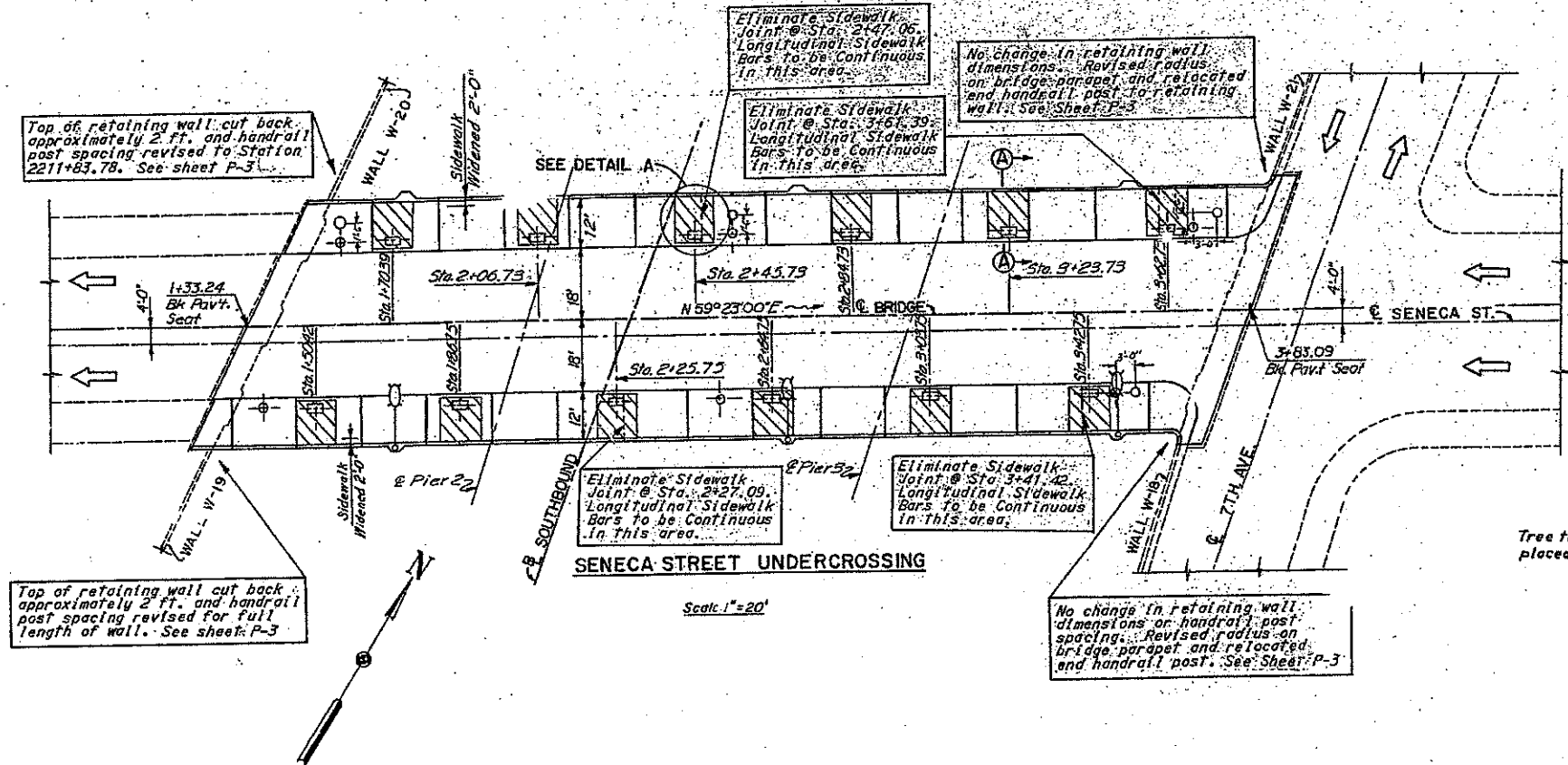


**SECTION B-B**

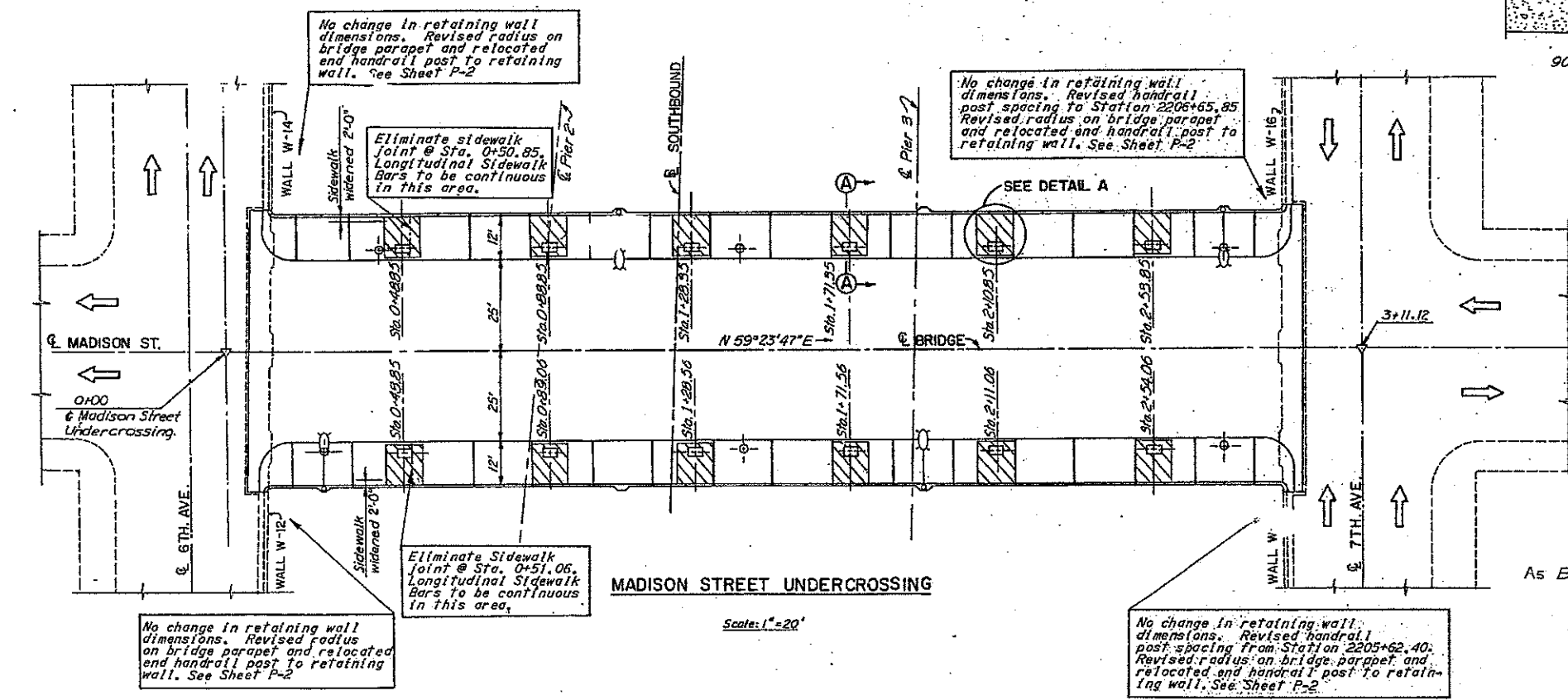
P/1681

163/56

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
2	WASH.				



**DETAIL A**  
Edge of exposed aggregate topping aligns with sidewalk joints except as shown in plan views.



ADDITIONAL QUANTITIES				
TOTAL	ITEM	UNIT	MADISON	SENECA
123	Concrete Class AX	Cu. Yds.	66	57
17,600	Reinforcing Steel	Lbs.	9,470	8,380
284	Sidewalk Arch. Treatment	Sq. Yds.	142	142

\* Superstructure bid on Lump Sum on Contract Plans.

New Sheet

**PRIMARY STATE HIGHWAY NO. 1  
SEATTLE-FREEWAY**

JAMES STREET TO SENECA STREET

KING COUNTY

LAYOUT AND BASE DETAILS  
MADISON AND SENECA STREET UNDERCROSSINGS

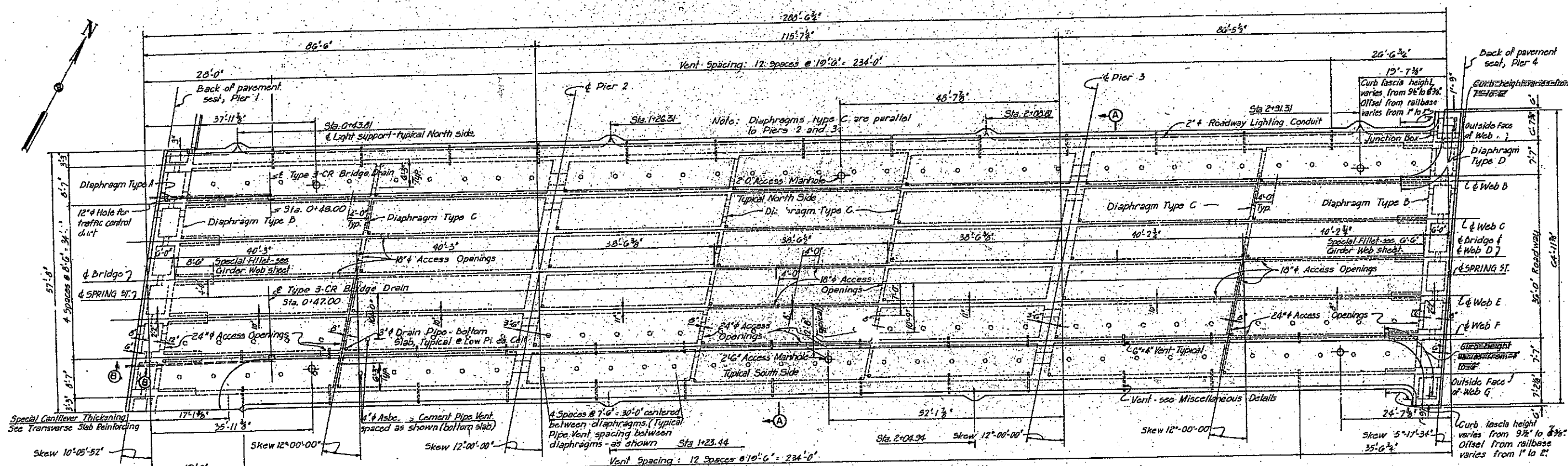
WASHINGTON STATE HIGHWAY COMMISSION  
DEPARTMENT OF HIGHWAYS  
OLYMPIA, WASHINGTON



