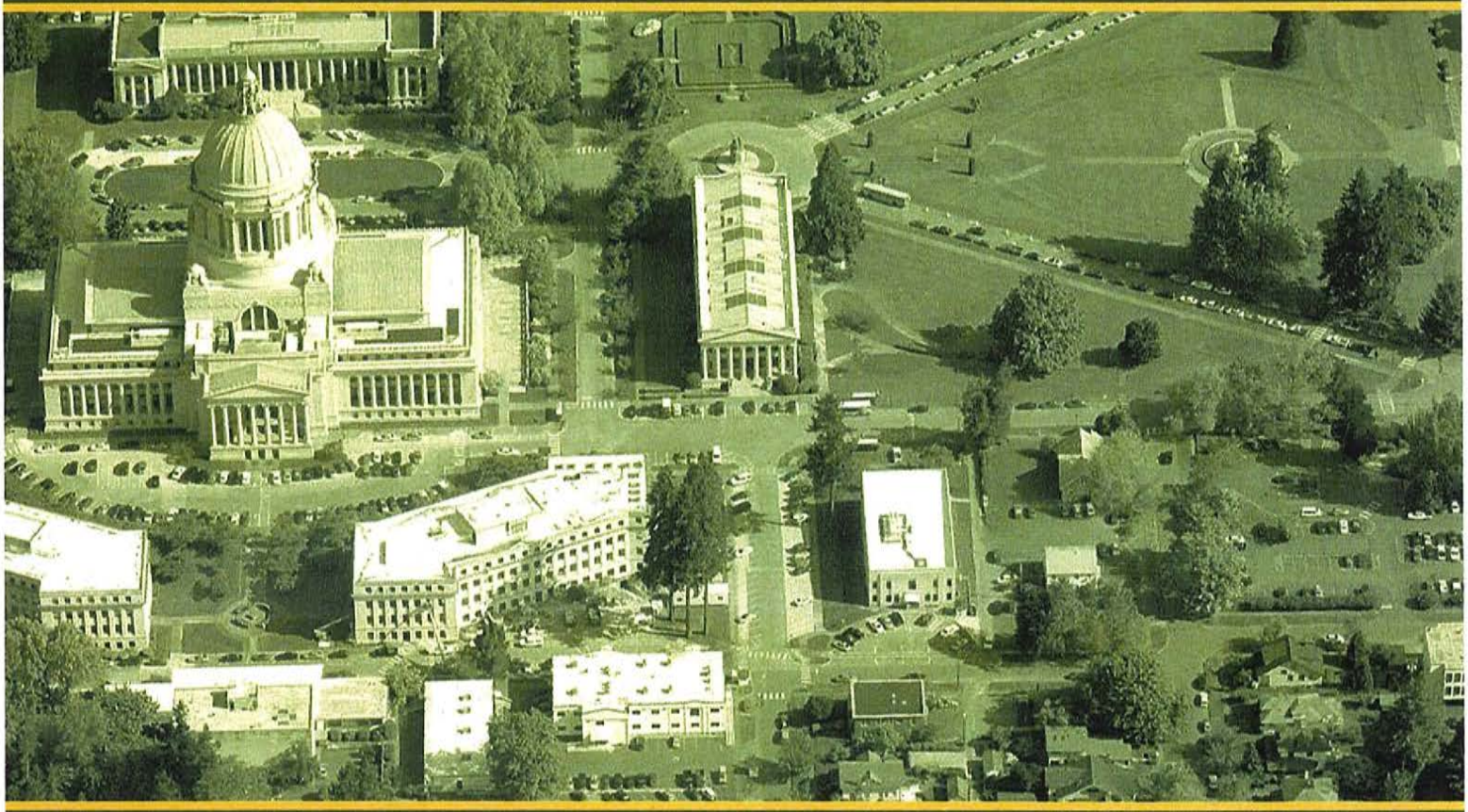
PROJECT REQUEST REPORT
APPENDIX:

Irv Newhouse Building Replacement
&
Legislative Support Building



State of Washington Department of General Administration
Division of Engineering and Architectural Services

December 2007

nbbj

7.0 Appendix

A. Cost Estimates (NBBJ)

B. Alternative Phasing Scenarios & Cost Estimates (NBBJ)

C. Civil Engineering Technical Memo (Shea, Carr & Jewell)

D. Structural Engineering Technical Memo (MKA)

E. Mechanical Engineering Technical Memo (Hargis)

F. Electrical Engineering Technical Memo (Hargis)

G. Telecommunications Technical Memo (Hargis)

H. Parking & Circulation Technical Memo (Shea, Carr & Jewell)

I. Historic & Archaeological Resources Technical Memo (Landau Associates)

A. Cost Estimates

NBBJ

STATE OF WASHINGTON

AGENCY/INSTITUTION PROJECT COST SUMMARY

Agency	Department of General Administration
Project Name	Alternate B - Phase 1 - Newhouse Replacemt Bldg w/ Garage beneath
Project Number	

Contact Information	
Analysis Date	10/18/2007
Analysis By	NBBJ
Contact Phone Number	206-223-5555

Statistics	Primary	Secondary	Total
Gross Square Feet	50,000	73,000	123,000
Net Square Feet	35,000	47,450	82,450
Efficiency	70%	65%	67%
Escalated MACC Cost per Sq.Ft.	485	319	387
Building Type	Office Buildings	Parking Structures and Garages	
Is project a remodel?	No	No	
A/E Fee Class	B	C	
A/E Fee Percentage	6.83%	5.73%	

Schedule	Start Date	End Date
Predesign (mm-yyyy)	Mar-2009	Nov-2009
Design (mm-yyyy)	Dec-2009	Jan-2011
Construction (mm-yyyy)	Jul-2011	Apr-2013
Construction Duration (months)	21	

Cost Summary	
Project Phase	**Escalated Cost**
Project Total	$78,651,000
Consultant Services	$6,039,000
Pre-Schematic Design Services	$531,000
A/E Basic Design Services	$1,951,000
A/E Extra Services/Reimbursables	$1,663,000
Other Services	$1,285,000
Design Services Contingency	$609,000
Construction	$64,430,000
MACC - Primary	$24,231,000
MACC - Secondary	$23,317,000
GC/CM Risk Contingency	$727,000
GC/CM or Design Build	$4,505,000
Contingencies	$6,657,000
Sales Tax	$4,993,000
Other	$8,182,000
Acquisition	$0
Equipment	$2,283,000
Equipment Tax	$192,000
Artwork	$101,000
Agency Project Administration	$806,000
Other	$4,800,000

Other Details	
Number of C100s Included in Summary	1
Alternative Public Works Project	Yes
State Construction Inflation Rate	3.00%
Base Month	Mar-2006
Project Administration by	Agency and GA
Project Admin Impact to GA that is NOT included in Project Total	$2,179,800

STATE OF WASHINGTON

AGENCY/INSTITUTION PROJECT COST ESTIMATE

FORM C-100 Version 2.6.1 July 1, 2005

AGENCY:	Department of General Administration	**Analysis Date:**	10/18/2007
PROJECT NAME:	Alternate B - Phase 1 - Newhouse Replacement Building with Garage beneath	**Analysis By:**	NBBJ
PROJECT NUMBER:		**Contact Phone #:**	206-223-5555
LOCATION:			

STATISTICS:	Primary	Secondary
Gross Square Feet	50,000	73,000
Net Square Feet	35,000	47,450
Efficiency	70%	65%
Estimated Cost per S.F.	485	319
Building Type:	Office Buildings	Parking Structures and Garages
Is project a remodel?	No	No
A/E Fee Class	B	C
A/E Fee Percentage:	6.83%	5.73%

Contingency Rate:	10.00%
Management Reserve:	4.00%
Tax Rate:	8.40%
Art Requirement Applies:	Yes
Project Admin by GA:	Yes
Higher Ed. Institution:	No
Alternative Public Works Project:	Yes

Project Schedule	Start Date	End Date
1. Predesign (mm-yyyy):	Mar-2009	Nov-2009
2. Design (mm-yyyy):	Dec-2009	Jan-2011
3. Construction (mm-yyyy):	Jul-2011	Apr-2013
5. Construction Duration (in Months):	21	
State Construction Inflation Rate:	3.00%	
Base Month:	Mar-2006	

Project Cost Summary	
Primary MACC (escalated):	$24,231,000
Secondary MACC (escalated):	$23,317,000
Current Project Total:	$65,918,436
Escalated Project Total:	$78,651,000

Includes Formula Overrides:	No

	ITEM	BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
A.	**ACQUISITION COSTS**					
1	Purchase/Lease Cost					
2	Appraisal and Closing Costs					
3	Right-of-Way Costs					
4	Offsite Mitigation					
5						
INSERT	<--Double-Click Here to Insert a Row					
Total: Acquisition Costs		**$0**			1.0000	**$0**
B.	**CONSULTANT SERVICES**					
1	**Pre-Schematic Design Services**					
	a. Programming/Site Analysis	$474,833				
	b. Environmental Analysis					
	c. Predesign Study					
	d.					
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Pre-Schematic Design Services	**$474,833**			1.1174	**$531,000**
2	**Construction Documents**					
	a. A/E Basic Design Services - Up to Bidding (69%)	$950,611		$950,611		
	b. A/E Basic Design Services - Secondary (69%)	$767,855		$767,855		
	SubTotal: Construction Documents	**$1,718,466**			1.1355	**$1,951,000**
3	**Extra Services**					
	a. Civil Design (Above Basic Services)	$70,000				
	b. Geotechnical Investigation	$40,000				
	c. Commissioning	$100,000				
	d. Site Survey	$40,000				
	e. Testing	$30,000				
	f. Energy Conservation Report	$20,000				
	g. Voice/Data Consultant	$30,000				
	h. VE Participation & Implementation	$40,000				
	i. Constructability Review Participation	$40,000				
	j. Environmental Mitigation Services (EIS)	$75,000				
	k. Landscape Consultant	$45,000				
	l. As-Built Archiving Fee $5,000 each project	$5,000				
	m. Document Reproduction use judgement -- around $2,000 for average project	$4,000				
	n. Advertising for bid and release of retainage $1,000 each project	$1,000				
	o. AV Consultant	$25,000				
	p. Art Coordination	$10,000				
	q. As-Built Drawings (final CADD only)	$20,000				
	r. Cost Estimating	$70,000				
	s. Elevator Consultant	$25,000				
	t. Exterior and Stone Consultant	$40,000				
	u. Fire and Life Safety Consultant	$15,000				
	v. GC/CM Interaction	$100,000				
	w. Graphics	$30,000				
	x. Interior Consultant	$150,000				
	y. Leed Documentation	$100,000				
	z. Lighting Consultant	$30,000				
	aa. LCCA	$30,000				
	ab. Mockups - Inspection	$15,000				
	ac. Models and Renderings	$15,000				
	ad. Environmental Mitigation Services (EIS) - Checklist Only	$20,000				

	ITEM	BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
ae.	Outreach	$20,000				
af.	Partnering	$20,000				
ag.	Security and Access Systems Consultant	$40,000				
ah.	Technology Consultant	$150,000				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Extra Services	**$1,465,000**			1.1355	**$1,663,000**
4	**Other Services**					
a.	Bid/Construction/Closeout - 31% of basic services	$427,086		$427,086		
b.	Bid/Construction/Closeout - Secondary	$344,978		$344,978		
c.	HVAC Balancing	$40,000				
d.	Commissioning and Training	$150,000				
e.	Historic Structures Report $30,000 each project when required	$30,000				
f.	Campus Conservator Review (about $5,000 on typical historic building)	$5,000				
g.	Constructibility Consultant (about $10,000 on a large project)	$10,000				
h.	Value Engineering Consultant (about $10,000 on a large project)	$10,000				
i.	Cost Check Consultant (about $10,000 on a large project)	$10,000				
j.	Schedule Check Consultant (about $10,000 on a large project)	$10,000				
k.	HazMat Consultant (judgement call)	$20,000				
l.	Fulltime Roof Inspector $12,000 each major roofing project	$12,000				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Other Services	**$1,069,064**			1.2016	**$1,285,000**
5	**Design Services Contingency** 10.00%	$472,736		$472,736		
a.	Change Order Fees (design related) 1% to 2% of basic services	$34,369				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Design Services Contingency	**$507,105**			1.2016	**$609,000**
Total: Consultant Services		**$5,234,468**				**$6,039,000**
C.	**CONSTRUCTION CONTRACTS**					
1	**Site Work**					
a.	G10 - Site Preparation					
b.	G20 - Site Improvements					
c.	G30 - Site Mechanical Utilities					
d.	G40 - Site Electrical Utilities					
e.	G60 - Other Site Construction					
f.	Included with Secondary Costs below					
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Site Work	**$0**			1.1709	**$0**
2	**Related Project Costs**					
a.	Off site improvements					
b.	City Utilities Relocation					
c.	Parking Mitigation					
d.	Stormwater Retention/Detention					
e.	Wetland Mitigation					
f.	Included with Secondary Costs below					
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Related Project Costs	**$0**			1.1709	**$0**
3A	**Facility Construction - Primary**					
a.	A10 - Foundations					
b.	A20 - Basement Construction					
c.	B10 - Superstructure					
d.	B20 - Exterior Closure					
e.	B30 - Roofing					
f.	C10 - Interior Construction					
g.	C20 - Stairs					
h.	C30 - Interior Finishes					
i.	D10 - Conveying					
j.	D20 - Plumbing Systems					
k.	D30 - HVAC Systems					
l.	D40 - Fire Protection Systems					
m.	D50 - Electrical Systems					
n..	F10 - Special Construction					
o..	F20 - Selective Demolition					
p.	General Conditions					
q.	Phase 2 - Office Bldg - Oct, 2007 dollars per NBBJ Estimate	$17,151,336				
r.	Escalation adjustment from Oct, 2007 back to March, 2006 (basis month)	-$2,058,160				
s.	Extaordinary escalation from March, 2006 to Construction Mid-Point	$5,071,775				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Facility Construction - Primary	**$20,164,951**			1.2016	**$24,231,000**
	Maximum Allowable Construction Cost (MACC) - Primary	**$20,164,951**				**$24,231,000**
3B	**Facility Construction -Secondary (By Building System)**					
a.	A10 - Foundations					
b.	A20 - Basement Construction					
c.	B10 - Superstructure					
d.	B20 - Exterior Closure					
e.	B30 - Roofing					
f.	C10 - Interior Construction					
g.	C20 - Stairs					
h.	C30 - Interior Finishes					
i.	D10 - Conveying					
j.	D20 - Plumbing Systems					
k.	D30 - HVAC Systems					
l.	D40 - Fire Protection Systems					
m.	D50 - Electrical Systems					

	ITEM		BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
n..	F10 - Special Construction						
o..	F20 - Selective Demolition						
p.	General Conditions						
q.	Phase 2 - Parking Garage and Underground Corridor - Oct, 2007 Dollars per NBBJ		$16,504,474				
r.	Escalation adjustment from Oct, 2007 back to March, 2006 (basis month)		-$1,980,537				
s.	Extaordinary escalation from March, 2006 to Construction Mid-Point		$4,880,493				
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Facility Construction -Secondary (By Building System)		**$19,404,430**			1.2016	**$23,317,000**
	Maximum Allowable Construction Cost (MACC) - Secondary		**$19,404,430**				**$23,317,000**
4	**GC/CM Risk Contingency**						
a.			$605,000				
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: GC/CM Risk Contingency		**$605,000**			1.2016	**$727,000**
5	**GC/CM or Design Build Costs**						
a.	Preconstruction Services		$173,559				
b.	Fee		$1,744,271				
c.	Bid General Conditions		$1,831,484				
d.							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: GC/CM or Design Build Costs		**$3,749,314**			1.2016	**$4,505,000**
6	**Construction Contingencies**						
a.	Management Reserve	4.00%	$1,582,775		$1,582,775		
b.	Allowance for Change Orders	10.00%	$3,956,938		$3,956,938		
c.							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Construction Contingencies		**$5,539,713**			1.2016	**$6,657,000**
7	**Sales Tax**	8.40%	$4,154,926		$4,154,926		
a.							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Sales Tax		**$4,154,926**			1.2016	**$4,993,000**
Total: Construction Contracts			**$53,618,334**				**$64,430,000**
D.	**EQUIPMENT**						
1	E10 - Equipment						
2	E20 - Furnishings		$1,300,000				
3	F10 - Special Construction						
4	Telecom and Data Center		$600,000				
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Equipment		**$1,900,000**			1.2016	**$2,283,000**
99	**Sales Tax**	8.40%	$159,600		$159,600		
100							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Sales Tax		**$159,600**			1.2016	**$192,000**
Total: Equipment			**$2,059,600**				**$2,475,000**
E.	**ARTWORK**						
.1	Project Artwork		$100,825		$100,825		
2	Higher Education Artwork		N/A		N/A		
3							
INSERT	<--Double-Click Here to Insert a Row						
Total: Artwork			**$100,825**			1.0000	**$101,000**
F.	**OTHER COSTS**						
1	Mitigation Costs						
2	Hazardous Material Remediation\Removal						
3	B&G Project Support .005 x MACC		$101,000				
4	In-Plant Services .0032 x MACC		$65,000				
5	Campus Standards Program .0016 x MACC		$32,000				
6	Owner Site Representative # months const x $9,000 x % time on the job		$94,500				
7	Owner Project Manager #months design & const x $12,400 x % time on the job		$114,576				
8	Condition Assessment $30,000 each project where applicable		$0				
9	City Building Permit MACC/1000 x 6		$120,990				
10	City Plan Review Bldg Permit Fee x 0.65		$78,643				
11	Mockups		$100,000				
12	Project Signage $1,000 each project		$1,000				
13	Moving Expenses		$70,000				
14	Historic Mitigation		$100,000				
15	General Owners Contingency		$3,221,500				
INSERT	<--Double-Click Here to Insert a Row						
Total: Other Costs			**$4,099,209**			1.1709	**$4,800,000**
G.	**PROJECT MANAGEMENT**						
1	Agency Project Management		$0		$0		
2	Agency Project Management (should average about 4.5%)		$706,000				
3	E&AS Management Fee (check w/ E&AS on projects over $20 million)						
4	Special Inspections & Testing		$100,000				
INSERT	<--Double-Click Here to Insert a Row						
Total: Project Management			**$806,000**			1.0000	**$806,000**
GRAND TOTAL			**$65,918,436**				**$78,651,000**

ITEM	BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
NOTES					
Primary project refers to the office building. Secondary projects include the subterranean parking structure below the office building and a pedestrian tunnel connection to Cherberg Building.					