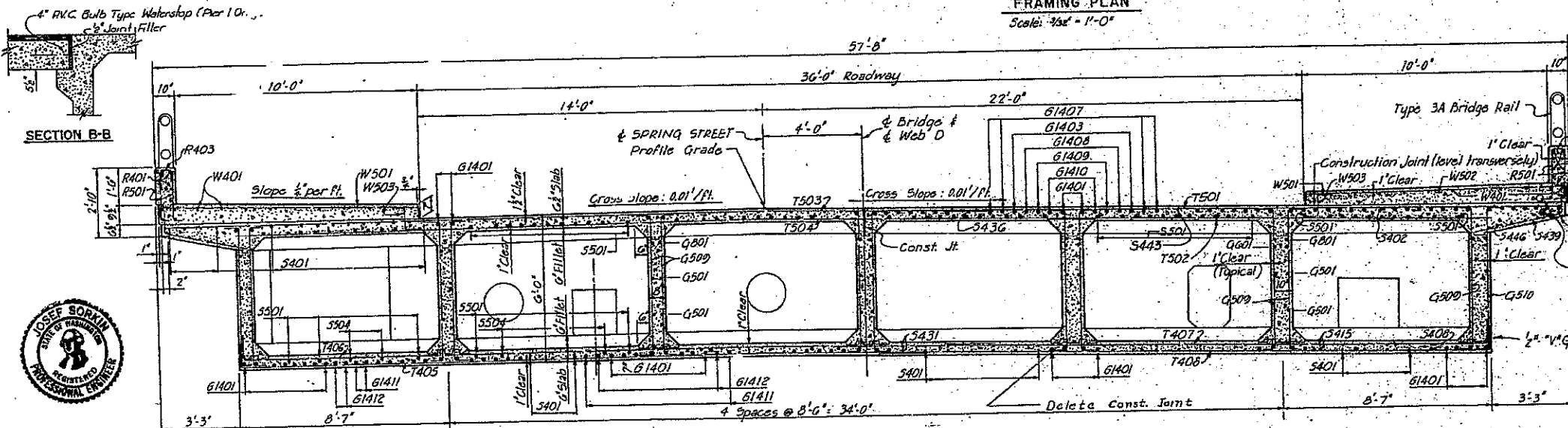
Sheet 357A of 412 Sheets  
March 6, 1964

**SPRING STREET UNDERCROSSING**

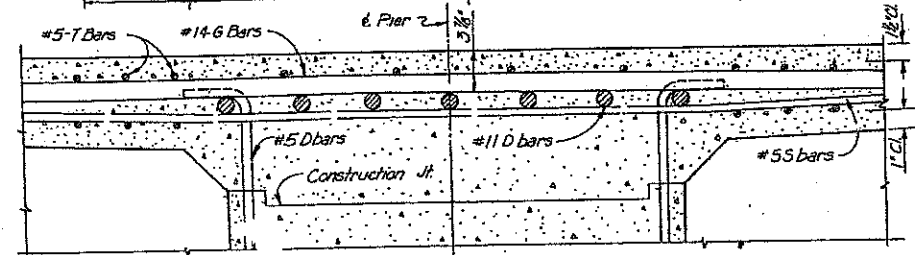
FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	WASH.	E1-3-3(152)165	384	412



**FRAMING PLAN**  
Scale: 3/8" = 1'-0"



**SECTION A-A**  
Scale: 3/8" = 1'-0"



**STEEL PLACEMENT DETAIL**

Note:  
Girder Web thicknesses shown for web E are typical for all webs.  
Unless otherwise directed by the engineer all longitudinal concrete pours will be made in a continuous operation.  
If allowed; transverse construction joints will be made as shown on the Miscellaneous Details sheet.  
For additional Reinforcing at Access Holes see the Miscellaneous Details sheet.

DATE	REVISION	BY
Oct. 31, 1962	Slab Distribution Steel	J.R.B.
	REVISION	BY

**PRIMARY STATE HIGHWAY NO. 1  
SEATTLE FREEWAY  
JAMES STREET TO SENECA STREET  
KING COUNTY**

**SPRING STREET UNDERCROSSING  
FRAMING PLAN**

WASHINGTON STATE HIGHWAY COMMISSION  
DEPARTMENT OF HIGHWAYS  
OLYMPIA, WASHINGTON

E. J. BISHOP  
S. L. BERGENDOFF

E. A. CORNELL, Designer

E. S. BARK  
E. A. BARK, Jr.

As Built Changes in Red 1-26-67

SHEET 384 of 412 SHEETS

Approved: Sept. 21, 1962

DATE	BY

DATE	BY

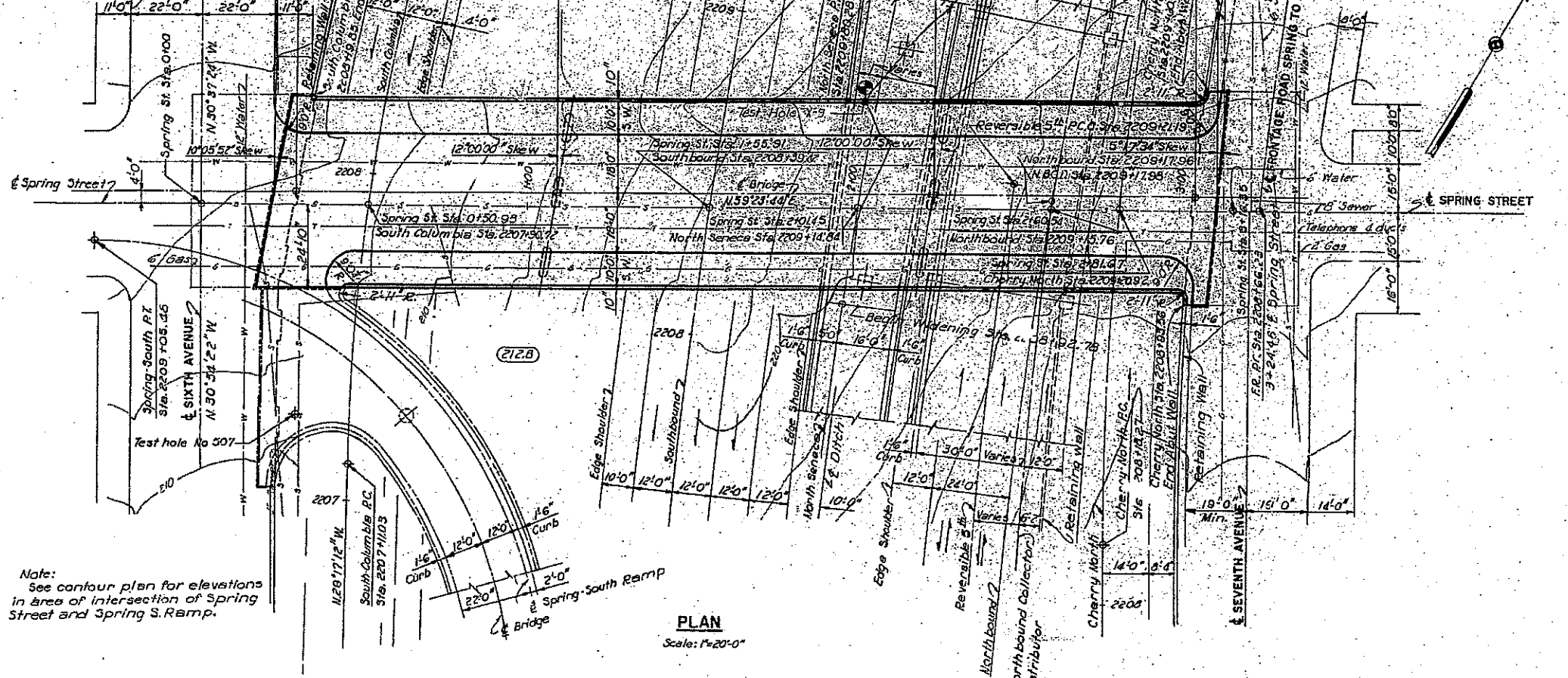
DATE	BY



HOWARD, NEEDLES, TAMMEN & BERGENDOFF

Note: Grade elevations shown are finish grades on Bridge, which is 4 ft. left of Street profile grades. Stationing are carried along Spring Street.

Use Standard Bridge railing Type No. 3A Standard sheet 25



Note: See contour plan for elevations in area of intersection of Spring Street and Spring S. Ramp.

PLAN Scale: 1"=20'-0"

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
5	WASH.	EST-3-3(155)165	383	412

CURVE DATA					
	SOUTHBOUND	NORTHBOUND	REVERSIBLE	N.B.-C.D.	REV. 5th CHERRY
PI	2214+24.71	2214+17.97	2214+42.81	2207+08.62	2208+17.16
Δ	45°49'30"	44°24'30"	42°34'02"	8°03'28"	10°25'53"
D	3'00'00"	3'10'00"	3'10'00"	3'10'00"	5'00'00"
R	1809.66	1809.34	1809.34	1809.34	1145.92
T	867.38	802.01	T <sub>1</sub> = 705.38 T <sub>2</sub> = 767.77	T <sub>1</sub> = 107.88 T <sub>2</sub> = 125.80	104.60
L	1407.50	1275.70	1280.90	190.58	208.63
S	0.05'/ft	0.05'/ft	0.05'/ft	0.05'/ft	0.05'/ft
CA	42°13'30"	40°23'50"	40°33'42"	6°02'06"	
a	2.5	2.5	2.5	2.5	
DE	1'48'00"	2'00'20"	2'00'20"	2'00'20"	
Ls	120.00	126.667	126.667	126.667	

CURVE DATA					
	CHERRY-N	N-SENECA	S-COLUMBIA	SPRING-S	FR. SPRING-S
PI	2209+32.2	2208+30.44	2208+72.11	2208+73.9	2209+72.68
Δ	10°58'11"	9°12'44"	25°05'58"	96°11'06"	11°58'20"
D	5'00'00"	3'04'03"	7'59'58"	4'12'38"	5'11'55"
R	1145.92	1867.84	716.25	158.36	1103.40
T	170.95	150.48	161.08	154.17	112.45
L	339.39	300.32	316.89	232.38	224.14
S	0.05'/ft	0.05'/ft	0.05'/ft	0.06'/ft	0.015'/ft

**GENERAL NOTES**

All material and work shall be in accordance with the requirements of the State of Washington, Department of Highways, Standard Specifications for Road and Bridge Construction dated July 1957.

Footings elevations are subject to change depending upon foundation material encountered and reinforcing steel for footings and walls shall not be cut until final footing elevations have been determined in the field.