STATE OF WASHINGTON

AGENCY/INSTITUTION PROJECT COST SUMMARY

Agency	Department of General Administration
Project Name	Alternate B - Phase 2 - Legislative Support Bldg w/ Garage beneath
Project Number	

Contact Information	
Analysis Date	10/18/2007
Analysis By	NBBJ
Contact Phone Number	206-223-5555

Statistics	Primary	Secondary	Total
Gross Square Feet	150,000	262,400	412,400
Net Square Feet	105,000	170,560	275,560
Efficiency	70%	65%	67%
Escalated MACC Cost per Sq.Ft.	597	303	410
Building Type	Office Buildings	Parking Structures and Garages	
Is project a remodel?	No	No	
A/E Fee Class	B	C	
A/E Fee Percentage	5.45%	4.66%	

Schedule	Start Date	End Date
Predesign (mm-yyyy)	Oct-2012	Jul-2013
Design (mm-yyyy)	Jul-2013	Jul-2014
Construction (mm-yyyy)	Jul-2015	Jul-2017
Construction Duration (months)	24	

Cost Summary	
Project Phase	**Escalated Cost**
Project Total	$270,397,000
Consultant Services	$14,599,000
Pre-Schematic Design Services	$1,548,000
A/E Basic Design Services	$5,501,000
A/E Extra Services/Reimbursables	$2,561,000
Other Services	$3,485,000
Design Services Contingency	$1,504,000
Construction	$228,940,000
MACC - Primary	$89,562,000
MACC - Secondary	$79,569,000
GC/CM Risk Contingency	$5,074,000
GC/CM or Design Build	$13,316,000
Contingencies	$23,678,000
Sales Tax	$17,741,000
Other	$26,858,000
Acquisition	$0
Equipment	$6,923,000
Equipment Tax	$582,000
Artwork	$330,000
Agency Project Administration	$1,190,000
Other	$17,833,000

Other Details	
Number of C100s Included in Summary	1
Alternative Public Works Project	Yes
State Construction Inflation Rate	3.00%
Base Month	Mar-2006
Project Administration by	Agency and GA
Project Admin Impact to GA that is NOT included in Project Total	$7,526,520

STATE OF WASHINGTON

AGENCY/INSTITUTION PROJECT COST ESTIMATE

FORM **C-100** Version 2.6.1 July 1, 2005

AGENCY:	Department of General Administration	**Analysis Date:**	10/18/2007
PROJECT NAME:	Alternate B - Phase 2 - Legislative Support Building with Garage beneath	**Analysis By:**	NBBJ
PROJECT NUMBER:		**Contact Phone #:**	206-223-5555
LOCATION:			

STATISTICS:	Primary	Secondary
Gross Square Feet	150,000	262,400
Net Square Feet	105,000	170,560
Efficiency	70%	65%
Estimated Cost per S.F.	597	303
Building Type:	Office Buildings	Parking Structures and Garages
Is project a remodel?	No	No
A/E Fee Class	B	C
A/E Fee Percentage:	5.45%	4.66%

Contingency Rate:	10.00%
Management Reserve:	4.00%
Tax Rate:	8.40%
Art Requirement Applies:	Yes
Project Admin by GA:	Yes
Higher Ed. Institution:	No
Alternative Public Works Project:	Yes

Project Schedule	Start Date	End Date
1. Predesign (mm-yyyy):	Oct-2012	Jul-2013
2. Design (mm-yyyy):	Jul-2013	Jul-2014
3. Construction (mm-yyyy):	Jul-2015	Jul-2017
5. Construction Duration (in Months):	24	
State Construction Inflation Rate:	3.00%	
Base Month:	Mar-2006	

Project Cost Summary	
Primary MACC (escalated):	$89,562,000
Secondary MACC (escalated):	$79,569,000
Current Project Total:	$200,538,088
Escalated Project Total:	$270,397,000

Includes Formula Overrides:	No

	ITEM	BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
A.	**ACQUISITION COSTS**					
1	Purchase/Lease Cost					
2	Appraisal and Closing Costs					
3	Right-of-Way Costs					
4	Offsite Mitigation					
5						
INSERT	<--Double-Click Here to Insert a Row					
Total: Acquisition Costs		**$0**			1.0000	**$0**
B.	**CONSULTANT SERVICES**					
1	**Pre-Schematic Design Services**					
	a. Programming/Site Analysis	$1,245,866				
	b. Environmental Analysis					
	c. Predesign Study					
	d.					
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Pre-Schematic Design Services	**$1,245,866**			1.2423	**$1,548,000**
2	**Construction Documents**					
	a. A/E Basic Design Services - Up to Bidding (69%)	$2,479,852		$2,479,852		
	b. A/E Basic Design Services - Secondary (69%)	$1,883,054		$1,883,054		
	SubTotal: Construction Documents	**$4,362,906**			1.2608	**$5,501,000**
3	**Extra Services**					
	a. Civil Design (Above Basic Services)	$100,000				
	b. Geotechnical Investigation	$50,000				
	c. Commissioning	$150,000				
	d. Site Survey	$40,000				
	e. Testing	$60,000				
	f. Energy Conservation Report	$30,000				
	g. Voice/Data Consultant	$40,000				
	h. VE Participation & Implementation	$50,000				
	i. Constructability Review Participation	$50,000				
	j. Environmental Mitigation Services (EIS)	$100,000				
	k. Landscape Consultant	$60,000				
	l. As-Built Archiving Fee $5,000 each project	$5,000				
	m. Document Reproduction - use judgement – around $2,000 for average project	$5,000				
	n. Advertising for bid and release of retainage $1,000 each project	$1,000				
	o. AV Consultant	$35,000				
	p. Art Coordination	$20,000				
	q. As-Built Drawings (final CADD only)	$25,000				
	r. Cost Estimating	$90,000				
	s. Elevator Consultant	$35,000				
	t. Exterior and Stone Consultant	$60,000				
	u. Fire and Life Safety Consultant	$20,000				
	v. GC/CM Interaction	$150,000				
	w. Graphics	$40,000				
	x. Interior Consultant	$250,000				
	y. Leed Documentation	$125,000				
	z. Lighting Consultant	$40,000				
	aa. LCCA	$40,000				
	ab. Mockups - Inspection	$20,000				
	ac. Models and Renderings	$15,000				
	ad. Environmental Mitigation Services (EIS) - Checklist Only	$30,000				

	ITEM	BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
ae.	Outreach	$25,000				
af.	Partnering	$20,000				
ag.	Security and Access Systems Consultant	$50,000				
ah.	Technology Consultant	$200,000				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Extra Services	**$2,031,000**			1.2608	**$2,561,000**
4	**Other Services**					
a.	Bid/Construction/Closeout - 31% of basic services	$1,114,137		$1,114,137		
b.	Bid/Construction/Closeout - Secondary	$846,010		$846,010		
c.	HVAC Balancing	$50,000				
d.	Commissioning and Training	$450,000				
e.	Historic Structures Report $30,000 each project when required	$30,000				
f.	Campus Conservator Review (about $5,000 on typical historic building)	$5,000				
g.	Constructibility Consultant (about $10,000 on a large project)	$10,000				
h.	Value Engineering Consultant (about $10,000 on a large project)	$10,000				
i.	Cost Check Consultant (about $10,000 on a large project)	$10,000				
j.	Schedule Check Consultant (about $10,000 on a large project)	$10,000				
k.	HazMat Consultant (judgement call)	$20,000				
l.	Fulltime Roof Inspector $12,000 each major roofing project	$12,000				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Other Services	**$2,567,147**			1.3575	**$3,485,000**
5	**Design Services Contingency** 10.00%	$1,020,692		$1,020,692		
a.	Change Order Fees (design related) 1% to 2% of basic services	$87,258				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Design Services Contingency	**$1,107,950**			1.3575	**$1,504,000**
Total: Consultant Services		**$11,314,869**				**$14,599,000**
C.	**CONSTRUCTION CONTRACTS**					
1	**Site Work**					
a.	G10 - Site Preparation					
b.	G20 - Site Improvements					
c.	G30 - Site Mechanical Utilities					
d.	G40 - Site Electrical Utilities					
e.	G60 - Other Site Construction					
f.	Included with Secondary Costs below					
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Site Work	**$0**			1.3179	**$0**
2	**Related Project Costs**					
a.	Off site improvements					
b.	City Utilities Relocation					
c.	Parking Mitigation					
d.	Stormwater Retention/Detention					
e.	Wetland Mitigation					
f.	Included with Secondary Costs below					
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Related Project Costs	**$0**			1.3179	**$0**
3A	**Facility Construction - Primary**					
a.	A10 - Foundations					
b.	A20 - Basement Construction					
c.	B10 - Superstructure					
d.	B20 - Exterior Closure					
e.	B30 - Roofing					
f.	C10 - Interior Construction					
g.	C20 - Stairs					
h.	C30 - Interior Finishes					
i.	D10 - Conveying					
j.	D20 - Plumbing Systems					
k.	D30 - HVAC Systems					
l.	D40 - Fire Protection Systems					
m.	D50 - Electrical Systems					
n.	F10 - Special Construction					
o.	F20 - Selective Demolition					
p.	General Conditions					
q.	Phase 1 - Office Bldg - Oct, 2007 dollars per NBBJ Estimate	$46,623,864				
r.	Escalation adjustment from Oct, 2007 back to March, 2006 (basis month)	-$5,284,038				
s.	Extaordinary escalation from March, 2006 to Construction Mid-Point	$24,634,044				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Facility Construction - Primary	**$65,973,871**			1.3575	**$89,562,000**
	Maximum Allowable Construction Cost (MACC) - Primary	**$65,973,871**				**$89,562,000**
3B	**Facility Construction -Secondary (By Building System)**					
a.	A10 - Foundations					
b.	A20 - Basement Construction					
c.	B10 - Superstructure					
d.	B20 - Exterior Closure					
e.	B30 - Roofing					
f.	C10 - Interior Construction					
g.	C20 - Stairs					
h.	C30 - Interior Finishes					
i.	D10 - Conveying					
j.	D20 - Plumbing Systems					
k.	D30 - HVAC Systems					
l.	D40 - Fire Protection Systems					
m.	D50 - Electrical Systems					

	ITEM		BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
n..	F10 - Special Construction						
o..	F20 - Selective Demolition						
p.	General Conditions						
q.	Phase 1 - Parking Garage and Pedestrian Bridge - Oct, 2007 Dollars per NBBJ		$41,421,715				
r.	Escalation adjustment from Oct, 2007 back to March, 2006 (basis month)		-$4,694,461				
s.	Extaordinary escalation from March, 2006 to Construction Mid-Point		$21,885,452				
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Facility Construction -Secondary (By Building System)		**$58,612,706**			1.3575	**$79,569,000**
	Maximum Allowable Construction Cost (MACC) - Secondary		**$58,612,706**				**$79,569,000**
4	**GC/CM Risk Contingency**						
a.			$3,738,000				
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: GC/CM Risk Contingency		**$3,738,000**			1.3575	**$5,074,000**
5	**GC/CM or Design Build Costs**						
a.	Preconstruction Services		$454,075				
b.	Fee		$4,563,458				
c.	Bid General Conditions		$4,791,630				
d.							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: GC/CM or Design Build Costs		**$9,809,163**			1.3575	**$13,316,000**
6	**Construction Contingencies**						
a.	Management Reserve	4.00%	$4,983,463		$4,983,463		
b.	Allowance for Change Orders	10.00%	$12,458,658		$12,458,658		
c.							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Conistruction Contingencies		**$17,442,121**			1.3575	**$23,678,000**
7	**Sales Tax**	8.40%	$13,068,372		$13,068,372		
a.							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Sales Tax		**$13,068,372**			1.3575	**$17,741,000**
Total: Construction Contracts			**$168,644,233**				**$228,940,000**
D.	**EQUIPMENT**						
1	E10 - Equipment						
2	E20 - Furnishings		$3,600,000				
3	F10 - Special Construction						
4	Telecom and Data Center		$1,500,000				
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Equipment		**$5,100,000**			1.3575	**$6,923,000**
99	**Sales Tax**	8.40%	$428,400		$428,400		
100							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Sales Tax		**$428,400**			1.3575	**$582,000**
Total: Equipment			**$5,528,400**				**$7,505,000**
E.	**ARTWORK**						
1	Project Artwork		$329,869		$329,869		
2	Higher Education Artwork		N/A		N/A		
3							
INSERT	<--Double-Click Here to Insert a Row						
Total: Artwork			**$329,869**			1.0000	**$330,000**
F.	**OTHER COSTS**						
1	Mitigation Costs						
2	Hazardous Material Remediation\Removal						
3	B&G Project Support .005 x MACC		$330,000				
4	In-Plant Services .0032 x MACC		$211,000				
5	Campus Standards Program .0016 x MACC		$106,000				
6	Owner Site Representative # months const x $9,000 x % time on the job		$108,000				
7	Owner Project Manager #months design & const x $12,400 x % time on the job		$114,576				
8	Condition Assessment $30,000 each project where applicable		$0				
9	City Building Permit MACC/1000 x 6		$395,843				
10	City Plan Review Bldg Permit Fee x 0.65		$257,298				
11	Mockups		$100,000				
12	Project Signage $1,000 each project		$1,000				
13	Moving Expenses		$210,000				
14	Historic Mitigation		$250,000				
15	General Owners Contingency		$11,447,000				
INSERT	<--Double-Click Here to Insert a Row						
Total: Other Costs			**$13,530,717**			1.3179	**$17,833,000**
G.	**PROJECT MANAGEMENT**						
1	Agency Project Management		$0		$0		
2	Agency Project Management (should average about 4.5%)		$990,000				
3	E&AS Management Fee (check w/ E&AS on projects over $20 million)						
4	Special Inspections & Testing		$200,000				
INSERT	<--Double-Click Here to Insert a Row						
Total: Project Management			**$1,190,000**			1.0000	**$1,190,000**
GRAND TOTAL			**$200,538,088**				**$270,397,000**

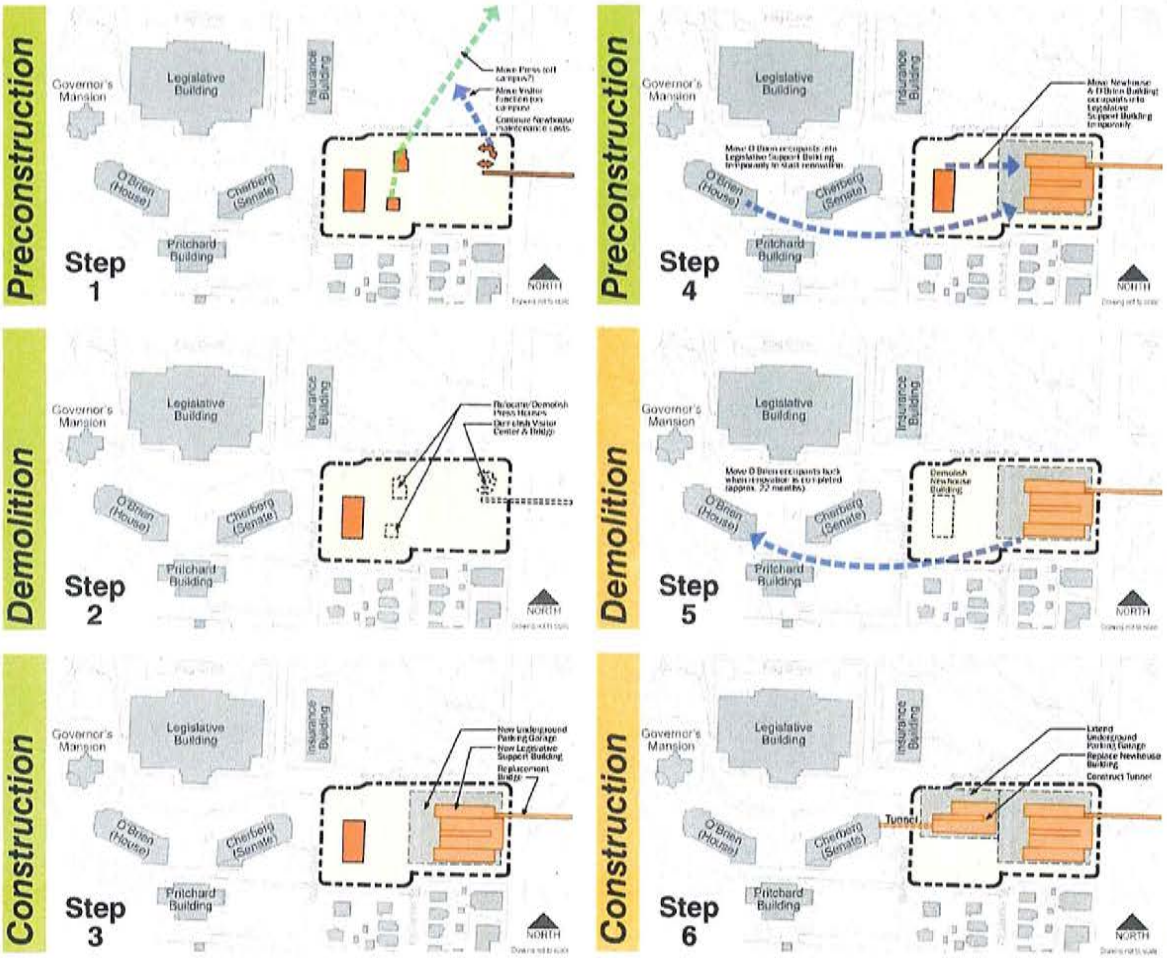
ITEM	BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
NOTES					
Primary project is the office building. Secondary projects include subterranean parking structure below office building and a replacement pedestrian bridge over Capitol Way.					

B. Alternative Phasing Scenarios & Cost Estimates NBBJ

B. Alternative Phasing Scenarios & Cost Estimates

NBBJ

Alternative A



Campus South Edge Sub-area Proposed Staging

ALTERNATIVE A - COLLOCATED

		2008				2009				2010				2011				2012				2013				2014				2015				2016
		SESSION	2nd Q	3rd Q	4th Q	SESSION	2nd Q	3rd Q	4th Q	SESSION	2nd Q	3rd Q	4th Q	SESSION	2nd Q	3rd Q	4th Q	SESSION	2nd Q	3rd Q	4th Q	SESSION	2nd Q	3rd Q	4th Q	SESSION	2nd Q	3rd Q	4th Q	SESSION	2nd Q	3rd Q	4th Q	SESSION
Steps 1 - 4	Legislative Support Bldg. Design and Approvals																																	
	Construct Leg. Support Bldg. 150,000 SQ FT + PARKING																																	
	Relocate O'Brien & Newhouse Offices to Legislative Support Bldg.																																	
	Locate Other Leg. Services to Leg. Support Bldg, space permitting																																	
	Renovate O'Brien Building																																	
Steps 5 - 6	Newhouse Replacement Bldg. Design and Approvals																																	
	Demolition of Newhouse Building																																	
	Move Appropriate Functions Back to O'Brien Building																																	
	Construct Newhouse Replacement Bldg. 50,000 SQ FT + PARKING																																	
	Move Senate Offices into Newhouse Replacement Bldg.																																	
	Backfill rest of Legislative Support Bldg. with Other Agencies																																	

- **Demolition of Newhouse Building occurs September - October 2011.**
- **Newhouse Senators in temporary quarters for Sessions 2012 & 2013.**

STATE OF WASHINGTON

AGENCY/INSTITUTION PROJECT COST SUMMARY

Agency	Department of General Administration
Project Name	Alternate A - Phase 1 - Legislative Support Bldg w/ Garage beneath
Project Number	

Contact Information	
Analysis Date	
Analysis By	
Contact Phone Number	

Statistics	Primary	Secondary	Total
Gross Square Feet	150,000	262,400	412,400
Net Square Feet	105,000	170,560	275,560
Efficiency	70%	65%	67%
Escalated MACC Cost per Sq.Ft.	373	189	256
Building Type			
Is project a remodel?			
A/E Fee Class			
A/E Fee Percentage			

Schedule	Start Date	End Date
Predesign (mm-yyyy)		
Design (mm-yyyy)		
Construction (mm-yyyy)		
Construction Duration (months)	0	

Cost Summary	
Project Phase	**Escalated Cost**
Project Total	$173,693,043
Consultant Services	$10,500,000
Pre-Schematic Design Services	$1,015,000
A/E Basic Design Services	$3,789,000
A/E Extra Services/Reimbursables	$2,206,000
Other Services	$2,442,000
Design Services Contingency	$1,048,000
Construction	$145,898,000
MACC - Primary	$55,931,000
MACC - Secondary	$49,690,000
GC/CM Risk Contingency	$3,169,000
GC/CM or Design Build	$11,015,000
Contingencies	$14,787,000
Sales Tax	$11,306,000
Other	$17,295,043
Acquisition	$0
Equipment	$5,727,000
Equipment Tax	$481,000
Artwork	$249,043
Agency Project Administration	$947,000
Other	$9,891,000

Other Details	
Number of C100s Included in Summary	1
Alternative Public Works Project	
State Construction Inflation Rate	
Base Month	
Project Administration by	
Project Admin Impact to GA that is NOT included in Project Total	$0

STATE OF WASHINGTON

AGENCY/INSTITUTION PROJECT COST ESTIMATE

FORM **C-100** Version 2.6.1 July 1, 2005

AGENCY:	Department of General Administration	**Analysis Date:**	10/17/2007
PROJECT NAME:	Alternate A - Phase 1 - Legislative Support Building with Garage beneath	**Analysis By:**	NBBJ
PROJECT NUMBER:		**Contact Phone #:**	206-223-5555
LOCATION:			

STATISTICS:	Primary	Secondary
Gross Square Feet	150,000	262,400
Net Square Feet	105,000	170,560
Efficiency	70%	65%
Estimated Cost per S.F.	373	189
Building Type:	Office Buildings	Parking Structures and Garages
Is project a remodel?	No	No
A/E Fee Class	B	C
A/E Fee Percentage:	5.77%	4.93%

Contingency Rate:	10.00%
Management Reserve:	4.00%
Tax Rate:	8.40%
Art Requirement Applies:	Yes
Project Admin by GA:	Yes
Higher Ed. Institution:	No
Alternative Public Works Project:	Yes

Project Schedule	Start Date	End Date
1. Predesign (mm-yyyy):	Jan-2008	Sep-2008
2. Design (mm-yyyy):	Oct-2008	Oct-2009
3. Construction (mm-yyyy):	Mar-2009	Jan-2011
5. Construction Duration (in Months):	22	
State Construction Inflation Rate:	3.00%	
Base Month:	Mar-2006	

Project Cost Summary	
Primary MACC (escalated):	$55,931,000
Secondary MACC (escalated):	$49,690,000
Current Project Total:	$155,270,387
Escalated Project Total:	$173,693,043

Includes Formula Overrides:	No

	ITEM	BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
A.	**ACQUISITION COSTS**					
1	Purchase/Lease Cost					
2	Appraisal and Closing Costs					
3	Right-of-Way Costs					
4	Offsite Mitigation					
5						
INSERT	<--Double-Click Here to Insert a Row					
Total: Acquisition Costs		**$0**			1.0000	**$0**
B.	**CONSULTANT SERVICES**					
1	**Pre-Schematic Design Services**					
	a. Programming/Site Analysis	$940,597				
	b. Environmental Analysis					
	c. Predesign Study					
	d.					
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Pre-Schematic Design Services	**$940,597**			1.0795	**$1,015,000**
2	**Construction Documents**					
	a. A/E Basic Design Services - Up to Bidding (69%)	$1,984,193		$1,984,193		
	b. A/E Basic Design Services - Secondary (69%)	$1,504,566		$1,504,566		
	SubTotal: Construction Documents	**$3,488,759**			1.0862	**$3,789,000**
3	**Extra Services**					
	a. Civil Design (Above Basic Services)	$100,000				
	b. Geotechnical Investigation	$50,000				
	c. Commissioning	$150,000				
	d. Site Survey	$40,000				
	e. Testing	$60,000				
	f. Energy Conservation Report	$30,000				
	g. Voice/Data Consultant	$40,000				
	h. VE Participation & Implementation	$50,000				
	i. Constructability Review Participation	$50,000				
	j. Environmental Mitigation Services (EIS)	$100,000				
	k. Landscape Consultant	$60,000				
	l. As-Built Archiving Fee $5,000 each project	$5,000				
	m. Document Reproduction use judgement -- around $2,000 for average project	$5,000				
	n. Advertising for bid and release of retainage $1,000 each project	$1,000				
	o. AV Consultant	$35,000				
	p. Art Coordination	$20,000				
	q. As-Built Drawings (final CADD only)	$25,000				
	r. Cost Estimating	$90,000				
	s. Elevator Consultant	$35,000				
	t. Exterior and Stone Consultant	$60,000				
	u. Fire and Life Safety Consultant	$20,000				
	v. GC/CM Interaction	$150,000				
	w. Graphics	$40,000				
	x. Interior Consultant	$250,000				
	y. Leed Documentation	$125,000				
	z. Lighting Consultant	$40,000				
	aa. LCCA	$40,000				
	ab. Mockups - Inspection	$20,000				
	ac. Models and Renderings	$15,000				
	ad. Environmental Mitigation Services (EIS) - Checklist Only	$30,000				

	ITEM	BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
ae.	Outreach	$25,000				
af.	Partnering	$20,000				
ag.	Security and Access Systems Consultant	$50,000				
ah.	Technology Consultant	$200,000				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Extra Services	**$2,031,000**			1.0862	**$2,206,000**
4	**Other Services**					
a.	Bid/Construction/Closeout - 31% of basic services	$891,449		$891,449		
b.	Bid/Construction/Closeout - Secondary	$675,964		$675,964		
c.	HVAC Balancing	$50,000				
d.	Commissioning and Training	$450,000				
e.	Historic Structures Report $30,000 each project when required	$30,000				
f.	Campus Conservator Review (about $5,000 on typical historic building)	$5,000				
g.	Constructibility Consultant (about $10,000 on a large project)	$10,000				
h.	Value Engineering Consultant (about $10,000 on a large project)	$10,000				
i.	Cost Check Consultant (about $10,000 on a large project)	$10,000				
j.	Schedule Check Consultant (about $10,000 on a large project)	$10,000				
k.	HazMat Consultant (judgement call)	$20,000				
l.	Fulltime Roof Inspector $12,000 each major roofing project	$12,000				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Other Services	**$2,174,413**			1.1229	**$2,442,000**
5	**Design Services Contingency** 10.00%	$863,477		$863,477		
a.	Change Order Fees (design related) 1% to 2% of basic services	$69,775				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Design Services Contingency	**$933,252**			1.1229	**$1,048,000**
Total: Consultant Services		**$9,568,021**				**$10,500,000**
C.	**CONSTRUCTION CONTRACTS**					
1	**Site Work**					
a.	G10 - Site Preparation					
b.	G20 - Site Improvements					
c.	G30 - Site Mechanical Utilities					
d.	G40 - Site Electrical Utilities					
e.	G60 - Other Site Construction					
f.	Included with Secondary Costs below					
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Site Work	**$0**			1.0928	**$0**
2	**Related Project Costs**					
a.	Off site improvements					
b.	City Utilities Relocation					
c.	Parking Mitigation					
d.	Stormwater Retention/Detention					
e.	Wetland Mitigation					
f.	Included with Secondary Costs below					
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Related Project Costs	**$0**			1.0928	**$0**
3A	**Facility Construction - Primary**					
a.	A10 - Foundations					
b.	A20 - Basement Construction					
c.	B10 - Superstructure					
d.	B20 - Exterior Closure					
e.	B30 - Roofing					
f.	C10 - Interior Construction					
g.	C20 - Stairs					
h.	C30 - Interior Finishes					
i.	D10 - Conveying					
j.	D20 - Plumbing Systems					
k.	D30 - HVAC Systems					
l.	D40 - Fire Protection Systems					
m.	D50 - Electrical Systems					
n..	F10 - Special Construction					
o..	F20 - Selective Demolition					
p.	General Conditions					
q.	Phase 1 - Office Bldg - Oct, 2007 dollars per NBBJ Estimate	$46,623,864				
r.	Escalation adjustment from Oct, 2007 back to March, 2006 (basis month)	-$5,284,038				
s.	Extaordinary escalation from March, 2006 to Construction Mid-Point	$8,468,747				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Facility Construction - Primary	**$49,808,573**			1.1229	**$55,931,000**
	Maximum Allowable Construction Cost (MACC) - Primary	**$49,808,573**				**$55,931,000**
3B	**Facility Construction -Secondary (By Building System)**					
a.	A10 - Foundations					
b.	A20 - Basement Construction					
c.	B10 - Superstructure					
d.	B20 - Exterior Closure					
e.	B30 - Roofing					
f.	C10 - Interior Construction					
g.	C20 - Stairs					
h.	C30 - Interior Finishes					
i.	D10 - Conveying					
j.	D20 - Plumbing Systems					
k.	D30 - HVAC Systems					
l.	D40 - Fire Protection Systems					
m.	D50 - Electrical Systems					

	ITEM		BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
n..	F10 - Special Construction						
o..	F20 - Selective Demolition						
p.	General Conditions						
q.	Phase 1 - Parking Garage and Pedestrian Bridge - Oct, 2007 Dollars per NBBJ		$41,421,715				
r.	Escalation adjustment from Oct, 2007 back to March, 2006 (basis month)		-$4,694,461				
s.	Extaordinary escalation from March, 2006 to Construction Mid-Point		$7,523,830				
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Facility Construction -Secondary (By Building System)		**$44,251,084**			1.1229	**$49,690,000**
	Maximum Allowable Construction Cost (MACC) - Secondary		**$44,251,084**				**$49,690,000**
4	**GC/CM Risk Contingency**						
a.			$2,822,000				
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: GC/CM Risk Contingency		**$2,822,000**			1.1229	**$3,169,000**
5	**GC/CM or Design Build Costs**						
a.	Preconstruction Services		$454,075				
b.	Fee		$4,563,458				
c.	Bid General Conditions		$4,791,630				
d.							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: GC/CM or Design Build Costs		**$9,809,163**			1.1229	**$11,015,000**
6	**Construction Contingencies**						
a.	Management Reserve	4.00%	$3,762,386		$3,762,386		
b.	Allowance for Change Orders	10.00%	$9,405,966		$9,405,966		
c.							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Construction Contingencies		**$13,168,352**			1.1229	**$14,787,000**
7	**Sales Tax**	8.40%	$10,068,170		$10,068,170		
a.							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Sales Tax		**$10,068,170**			1.1229	**$11,306,000**
Total: Construction Contracts			**$129,927,342**				**$145,898,000**
D.	**EQUIPMENT**						
1	E10 - Equipment						
2	E20 - Furnishings		$3,600,000				
3	F10 - Special Construction						
4	Telecom and Data Center		$1,500,000				
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Equipment		**$5,100,000**			1.1229	**$5,727,000**
99	**Sales Tax**	8.40%	$428,400		$428,400		
100							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Sales Tax		**$428,400**			1.1229	**$481,000**
Total: Equipment			**$5,528,400**				**$6,208,000**
E.	**ARTWORK**						
1	Project Artwork		$249,043		$249,043		
2	Higher Education Artwork		N/A		N/A		
3							
INSERT	<--Double-Click Here to Insert a Row						
Total: Artwork			**$249,043**			1.0000	**$249,043**
F.	**OTHER COSTS**						
1	Mitigation Costs						
2	Hazardous Material Remediation\Removal						
3	B&G Project Support .005 x MACC		$249,000				
4	In-Plant Services .0032 x MACC		$159,000				
5	Campus Standards Program .0016 x MACC		$80,000				
6	Owner Site Representative # months const x $9,000 x % time on the job		$99,000				
7	Owner Project Manager #months design & const x $12,400 x % time on the job		$114,576				
8	Condition Assessment $30,000 each project where applicable		$0				
9	City Building Permit MACC/1000 x 6		$298,851				
10	City Plan Review Bldg Permit Fee x 0.65		$194,253				
11	Mockups		$100,000				
12	Project Signage $1,000 each project		$1,000				
13	Moving Expenses		$210,000				
14	Historic Mitigation		$250,000				
15	General Owners Contingency		$7,294,900				
INSERT	<--Double-Click Here to Insert a Row						
Total: Other Costs			**$9,050,581**			1.0928	**$9,891,000**
G.	**PROJECT MANAGEMENT**						
1	Agency Project Management		$0		$0		
2	Agency Project Management (should average about 4.5%)		$747,000				
3	E&AS Management Fee (check w/ E&AS on projects over $20 million)						
4	Special Inspections & Testing		$200,000				
INSERT	<--Double-Click Here to Insert a Row						
Total: Project Management			**$947,000**			1.0000	**$947,000**
GRAND TOTAL			**$155,270,387**				**$173,693,043**

ITEM	BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
NOTES					

STATE OF WASHINGTON

AGENCY/INSTITUTION PROJECT COST SUMMARY

Agency	Department of General Administration
Project Name	Alternate A - Phase 2 - Newhouse Replacemt Bldg w/ Garage beneatl
Project Number	

Contact Information	
Analysis Date	
Analysis By	
Contact Phone Number	

Statistics	Primary	Secondary	Total
Gross Square Feet	50,000	73,000	123,000
Net Square Feet	35,000	47,450	82,450
Efficiency	70%	65%	67%
Escalated MACC Cost per Sq.Ft.	503	331	401
Building Type			
Is project a remodel?			
A/E Fee Class			
A/E Fee Percentage			

Schedule	Start Date	End Date
Predesign (mm-yyyy)		
Design (mm-yyyy)		
Construction (mm-yyyy)		
Construction Duration (months)	0	

Cost Summary	
Project Phase	**Escalated Cost**
Project Total	$81,348,087
Consultant Services	$6,140,000
Pre-Schematic Design Services	$542,000
A/E Basic Design Services	$1,988,000
A/E Extra Services/Reimbursables	$1,663,000
Other Services	$1,321,000
Design Services Contingency	$626,000
Construction	$66,751,000
MACC - Primary	$25,145,000
MACC - Secondary	$24,197,000
GC/CM Risk Contingency	$755,000
GC/CM or Design Build	$4,573,000
Contingencies	$6,908,000
Sales Tax	$5,173,000
Other	$8,457,087
Acquisition	$0
Equipment	$2,317,000
Equipment Tax	$195,000
Artwork	$103,087
Agency Project Administration	$822,000
Other	$5,020,000

Other Details	
Number of C100s Included in Summary	1
Alternative Public Works Project	
State Construction Inflation Rate	
Base Month	
Project Administration by	
Project Admin Impact to GA that is NOT included in Project Total	$0

STATE OF WASHINGTON

AGENCY/INSTITUTION PROJECT COST ESTIMATE

FORM **C-100** Version 2.6.1 July 1, 2005

AGENCY:	Department of General Administration	**Analysis Date:**	10/18/2007
PROJECT NAME:	Alternate A - Phase 2 - Newhouse Replacement Building with Garage beneath	**Analysis By:**	NBBJ
PROJECT NUMBER:		**Contact Phone #:**	206-223-5555
LOCATION:			

STATISTICS:	Primary	Secondary
Gross Square Feet	50,000	73,000
Net Square Feet	35,000	47,450
Efficiency	70%	65%
Estimated Cost per S.F.	503	331
Building Type:	Office Buildings	Parking Structures and Garages
Is project a remodel?	No	No
A/E Fee Class	B	C
A/E Fee Percentage:	6.81%	5.71%

Contingency Rate:	10.00%
Management Reserve:	4.00%
Tax Rate:	8.40%
Art Requirement Applies:	Yes
Project Admin by GA:	Yes
Higher Ed. Institution:	No
Alternative Public Works Project:	Yes

Project Schedule	Start Date	End Date
1. Predesign (mm-yyyy):	Mar-2009	Nov-2009
2. Design (mm-yyyy):	Dec-2009	Jan-2011
3. Construction (mm-yyyy):	Jan-2012	Oct-2013
5. Construction Duration (in Months):	21	
State Construction Inflation Rate:	3.00%	
Base Month:	Mar-2006	

Project Cost Summary	
Primary MACC (escalated):	$25,145,000
Secondary MACC (escalated):	$24,197,000
Current Project Total:	$67,236,966
Escalated Project Total:	$81,348,087

Includes Formula Overrides:	No

	ITEM	BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
A.	**ACQUISITION COSTS**					
1	Purchase/Lease Cost					
2	Appraisal and Closing Costs					
3	Right-of-Way Costs					
4	Offsite Mitigation					
5						
INSERT	<--Double-Click Here to Insert a Row					
Total: Acquisition Costs		**$0**			1.0000	**$0**
B.	**CONSULTANT SERVICES**					
1	**Pre-Schematic Design Services**					
a.	Programming/Site Analysis	$485,489				
b.	Environmental Analysis					
c.	Predesign Study					
d.						
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Pre-Schematic Design Services	**$485,489**			1.1174	**$542,000**
2	**Construction Documents**					
a.	A/E Basic Design Services - Up to Bidding (69%)	$968,255		$968,255		
b.	A/E Basic Design Services - Secondary (69%)	$782,096		$782,096		
	SubTotal: Construction Documents	**$1,750,351**			1.1355	**$1,988,000**
3	**Extra Services**					
a.	Civil Design (Above Basic Services)	$70,000				
b.	Geotechnical Investigation	$40,000				
c.	Commissioning	$100,000				
d.	Site Survey	$40,000				
e.	Testing	$30,000				
f.	Energy Conservation Report	$20,000				
g.	Voice/Data Consultant	$30,000				
h.	VE Participation & Implementation	$40,000				
i.	Constructability Review Participation	$40,000				
j.	Environmental Mitigation Services (EIS)	$75,000				
k.	Landscape Consultant	$45,000				
l.	As-Built Archiving Fee $5,000 each project	$5,000				
m.	Document Reproduction use judgement -- around $2,000 for average project	$4,000				
n.	Advertising for bid and release of retainage $1,000 each project	$1,000				
o.	AV Consultant	$25,000				
p.	Art Coordination	$10,000				
q.	As-Built Drawings (final CADD only)	$20,000				
r.	Cost Estimating	$70,000				
s.	Elevator Consultant	$25,000				
t.	Exterior and Stone Consultant	$40,000				
u.	Fire and Life Safety Consultant	$15,000				
v.	GC/CM Interaction	$100,000				
w.	Graphics	$30,000				
x.	Interior Consultant	$150,000				
y.	Leed Documentation	$100,000				
z.	Lighting Consultant	$30,000				
aa.	LCCA	$30,000				
ab.	Mockups - Inspection	$15,000				
ac.	Models and Renderings	$15,000				
ad.	Environmental Mitigation Services (EIS) - Checklist Only	$20,000				