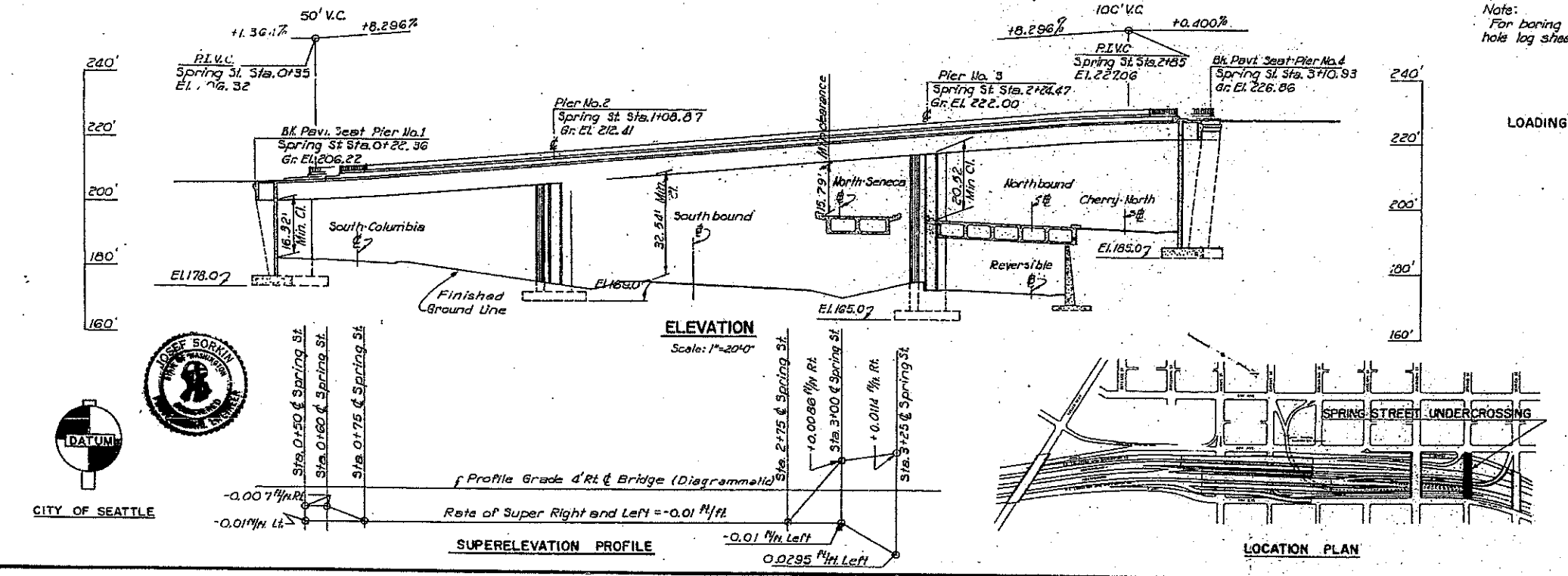
The concrete in the footings shall be Class B mix and all other concrete shall be Class A mix.

Falsework shall not be released in any one span until all concrete has been in place the required length of time and has developed sufficient strength as outlined in the specifications. Falsework shall be carefully released to prevent impact or undue stress in the structure.

The maximum allowable soil pressure per square foot is four (4) tons.

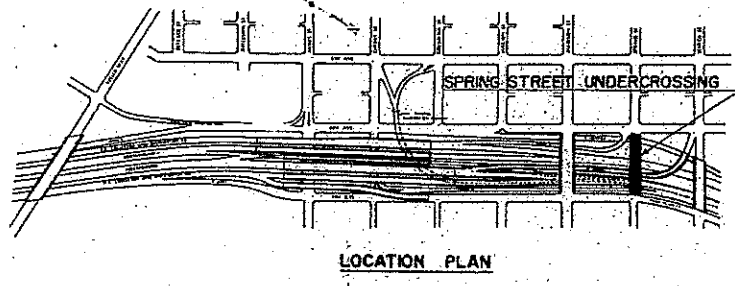
APPROXIMATE QUANTITIES		
DESCRIPTION	TOTAL	UNITS
Furn. Place and Comp. Selected Backfill Mat'l.	1,250	Cu. Yds.
Superstructure	Lump Sum	Lump Sum
Standard Bridge Railing type No. 3A	541	Lin. Ft.
Concrete Class AX	457	Cu. Yds.
Concrete Class B	352	Cu. Yds.
Steel Reinforcing Bbs	214,000	Lbs.
Downspouts	55	Lin. Ft.
Structure Excavation	3,140	Cu. Yds.
Architectural Treatment	230	Sq. Yds.
Cofferdam, Type J	4,900	Sq. Ft.

Note: See Summary of Quantities Sheets for miscellaneous backfill and utility items.



ELEVATION Scale: 1"=20'-0"

SUPERELEVATION PROFILE



LOCATION PLAN

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CITY OF SEATTLE

**PRIMARY STATE HIGHWAY NO. 1  
SEATTLE FREEWAY  
JAMES STREET TO SENECA STREET  
KING COUNTY**

**SPRING STREET UNDERCROSSING  
BRIDGE LAYOUT**

WASHINGTON STATE HIGHWAY COMMISSION  
DEPARTMENT OF HIGHWAYS  
OLYMPIA, WASHINGTON

Approved, Sept. 21, 1942

SHEET 383 of 412 SHEETS

APPENDIX C  
VISUALIZATIONS OF LID CONCEPTS



**Figure C-1 Option 1A - Complete Lid with Basic Amenities**





**Figure C-2 Option 1B - Complete Lid with Landscaping**



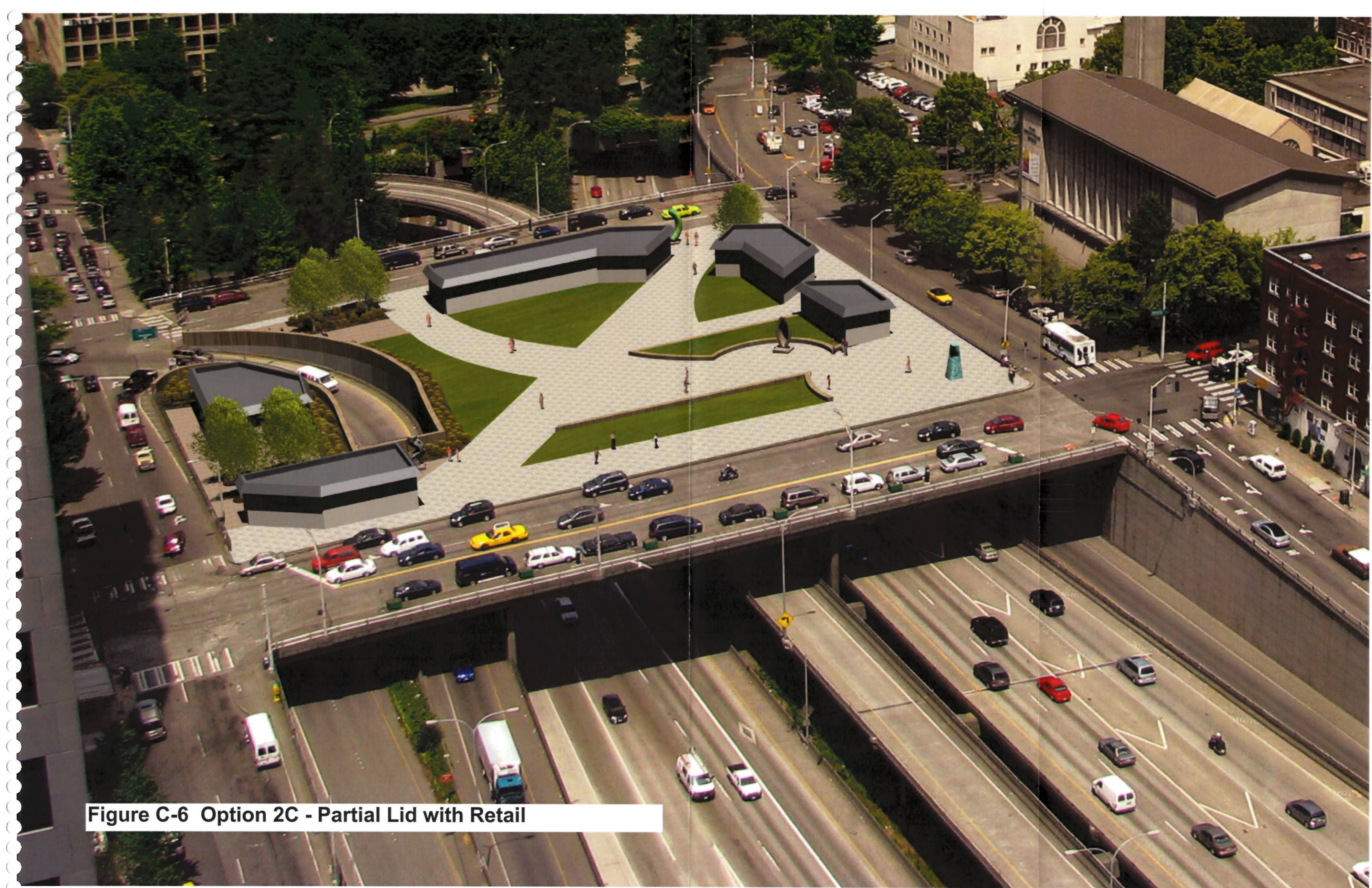
**Figure C-3 Option 1C - Complete Lid with Retail**



**Figure C-4 Option 2A - Partial Lid with Basic Amenities**



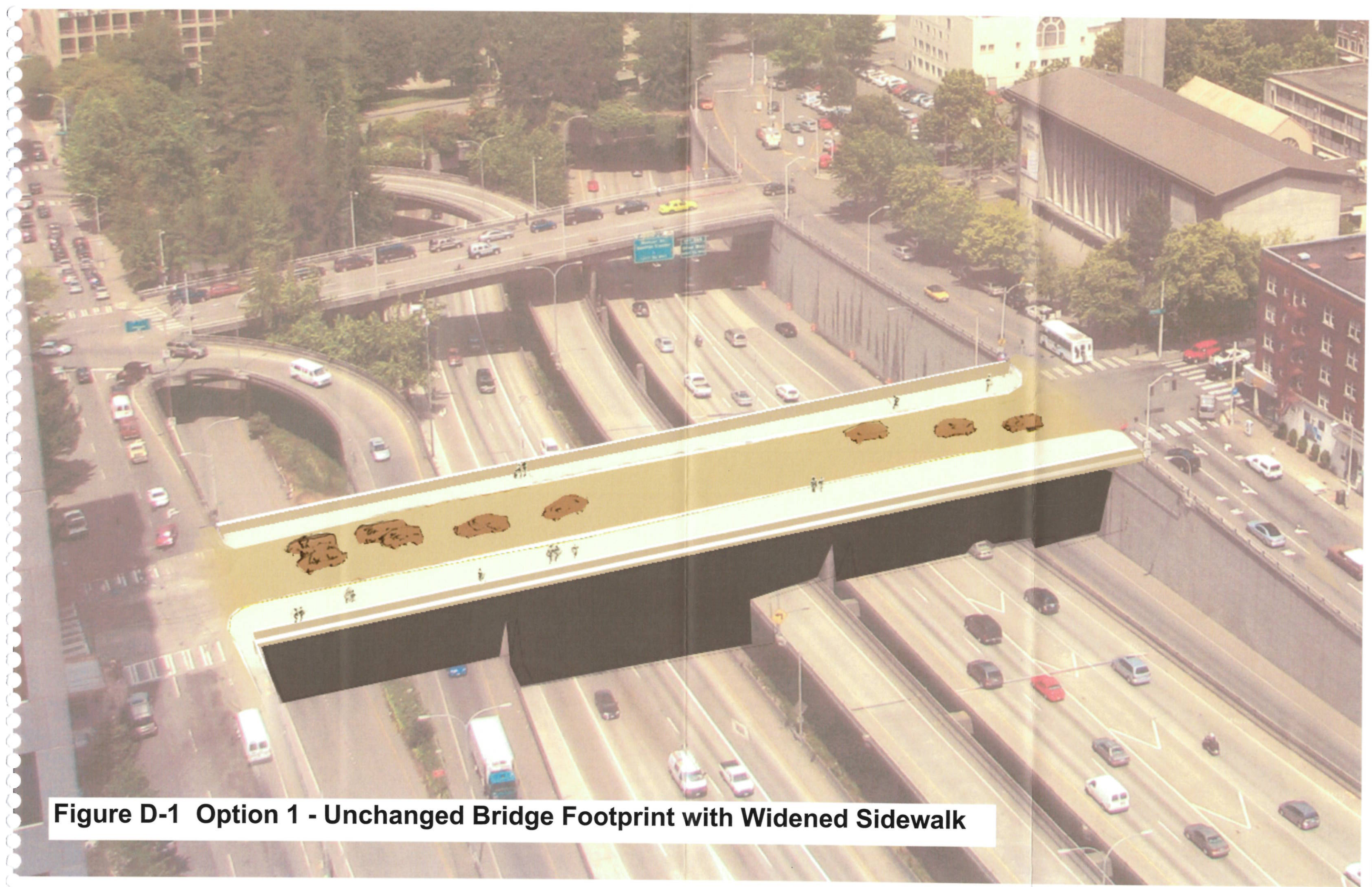
**Figure C-5 Option 2B - Partial Lid with Landscaping**