	ITEM	BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
ae.	Outreach	$20,000				
af.	Partnering	$20,000				
ag.	Security and Access Systems Consultant	$40,000				
ah.	Technology Consultant	$150,000				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Extra Services	**$1,465,000**			1.1355	**$1,663,000**
4	**Other Services**					
a.	Bid/Construction/Closeout - 31% of basic services	$435,013		$435,013		
b.	Bid/Construction/Closeout - Secondary	$351,376		$351,376		
c.	HVAC Balancing	$40,000				
d.	Commissioning and Training	$150,000				
e.	Historic Structures Report $30,000 each project when required	$30,000				
f.	Campus Conservator Review (about $5,000 on typical historic building)	$5,000				
g.	Constructibility Consultant (about $10,000 on a large project)	$10,000				
h.	Value Engineering Consultant (about $10,000 on a large project)	$10,000				
i.	Cost Check Consultant (about $10,000 on a large project)	$10,000				
j.	Schedule Check Consultant (about $10,000 on a large project)	$10,000				
k.	HazMat Consultant (judgement call)	$20,000				
l.	Fulltime Roof Inspector $12,000 each major roofing project	$12,000				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Other Services	**$1,083,389**			1.2196	**$1,321,000**
5	**Design Services Contingency** 10.00%	$478,423		$478,423		
a.	Change Order Fees (design related) 1% to 2% of basic services	$35,007				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Design Services Contingency	**$513,430**			1.2196	**$626,000**
Total: Consultant Services		**$5,297,659**				**$6,140,000**
C.	**CONSTRUCTION CONTRACTS**					
1	**Site Work**					
a.	G10 - Site Preparation					
b.	G20 - Site Improvements					
c.	G30 - Site Mechanical Utilities					
d.	G40 - Site Electrical Utilities					
e.	G60 - Other Site Construction					
f.	Included with Secondary Costs below					
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Site Work	**$0**			1.1885	**$0**
2	**Related Project Costs**					
a.	Off site Improvements					
b.	City Utilities Relocation					
c.	Parking Mitigation					
d.	Stormwater Retention/Detention					
e.	Wetland Mitigation					
f.	Included with Secondary Costs below					
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Related Project Costs	**$0**			1.1885	**$0**
3A	**Facility Construction - Primary**					
a.	A10 - Foundations					
b.	A20 - Basement Construction					
c.	B10 - Superstructure					
d.	B20 - Exterior Closure					
e.	B30 - Roofing					
f.	C10 - Interior Construction					
g.	C20 - Stairs					
h.	C30 - Interior Finishes					
i.	D10 - Conveying					
j.	D20 - Plumbing Systems					
k.	D30 - HVAC Systems					
l.	D40 - Fire Protection Systems					
m.	D50 - Electrical Systems					
n..	F10 - Special Construction					
o..	F20 - Selective Demolition					
p.	General Conditions					
q.	Phase 2 - Office Bldg - Oct, 2007 dollars per NBBJ Estimate	$17,151,336				
r.	Escalation adjustment from Oct, 2007 back to March, 2006 (basis month)	-$2,058,160				
s.	Extaordinary escalation from March, 2006 to Construction Mid-Point	$5,524,315				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Facility Construction - Primary	**$20,617,491**			1.2196	**$25,145,000**
	Maximum Allowable Construction Cost (MACC) - Primary	**$20,617,491**				**$25,145,000**
3B	**Facility Construction -Secondary (By Building System)**					
a.	A10 - Foundations					
b.	A20 - Basement Construction					
c.	B10 - Superstructure					
d.	B20 - Exterior Closure					
e.	B30 - Roofing					
f.	C10 - Interior Construction					
g.	C20 - Stairs					
h.	C30 - Interior Finishes					
i.	D10 - Conveying					
j.	D20 - Plumbing Systems					
k.	D30 - HVAC Systems					
l.	D40 - Fire Protection Systems					
m.	D50 - Electrical Systems					

	ITEM		BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
n..	F10 - Special Construction						
o..	F20 - Selective Demolition						
p.	General Conditions						
q.	Phase 2 - Parking Garage and Underground Corridor - Oct, 2007 Dollars per NBBJ		$16,504,474				
r.	Escalation adjustment from Oct, 2007 back to March, 2006 (basis month)		-$1,980,537				
s.	Extaordinary escalation from March, 2006 to Construction Mid-Point		$5,315,966				
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Facility Construction -Secondary (By Building System)		**$19,839,903**			1.2196	**$24,197,000**
	Maximum Allowable Construction Cost (MACC) - Secondary		**$19,839,903**				**$24,197,000**
4	**GC/CM Risk Contingency**						
a.			$619,000				
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: GC/CM Risk Contingency		**$619,000**			1.2196	**$755,000**
5	**GC/CM or Design Build Costs**						
a.	Preconstruction Services		$173,559				
b.	Fee		$1,744,271				
c.	Bid General Conditions		$1,831,484				
d.							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: GC/CM or Design Build Costs		**$3,749,314**			1.2196	**$4,573,000**
6	**Construction Contingencies**						
a.	Management Reserve	4.00%	$1,618,296		$1,618,296		
b.	Allowance for Change Orders	10.00%	$4,045,739		$4,045,739		
c.							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Construction Contingencies		**$5,664,035**			1.2196	**$6,908,000**
7	**Sales Tax**	8.40%	$4,241,138		$4,241,138		
a.							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Sales Tax		**$4,241,138**			1.2196	**$5,173,000**
Total: Construction Contracts			**$54,730,881**				**$66,751,000**
D.	**EQUIPMENT**						
1	E10 - Equipment						
2	E20 - Furnishings		$1,300,000				
3	F10 - Special Construction						
4	Telecom and Data Center		$600,000				
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Equipment		**$1,900,000**			1.2196	**$2,317,000**
99	**Sales Tax**	8.40%	$159,600		$159,600		
100							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Sales Tax		**$159,600**			1.2196	**$195,000**
Total: Equipment			**$2,059,600**				**$2,512,000**
E.	**ARTWORK**						
1	Project Artwork		$103,087		$103,087		
2	Higher Education Artwork		N/A		N/A		
3							
INSERT	<--Double-Click Here to Insert a Row						
Total: Artwork			**$103,087**			1.0000	**$103,087**
F.	**OTHER COSTS**						
1	Mitigation Costs						
2	Hazardous Material Remediation\Removal						
3	B&G Project Support .005 x MACC		$103,000				
4	In-Plant Services .0032 x MACC		$66,000				
5	Campus Standards Program .0016 x MACC		$33,000				
6	Owner Site Representative # months const x $9,000 x % time on the job		$94,500				
7	Owner Project Manager #months design & const x $12,400 x % time on the job		$114,576				
8	Condition Assessment $30,000 each project where applicable		$0				
9	City Building Permit MACC/1000 x 6		$123,705				
10	City Plan Review Bldg Permit Fee x 0.65		$80,408				
11	Mockups		$100,000				
12	Project Signage $1,000 each project		$1,000				
13	Moving Expenses		$70,000				
14	Historic Mitigation		$100,000				
15	General Owners Contingency		$3,337,550				
INSERT	<--Double-Click Here to Insert a Row						
Total: Other Costs			**$4,223,739**			1.1885	**$5,020,000**
G.	**PROJECT MANAGEMENT**						
1	Agency Project Management		$0		$0		
2	Agency Project Management (should average about 4.5%)		$722,000				
3	E&AS Management Fee (check w/ E&AS on projects over $20 million)						
4	Special Inspections & Testing		$100,000				
INSERT	<--Double-Click Here to Insert a Row						
Total: Project Management			**$822,000**			1.0000	**$822,000**
GRAND TOTAL			**$67,236,966**				**$81,348,087**

STATE OF WASHINGTON

AGENCY/INSTITUTION PROJECT COST SUMMARY

Agency	Department of General Administration
Project Name	Alternate A - Phase 3 - Partial Remodel of Phase 1 Office Building
Project Number	

Contact Information	
Analysis Date	
Analysis By	
Contact Phone Number	

Statistics	Primary	Secondary	Total
Gross Square Feet	31,500	0	31,500
Net Square Feet	25,200	0	25,200
Efficiency	80%	0%	80%
Escalated MACC Cost per Sq.Ft.	269	0	269
Building Type			
Is project a remodel?			
A/E Fee Class			
A/E Fee Percentage			

Schedule	Start Date	End Date
Predesign (mm-yyyy)		
Design (mm-yyyy)		
Construction (mm-yyyy)		
Construction Duration (months)	0	

Cost Summary	
Project Phase	**Escalated Cost**
Project Total	$15,848,059
Consultant Services	$1,670,000
Pre-Schematic Design Services	$0
A/E Basic Design Services	$573,000
A/E Extra Services/Reimbursables	$576,000
Other Services	$355,000
Design Services Contingency	$166,000
Construction	$11,525,000
MACC - Primary	$8,461,000
MACC - Secondary	$0
GC/CM Risk Contingency	$253,000
GC/CM or Design Build	$733,000
Contingencies	$1,185,000
Sales Tax	$893,000
Other	$2,653,059
Acquisition	$0
Equipment	$1,129,000
Equipment Tax	$95,000
Artwork	$33,059
Agency Project Administration	$241,000
Other	$1,155,000

Other Details	
Number of C100s Included in Summary	1
Alternative Public Works Project	
State Construction Inflation Rate	
Base Month	
Project Administration by	
Project Admin Impact to GA that is NOT included in Project Total	$0

STATE OF WASHINGTON

AGENCY/INSTITUTION PROJECT COST ESTIMATE

FORM **C-100** Version 2.6.1 July 1, 2005

AGENCY:	Department of General Administration	**Analysis Date:**	10/18/2007
PROJECT NAME:	Alternate A - Phase 3 - Partial remodel of Phase 1 Office Building	**Analysis By:**	NBBJ
PROJECT NUMBER:		**Contact Phone #:**	206-223-5555
LOCATION:			

STATISTICS:	Primary	Secondary
Gross Square Feet	31,500	
Net Square Feet	25,200	
Efficiency	80%	0%
Estimated Cost per S.F.	269	0
Building Type:	Office Buildings	
Is project a remodel?	Yes	No
A/E Fee Class	B	
A/E Fee Percentage:	10.11%	0.00%

Contingency Rate:	10.00%
Management Reserve:	4.00%
Tax Rate:	8.40%
Art Requirement Applies:	Yes
Project Admin by GA:	Yes
Higher Ed. Institution:	No
Alternative Public Works Project:	Yes

Project Schedule	Start Date	End Date
1. Predesign (mm-yyyy):	Jul-2012	Jan-2013
2. Design (mm-yyyy):	Jan-2013	Jan-2014
3. Construction (mm-yyyy):	Jan-2014	Jan-2015
5. Construction Duration (in Months):	12	
State Construction Inflation Rate:	3.00%	
Base Month:	Mar-2006	

Project Cost Summary	
Primary MACC (escalated):	$8,461,000
Secondary MACC (escalated):	$0
Current Project Total:	$12,483,654
Escalated Project Total:	$15,848,059

Includes Formula Overrides:	No

	ITEM	BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
A.	**ACQUISITION COSTS**					
1	Purchase/Lease Cost					
2	Appraisal and Closing Costs					
3	Right-of-Way Costs					
4	Offsite Mitigation					
5						
INSERT	<--Double-Click Here to Insert a Row					
Total: Acquisition Costs		**$0**			1.0000	**$0**
B.	**CONSULTANT SERVICES**					
1	**Pre-Schematic Design Services**					
a.	Programming/Site Analysis					
b.	Environmental Analysis					
c.	Predesign Study					
d.						
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Pre-Schematic Design Services	**$0**			1.2242	**$0**
2	**Construction Documents**					
a.	A/E Basic Design Services - Up to Bidding (69%)	$461,057		$461,057		
b.	A/E Basic Design Services - Secondary (69%)	$0		$0		
	SubTotal: Construction Documents	**$461,057**			1.2424	**$573,000**
3	**Extra Services**					
a.	Civil Design (Above Basic Services)	$0				
b.	Geotechnical Investigation	$0				
c.	Commissioning	$20,000				
d.	Site Survey	$0				
e.	Testing	$5,000				
f.	Energy Conservation Report	$0				
g.	Voice/Data Consultant	$20,000				
h.	VE Participation & Implementation	$0				
i.	Constructability Review Participation	$0				
j.	Environmental Mitigation Services (EIS)	$0				
k.	Landscape Consultant	$0				
l.	As-Built Archiving Fee $5,000 each project	$5,000				
m.	Document Reproduction use judgement -- around $2,000 for average project	$2,500				
n.	Advertising for bid and release of retainage $1,000 each project	$1,000				
o.	AV Consultant	$15,000				
p.	Art Coordination	$5,000				
q.	As-Built Drawings (final CADD only)	$10,000				
r.	Cost Estimating	$25,000				
s.	Elevator Consultant	$0				
t.	Exterior and Stone Consultant	$0				
u.	Fire and Life Safety Consultant	$5,000				
v.	GC/CM Interaction	$25,000				
w.	Graphics	$30,000				
x.	Interior Consultant	$150,000				
y.	Leed Documentation	$0				
z.	Lighting Consultant	$30,000				
aa.	LCCA	$0				
ab.	Mockups - Inspection	$0				
ac.	Models and Renderings	$0				
ad.	Environmental Mitigation Services (EIS) - Checklist Only	$0				

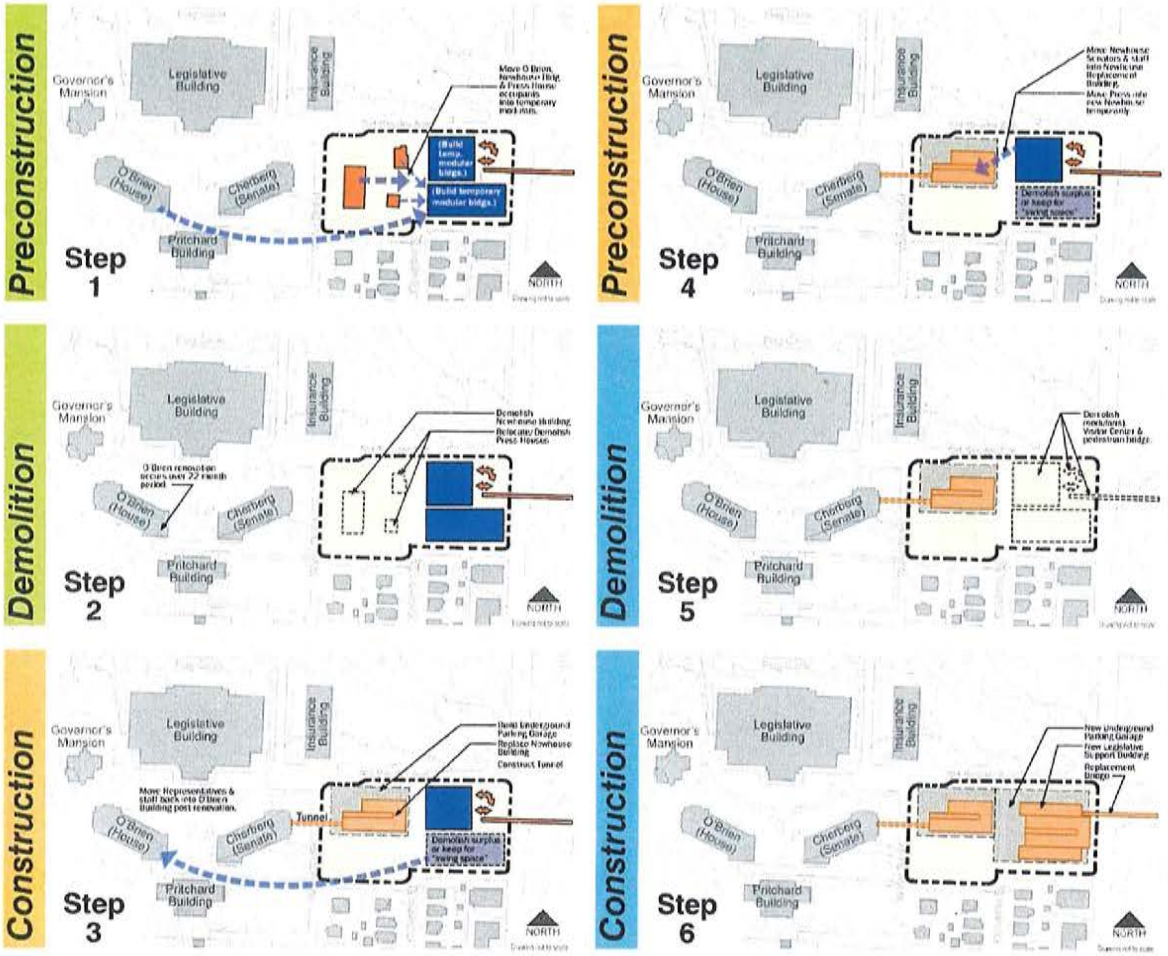
	ITEM	BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
ae.	Outreach	$10,000				
af.	Partnering	$10,000				
ag.	Security and Access Systems Consultant	$20,000				
ah.	Technology Consultant	$75,000				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Extra Services	**$463,500**			1.2424	**$576,000**
4	**Other Services**					
a.	Bid/Construction/Closeout - 31% of basic services	$207,141		$207,141		
b.	Bid/Construction/Closeout - Secondary	$0		$0		
c.	HVAC Balancing	$20,000				
d.	Commissioning and Training	$30,000				
e.	Historic Structures Report $30,000 each project when required	$0				
f.	Campus Conservator Review (about $5,000 on typical historic building)	$0				
g.	Constructibility Consultant (about $10,000 on a large project)	$0				
h.	Value Engineering Consultant (about $10,000 on a large project)	$0				
i.	Cost Check Consultant (about $10,000 on a large project)	$10,000				
j.	Schedule Check Consultant (about $10,000 on a large project)	$10,000				
k.	HazMat Consultant (judgement call)	$0				
l.	Fulltime Roof Inspector $12,000 each major roofing project	$0				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Other Services	**$277,141**			1.2797	**$355,000**
5	**Design Services Contingency** 10.00%	$120,170		$120,170		
a.	Change Order Fees (design related) 1% to 2% of basic services	$9,221				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Design Services Contingency	**$129,391**			1.2797	**$166,000**
Total: Consultant Services		**$1,331,089**				**$1,670,000**
C.	**CONSTRUCTION CONTRACTS**					
1	**Site Work**					
a.	G10 - Site Preparation					
b.	G20 - Site Improvements					
c.	G30 - Site Mechanical Utilities					
d.	G40 - Site Electrical Utilities					
e.	G60 - Other Site Construction					
f.	Included with Secondary Costs below					
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Site Work	**$0**			1.2609	**$0**
2	**Related Project Costs**					
a.	Off site improvements					
b.	City Utilities Relocation					
c.	Parking Mitigation					
d.	Stormwater Retention/Detention					
e.	Wetland Mitigation					
f.	Included with Secondary Costs below					
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Related Project Costs	**$0**			1.2609	**$0**
3A	**Facility Construction - Primary**					
a.	A10 - Foundations					
b.	A20 - Basement Construction					
c.	B10 - Superstructure					
d.	B20 - Exterior Closure					
e.	B30 - Roofing					
f.	C10 - Interior Construction					
g.	C20 - Stairs					
h.	C30 - Interior Finishes					
i.	D10 - Conveying					
j.	D20 - Plumbing Systems					
k.	D30 - HVAC Systems					
l.	D40 - Fire Protection Systems					
m.	D50 - Electrical Systems					
n..	F10 - Special Construction					
o..	F20 - Selective Demolition					
p.	General Conditions					
q.	Phase 3 Construction Cost in Oct, 2007 dollars per NBBJ Estimate	$5,124,526				
r.	Escalation adjustment from Oct, 2007 back to March, 2006 (basis month)	-$614,943				
s.	Extaordinary escalation from March, 2006 to Construction Mid-Point	$2,102,295				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Facility Construction - Primary	**$6,611,878**			1.2797	**$8,461,000**
	Maximum Allowable Construction Cost (MACC) - Primary	**$6,611,878**				**$8,461,000**
3B	**Facility Construction -Secondary (By Building System)**					
a.	A10 - Foundations					
b.	A20 - Basement Construction					
c.	B10 - Superstructure					
d.	B20 - Exterior Closure					
e.	B30 - Roofing					
f.	C10 - Interior Construction					
g.	C20 - Stairs					
h.	C30 - Interior Finishes					
i.	D10 - Conveying					
j.	D20 - Plumbing Systems					
k.	D30 - HVAC Systems					
l.	D40 - Fire Protection Systems					
m.	D50 - Electrical Systems					