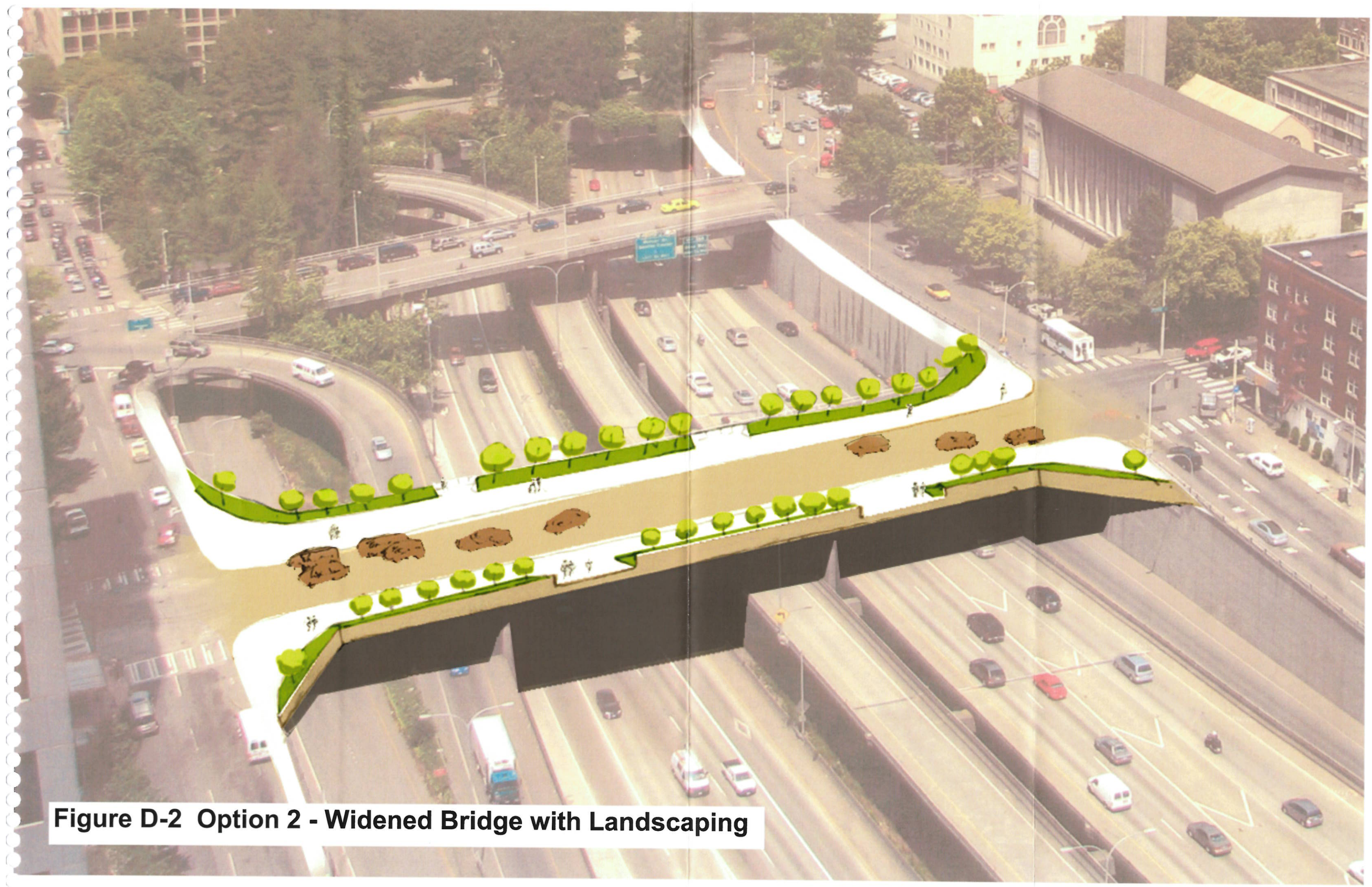
**Figure C-6 Option 2C - Partial Lid with Retail**

APPENDIX D

**MADISON STREET BRIDGE WIDENING CONCEPTS**

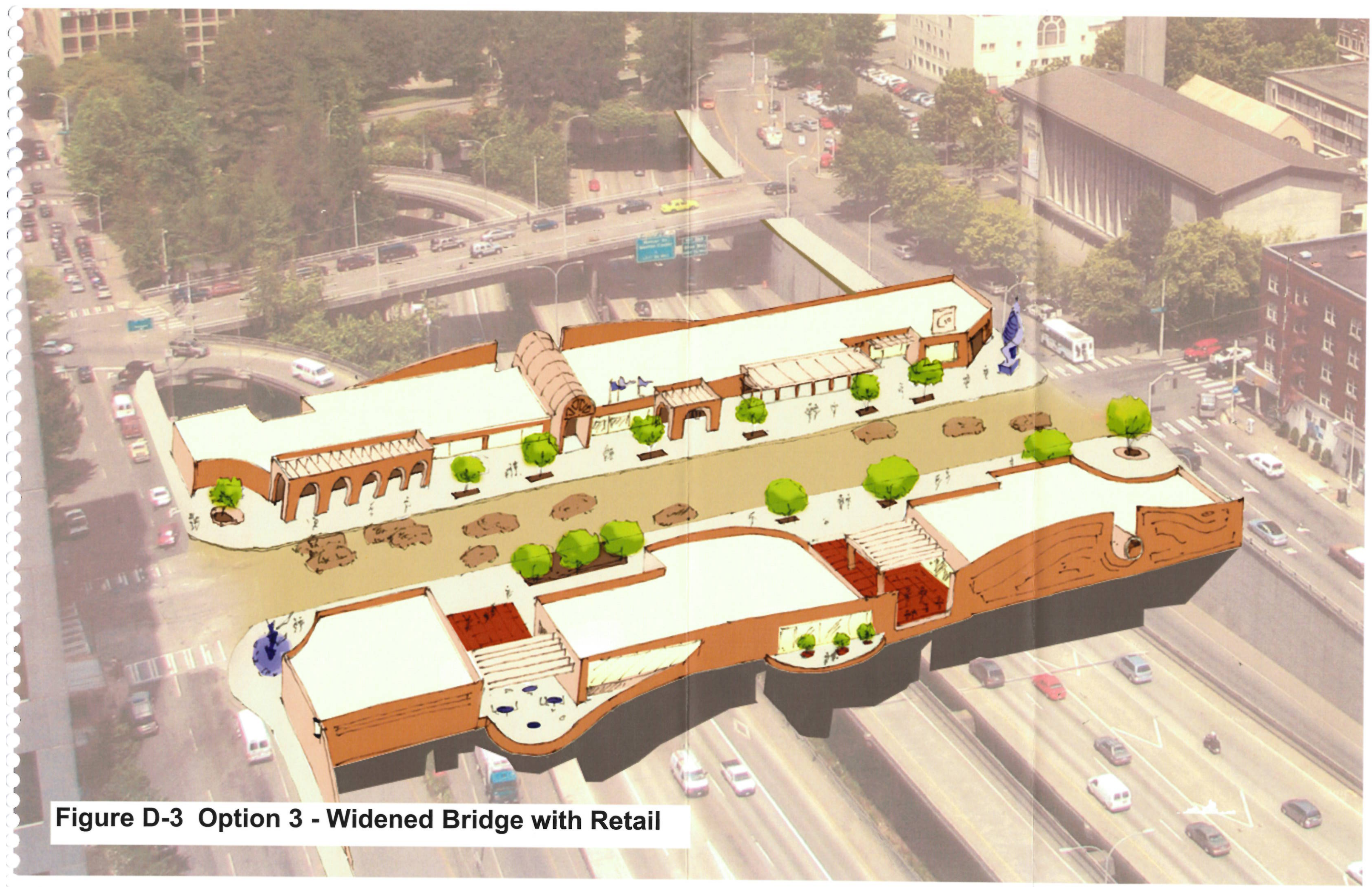


**Figure D-1 Option 1 - Unchanged Bridge Footprint with Widened Sidewalk**



**Figure D-2 Option 2 - Widened Bridge with Landscaping**





**Figure D-3 Option 3 - Widened Bridge with Retail**

**COST ESTIMATES OF LID CONCEPTS**

APPENDIX E  
**COST ESTIMATES**



**SDOT I-5 Lid Project  
Conceptual-Level Cost Estimate**

Revision Date: March 2, 2009

**OPTION 2 - PARTIAL LID OVER I-5 (LEAVE EXISTING ON-RAMP)**

No.	Item Description		Option 1A Cost	Option 1B Cost	Option 1C Cost	
<b>I. CONSTRUCTION</b>						
1.0	Site Prep		\$ 49,000	\$ 49,000	\$ 49,000	
2.0	Structures		\$ 21,500,000	\$ 21,500,000	\$ 23,275,000	
3.0	Amenities on Lid		\$ 497,000	\$ 1,207,000	\$ 4,331,000	
4.0	Civil/Roadway		\$ 32,000	\$ 32,000	\$ 32,000	
5.0	Drainage		\$ 385,000	\$ 385,000	\$ 385,000	
6.0	Traffic		\$ 815,000	\$ 815,000	\$ 815,000	
7.0	Specialty Items		\$ 1,702,000	\$ 1,702,000	\$ 2,057,000	
8.0	Traffic Control		\$ 2,448,000	\$ 2,448,000	\$ 2,661,000	
	Construction Without Mobilization		\$ 27,428,000	\$ 28,138,000	\$ 33,605,000	
	Mobilization	10%	\$ 2,742,800	\$ 2,813,800	\$ 3,360,500	
	Construction Including Mobilization		\$ 30,170,800	\$ 30,951,800	\$ 36,965,500	
	Contingency	40%	\$ 12,068,320	\$ 12,380,720	\$ 14,786,200	
	Subtotal		\$ 42,239,120	\$ 43,332,520	\$ 51,751,700	
	Sales Tax	9.4%	\$ 3,970,477	\$ 4,073,257	\$ 4,864,660	
	Subtotal		\$ 46,209,597	\$ 47,405,777	\$ 56,616,360	
	Inflation (4% per year for 3 years) (Assume construction in 2012)	12.5%	\$ 5,769,915	\$ 5,919,275	\$ 7,069,345	
	<b>Construction Subtotal</b>		\$ 51,979,512	\$ 53,325,052	\$ 63,685,705	(A)
	<b>Design/Environmental Documentation</b>					
	Engineering/Environ Documentation	15%	\$ 7,796,927	\$ 7,998,758	\$ 9,552,856	of (A)
	Agency Administration	5%	\$ 2,598,976	\$ 2,666,253	\$ 3,184,285	of (A)
	<b>Total</b>		\$ 10,395,902	\$ 10,665,010	\$ 12,737,141	
	<b>Construction Engineering</b>					
	Construction Engineering	15%	\$ 7,796,927	\$ 7,998,758	\$ 9,552,856	of (A)
	Agency Administration	5%	\$ 2,598,976	\$ 2,666,253	\$ 3,184,285	of (A)
	<b>Total</b>		\$ 10,395,902	\$ 10,665,010	\$ 12,737,141	
	<b>CONSTRUCTION TOTAL</b>		\$ 72,800,000	\$ 74,700,000	\$ 89,200,000	
<b>II. RIGHT OF WAY</b>						
	Right of Way Costs		\$ 14,900,000	\$ 14,900,000	\$ 14,900,000	
	<b>RIGHT OF WAY TOTAL</b>		\$ 14,900,000	\$ 14,900,000	\$ 14,900,000	

**TOTAL ESTIMATED PROJECT COST \$ 87.7 \$ 89.6 \$ 104.1 Million**

NOTE: The above costs are in February 2009 dollars and then escalated to 2012.

No financial, agreement, or O&M costs are included.

The cost opinion shown has been prepared for guidance in project evaluation from the information available at the time of preparation. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope, final schedule and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs must be carefully reviewed prior to making specific financial decisions or establishing final budgets.

**SDOT I-5 Lid Project**  
**Conceptual-Level Cost Estimate**

Revision Date: March 2, 2009

**OPTION 1 - COMPLETE LID OVER I-5 (REMOVAL OF EXISTING ON-RAMP)**

Item No.	Item Description	Quantity	Unit	Unit Cost	Option 1A Cost	Option 1B Cost	Option 1C Cost	Comments
<b>1.0</b>	<b>SITE PREP</b>							
1.1	Removal of Traffic Barrier on Existing Bridges	580	LF	\$ 50	\$ 29,000	\$ 29,000	\$ 29,000	Along edge of Madison and Spring St Bridges
1.2	Removal of Traffic Barrier along 6th and 7th Avenue	540	LF	\$ 40	\$ 21,600	\$ 21,600	\$ 21,600	
1.3	Removal of On-Ramp Structure	5,000	SF	\$ 50	\$ 250,000	\$ 250,000	\$ 250,000	
1.4	Removal of On-Ramp Approach Walls/Embankment	8,000	SF	\$ 25	\$ 200,000	\$ 200,000	\$ 200,000	
1.5	Removal of On-Ramp Pavement	900	SY	\$ 15	\$ 13,500	\$ 13,500	\$ 13,500	
					<b>\$ 514,100</b>	<b>\$ 514,100</b>	<b>\$ 514,100</b>	
<b>2.0</b>	<b>STRUCTURES</b>							
2.1	New Lid Structure (Full Lid)	78,300	SF	\$ 300	\$ 23,490,000	\$ 23,490,000	\$ 25,447,500	Use \$25/SF higher unit cost for retail structures placed on top of lid. Cost based on 10th and Delmar SR 520 lid cost from 2007 CEVP escalated to 2/2009
					<b>\$ 23,490,000</b>	<b>\$ 23,490,000</b>	<b>\$ 25,447,500</b>	
<b>3.0</b>	<b>AMENITIES ON LID</b>							
3.1	Option A - Benches, Planters, Grass, Lighting	78,300	SF	\$ 7	\$ 548,100			
3.2	Option B - Landscaping	78,300	SF	\$ 17		\$ 1,331,100		
3.3	Option C - Retail (half the lid)	39,150	SF	\$ 115			\$ 4,502,250	Assume retail spaces occupies 50% of lid
3.4	Option C - Walkways and Ped Amenities (other half)	39,150	SF	\$ 7			\$ 274,050	
					<b>\$ 548,100</b>	<b>\$ 1,331,100</b>	<b>\$ 4,776,300</b>	
<b>4.0</b>	<b>CIVIL/ROADWAY</b>							
4.1	New ACP Pavement along 6th and 7th Ave	800	SY	\$ 40	\$ 32,000	\$ 32,000	\$ 32,000	
					<b>\$ 32,000</b>	<b>\$ 32,000</b>	<b>\$ 32,000</b>	
<b>5.0</b>	<b>DRAINAGE</b>							
5.1	Stormwater Detention	78,300	SF	\$ 2	\$ 156,600	\$ 156,600	\$ 156,600	Allowance for new impervious pavement
5.2	Stormwater Conveyance	1,200	LF	\$ 100	\$ 120,000	\$ 120,000	\$ 120,000	
5.3	Bridge Drains	16	EA	\$ 3,000	\$ 48,000	\$ 48,000	\$ 48,000	
5.4	Temporary Water Pollution Control	1	LS	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	Allowance - at on-ramp to be removed
					<b>\$ 424,600</b>	<b>\$ 424,600</b>	<b>\$ 424,600</b>	
<b>6.0</b>	<b>TRAFFIC</b>							
6.1	Modify Signals at 6th Ave	2	EA	\$ 150,000	\$ 300,000	\$ 300,000	\$ 300,000	Assume modification of 2 signals
6.2	Illumination	1	LS	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	Allowance for lighting under structure

**SDOT I-5 Lid Project**  
**Conceptual-Level Cost Estimate**

Revision Date: March 2, 2009

**OPTION 1 - COMPLETE LID OVER I-5 (REMOVAL OF EXISTING ON-RAMP)**

Item No.	Item Description	Quantity	Unit	Unit Cost	Option 1A Cost	Option 1B Cost	Option 1C Cost	Comments
6.3	ITS (local streets)	1	LS	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	Assume half of cost of signals
6.4	Signing on I-5 mainline for ramp removal	1	LS	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	Assume revising existing signs on SB I-5
6.5	Signing on local streets	1	LS	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	Allowance
6.6	Pavement Marking on I-5 for ramp removal	1	LS	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	Allowance
6.7	VMS Sign on I-5 for Lid	1	LS	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	
6.8	Communication System on I-5	1	LS	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	
					<b>\$ 915,000</b>	<b>\$ 915,000</b>	<b>\$ 915,000</b>	
<b>7.0</b>	<b>SPECIALTY ITEMS</b>							
7.1	Mechanical/HVAC Systems				\$ -	\$ -	\$ -	Assume none required, lid less than 500 feet
7.2	Fire Alarm, Supression & Egress System	1	LS	\$ 1,400,000	\$ 1,400,000	\$ 1,400,000	\$ 1,400,000	assume same for all options
7.3	Utility Relocation	1	LS	\$ 360,000	\$ 360,000	\$ 360,000	\$ 360,000	Allowance for utility relocation along 6th & 7th Ave
7.4	New Services to Lid (water, electr)	78,300	SF	\$ 2	\$ 156,600	\$ 156,600		Options A and B - half of Option C
7.5	New Services to Lid (fire, sewer, water, electr)	78,300	SF	\$ 8			\$ 626,400	Option C
					<b>\$ 1,916,600</b>	<b>\$ 1,916,600</b>	<b>\$ 2,386,400</b>	
<b>8.0</b>	<b>TRAFFIC CONTROL</b>							
8.1	Traffic Control	1	LS		\$ 2,729,000	\$ 2,729,000	\$ 2,972,000	Assume 10% of construction cost (except amenities on lid)
					<b>\$ 2,729,000</b>	<b>\$ 2,729,000</b>	<b>\$ 2,972,000</b>	
<b>SUBTOTAL CONSTRUCTION</b>					<b>\$ 30,569,400</b>	<b>\$ 31,352,400</b>	<b>\$ 37,467,900</b>	

**SDOT I-5 Lid Project**  
**Conceptual-Level Cost Estimate**

Revision Date: March 2, 2009

**OPTION 2 - PARTIAL LID OVER I-5 (LEAVE EXISTING ON-RAMP)**

Item No.	Item Description	Quantity	Unit	Unit Cost	Option 1A Cost	Option 1B Cost	Option 1C Cost	Comments
<b>1.0</b>	<b>SITE PREP</b>							
1.1	Removal of Traffic Barrier on Existing Bridges	580	LF	\$ 50	\$ 29,000	\$ 29,000	\$ 29,000	Along edge of Madison and Spring St Bridges
1.2	Removal of Traffic Barrier along 6th and 7th Avenue	500	LF	\$ 40	\$ 20,000	\$ 20,000	\$ 20,000	
					<b>\$ 49,000</b>	<b>\$ 49,000</b>	<b>\$ 49,000</b>	
<b>2.0</b>	<b>STRUCTURES</b>							
2.1	New Lid Structure (Partial Lid)	71,000	SF	\$ 300	\$ 21,300,000	\$ 21,300,000	\$ 23,075,000	Use \$25/SF higher unit cost for retail structures placed on top of lid. Cost based on 10th and Delmar SR 520 lid cost from 2007 CEVP escalated to 2/2009
2.2	Temporary Shoring at On-Ramp Embankment to construct new columns at Pier 2	2,000	SF	\$ 100	\$ 200,000	\$ 200,000	\$ 200,000	
					<b>\$ 21,500,000</b>	<b>\$ 21,500,000</b>	<b>\$ 23,275,000</b>	
<b>3.0</b>	<b>AMENITIES ON LID</b>							
3.1	Option A - Benches, Planters, Grass, Lighting	71,000	SF	\$ 7	\$ 497,000			
3.2	Option B - Landscaping	71,000	SF	\$ 17		\$ 1,207,000		
3.3	Option C - Retail (half the lid)	35,500	SF	\$ 115			\$ 4,082,500	Assume retail spaces occupies 50% of lid
3.4	Option C - Walkways and Ped Amenities (other half)	35,500	SF	\$ 7			\$ 248,500	
					<b>\$ 497,000</b>	<b>\$ 1,207,000</b>	<b>\$ 4,331,000</b>	
<b>4.0</b>	<b>CIVIL/ROADWAY</b>							
4.1	New ACP Pavement along 6th and 7th Ave	800	SY	\$ 40	\$ 32,000	\$ 32,000	\$ 32,000	
					<b>\$ 32,000</b>	<b>\$ 32,000</b>	<b>\$ 32,000</b>	
<b>5.0</b>	<b>DRAINAGE</b>							
5.1	Stormwater Detention	71,000	SF	\$ 2	\$ 142,000	\$ 142,000	\$ 142,000	Allowance for new impervious pavement
5.2	Stormwater Conveyance	1,200	LF	\$ 100	\$ 120,000	\$ 120,000	\$ 120,000	
5.3	Bridge Drains	16	EA	\$ 3,000	\$ 48,000	\$ 48,000	\$ 48,000	
5.4	Temporary Water Pollution Control	1	LS	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	Allowance
					<b>\$ 385,000</b>	<b>\$ 385,000</b>	<b>\$ 385,000</b>	
<b>6.0</b>	<b>TRAFFIC</b>							
6.1	Modify Signals at 6th Ave	2	EA	\$ 150,000	\$ 300,000	\$ 300,000	\$ 300,000	Assume modification of 2 signals
6.2	Illumination	1	LS	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	Allowance for lighting under structure
6.3	ITS (local streets)	1	LS	\$ 75,000	\$ 75,000	\$ 75,000	\$ 75,000	Assume half of cost of signals