	ITEM		BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
n..	F10 - Special Construction						
o..	F20 - Selective Demolition						
p.	General Conditions						
q.							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Facility Construction -Secondary (By Building System)		$0			1.2797	$0
	Maximum Allowable Construction Cost (MACC) - Secondary		$0				$0
4	**GC/CM Risk Contingency**						
a.			$198,000				
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: GC/CM Risk Contingency		$198,000			1.2797	$253,000
5	**GC/CM or Design Build Costs**						
a.	Preconstruction Services		$26,523				
b.	Fee		$266,552				
c.	Bid General Conditions		$279,880				
d.							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: GC/CM or Design Build Costs		$572,955			1.2797	$733,000
6	**Construction Contingencies**						
a.	Management Reserve	4.00%	$264,475		$264,475		
b.	Allowance for Change Orders	10.00%	$661,188		$661,188		
c.							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Construction Contingencies		$925,663			1.2797	$1,185,000
7	**Sales Tax**	8.40%	$697,914		$697,914		
a.							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Sales Tax		$697,914			1.2797	$893,000
	Total: Construction Contracts		$9,006,410				$11,525,000
D.	**EQUIPMENT**						
1	E10 - Equipment						
2	E20 - Furnishings		$882,000				
3	F10 - Special Construction						
4	Telecom and Data Center						
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Equipment		$882,000			1.2797	$1,129,000
99	**Sales Tax**	8.40%	$74,088		$74,088		
100							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Sales Tax		$74,088			1.2797	$95,000
	Total: Equipment		$956,088				$1,224,000
E.	**ARTWORK**						
1	Project Artwork		$33,059		$33,059		
2	Higher Education Artwork		N/A		N/A		
3							
INSERT	<--Double-Click Here to Insert a Row						
	Total: Artwork		$33,059			1.0000	$33,059
F.	**OTHER COSTS**						
1	Mitigation Costs						
2	Hazardous Material Remediation\Removal						
3	B&G Project Support .005 x MACC		$33,000				
4	In-Plant Services .0032 x MACC		$21,000				
5	Campus Standards Program .0016 x MACC		$11,000				
6	Owner Site Representative # months const x $9,000 x % time on the job		$27,000				
7	Owner Project Manager #months design & const x $12,400 x % time on the job		$86,800				
8	Condition Assessment $30,000 each project where applicable		$0				
9	City Building Permit MACC/1000 x 6		$39,671				
10	City Plan Review Bldg Permit Fee x 0.65		$25,786				
11	Mockups		$0				
12	Project Signage $1,000 each project		$1,000				
13	Moving Expenses		$94,500				
14	Historic Mitigation		$0				
15	General Owners Contingency		$576,250				
INSERT	<--Double-Click Here to Insert a Row						
	Total: Other Costs		$916,008			1.2609	$1,155,000
G.	**PROJECT MANAGEMENT**						
1	Agency Project Management		$0		$0		
2	Agency Project Management (should average about 4.5%)		$231,000				
3	E&AS Management Fee (check w/ E&AS on projects over $20 million)						
4	Special Inspections & Testing		$10,000				
INSERT	<--Double-Click Here to Insert a Row						
	Total: Project Management		$241,000			1.0000	$241,000
	GRAND TOTAL		$12,483,654				$15,848,059

NOTES

ITEM	BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST

Alternative C



Campus South Edge Sub-area Proposed Staging

ALTERNATIVE C - COLLOCATED REVERSED

		2008				2009				2010				2011				2012				2013				2014				2015				2016
		SESSION	2nd Q	3rd Q	4th Q	SESSION	2nd Q	3rd Q	4th Q	SESSION	2nd Q	3rd Q	4th Q	SESSION	2nd Q	3rd Q	4th Q	SESSION	2nd Q	3rd Q	4th Q	SESSION	2nd Q	3rd Q	4th Q	SESSION	2nd Q	3rd Q	4th Q	SESSION	2nd Q	3rd Q	4th Q	SESSION
Steps 1 - 2	Design and Approvals of Modular Units (6 Months)																																	
	Construct Phase I Modular Units + Surface Parking (7 Months)																																	
	Move O'Brien & Newhouse offices to Modular Units (1+ Month)																																	
	Renovate O'Brien Building (16 Months)																																	
	Demolish Newhouse Building																																	
	Move O'Brien offices back to O'Brien building (1 Month)																																	
Steps 3 - 4	Newhouse Replt. Bldg. Design & Approvals - 50,000 GSF + PARKING																																	
	Construct Newhouse Replacement Building																																	
	Move Senate Offices into Newhouse Replt. Bldg																																	
Steps 5 - 6	Legislative Support Bldg. Design & Approval - 150,000 GSF + Pkg.																																	
	Site Prep and removal of Modular Bldgs.																																	
	Construct Legislative Support Building																																	
	Legislative Support Building Move-in																																	

- **Demolition of Newhouse Building occurs August - September 2009.**
- **Newhouse Senators in temporary quarters for Sessions 2010 & 2011.**

STATE OF WASHINGTON

AGENCY/INSTITUTION PROJECT COST SUMMARY

Agency	Department of General Administration
Project Name	Alternate C - Phase 2 - Newhouse Replacemt Bldg w/ Garage beneat
Project Number	

Contact Information	
Analysis Date	
Analysis By	
Contact Phone Number	

Statistics	Primary	Secondary	Total
Gross Square Feet	50,000	73,000	123,000
Net Square Feet	35,000	47,450	82,450
Efficiency	70%	65%	67%
Escalated MACC Cost per Sq.Ft.	425	280	339
Building Type			
Is project a remodel?			
A/E Fee Class			
A/E Fee Percentage			

Schedule	Start Date	End Date
Predesign (mm-yyyy)		
Design (mm-yyyy)		
Construction (mm-yyyy)		
Construction Duration (months)	0	

Cost Summary	
Project Phase	**Escalated Cost**
Project Total	$69,767,203
Consultant Services	$5,561,000
Pre-Schematic Design Services	$474,000
A/E Basic Design Services	$1,764,000
A/E Extra Services/Reimbursables	$1,605,000
Other Services	$1,164,000
Design Services Contingency	$554,000
Construction	$56,905,000
MACC - Primary	$21,269,000
MACC - Secondary	$20,467,000
GC/CM Risk Contingency	$638,000
GC/CM or Design Build	$4,278,000
Contingencies	$5,843,000
Sales Tax	$4,410,000
Other	$7,301,203
Acquisition	$0
Equipment	$2,168,000
Equipment Tax	$182,000
Artwork	$93,203
Agency Project Administration	$752,000
Other	$4,106,000

Other Details	
Number of C100s Included in Summary	1
Alternative Public Works Project	
State Construction Inflation Rate	
Base Month	
Project Administration by	
Project Admin Impact to GA that is NOT included in Project Total	$0

STATE OF WASHINGTON

AGENCY/INSTITUTION PROJECT COST ESTIMATE

FORM **C-100** Version 2.6.1 July 1, 2005

AGENCY:	Department of General Administration	**Analysis Date:**	10/18/2007
PROJECT NAME:	Alternate C - Phase 2 - Newhouse Replacement Building with Garage beneath	**Analysis By:**	NBBJ
PROJECT NUMBER:		**Contact Phone #:**	206-223-5555
LOCATION:			

STATISTICS:	Primary	Secondary
Gross Square Feet	50,000	73,000
Net Square Feet	35,000	47,450
Efficiency	70%	65%
Estimated Cost per S.F.	425	280
Building Type:	Office Buildings	Parking Structures and Garages
Is project a remodel?	No	No
A/E Fee Class	B	C
A/E Fee Percentage:	6.92%	5.81%

Contingency Rate:	10.00%
Management Reserve:	4.00%
Tax Rate:	8.40%
Art Requirement Applies:	Yes
Project Admin by GA:	Yes
Higher Ed. Institution:	No
Alternative Public Works Project:	Yes

Project Schedule	Start Date	End Date
1. Predesign (mm-yyyy):	Jan-2008	Sep-2008
2. Design (mm-yyyy):	Oct-2008	Oct-2009
3. Construction (mm-yyyy):	Oct-2009	Jul-2011
5. Construction Duration (in Months):	21	
State Construction Inflation Rate:	3.00%	
Base Month:	Mar-2006	

Project Cost Summary	
Primary MACC (escalated):	$21,269,000
Secondary MACC (escalated):	$20,467,000
Current Project Total:	$61,489,372
Escalated Project Total:	$69,767,203

Includes Formula Overrides:	No

	ITEM	BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
A.	**ACQUISITION COSTS**					
1	Purchase/Lease Cost					
2	Appraisal and Closing Costs					
3.	Right-of-Way Costs					
4	Offsite Mitigation					
5						
INSERT	<--Double-Click Here to Insert a Row					
Total: Acquisition Costs		**$0**			1.0000	**$0**
B.	**CONSULTANT SERVICES**					
1	**Pre-Schematic Design Services**					
	a. Programming/Site Analysis	$438,937				
	b. Environmental Analysis					
	c. Predesign Study					
	d.					
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Pre-Schematic Design Services	**$438,937**			1.0795	**$474,000**
2	**Construction Documents**					
	a. A/E Basic Design Services - Up to Bidding (69%)	$890,551		$890,551		
	b. A/E Basic Design Services - Secondary (69%)	$719,388		$719,388		
	SubTotal: Construction Documents	**$1,609,939**			1.0956	**$1,764,000**
3	**Extra Services**					
	a. Civil Design (Above Basic Services)	$70,000				
	b. Geotechnical Investigation	$40,000				
	c. Commissioning	$100,000				
	d. Site Survey	$40,000				
	e. Testing	$30,000				
	f. Energy Conservation Report	$20,000				
	g. Voice/Data Consultant	$30,000				
	h. VE Participation & Implementation	$40,000				
	i. Constructability Review Participation	$40,000				
	j. Environmental Mitigation Services (EIS)	$75,000				
	k. Landscape Consultant	$45,000				
	l. As-Built Archiving Fee $5,000 each project	$5,000				
	m. Document Reproduction use judgement – around $2,000 for average project	$4,000				
	n. Advertising for bid and release of retainage $1,000 each project	$1,000				
	o. AV Consultant	$25,000				
	p. Art Coordination	$10,000				
	q. As-Built Drawings (final CADD only)	$20,000				
	r. Cost Estimating	$70,000				
	s. Elevator Consultant	$25,000				
	t. Exterior and Stone Consultant	$40,000				
	u. Fire and Life Safety Consultant	$15,000				
	v. GC/CM Interaction	$100,000				
	w. Graphics	$30,000				
	x. Interior Consultant	$150,000				
	y. Leed Documentation	$100,000				
	z. Lighting Consultant	$30,000				
	aa. LCCA	$30,000				
	ab. Mockups - Inspection	$15,000				
	ac. Models and Renderings	$15,000				
	ad. Environmental Mitigation Services (EIS) - Checklist Only	$20,000				

	ITEM	BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
ae.	Outreach	$20,000				
af.	Partnering	$20,000				
ag.	Security and Access Systems Consultant	$40,000				
ah.	Technology Consultant	$150,000				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Extra Services	**$1,465,000**			1.0956	**$1,605,000**
4	**Other Services**					
a.	Bid/Construction/Closeout - 31% of basic services	$400,103		$400,103		
b.	Bid/Construction/Closeout - Secondary	$323,203		$323,203		
c.	HVAC Balancing	$40,000				
d.	Commissioning and Training	$150,000				
e.	Historic Structures Report $30,000 each project when required	$30,000				
f.	Campus Conservator Review (about $5,000 on typical historic building)	$5,000				
g.	Constructibility Consultant (about $10,000 on a large project)	$10,000				
h.	Value Engineering Consultant (about $10,000 on a large project)	$10,000				
i.	Cost Check Consultant (about $10,000 on a large project)	$10,000				
j.	Schedule Check Consultant (about $10,000 on a large project)	$10,000				
k.	HazMat Consultant (judgement call)	$20,000				
l.	Fulltime Roof Inspector $12,000 each major roofing project	$12,000				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Other Services	**$1,020,306**			1.1410	**$1,164,000**
5	**Design Services Contingency** 10.00%	$453,418		$453,418		
a.	Change Order Fees (design related) 1% to 2% of basic services	$32,199				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Design Services Contingency	**$485,617**			1.1410	**$554,000**
Total: Consultant Services		**$5,019,798**				**$5,561,000**
C.	**CONSTRUCTION CONTRACTS**					
1	**Site Work**					
a.	G10 - Site Preparation					
b.	G20 - Site Improvements					
c.	G30 - Site Mechanical Utilities					
d.	G40 - Site Electrical Utilities					
e.	G60 - Other Site Construction					
f.	Included with Secondary Costs below					
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Site Work	**$0**			1.1119	**$0**
2	**Related Project Costs**					
a.	Off site improvements					
b.	City Utilities Relocation					
c.	Parking Mitigation					
d.	Stormwater Retention/Detention					
e.	Wetland Mitigation					
f.	Included with Secondary Costs below					
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Related Project Costs	**$0**			1.1119	**$0**
3A	**Facility Construction - Primary**					
a.	A10 - Foundations					
b.	A20 - Basement Construction					
c.	B10 - Superstructure					
d.	B20 - Exterior Closure					
e.	B30 - Roofing					
f.	C10 - Interior Construction					
g.	C20 - Stairs					
h.	C30 - Interior Finishes					
i.	D10 - Conveying					
j.	D20 - Plumbing Systems					
k.	D30 - HVAC Systems					
l.	D40 - Fire Protection Systems					
m.	D50 - Electrical Systems					
n..	F10 - Special Construction					
o..	F20 - Selective Demolition					
p.	General Conditions					
q.	Phase 2 - Office Bldg - Oct, 2007 dollars per NBBJ Estimate	$17,151,336				
r.	Escalation adjustment from Oct, 2007 back to March, 2006 (basis month)	-$2,058,160				
s.	Extaordinary escalation from March, 2006 to Construction Mid-Point	$3,547,363				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Facility Construction - Primary	**$18,640,539**			1.1410	**$21,269,000**
	Maximum Allowable Construction Cost (MACC) - Primary	**$18,640,539**				**$21,269,000**
3B	**Facility Construction -Secondary (By Building System)**					
a.	A10 - Foundations					
b.	A20 - Basement Construction					
c.	B10 - Superstructure					
d.	B20 - Exterior Closure					
e.	B30 - Roofing					
f.	C10 - Interior Construction					
g.	C20 - Stairs					
h.	C30 - Interior Finishes					
i.	D10 - Conveying					
j.	D20 - Plumbing Systems					
k.	D30 - HVAC Systems					
l.	D40 - Fire Protection Systems					
m.	D50 - Electrical Systems					

	ITEM		BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
n..	F10 - Special Construction						
o..	F20 - Selective Demolition						
p.	General Conditions						
q.	Phase 2 - Parking Garage and Underground Corridor - Oct, 2007 Dollars per NBBJ		$16,504,474				
r.	Escalation adjustment from Oct, 2007 back to March, 2006 (basis month)		-$1,980,537				
s.	Extaordinary escalation from March, 2006 to Construction Mid-Point		$3,413,575				
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Facility Construction -Secondary (By Building System)		**$17,937,512**			1.1410	**$20,467,000**
	Maximum Allowable Construction Cost (MACC) - Secondary		**$17,937,512**				**$20,467,000**
4	**GC/CM Risk Contingency**						
a.			$559,000				
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: GC/CM Risk Contingency		**$559,000**			1.1410	**$638,000**
5	**GC/CM or Design Build Costs**						
a.	Preconstruction Services		$173,559				
b.	Fee		$1,744,271				
c.	Bid General Conditions		$1,831,484				
d.							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: GC/CM or Design Build Costs		**$3,749,314**			1.1410	**$4,278,000**
6	**Construction Contingencies**						
a.	Management Reserve	4.00%	$1,463,122		$1,463,122		
b.	Allowance for Change Orders	10.00%	$3,657,805		$3,657,805		
c.							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Construction Contingencies		**$5,120,927**			1.1410	**$5,843,000**
7	**Sales Tax**	8.40%	$3,864,612		$3,864,612		
a.							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Sales Tax		**$3,864,612**			1.1410	**$4,410,000**
	Total: Construction Contracts		**$49,871,904**				**$56,905,000**
D.	**EQUIPMENT**						
1	E10 - Equipment						
2	E20 - Furnishings		$1,300,000				
3	F10 - Special Construction						
4	Telecom and Data Center		$600,000				
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Equipment		**$1,900,000**			1.1410	**$2,168,000**
99	**Sales Tax**	8.40%	$159,600		$159,600		
100							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Sales Tax		**$159,600**			1.1410	**$182,000**
	Total: Equipment		**$2,059,600**				**$2,350,000**
E.	**ARTWORK**						
1	Project Artwork		$93,203		$93,203		
2	Higher Education Artwork		N/A		N/A		
3							
INSERT	<--Double-Click Here to Insert a Row						
	Total: Artwork		**$93,203**			1.0000	**$93,203**
F.	**OTHER COSTS**						
1	Mitigation Costs						
2	Hazardous Material Remediation\Removal						
3	B&G Project Support .005 x MACC		$93,000				
4	In-Plant Services .0032 x MACC		$60,000				
5	Campus Standards Program .0016 x MACC		$30,000				
6	Owner Site Representative # months const x $9,000 x % time on the job		$94,500				
7	Owner Project Manager #months design & const x $12,400 x % time on the job		$114,576				
8	Condition Assessment $30,000 each project where applicable		$0				
9	City Building Permit MACC/1000 x 6		$111,843				
10	City Plan Review Bldg Permit Fee x 0.65		$72,698				
11	Mockups		$100,000				
12	Project Signage $1,000 each project		$1,000				
13	Moving Expenses		$70,000				
14	Historic Mitigation		$100,000				
15	General Owners Contingency		$2,845,250				
INSERT	<--Double-Click Here to Insert a Row						
	Total: Other Costs		**$3,692,867**			1.1119	**$4,106,000**
G.	**PROJECT MANAGEMENT**						
1	Agency Project Management		$0		$0		
2	Agency Project Management (should average about 4.5%)		$652,000				
3	E&AS Management Fee (check w/ E&AS on projects over $20 million)						
4	Special Inspections & Testing		$100,000				
INSERT	<--Double-Click Here to Insert a Row						
	Total: Project Management		**$752,000**			1.0000	**$752,000**
	GRAND TOTAL		**$61,489,372**				**$69,767,203**