**SDOT I-5 Lid Project**

**Conceptual-Level Cost Estimate**

Revision Date: March 2, 2009

**OPTION 2 - PARTIAL LID OVER I-5 (LEAVE EXISTING ON-RAMP)**

Item No.	Item Description	Quantity	Unit	Unit Cost	Option 1A Cost	Option 1B Cost	Option 1C Cost	Comments
6.4	Signing on I-5 mainline for ramp removal	1	LS	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	Assume revising existing signs on SB I-5
6.5	Signing on local streets	1	LS	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	Allowance
6.7	VMS Sign on I-5 for Lid	1	LS	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	
6.8	Communication System on I-5	1	LS	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	
					<b>\$ 815,000</b>	<b>\$ 815,000</b>	<b>\$ 815,000</b>	
<b>7.0</b>	<b>SPECIALTY ITEMS</b>							
7.1	Mechanical/HVAC Systems				\$ -	\$ -	\$ -	Assume none required, lid less than 500 feet
7.2	Fire Alarm, Supression & Egress System	1	LS	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	assume same for all options
7.3	Utility Relocation	1	LS	\$ 360,000	\$ 360,000	\$ 360,000	\$ 360,000	Allowance for utility relocation along 6th & 7th Ave
7.4	New Services to Lid (water, electr)	71,000	SF	\$ 2	\$ 142,000	\$ 142,000		Options A and B - half of Option C
7.5	New Services to Lid (fire, sewer, water, electr)	71,000	SF	\$ 7			\$ 497,000	Option C
					<b>\$ 1,702,000</b>	<b>\$ 1,702,000</b>	<b>\$ 2,057,000</b>	
<b>8.0</b>	<b>TRAFFIC CONTROL</b>							
8.1	Traffic Control	1	LS		\$ 2,448,000	\$ 2,448,000	\$ 2,661,000	Assume 10% of construction cost (except amenities on lid)
					<b>\$ 2,448,000</b>	<b>\$ 2,448,000</b>	<b>\$ 2,661,000</b>	
<b>SUBTOTAL CONSTRUCTION</b>					<b>\$ 27,428,000</b>	<b>\$ 28,138,000</b>	<b>\$ 33,605,000</b>	

**SDOT I-5 Lid Project  
Conceptual-Level Cost Estimate**

Revision Date: March 2, 2009

**COST ESTIMATE BACK-UP**

Item No.	Item Description	Quantity	Unit	Unit Cost	Cost	Comments
<b>3.0</b>	<b>AMENITIES ON LID</b>					
3.1	<b>Option A - Benches, Planters, Grass, Lighting</b>	78,300	SF	\$ 7	\$ 511,941	M&S 66
	Grass	58,725	SF	\$ 1.20	\$ 70,238	assume 3/4 of area
	Soil	3,263	CY	\$ 35	\$ 114,188	
	Irrigation	58,725	SF	\$ 0.99	\$ 58,098	
	Benches	30	EA	\$ 1,477	\$ 44,298	48" dia
	Planters	30	EA	\$ 613	\$ 18,384	48" dia
	Lighting	15	EA	\$ 5,906	\$ 88,596	pole & fixture
	Misc Allowance	1	LS	\$ 118,140	\$ 118,140	soil, receptacles, plaza areas, etc
3.2	<b>Option B - Landscaping</b>	78,300	SF	\$ 17	\$ 1,331,662	M&S 66
	Grass	58,725	SF	\$ 1.20	\$ 70,238	assume 3/4 of area
	Soil	3,263	CY	\$ 35	\$ 114,188	
	Irrigation	58,725	SF	\$ 0.99	\$ 58,098	
	Benches	30	EA	\$ 1,477	\$ 44,298	48" dia
	Planters	30	EA	\$ 613	\$ 18,384	48" dia
	Lighting	30	EA	\$ 5,906	\$ 177,192	pole & fixture
	Landscaping Area	58,725	SF	\$ 9.23	\$ 541,958	assume 3/4 of area
	Misc Allowance	1	LS	\$ 307,307	\$ 307,307	soil, receptacles, plaza areas, etc
3.3	<b>Option C - Retail (half the lid)</b>	39,150	SF	\$ 115	\$ 4,514,874	M&S 13/22, convenience, CI D, average
	Retail Spaces	39,150	SF	\$ 105	\$ 4,104,431	
	Misc Allowance	1	LS	\$ 410,443	\$ 410,443	sidewalks, etc
3.4	<b>Option C - Walkways and Ped Amenities (other half)</b>	39,150	SF	\$ 7	\$ 275,166	same as option A
	Grass	29,363	SF	\$ 1.20	\$ 35,119	assume 3/4 of area
	Soil	1,631	CY	\$ 35	\$ 57,094	
	Irrigation	29,363	SF	\$ 0.99	\$ 29,049	
	Benches	15	EA	\$ 1,477	\$ 22,149	48" dia
	Planters	15	EA	\$ 613	\$ 9,192	48" dia
	Lighting	10	EA	\$ 5,906	\$ 59,064	pole & fixture at 100'oc
	Misc Allowance	1	LS	\$ 63,500	\$ 63,500	soil, receptacles, plaza areas, etc

**SDOT I-5 Lid Project  
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**COST ESTIMATE BACK-UP**

Item No.	Item Description	Quantity	Unit	Unit Cost	Cost	Comments
<b>7.0</b>	<b>SPECIALTY ITEMS</b>					
7.1	<b>Mech/HVAC Systems</b>	1	LS	\$ 1,422,315	\$ 1,422,315	Assume not required, lid shorter than 500 feet
	Mech/HVAC Systems	1	SF	\$ 15	\$ 15	
7.2	<b>Fire Alarm, Supression &amp; Egress System OPTION 1</b>	78,300	SF	\$ 18	\$ 1,422,300	
	Fire alarms	1	LS	\$ 50,000	\$ 50,000	
	Fire detection	1	LS	\$ 50,000	\$ 50,000	
	Fire extinguishers	1	LS	\$ 10,000	\$ 10,000	
	Fire Supression System	78,300	SF	\$ 10	\$ 783,000	foam & deluge heads at 5'oc
	Drainage System	1	LS	\$ 100,000	\$ 100,000	allowance
	Stairwell Egress	3	EA	\$ 100,000	\$ 300,000	allowance
	Misc Allowance	1	LS	\$ 129,300	\$ 129,300	
7.2	<b>Fire Alarm, Supression &amp; Egress System OPTION 2</b>	71,000	SF	\$ 17	\$ 1,204,500	
	Fire alarms	1	LS	\$ 50,000	\$ 50,000	
	Fire detection	1	LS	\$ 50,000	\$ 50,000	
	Fire extinguishers	1	LS	\$ 10,000	\$ 10,000	
	Fire Supression System	71,000	SF	\$ 10	\$ 710,000	foam & deluge heads at 5'oc
	Drainage System	1	LS	\$ 75,000	\$ 75,000	allowance
	Stairwell Egress	2	EA	\$ 100,000	\$ 200,000	allowance
	Misc Allowance	1	LS	\$ 109,500	\$ 109,500	
7.3	<b>Utility Relocation - OPTION 1</b>	1	LS	\$ 360,000	\$ 360,000	
	Utility relocation along 6th Ave	300	LF	\$ 600	\$ 180,000	Allowance
	Utility relocation along 7th Ave	300	LF	\$ 600	\$ 180,000	Allowance
	Misc Allowance	0	LS	\$ 72,000	\$ -	
7.3	<b>Utility Relocation - OPTION 2</b>	1	LS	\$ 360,000	\$ 360,000	
	Utility relocation along 6th Ave	300	LF	\$ 600	\$ 180,000	Allowance
	Utility relocation along 7th Ave	300	LF	\$ 600	\$ 180,000	Allowance
	Misc Allowance	0	LS	\$ 72,000	\$ -	
7.4	<b>New Services to Lid (Fire Lines, sewer, water, electr) OPTION 1</b>	78,300	LS	\$ 8	\$ 636,060	M&S 66/1
	Fire Line	1,120	LF	\$ 177	\$ 198,455	perimeter, under structure

**SDOT I-5 Lid Project  
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Revision Date: March 2, 2009

**COST ESTIMATE BACK-UP**

Item No.	Item Description	Quantity	Unit	Unit Cost	Cost	Comments
	Hydrant	4	EA	\$ 4,430	\$ 16,538	300'oc
	Sewer	600	LF	\$ 354	\$ 212,630	2 lengths, under structure
	Water	600	LF	\$ 177	\$ 106,315	
	Electrical	600	LF	\$ 74	\$ 44,298	
	Misc Allowance	1	LS	\$ 57,824	\$ 57,824	
<b>7.4</b>	<b>New Services to Lid (Fire Lines, sewer, water, electr) OPTION 2</b>	<b>71,000</b>	<b>LS</b>	<b>\$ 7</b>	<b>\$ 466,975</b>	<b>M&amp;S 66/1</b>
	Fire Line	950	LF	\$ 177	\$ 168,332	perimeter, under structure
	Hydrant	3	EA	\$ 4,430	\$ 14,028	300'oc
	Sewer	400	LF	\$ 354	\$ 141,754	2 lengths, under structure
	Water	400	LF	\$ 177	\$ 70,877	
	Electrical	400	LF	\$ 74	\$ 29,532	
	Misc Allowance	1	LS	\$ 42,452	\$ 42,452	

**SDOT I-5 Lid Project  
Conceptual-Level Cost Estimate**

Revision Date: March 2, 2009

**RIGHT OF WAY COST ESTIMATE**

**OPTION 1 - COMPLETE LID OVER I-5 (REMOVAL OF EXISTING ON-RAMP)**

**Assumptions**

- \$ - Cost for fee take areas (per SF)
- \$ 200 Cost for air right areas (per SF)

Owner	Tax Parcel #	Parcel Size (SF)	Acquisition Area (SF)			Acquisition Cost (\$)			Total Cost	Comments
			Fee	Air Rts.	TCE	Fee	Air Rts.	TCE		
WSDOT		78,300		78,300			\$ 15,660,000	\$ 15,660,000		

Estimated R/W **\$15,660,000**  
 Admin. Cost 5% **\$783,000**  
**TOTAL** **\$16,400,000**

**OPTION 2 - PARTIAL LID OVER I-5 LEAVE EXISTING ON-RAMP**

**Assumptions**

- \$ - Cost for fee take areas (per SF)
- \$ 200 Cost for air right areas (per SF)

Owner	Tax Parcel #	Parcel Size (SF)	Acquisition Area (SF)			Acquisition Cost (\$)			Total Cost	Comments
			Fee	Air Rts.	TCE	Fee	Air Rts.	TCE		
WSDOT		71,000		71,000			\$ 14,200,000	\$ 14,200,000		

Estimated R/W **\$14,200,000**  
 Admin. Cost 5% **\$710,000**  
**TOTAL** **\$14,900,000**

**COST ESTIMATES OF MADISON STREET BRIDGE  
WIDENING CONCEPTS**

**SDOT I-5 Lid Project  
Conceptual-Level Cost Estimate**

Revision Date: March 2, 2009

**WIDENING OF MADISON ST BRIDGE OVER I-5**

**3 OPTIONS:**

- 1) Unchanged Bridge Footprint with Widened Sidewalk
- 2) Widened Bridge with Landscaping
- 3) Widened Bridge with Retail

No.	Item Description		Option 1 Cost	Option 2 Cost	Option 3 Cost	
<b>I. CONSTRUCTION</b>						
1.0	Site Prep		\$ 3,300	\$ 67,400	\$ 82,500	
2.0	Structures		\$ 62,583	\$ 3,778,000	\$ 14,195,500	
3.0	Amenities on Lid		\$ -	\$ 163,320	\$ 4,025,825	
4.0	Civil/Roadway		\$ 2,000	\$ 63,500	\$ 83,000	
5.0	Drainage		\$ 3,000	\$ 118,800	\$ 217,000	
6.0	Traffic		\$ 4,000	\$ 46,000	\$ 58,000	
7.0	Specialty Items		\$ -	\$ 99,600	\$ 448,000	
8.0	Traffic Control		\$ 11,233	\$ 433,662	\$ 1,910,983	
	Construction Without Mobilization		\$ 86,116	\$ 4,770,282	\$ 21,020,808	
	Mobilization	10%	\$ 8,612	\$ 477,028	\$ 2,102,081	
	Construction Including Mobilization		\$ 94,727	\$ 5,247,310	\$ 23,122,888	
	Contingency	40%	\$ 37,891	\$ 2,098,924	\$ 9,249,155	
	Subtotal		\$ 132,618	\$ 7,346,234	\$ 32,372,044	
	Sales Tax	9.4%	\$ 12,466	\$ 690,546	\$ 3,042,972	
	Subtotal		\$ 145,085	\$ 8,036,780	\$ 35,415,016	
	Inflation (4% per year for 3 years) (Assume construction in 2012)	12.5%	\$ 18,116	\$ 1,003,505	\$ 4,422,061	
	<b>Construction Subtotal</b>		\$ 163,200	\$ 9,040,285	\$ 39,837,076	(A)
	<b>Design/Environmental Documentation</b>					
	Engineering/Environ Documentation	15%	\$ 24,480	\$ 1,356,043	\$ 5,975,561	of (A)
	City Administration	5%	\$ 8,160	\$ 452,014	\$ 1,991,854	of (A)
	<b>Total</b>		\$ 32,640	\$ 1,808,057	\$ 7,967,415	
	<b>Construction Engineering</b>					
	Construction Engineering	15%	\$ 24,480	\$ 1,356,043	\$ 5,975,561	of (A)
	City Administration	5%	\$ 8,160	\$ 452,014	\$ 1,991,854	of (A)
	<b>Total</b>		\$ 32,640	\$ 1,808,057	\$ 7,967,415	
	<b>CONSTRUCTION TOTAL</b>		\$ 228,000	\$ 12,700,000	\$ 55,800,000	
<b>II. RIGHT OF WAY</b>						
	Right of Way Costs		\$ -	\$ 2,600,000	\$ 9,100,000	
	<b>RIGHT OF WAY TOTAL</b>		\$ -	\$ 2,600,000	\$ 9,100,000	

**TOTAL ESTIMATED PROJECT COST \$ 228,000 \$ 15,300,000 \$ 64,900,000**

NOTE: The above costs are in February 2009 dollars and then escalated to 2012.

No financial, agreement, or O&M costs are included.

The cost opinion shown has been prepared for guidance in project evaluation from the information available at the time of preparation. The final costs of the project will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope, final schedule and other variable factors. As a result, the final project costs will vary from those presented above. Because of these factors, funding needs must be carefully reviewed prior to making specific financial decisions or establishing final budgets.

**SDOT I-5 Lid Project**

**Conceptual-Level Cost Estimate**

Revision Date: March 2, 2009

**WIDENING OF MADISON ST BRIDGE OVER I-5**

**Option 1 - Unchanged Bridge Footprint with Widened Sidewalk**

**Assumptions:**

- Widen sidewalk on south side of bridge by 8' by taking up vehicle parking lane on bridge. No structure widening is needed.
- Leave existing planters on sidewalks in place.
- No retrofit of existing Madison St UC Bridge is needed.
- Additional sidewalk dead load can be added to the structure without the need to strengthen the superstructure.
- No additional illumination on bridge required.

Item No.	Item Description	Quantity	Unit	Unit Cost	Cost	Comments
<b>1.0</b>	<b>SITE PREP</b>					
1.1	Construction Survey	1	LS	\$3,000	\$ 3,000	
1.2	Remove Conc Sidewalk	10	SY	\$30	\$ 300	At end of bridge for new curb ramp
					<b>\$ 3,300</b>	
<b>2.0</b>	<b>STRUCTURES</b>					
2.1	Concrete for Sidewalk Widening	50	CY	\$ 800	\$ 40,000	7" thickness x 8' wide x 290' long
2.2	Reinforcing Steel for Sidewalk Widening	2,500	LB	\$ 1.30	\$ 3,250	50 lbs rebar/CY
2.3	Drilled Holes for Dowels	193	LF	\$ 100.00	\$ 19,333	Assume 18" spacing of dowels x 1' long
					<b>\$ 62,583</b>	
<b>3.0</b>	<b>AMENITIES ON LID</b>					
	None					
					<b>\$ -</b>	
<b>4.0</b>	<b>CIVIL/ROADWAY</b>					
4.1	New Curb Ramp	1	EA	\$2,000	\$ 2,000	at SW corner of bridge
					<b>\$ 2,000</b>	
<b>5.0</b>	<b>DRAINAGE</b>					
5.1	Temporary Water Pollution Control	1	LS	\$ 3,000	\$ 3,000	Allowance
					<b>\$ 3,000</b>	
<b>6.0</b>	<b>TRAFFIC</b>					
6.1	New Pavement Markings on Bridge	1	LS	\$ 2,000	\$ 2,000	Allowance
6.2	Signing on local streets	1	LS	\$ 2,000	\$ 2,000	Allowance
					<b>\$ 4,000</b>	
<b>7.0</b>	<b>SPECIALTY ITEMS</b>					
	None					
					<b>\$ -</b>	
<b>8.0</b>	<b>TRAFFIC CONTROL</b>					
8.1	Traffic Control	1	LS	\$ 11,233	\$ 11,233	Assume 15% of construction cost
					<b>\$ 11,233</b>	
<b>SUBTOTAL CONSTRUCTION</b>					<b>\$ 86,116</b>	



**SDOT I-5 Lid Project**

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Revision Date: March 2, 2009

**WIDENING OF MADISON ST BRIDGE OVER I-5**

**Option 2 - Widened Bridge with Landscaping**

**Assumptions:**

- Leave existing parking lane on bridge - do not fill in with sidewalk.
- Remove existing planters on sidewalks.
- No retrofit of existing Madison St UC Bridge is needed.
- New 20' wide bridges provided on each side of existing bridge for sidewalk and landscaping.
- No new sidewalks on 6th or 7th Avenues.
- Need to regrade existing SB off ramp under west end of bridge to provide adequate vertical clearance.

Item No.	Item Description	Quantity	Unit	Unit Cost	Cost	Comments
<b>1.0</b>	<b>SITE PREP</b>					
1.1	Construction Survey	1	LS	\$5,000	\$ 5,000	
1.2	Remove Pavement on SB Off-Ramp	1000	SY	\$15	\$ 15,000	Assume 300' long x 30' wide
1.3	Remove Existing Planters	12	EA	\$1,000	\$ 12,000	
1.4	Remove Existing Traffic Barriers on Walls	160	LF	\$40	\$ 6,400	
1.5	Remove Existing Traffic Barriers on Bridge	580	LF	\$50	\$ 29,000	
					<b>\$ 67,400</b>	
<b>2.0</b>	<b>STRUCTURES</b>					
2.1	New Structure on Each Side of Bridge	11,600	SF	\$ 300	\$ 3,480,000	20' wide x 290' long x 2 bridges
2.2	Fillets at Each Corner of New Bridge	800	SF	\$ 300	\$ 240,000	20' wide x 20' long fillets
2.3	Expansion Jt between New and Existing Bridges	580	LF	\$ 100	\$ 58,000	
					<b>\$ 3,778,000</b>	
<b>3.0</b>	<b>AMENITIES ON LID</b>					
3.1	Landscaping & Irrigation	6,960	SF	\$ 17	\$ 118,320	Assume 12' width landscaping each side
3.2	Public Art	1	LS	\$ 45,000	\$ 45,000	Allowance (1% for Art)
					<b>\$ 163,320</b>	
<b>4.0</b>	<b>CIVIL/ROADWAY</b>					
4.1	New ACP Pavement on SB Off-Ramp	1000	SY	\$50	\$ 50,000	Assume 300' long x 30' wide
4.2	New ACP Pavement along 6th and 7th Ave	110	SY	\$50	\$ 5,500	Assume 6' wide replacement at bridge ends
4.3	New Curb Ramps	4	EA	\$2,000	\$ 8,000	At each corner of bridge
					<b>\$ 63,500</b>	
<b>5.0</b>	<b>DRAINAGE</b>					
5.1	Stormwater Detention	12,400	SF	\$ 2	\$ 24,800	Allowance for new impervious pavement
5.2	Stormwater Conveyance	600	LF	\$ 100	\$ 60,000	Assume 300' per bridge
5.3	Bridge Drains	8	EA	\$ 3,000	\$ 24,000	
5.4	Temporary Water Pollution Control	1	LS	\$ 10,000	\$ 10,000	Allowance
					<b>\$ 118,800</b>	
<b>6.0</b>	<b>TRAFFIC</b>					
6.1	New Light Poles on Bridge	8	EA	\$ 3,000	\$ 24,000	
6.2	Uplighting for Landscaping	1	LS	\$ 15,000	\$ 15,000	
6.3	New Pavement Markings	1	LS	\$ 2,000	\$ 2,000	Allowance
6.4	Pavement Marking on I-5 SB Off-Ramp	1	LS	\$ 5,000	\$ 5,000	Allowance
					<b>\$ 46,000</b>	
<b>7.0</b>	<b>SPECIALTY ITEMS</b>					
7.1	Utility Relocation	1	LS	\$ 50,000	\$ 50,000	Allowance for utility relocation at 6th & 7th Ave
7.2	New Services to Lid (water, electr)	12,400	SF	\$ 4	\$ 49,600	
					<b>\$ 99,600</b>	
<b>8.0</b>	<b>TRAFFIC CONTROL</b>					
8.1	Traffic Control	1	LS	\$ 433,662	\$ 433,662	Assume 10% of construction cost
					<b>\$ 433,662</b>	
	<b>SUBTOTAL CONSTRUCTION</b>				<b>\$ 4,770,282</b>	

**SDOT I-5 Lid Project**

**Conceptual-Level Cost Estimate**

Revision Date: March 2, 2009

**WIDENING OF MADISON ST BRIDGE OVER I-5**

**Option 3 - Widened Bridge with Retail**

**Assumptions:**

- Leave existing parking lane on bridge - do not fill in with sidewalk.
- Remove existing planters on sidewalks.
- No retrofit of existing Madison St UC Bridge is needed.
- New 75' wide bridges provided on each side of existing bridge for sidewalk and retail space.
- No new sidewalks on 6th or 7th Avenues.
- Need to regrade existing SB off ramp under west end of bridge to provide adequate vertical clearance.