ITEM	BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
NOTES					

ITEM	BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
NOTES					

STATE OF WASHINGTON

AGENCY/INSTITUTION PROJECT COST SUMMARY

Agency	Department of General Administration
Project Name	Alternate C - Phase 3 - Legislative Support Bldg w/ Garage beneath
Project Number	

Contact Information	
Analysis Date	
Analysis By	
Contact Phone Number	

Statistics	Primary	Secondary	Total
Gross Square Feet	150,000	262,400	412,400
Net Square Feet	105,000	170,560	275,560
Efficiency	70%	65%	67%
Escalated MACC Cost per Sq.Ft.	447	227	307
Building Type			
Is project a remodel?			
A/E Fee Class			
A/E Fee Percentage			

Schedule	Start Date	End Date
Predesign (mm-yyyy)		
Design (mm-yyyy)		
Construction (mm-yyyy)		
Construction Duration (months)	0	

Cost Summary	
Project Phase	**Escalated Cost**
Project Total	$205,465,000
Consultant Services	$11,899,000
Pre-Schematic Design Services	$1,186,000
A/E Basic Design Services	$4,380,000
A/E Extra Services/Reimbursables	$2,337,000
Other Services	$2,794,000
Design Services Contingency	$1,202,000
Construction	$173,245,000
MACC - Primary	$66,981,000
MACC - Secondary	$59,507,000
GC/CM Risk Contingency	$3,794,000
GC/CM or Design Build	$11,830,000
Contingencies	$17,708,000
Sales Tax	$13,425,000
Other	$20,321,000
Acquisition	$0
Equipment	$6,151,000
Equipment Tax	$517,000
Artwork	$278,000
Agency Project Administration	$1,033,000
Other	$12,342,000

Other Details	
Number of C100s Included in Summary	1
Alternative Public Works Project	
State Construction Inflation Rate	
Base Month	
Project Administration by	
Project Admin Impact to GA that is NOT included in Project Total	$0

STATE OF WASHINGTON

AGENCY/INSTITUTION PROJECT COST ESTIMATE

FORM **C-100** Version 2.6.1 July 1, 2005

AGENCY:	Department of General Administration	**Analysis Date:**	10/18/2007
PROJECT NAME:	Alternate C - Phase 3 - Legislative Support Building with Garage beneath	**Analysis By:**	NBBJ
PROJECT NUMBER:		**Contact Phone #:**	206-223-5555
LOCATION:			

STATISTICS:	Primary	Secondary
Gross Square Feet	150,000	262,400
Net Square Feet	105,000	170,560
Efficiency	70%	65%
Estimated Cost per S.F.	447	227
Building Type:	Office Buildings	Parking Structures and Garages
Is project a remodel?	No	No
A/E Fee Class	B	C
A/E Fee Percentage:	5.65%	4.82%

Contingency Rate:	10.00%
Management Reserve:	4.00%
Tax Rate:	8.40%
Art Requirement Applies:	Yes
Project Admin by GA:	Yes
Higher Ed. Institution:	No
Alternative Public Works Project:	Yes

Project Schedule	Start Date	End Date
1. Predesign (mm-yyyy):	Oct-2009	Apr-2010
2. Design (mm-yyyy):	May-2010	Jul-2011
3. Construction (mm-yyyy):	Jul-2011	Jul-2013
5. Construction Duration (in Months):	24	
State Construction Inflation Rate:	3.00%	
Base Month:	Mar-2006	

Project Cost Summary	
Primary MACC (escalated):	$66,981,000
Secondary MACC (escalated):	$59,507,000
Current Project Total:	$171,224,588
Escalated Project Total:	$205,465,000

Includes Formula Overrides:	No

	ITEM	BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
A.	**ACQUISITION COSTS**					
1	Purchase/Lease Cost					
2	Appraisal and Closing Costs					
3	Right-of-Way Costs					
4	Offsite Mitigation					
5						
INSERT	<--Double-Click Here to Insert a Row					
Total: Acquisition Costs		**$0**			1.0000	**$0**
B.	**CONSULTANT SERVICES**					
1	**Pre-Schematic Design Services**					
a.	Programming/Site Analysis	$1,048,772				
b.	Environmental Analysis					
c.	Predesign Study					
d.						
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Pre-Schematic Design Services	**$1,048,772**			1.1312	**$1,186,000**
2	**Construction Documents**					
a.	A/E Basic Design Services - Up to Bidding (69%)	$2,163,888		$2,163,888		
b.	A/E Basic Design Services - Secondary (69%)	$1,641,692		$1,641,692		
	SubTotal: Construction Documents	**$3,805,580**			1.1509	**$4,380,000**
3	**Extra Services**					
a.	Civil Design (Above Basic Services)	$100,000				
b.	Geotechnical Investigation	$50,000				
c.	Commissioning	$150,000				
d.	Site Survey	$40,000				
e.	Testing	$60,000				
f.	Energy Conservation Report	$30,000				
g.	Voice/Data Consultant	$40,000				
h.	VE Participation & Implementation	$50,000				
i.	Constructability Review Participation	$50,000				
j.	Environmental Mitigation Services (EIS)	$100,000				
k.	Landscape Consultant	$60,000				
l.	As-Built Archiving Fee $5,000 each project	$5,000				
m.	Document Reproduction use judgement -- around $2,000 for average project	$5,000				
n.	Advertising for bid and release of retainage $1,000 each project	$1,000				
o.	AV Consultant	$35,000				
p.	Art Coordination	$20,000				
q.	As-Built Drawings (final CADD only)	$25,000				
r.	Cost Estimating	$90,000				
s.	Elevator Consultant	$35,000				
t.	Exterior and Stone Consultant	$60,000				
u.	Fire and Life Safety Consultant	$20,000				
v.	GC/CM Interaction	$150,000				
w.	Graphics	$40,000				
x.	Interior Consultant	$250,000				
y.	Leed Documentation	$125,000				
z.	Lighting Consultant	$40,000				
aa.	LCCA	$40,000				
ab.	Mockups - Inspection	$20,000				
ac.	Models and Renderings	$15,000				
ad.	Environmental Mitigation Services (EIS) - Checklist Only	$30,000				

	ITEM	BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
ae.	Outreach	$25,000				
af.	Partnering	$20,000				
ag.	Security and Access Systems Consultant	$50,000				
ah.	Technology Consultant	$200,000				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Extra Services	**$2,031,000**			1.1509	**$2,337,000**
4	**Other Services**					
a.	Bid/Construction/Closeout - 31% of basic services	$972,181		$972,181		
b.	Bid/Construction/Closeout - Secondary	$737,572		$737,572		
c.	HVAC Balancing	$50,000				
d.	Commissioning and Training	$450,000				
e.	Historic Structures Report $30,000 each project when required	$30,000				
f.	Campus Conservator Review (about $5,000 on typical historic building)	$5,000				
g.	Constructibility Consultant (about $10,000 on a large project)	$10,000				
h.	Value Engineering Consultant (about $10,000 on a large project)	$10,000				
i.	Cost Check Consultant (about $10,000 on a large project)	$10,000				
j.	Schedule Check Consultant (about $10,000 on a large project)	$10,000				
k.	HazMat Consultant (judgement call)	$20,000				
l.	Fulltime Roof Inspector $12,000 each major roofing project	$12,000				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Other Services	**$2,316,753**			1.2061	**$2,794,000**
5	**Design Services Contingency** 10.00%	$920,210		$920,210		
a.	Change Order Fees (design related) 1% to 2% of basic services	$76,112				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Design Services Contingency	**$996,322**			1.2061	**$1,202,000**
Total: Consultant Services		**$10,198,427**				**$11,899,000**
C.	**CONSTRUCTION CONTRACTS**					
1	**Site Work**					
a.	G10 - Site Preparation					
b.	G20 - Site Improvements					
c.	G30 - Site Mechanical Utilities					
d.	G40 - Site Electrical Utilities					
e.	G60 - Other Site Construction					
f.	Included with Secondary Costs below					
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Site Work	**$0**			1.1709	**$0**
2	**Related Project Costs**					
a.	Off site improvements					
b.	City Utilities Relocation					
c.	Parking Mitigation					
d.	Stormwater Retention/Detention					
e.	Wetland Mitigation					
f.	Included with Secondary Costs below					
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Related Project Costs	**$0**			1.1709	**$0**
3A	**Facility Construction - Primary**					
a.	A10 - Foundations					
b.	A20 - Basement Construction					
c.	B10 - Superstructure					
d.	B20 - Exterior Closure					
e.	B30 - Roofing					
f.	C10 - Interior Construction					
g.	C20 - Stairs					
h.	C30 - Interior Finishes					
i.	D10 - Conveying					
j.	D20 - Plumbing Systems					
k.	D30 - HVAC Systems					
l.	D40 - Fire Protection Systems					
m.	D50 - Electrical Systems					
n..	F10 - Special Construction					
o..	F20 - Selective Demolition					
p.	General Conditions					
q.	Phase 1 - Office Bldg - Oct, 2007 dollars per NBBJ Estimate	$46,623,864				
r.	Escalation adjustment from Oct, 2007 back to March, 2006 (basis month)	-$5,284,038				
s.	Extaordinary escalation from March, 2006 to Construction Mid-Point	$14,197,090				
INSERT	<--Double-Click Here to Insert a Row					
	SubTotal: Facility Construction - Primary	**$55,536,916**			1.2061	**$66,981,000**
	Maximum Allowable Construction Cost (MACC) - Primary	**$55,536,916**				**$66,981,000**
3B	**Facility Construction -Secondary (By Building System)**					
a.	A10 - Foundations					
b.	A20 - Basement Construction					
c.	B10 - Superstructure					
d.	B20 - Exterior Closure					
e.	B30 - Roofing					
f.	C10 - Interior Construction					
g.	C20 - Stairs					
h.	C30 - Interior Finishes					
i.	D10 - Conveying					
j.	D20 - Plumbing Systems					
k.	D30 - HVAC Systems					
l.	D40 - Fire Protection Systems					
m.	D50 - Electrical Systems					

	ITEM		BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
n..	F10 - Special Construction						
o..	F20 - Selective Demolition						
p.	General Conditions						
q.	Phase 1 - Parking Garage and Pedestrian Bridge - Oct, 2007 Dollars per NBBJ		$41,421,715				
r.	Escalation adjustment from Oct, 2007 back to March, 2006 (basis month)		-$4,694,461				
s.	Extaordinary escalation from March, 2006 to Construction Mid-Point		$12,613,021				
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Facility Construction -Secondary (By Building System)		**$49,340,275**			1.2061	**$59,507,000**
	Maximum Allowable Construction Cost (MACC) - Secondary		**$49,340,275**				**$59,507,000**
4	**GC/CM Risk Contingency**						
a.			$3,146,000				
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: GC/CM Risk Contingency		**$3,146,000**			1.2061	**$3,794,000**
5	**GC/CM or Design Build Costs**						
a.	Preconstruction Services		$454,075				
b.	Fee		$4,563,458				
c.	Bid General Conditions		$4,791,630				
d.							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: GC/CM or Design Build Costs		**$9,809,163**			1.2061	**$11,830,000**
6	**Construction Contingencies**						
a.	Management Reserve	4.00%	$4,195,088		$4,195,088		
b.	Allowance for Change Orders	10.00%	$10,487,719		$10,487,719		
c.							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Construction Contingencies		**$14,682,807**			1.2061	**$17,708,000**
7	**Sales Tax**	8.40%	$11,131,274		$11,131,274		
a.							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Sales Tax		**$11,131,274**			1.2061	**$13,425,000**
	Total: Construction Contracts		**$143,646,435**				**$173,245,000**
D.	**EQUIPMENT**						
1	E10 - Equipment						
2	E20 - Furnishings		$3,600,000				
3	F10 - Special Construction						
4	Telecom and Data Center		$1,500,000				
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Equipment		**$5,100,000**			1.2061	**$6,151,000**
99	**Sales Tax**	8.40%	$428,400		$428,400		
100							
INSERT	<--Double-Click Here to Insert a Row						
	SubTotal: Sales Tax		**$428,400**			1.2061	**$517,000**
	Total: Equipment		**$5,528,400**				**$6,668,000**
E.	**ARTWORK**						
1	Project Artwork		$277,685		$277,685		
2	Higher Education Artwork		N/A		N/A		
3							
INSERT	<--Double-Click Here to Insert a Row						
	Total: Artwork		**$277,685**			1.0000	**$278,000**
F.	**OTHER COSTS**						
1	Mitigation Costs						
2	Hazardous Material Remediation\Removal						
3	B&G Project Support .005 x MACC		$278,000				
4	In-Plant Services .0032 x MACC		$178,000				
5	Campus Standards Program .0016 x MACC		$89,000				
6	Owner Site Representative # months const x $9,000 x % time on the job		$108,000				
7	Owner Project Manager #months design & const x $12,400 x % time on the job		$114,576				
8	Condition Assessment $30,000 each project where applicable		$0				
9	City Building Permit MACC/1000 x 6		$333,221				
10	City Plan Review Bldg Permit Fee x 0.65		$216,594				
11	Mockups		$100,000				
12	Project Signage $1,000 each project		$1,000				
13	Moving Expenses		$210,000				
14	Historic Mitigation		$250,000				
15	General Owners Contingency		$8,662,250				
INSERT	<--Double-Click Here to Insert a Row						
	Total: Other Costs		**$10,540,641**			1.1709	**$12,342,000**
G.	**PROJECT MANAGEMENT**						
1	Agency Project Management		$0		$0		
2	Agency Project Management (should average about 4.5%)		$833,000				
3	E&AS Management Fee (check w/ E&AS on projects over $20 million)						
4	Special Inspections & Testing		$200,000				
INSERT	<--Double-Click Here to Insert a Row						
	Total: Project Management		**$1,033,000**			1.0000	**$1,033,000**
	GRAND TOTAL		**$171,224,588**				**$205,465,000**

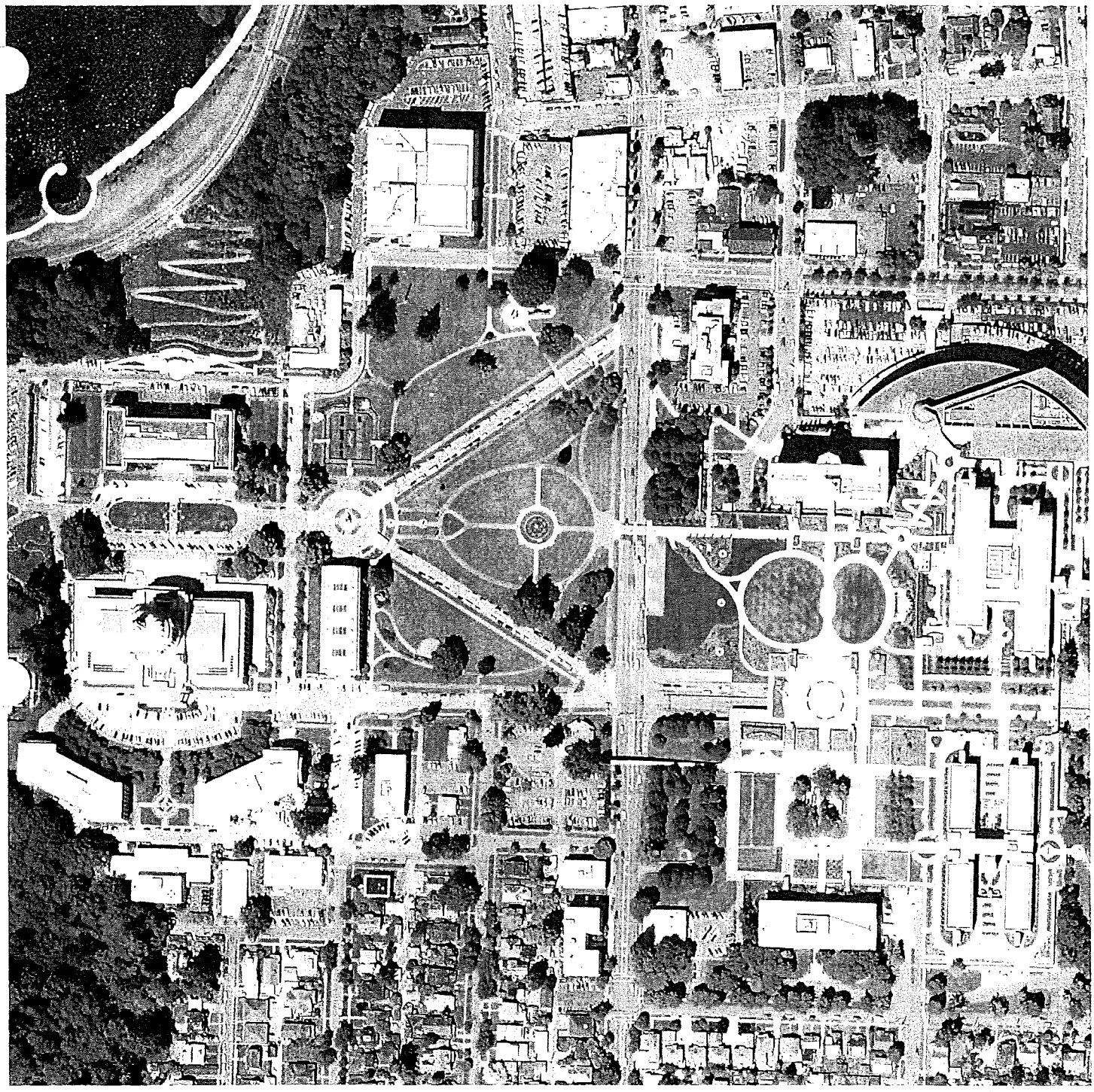
ITEM	BASE MONTH AMOUNT	FORMULA OVERRIDE	STANDARD FORMULA	ESCALATION FACTOR	ESCALATED COST
NOTES					

C. Civil Engineering Technical Memo

Shea, Carr & Jewell

C. Civil Engineering Technical Memo

Shea, Carr & Jewell



Utility Assessment

Capitol Campus South Edge Sub Campus Plan

SHEA CARR JEWELL Inc.
2102 CARRIAGE DRIVE,
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WWW.SHEACARRJEWELL.COM

SCJ Project #870-01
September 2007

SHEA CARR JEWELL Inc.