Item No.	Item Description	Quantity	Unit	Unit Cost	Cost	Comments
<b>1.0</b>	<b>SITE PREP</b>					
1.1	Construction Survey	1	LS	\$10,000	\$ 10,000	
1.2	Remove Pavement on SB Off-Ramp	1300	SY	\$15	\$ 19,500	Assume 400' long x 30' wide
1.3	Remove Existing Planters	12	EA	\$1,000	\$ 12,000	
1.4	Remove Existing Traffic Barriers on Walls	300	LF	\$40	\$ 12,000	
1.5	Remove Existing Traffic Barriers on Bridge	580	LF	\$50	\$ 29,000	
					<b>\$ 82,500</b>	
<b>2.0</b>	<b>STRUCTURES</b>					
2.1	New Structure on Each Side of Bridge	43,500	SF	\$ 325	\$ 14,137,500	75' wide x 290' long x 2 bridges
2.2	Expansion Jt between New and Existing Bridges	580	LF	\$ 100	\$ 58,000	
					<b>\$ 14,195,500</b>	
<b>3.0</b>	<b>AMENITIES ON LID</b>					
3.1	Retail Space	32,625	SF	\$ 115	\$ 3,751,875	Assume on 3/4 of lid
3.2	Landscaping	4,350	SF	\$ 17	\$ 73,950	Assume on 10% of lid
3.3	Public Art	1	LS	\$ 200,000	\$ 200,000	Allowance (1% for Art)
					<b>\$ 4,025,825</b>	
<b>4.0</b>	<b>CIVIL/ROADWAY</b>					
4.1	New ACP Pavement on SB Off-Ramp	1300	SY	\$50	\$ 65,000	Assume 400' long x 30' wide
4.2	New ACP Pavement along 6th and 7th Ave	200	SY	\$50	\$ 10,000	Assume 6' wide replacement at bridge ends
4.3	New Curb Ramps	4	EA	\$2,000	\$ 8,000	At each corner of bridge
					<b>\$ 83,000</b>	
<b>5.0</b>	<b>DRAINAGE</b>					
5.1	Stormwater Detention	43,500	SF	\$ 2	\$ 87,000	Allowance for new impervious pavement
5.2	Stormwater Conveyance	800	LF	\$ 100	\$ 80,000	Assume 400' per bridge
5.3	Bridge Drains	10	EA	\$ 3,000	\$ 30,000	
5.4	Temporary Water Pollution Control	1	LS	\$ 20,000	\$ 20,000	Allowance
					<b>\$ 217,000</b>	
<b>6.0</b>	<b>TRAFFIC</b>					
6.1	New Light Poles on Bridge	12	EA	\$ 3,000	\$ 36,000	
6.2	Uplighting for Landscaping	1	LS	\$ 15,000	\$ 15,000	
6.3	New Pavement Markings	1	LS	\$ 2,000	\$ 2,000	Allowance
6.4	Pavement Marking on I-5 SB Off-Ramp	1	LS	\$ 5,000	\$ 5,000	Allowance
					<b>\$ 58,000</b>	
<b>7.0</b>	<b>SPECIALTY ITEMS</b>					
7.1	Utility Relocation	1	LS	\$ 100,000	\$ 100,000	Allowance for utility relocation at 6th & 7th Ave
7.2	New Services to Lid (fire, sewer, water, electr)	43,500	SF	\$ 8	\$ 348,000	
					<b>\$ 448,000</b>	
<b>8.0</b>	<b>TRAFFIC CONTROL</b>					
8.1	Traffic Control	1	LS	\$ 1,910,983	\$ 1,910,983	Assume 10% of construction cost
					<b>\$ 1,910,983</b>	
<b>SUBTOTAL CONSTRUCTION</b>					<b>\$ 21,020,808</b>	

**SDOT I-5 Lid Project  
Conceptual-Level Cost Estimate**

Revision Date: March 2, 2009

**RIGHT OF WAY COST ESTIMATE**

**Option 1 - Unchanged Bridge Footprint with Widened Sidewalk**

**Assumptions**

- \$ - Cost for fee take areas (per SF)
- \$ 200 Cost for air right areas (per SF)

Owner	Parcel Size (SF)	Acquisition Area (SF)			Acquisition Cost (\$)			Total Cost
		Fee	Air Rts.	TCE	Fee	Air Rts.	TCE	
WSDOT	0		0		\$ -		\$ -	
Estimated R/W								\$0
Admin. Cost 5%								\$0
<b>TOTAL</b>								<b>\$0</b>

**Option 2 - Widened Bridge with Landscaping**

**Assumptions**

- \$ - Cost for fee take areas (per SF)
- \$ 200 Cost for air right areas (per SF)

Owner	Parcel Size (SF)	Acquisition Area (SF)			Acquisition Cost (\$)			Total Cost
		Fee	Air Rts.	TCE	Fee	Air Rts.	TCE	
WSDOT	12,400		12,400		\$ 2,480,000		\$ 2,480,000	
Estimated R/W								\$2,480,000
Admin. Cost 5%								\$124,000
<b>TOTAL</b>								<b>\$2,600,000</b>

**Option 3 - Widened Bridge with Retail**

**Assumptions**

- \$ - Cost for fee take areas (per SF)
- \$ 200 Cost for air right areas (per SF)

Owner	Parcel Size (SF)	Acquisition Area (SF)			Acquisition Cost (\$)			Total Cost
		Fee	Air Rts.	TCE	Fee	Air Rts.	TCE	
WSDOT	43,500		43,500		\$ 8,700,000		\$ 8,700,000	
Estimated R/W								\$8,700,000
Admin. Cost 5%								\$435,000
<b>TOTAL</b>								<b>\$9,100,000</b>

APPENDIX F  
**EXAMPLES OF OTHER LID PROJECTS**



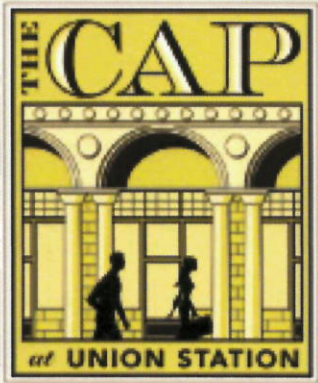
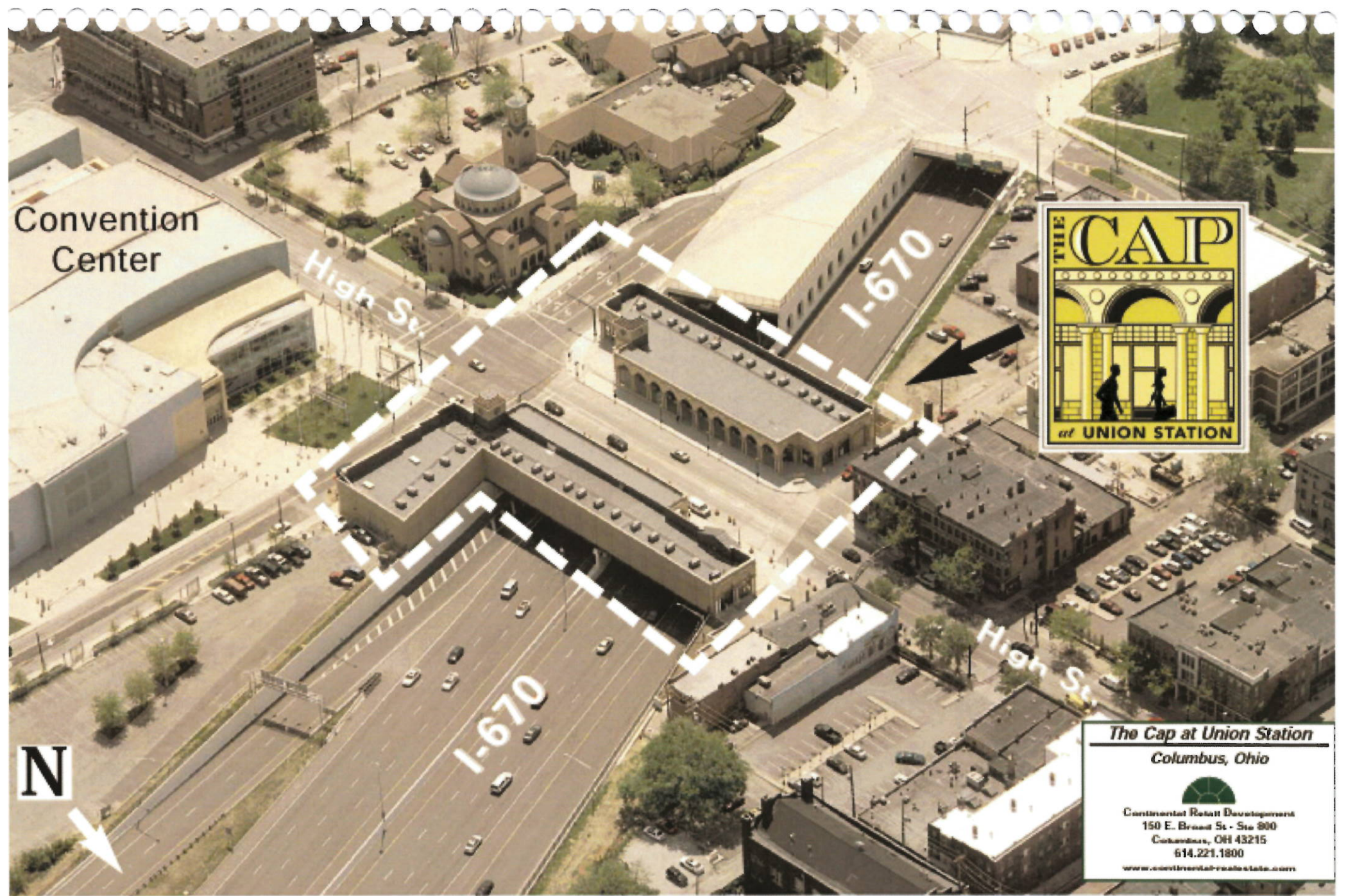
5th Street Bridge  
Atlanta, Georgia

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**5th Street Bridge**  
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**The Cap at Union Station**  
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Continental Retail Development  
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