TECHNICAL MEMORANDUM

TO:	Larry Goetz, AIA NBBJ
FROM:	Amy M. Head, P.E. Project Manager
DATE:	September 26, 2007
REGARDING:	South Edge Sub Campus Plan Existing Utilities Location Summary and Code Analysis SC&J Project No. 870-01
ENCLOSURES:	Utility location maps Manhole Data from City of Olympia Exhibit of West Campus Main Storm Trunkline Thurston County GeoData Topography Map Capitol Campus Infrastructure Study

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The purpose of this memorandum is to summarize the existing availability of water, sewer, and storm systems in the area of opportunity site #6 and to determine the capacity of these systems to serve the South Edge Sub Campus Plan. In addition, construction requirements for future utilities have been provided and have been based on a code analysis of the applicable regulatory codes.

The size and location of available utility systems was determined from researching the records of both the City of Olympia and the State of Washington General Administration. Information contained herein is based on the City of Olympia utility system maps, utility mapping that was developed for the Capitol Campus Infrastructure Study performed in 2000 and 2001, and the West Capitol Campus Sanitary Sewer System and Storm Drain System Evaluation performed in 2003.

Water System Infrastructure

Existing Conditions:

Water is available to the site along the north side of the site in 14th Ave., along the east side of the site in Capital Way, and within the portion of Columbia St. that bisects the site. There are 2 water main lines in 14th Ave. There is a 10 inch ductile iron main located on the north side of the street that extends from Capitol Way to Water Street. In addition, there is a 6 inch ductile iron main on the south side of the street that also extends from Capitol Way to Water Street. According to the City of Olympia system maps, both of these water lines are privately owned by the State of Washington.

The water line in Capitol Way is a 10 inch cast iron main and is on the east side of the street. The water line in Columbia Street is a 6 inch cast iron main located on the west side of the street. Both of these water mains are owned by the City of Olympia according to the City of Olympia system maps.

Fire hydrants are currently located at the northwest and northeast corners of the site on the north side of 14th Ave. There are additional hydrants in the vicinity of the project area across Capitol Way at the southeast corner of the site and in Water St. at the southwest corner of the site. Depending on the final building layout on the site, additional hydrants may be required to provide adequate fire coverage of the proposed structures.

Engineering/Code Requirements:

Water design and layout is regulated by the City of Olympia Engineering Design and Development Standards Chapter 6. Please note that the City is currently in the process of revising the code. All recommendations are based on the current code unless a future requirement is known.

According to the Capitol Campus Infrastructure Study Amendment #1 December 4, 2000 prepared by Wieland and Lindgren, the ductile iron pipes owned by the State were installed in the late 1980's and appear to be in good condition. Further, water pressure was found to be generally good and is maintained at a constant 85-90 pounds per square inch (psi).

Given the size of the project and the City of Olympia's policy for providing water looping, it is likely that a 10 inch water main will be required to extend from the existing 10 inch main on Capitol Way along the southern limits of the site along 15th Ave. to the western limits of the project adjacent to Water Street and north to the 10 inch main in 14th Ave. If required, the connection to the existing water main in Capitol Way will require boring to limit traffic disruption on this busy street. All new water mains will be constructed of ductile iron.

All proposed domestic and fire water connections will need to be made to existing or proposed 10 inch mains. The existing 6 inch main would not have enough capacity.

If, as a part of this project, Columbia St. is closed, the existing 6 inch cast iron main within the right-of-way will likely require removal. The remaining 6 inch main within Columbia Street south of the project area could then be connected to the proposed 10 inch main along 15th Ave., if required.

Per the City of Olympia requirements, all new water mains will require dedication to the City of Olympia if not located within City right-of-way.

Sewer System Infrastructure

Existing Conditions:

Sewer is available to the project area along the north side of the site in 14th Ave., along the east edge of the site in Capital Way, along the south side of the site in 15th Ave., and within the portion of Columbia St. that bisects the site. The sewer main within 14th Ave. is a 10 inch vitrified clay pipe within the middle of the road and

extends from Columbia St. to Capitol Way. Flow is assumed to be toward Capitol Way. The sewer main in Capitol Way is a 12 inch vitrified clay pipe located in the middle of the roadway. Based on area manhole invert information provided by the City and area topography, the main flows toward the north. Given their size, the existing sewer mains within 14th Ave. and Capitol Way should have adequate capacity for the additional flows from the South Edge Sub Campus development.

The sewer lines in 15th Ave. and Columbia St. are 8 inch vitrified clay pipe located within the middle of the roadways. If, as a part of this project, Columbia St. is closed, the existing 8 inch sewer main within the right-of-way will likely require removal. If removal is necessary, new connectivity will be required from where the main is terminated at 15th Ave. out to Capitol Way. This could be accomplished by extending the main east along 15th Ave. This new connection would be of PVC pipe and would be a minimum 8 inch pipe. If connection from the proposed construction is proposed to this new main, a 10 inch pipe may be required. Please note, it is possible that a sewer main may be present in this portion of 15th Ave. Mapping that was obtained shows a potential line in that location but length and size of this main are unknown.

Engineering/Code Requirements:

Sewer design and layout is regulated by the City of Olympia Engineering Design and Development Standards Chapter 7. As noted earlier, the City is currently in the process of revising the code. All recommendations are based on the current code unless a future requirement is known.

According to the 2000/2001 Study, sewer pipes on the Capitol Campus are owned by the State and the City owns the mains within City right-of-ways. The City utility system maps are not clear on the ownership, therefore, it is assumed that sewer mains in the vicinity of the site are City owned. The study further states that the vitrified clay pipes owned by the State were installed approximately 75 years ago. It is unclear if this includes the mains in 14th Ave., 15th Ave., Columbia St., and Capitol Way. The manhole data obtained from the City for manholes in Capitol Way indicates that the sewer main in Capitol Way was installed between 1910 and 1950. Per the study, it is recommended that master plan projects replace the vitrified clay pipes. Therefore, as a part of this project, the vitrified clay pipe in 14th Ave. and 15th Ave. should be replaced. All new sewer pipe will be constructed of PVC and will likely require dedication to the City of Olympia, if located outside of City right-of-way. Any connections that require crossing of Capitol Way will likely require boring rather than an open cut.

Storm Drainage Infrastructure:

Existing Conditions:

Stormwater catch basins and pipes are located adjacent to the site in 14th Ave., 15th Ave., and Columbia Street. There are 2 main storm lines within 14th Ave. There is a 6 inch vitrified clay pipe that extends from Columbia Street almost to Water Street. This connects to a 12 inch storm main that connects to the main trunk line on-site. The other storm pipe in 14th Ave. is an 8 inch of unspecified construction but is likely vitrified clay. This connects to the main trunk system on the south diagonal. The storm main in Columbia Street and 15th Ave. are both 8 inch vitrified clay pipes

within the roadway. There is no dedicated stormwater main line in Capitol Way. The main shown on City mapping is a combined sewer/stormwater main line. Please note that the mapping from the City of Olympia and the mapping from the Capitol Campus Infrastructure Master Plan do not agree on location or size of storm mains. Based on the studies performed on the campus regarding storm and sewer systems, this mapping was used to determine location of mains where they could be determined from this mapping. However, the campus mapping on 15th Ave. and Columbia Street was incomplete. Therefore, for these roadways, the City of Olympia mapping was used.

The campus drainage system is made up of several separate drainage basins. Drainage from the Pritchard Building and surrounding area is collected and conveyed to Capitol Lake by a 12 inch concrete main on the south end of the campus. Drainage from the General Administration Building is collected and conveyed to the City of Olympia storm drainage system in Columbia Street. Drainage from a portion of the north diagonal and some areas of the green which front on Capitol Way are collected and conveyed to the combined storm/sewer pipe in Capitol Way. The majority of the campus drainage, however, is collected and conveyed via a main trunk line that goes along the south diagonal, through the traffic circle, down between the Temple of Justice and the Legistlative Building in Flag Circle, through the Mansion Parking Lot, and out to Capitol Lake. This main trunk line is of varying size and materials.

Engineering/Code Requirements:

Stormwater in the City of Olympia is governed by the City of Olympia Engineering Design and Development Standards Chapter 5 and the City of Olympia Stormwater Manual dated January 2005. The City of Olympia Stormwater Manual has rigid criteria regarding stormwater management design for both new and redevelopment projects. It is difficult to determine at this time what requirements the City will apply to this project. Redevelopment projects have certain thresholds based on site design that trigger different requirements from the most minor (collect stormwater and convey to adjacent conveyance system) to the most stringent (upgrading the entire Capitol Campus site to meet current stormwater standards). Initial discussions with the City indicate that it is likely that this project will fall in the middle of this spectrum and will be required to provide water quality treatment and water quantity control for the stormwater generated by this 3.5 acre site. Given space limitations, it is likely these facilities will be located in underground structures such as a vault or similar structure. Stormwater from this facility would then be connected to the existing stormwater conveyance system.

On-site soils are mapped by the Soil Conservation Survey (SCS) Maps for Thurston County as Skipopa silt loam. This is poorly drained soil of negligible infiltrative capability beyond the first 18 inches of soil depth. Therefore, stormwater facilities will be detention rather than infiltration facilities. Preliminary sizing calculations estimate a stormwater management facility of approximately 60,000 to 80,000 cubic feet will be required for the 3.5 acre site assuming about 80% impervious area.

As on-site facilities will not be infiltrative, connection to an adjacent conveyance system is required. There are two possible connection options, connect to the adjacent City system or connect to the on-campus system. Each option has some potential off-site construction that may be required.

The on-site system is old and has failure issues. The Capitol Campus Infrastructure Study indicated that the vitrified clay pipe on campus was installed 75 years ago and is at the end of its useful life. The study performed in 2003, went on and identified that significant portions of the main trunk line were either failing or would fail in the not too distant future. Some of the projects recommended in the 2003 study have been completed and the pipe has been replaced. However, there still is some replacement that may be necessary. If a connection to the internal system is made, a downstream capacity analysis will also need to be performed. This analysis may also indicate that downstream pipe replacement is necessary due to insufficient capacity. The extent of the possible capacity upgrades is unknown at this time.

One advantage of connecting to the on-site system is that potentially only stormwater treatment will be required. Since drainage from the campus goes directly to Captiol Lake, stormwater detention is typically not required. However, if downstream capacity issues are encountered, detention of the stormwater could be proposed to avoid replacement of downstream pipes. This will require further analysis with future design phases of this project.

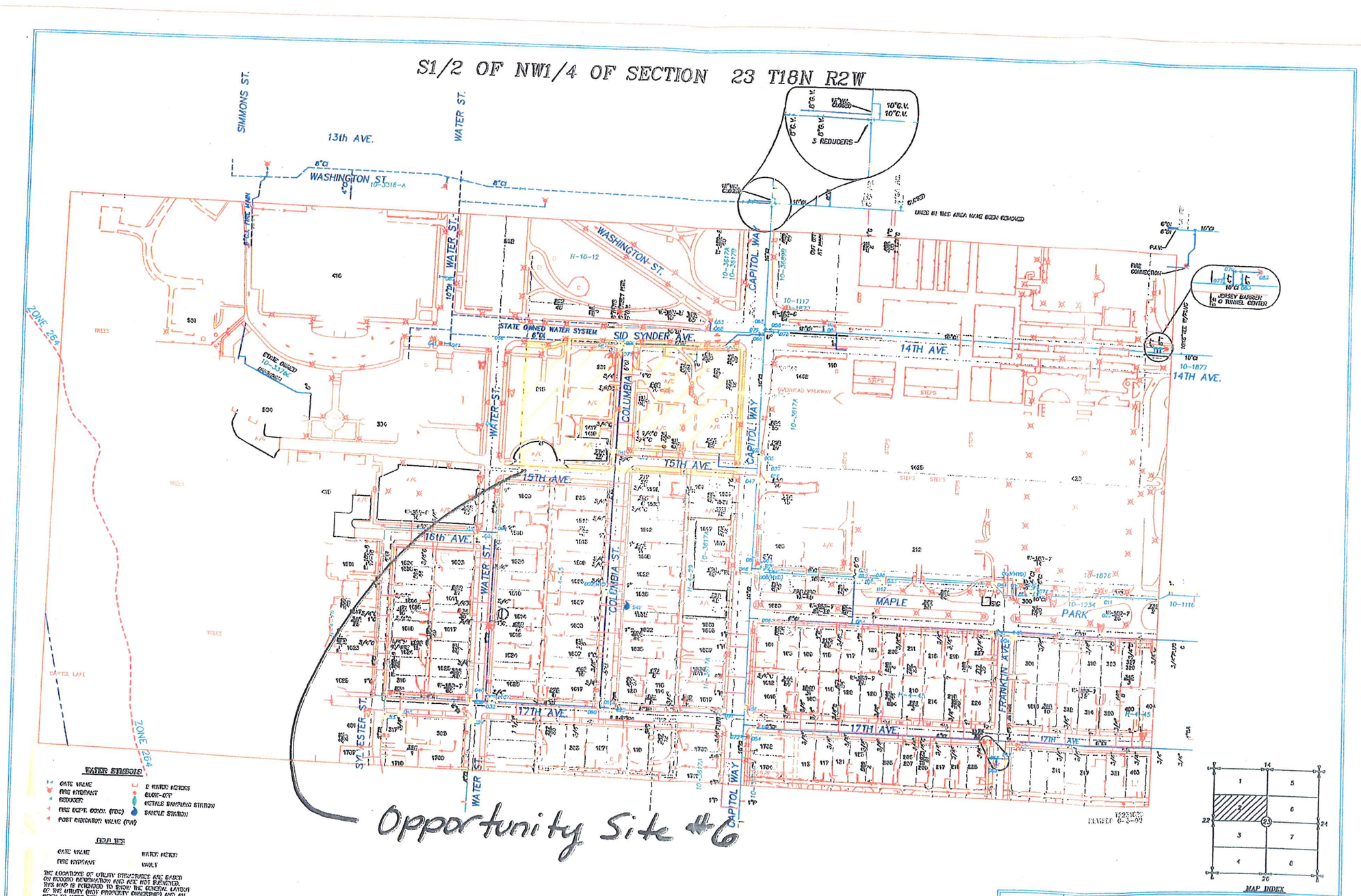
The adjacent City of Olympia piping is a combined storm/sewer pipe that conveys this drainage to the LOTT wastewater treatment plant. Conveying storm drainage to a sewer plant reduces its capacity to handle waste treatment. Therefore, the City of Olympia has a policy to not allow new connections to combined systems. The City typically requires that the connection must be made to a separated system. According to the City, the nearest separated system is at Union St. and Franklin St. Preliminary discussions with the City, however, have indicated that they likely will not require construction of piping so far from the site. They typically have a policy that, if the nearest separated system is over one city block away, they don't require connection to a separated system. Therefore, current indications are that a connection to the combined storm/sewer pipe in Capitol Way directly adjacent to the site may be allowed. However, the City has also indicated that they will encourage connection to the on-site system.

Development of the site will also require removal existing catch basins within the development area. It appears these can be easily removed and pipes capped or removed to the next catch basin. Rerouting of storm drainage systems does not appear to be necessary.

ATTACHMENT #1

UTILITY MAPS

S1/2 OF NW1/4 OF SECTION 23 T18N R2W



WATER SYMBOLS

- GATE VALVE
- FIRE HYDRANT
- REDUCER
- FIRE DEPT. CONN. (FDC)
- POST INDICATOR VALVE (PIV)
- 8" WATER MAINS
- BLOW-OFF
- METALS SAMPLING STATION
- SAMPLE STATION

DELETED

- GATE VALVE
- FIRE HYDRANT
- WATER METER
- VAULT

THE LOCATIONS OF UTILITY STRUCTURES ARE BASED ON RECORD INFORMATION AND ARE NOT SURVEYED. THIS MAP IS INTENDED TO SHOW THE GENERAL LAYOUT OF THE UTILITY (NOT PROPERTY OWNERSHIP) AND IS NOT TO BE USED FOR DETAILED ENGINEERING PLANS.

MAP INDEX

23822 _ _ _
(3 digits)

SCALE: 1"=100'	CITY OF OLYMPIA	DRAWING NUMBER
UPDATED DATE 6/05	WATER SYSTEM	23-18-2
ADOPTED 1/73		SHEET 2 OF 6

FOUNTAIN PUMP STATION

BOOSTER PUMP STATION

DIAGONAL S

CHERRY LANE SW

INSURANCE BUILDING

STATE OWNED

6" METER

14TH AVE. SW

CLOSED & CAPPED

JOHN A. CHERBERG BUILDING

NEWHOUSE BUILDING

WATER ST. SW

COLUMBIA ST. SW

15TH AVE. SW

16TH AVE. SW

CAPITOL WAY S

CAPITAL VISITOR INFORMATION CENTER

OVERHEAD WALKWAY

14TH AVE. SE

PLAZA GARAGE

CLOSED

STEPS

EMPLOYMENT SECURITY ANNEX

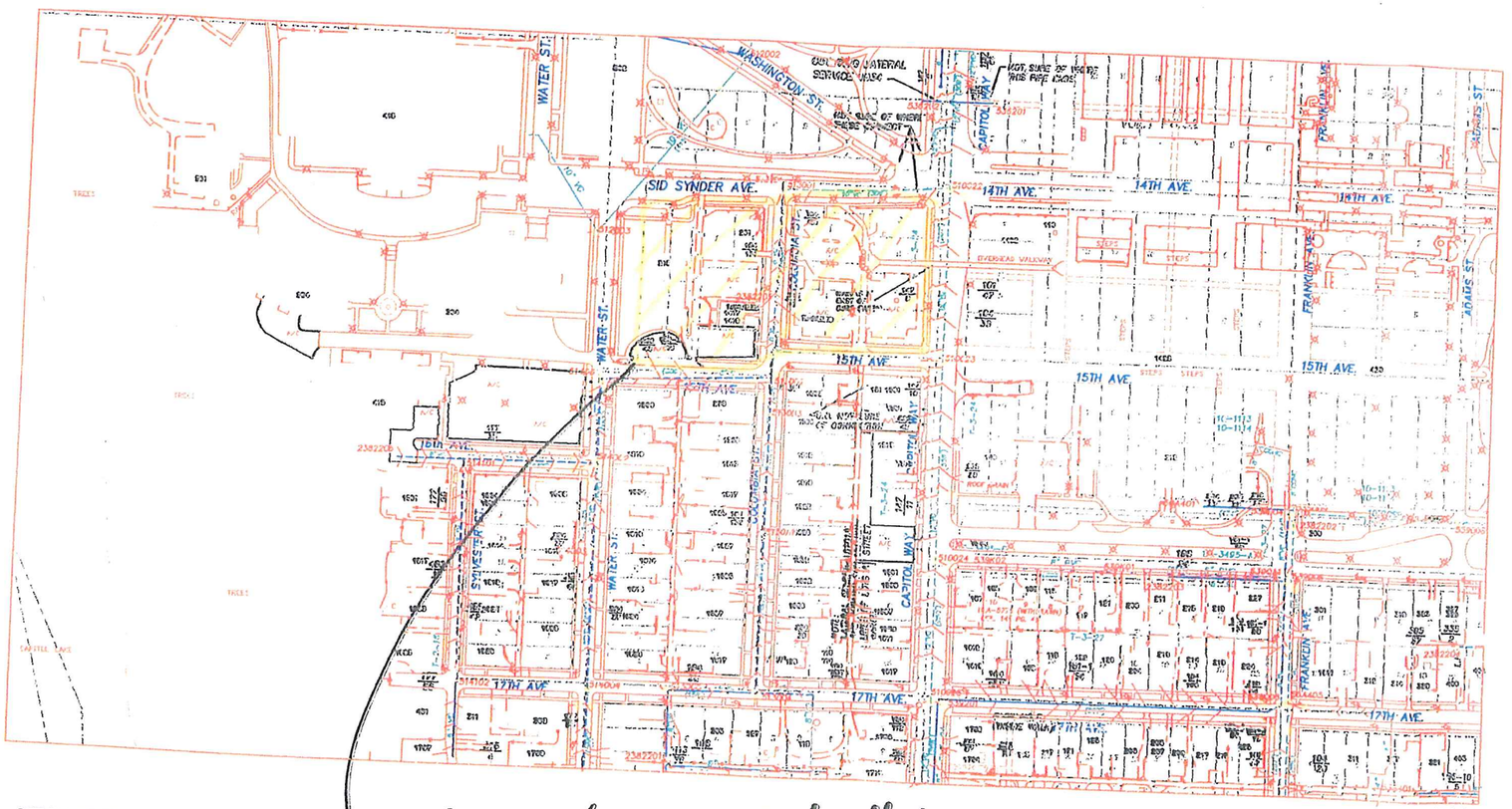
EMPLOYMENT SECURITY BUILDING

MAPLE PARK AVE. SE

Opportunity Site #6

Capitol Campus Infrastructure master plan water map Dated 10/27/00

S1/2 OF NW1/4 OF SECTION 23 T18N R2W



SANITARY SEWER SYMBOLS

MANHOLE — FLOW ARROW
CLEAN-OUT — SANITARY SEWER MANHOLE
SANITARY SEWER PUMP STATION
CONCRETE ENCASE

CATCH BASIN
CLEAN-OUT — STORM SEWER MANHOLE
CATCH BASIN — STORM SEWER MANHOLE

MISCELLANEOUS
VALVE — ALARM
HYDRANT — AIR RELEASE VALVE
IRRIGATION — MANHOLE
DOUBLE IRRIGATION — PAD POST

THE LOCATIONS OF UTILITY STRUCTURES ARE BASED ON RECORDED INFORMATION AND ARE NOT SURVEYED. THEY ARE TO BE REVIEWED TO SHOW THE GENERAL LAYOUT OF THE UTILITY AND PROPERTY OWNERSHIP AND AS A BASIS TO MAKE DETAILED ENGINEERING PLANS.

SEWER BASIN LEGEND

BASIN 0 - - - - MAIN INTERCEPTORS
BASIN 2 - - - - TUMWATER
BASIN 3 - - - - INDIAN CREEK
BASIN 4 - - - - HENDERSON
BASIN 6 - - - - WEST BAY
BASIN 7 - - - - PERCIVAL CREEK

REVISED 6-3-03

MAP INDEX

SCALE: 1"=100'	CITY OF OLYMPIA
APPROVED DATE 12/05	SANITARY SEWER
ADOPTED 1/75	DRAWING NUMBER 23-18-2
	SHEET 2 OF 8

TEMPLE OF JUSTICE

DIAGONAL S

STATE ARCHIVES BUILDING

HIGHWAYS - LICENSES BUILDING

LEGISLATIVE BUILDING

CHERRY LANE SW

INSURANCE BUILDING

MH-SS-53

MH-SS-11

MH-SS-__

MH-SS-43

PLAZA I / II GARAGE

MH-SS-45

14TH AVE. SW

14TH AVE. SE

CAPITAL VISITOR INFORMATION CENTER

OVERHEAD WALKWAY

JOHN A. CHERBERG BUILDING

NEWHOUSE BUILDING

WATER ST. SW

COLUMBIA ST. SW

CAPITOL WAY SW

15TH AVE. SW

MH-SS-34

MH-SS-35

MH-SS-33H

JOEL M. PRICHARD LIBRARY

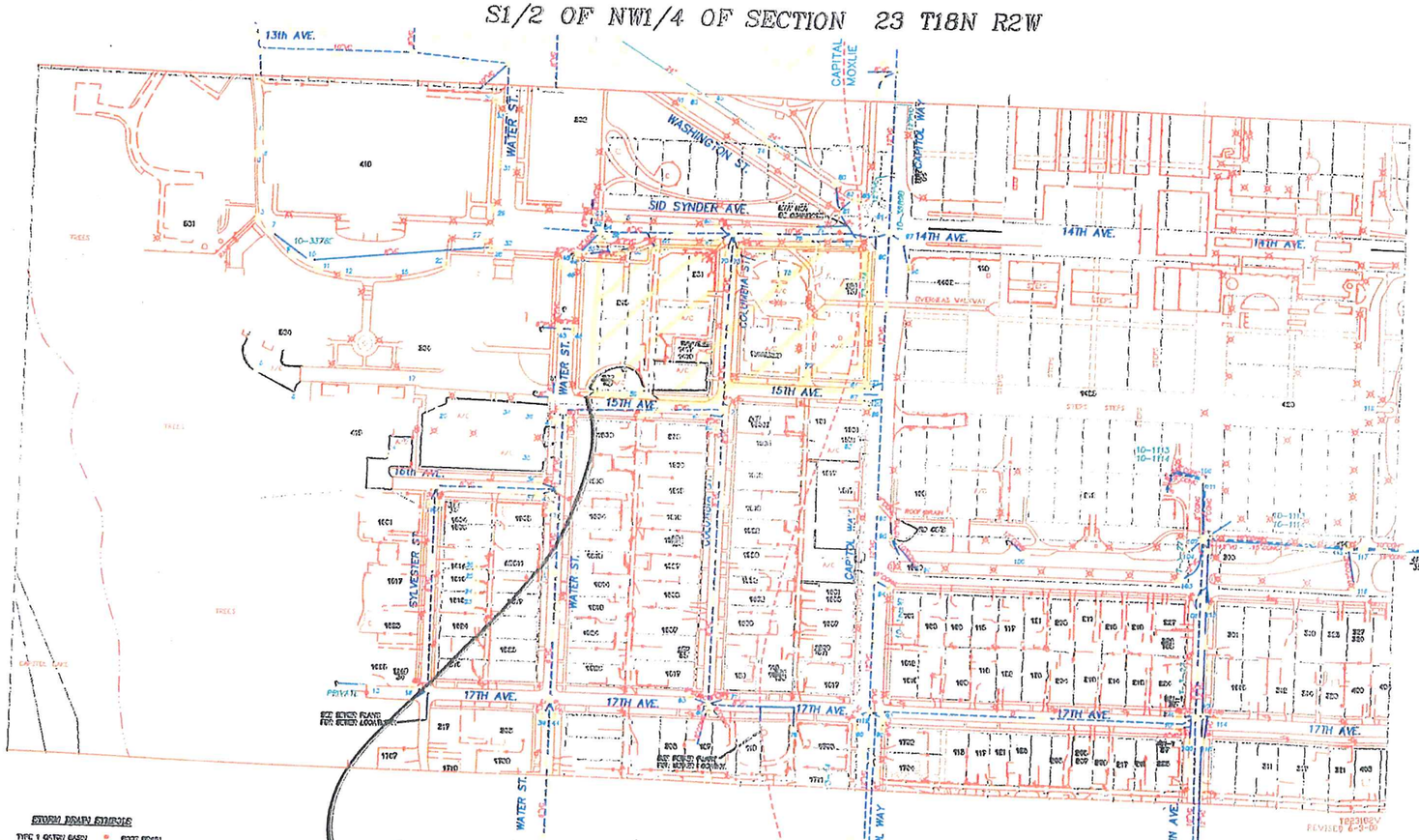
EMPLOYMENT SECURITY ANNEX

EMPLOYMENT SECURITY BUILDING

Opportunity Site #6

Capitol Campus Infrastructure Master Plan Sewer Map Dated 10/27/00

S1/2 OF NW1/4 OF SECTION 23 T18N R2W



STORM DRAIN SYMBOLS

TYPE 1 CATCH BASIN	ROOF DRAIN
TYPE 2 CATCH BASIN	YARD DRAIN
MANHOLE	CLEAN-OUT
RESERVATOR	CATCH BASIN (TIDIED UP)
END CRATE	FLOW ARROW
CULVERT	TIE BREAKING POINT
DRAIN	OUTLET DIRECTION

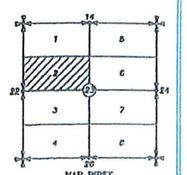
END TYPE

STORM DRAIN MANHOLE	CLEANOUT
CATCH BASIN	PERFORATED RISER MANHOLE

DRAIN FACILITY

DETENTION	PARKING LOT DRAINAGE
POND/VOL	UNDERGROUND DETENTION
DETENTION OVER	VAULTED
DETENTION POND	OPEN CHANNEL

THE LOCATIONS OF UTILITY APPURTENANCES ARE BASED ON RECORD INFORMATION AND ARE NOT EXACTING. THIS MAP IS INTENDED TO SHOW THE GENERAL LAYOUT OF THE UTILITY (NOT PROPERTY OWNERSHIP) AND NO BASIS TO MORE DETAILED ENGINEERING PLANS.



ADDED CASTINGS & TOPO: 1/16/02

23822 _ _ _
(3 digits)

DRAINAGE BASINS: CAPITAL & MOXLIE

SCALE: 1"=100'	CITY OF OLYMPIA	DRAWING NUMBER
UPDATED DATE 11/00	STORM SYSTEM	23-18-2
ADDED 1/13		SHEET 2 OF 8

Opportunity Site #6

Capitol Campus Infrastructure Master Plan
Storm Map Dated 10/27/00

ATTACHMENT #2

MANHOLE DATA FROM CITY OF OLYMPIA

Search Results

Result:	1	2	3	4	5	6	7
UP_MH:	534005	534201	536201	512001			510019
DOWN_MH:	534004	534005	536202	510019			510018
UP_INVERT:	67.8	0	0	86.2	0	0	83
DWN_INVERT:	60.2	0	0	84	0	0	64.6
SIZE:	8	8	8	10	8	8	15
MATERIAL:	VC	VC	VC	VC	VC	VC	VC
FLOW:	GRAVITY	GRAVITY	GRAVITY	GRAVITY	GRAVITY	GRAVITY	GRAVITY
OWNER:	CITY OF OLYMPIA	CITY OF OLYMPIA	CITY OF OLYMPIA	CITY OF OLYMPIA	CITY OF OLYMPIA	CITY OF OLYMPIA	CITY OF OLYMPIA
LENGTH:	242	231	95	452	43	1131	368
SLOPE:	0.0315	0	0	0.005	0	0	0.0505
YEAR:	1964	1964	1910-1950	1910-1970	UNKNOWN	UNKNOWN	1910-1950
TYPE:	SANITARY	SANITARY	SANITARY	SANITARY	SANITARY	SANITARY	COMBINED
TVDATE:	3/23/2006	3/23/2006					4/6/2006
TVRATING:	220	0	0	0	0	0	0
PIPE_LABEL:	8 IN. VC	8 IN. VC	8 IN. VC	10 IN. VC	8 IN. VC	8 IN. VC	15 IN. VC

Date: 9/18/2007
Time: 1:13:24 PM

Search Results

Result:	8	9	10	11	12	13	14
UP_MH:	510018	510021	510023	510025	510024	510020	513001
DOWN_MH:	510017	510020	510022	510024	510023	510019	510022
UP_INVERT:	64.6	97.2	117	136.3	127.1	90.1	109.2
DWN_INVERT:	51	90.1	107.1	127.1	117	83.1	107.6
SIZE:	15	15	12	12	12	15	10
MATERIAL:	VC	VC	VC	VC	VC	VC	VC
FLOW:	GRAVITY	GRAVITY	GRAVITY	GRAVITY	GRAVITY	GRAVITY	GRAVITY
OWNER:	CITY OF OLYMPIA	CITY OF OLYMPIA	CITY OF OLYMPIA	CITY OF OLYMPIA	CITY OF OLYMPIA	CITY OF OLYMPIA	CITY OF OLYMPIA
LENGTH:	275	310	310	250	356	312	308
SLOPE:	0.0503	0.0226	0.0321	0.0367	0.0284	0.0226	0.005
YEAR:	1910-1950	1910-1950	1910-1950	1910-1950	1910-1950	1910-1950	1910-1970
TYPE:	COMBINED	COMBINED	COMBINED	COMBINED	COMBINED	COMBINED	COMBINED
TVDATE:	4/6/2006	4/6/2006	4/6/2006	4/6/2006	4/6/2006		
TVRATING:	0	0	0	0	0	0	0
PIPE_LABEL:	15 IN. VC	15 IN. VC	12 IN. VC	12 IN. VC	12 IN. VC	15 IN. VC	10 IN. VC

Date: 9/18/2007
Time: 1:13:24 PM

Inv 51.0

Inv 64.6

Inv 83.0

Inv 90.1

Inv 97.2

N1/2 OF NW1/4 OF SECTION 23 T18N R2W

10th AVE.

11th AVE.

12th AVE.

13th AVE.

UNION AVE.

COLUMBIA ST.

WASHINGTON ST.

WATER ST.

SIMMONS ST.

CAPITOL WAY

FRANKLIN AVE.

ADAMS ST.

EBAA FLEX-TENSION ASSY.

TEMPLE OF JUSTICE

FOUNTAIN

PRESBYTERIAN CHURCH

C.O. NOT SURE OF CONNECTION

NOT LOCATED

MAY CONNECT TO CAP. SEW.

SUGGESTED LOCATION OF SIDEWALK FT

T-3-24-B

T-9-13-A & B 13-24

T-3-7

T-5-24

T-10-12 H-5-24 H-12-12

T-10-943

T-6-35

SANITARY SEWER SYMBOLS

CATCH BASIN — FLOW ARROW
CLEAN-OUT — SANITARY SEWER MANHOLE
(P) SANITARY SEWER PUMP STATION
** LOCATOR NOTES

FIELD MEX

CLEAN-OUT — SANITARY SEWER MANHOLE
CATCH BASIN — STORM DRAIN MANHOLE

S.T.E.P. SEWER SYMBOLS

V VALVE — A ALARM
(S) SEPTIC — * AIR RELEASE VALVE
S SINGLE SERVICE — R REDUCER
D DOUBLE SERVICE — • PIG PORT

THE LOCATIONS OF UTILITY STRUCTURES ARE BASED ON RECORD INFORMATION AND ARE NOT SURVEYED. THIS MAP IS INTENDED TO SHOW THE GENERAL LAYOUT OF THE UTILITY (NOT PROPERTY OWNERSHIP) AND AN INDEX TO MORE DETAILED ENGINEERING PLANS.

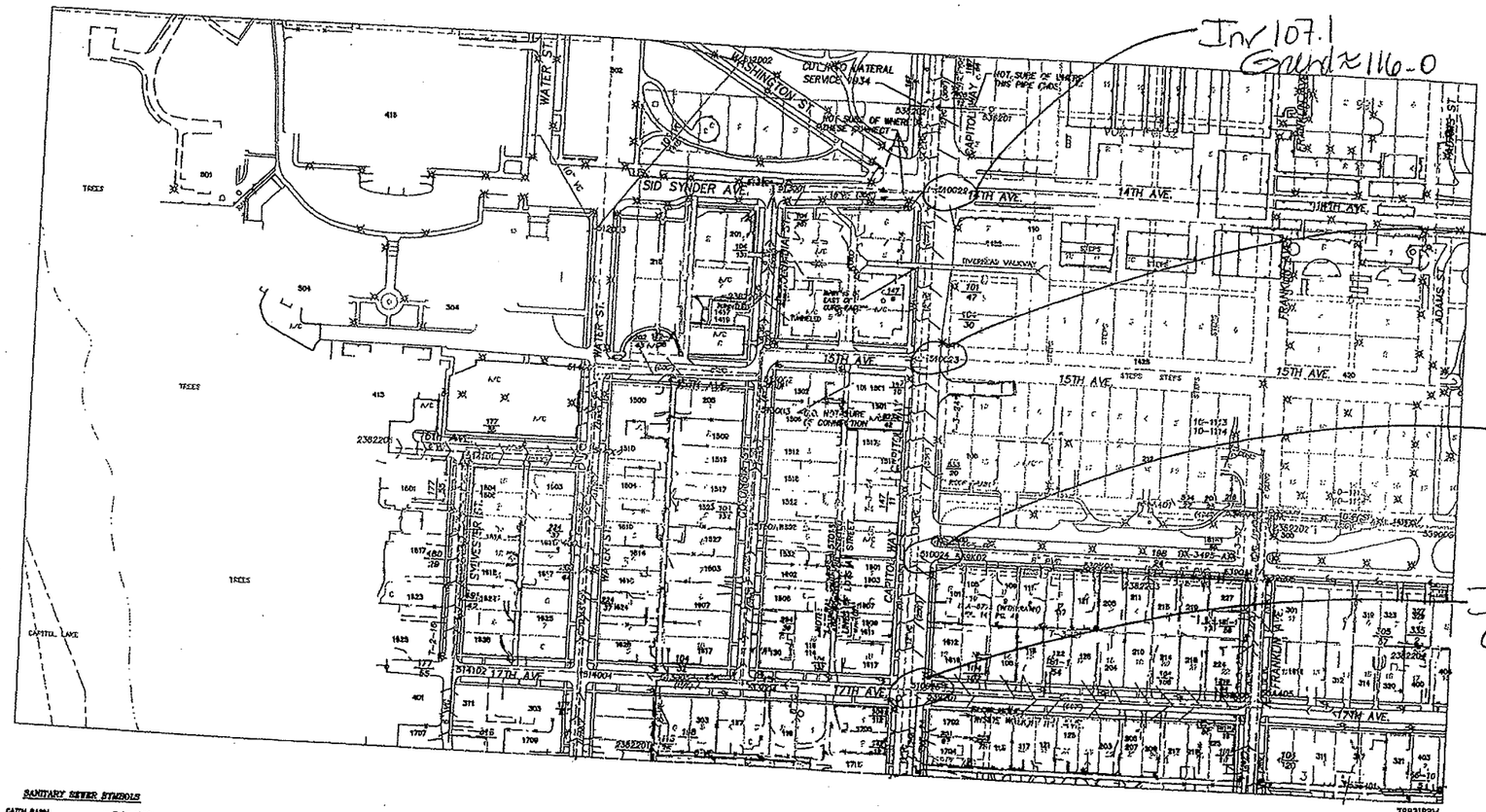
SEWER BASIN LEGEND

BASIN 0 ---- MAIN INTERCEPTORS
BASIN 2 ---- TUMWATER
BASIN 3 ---- INDIAN CREEK
BASIN 4 ---- HENDERSON
BASIN 6 ---- WEST BAY
BASIN 7 ---- PERCIVAL CREEK

MAP INDEX

SCALE: 1"=100'	CITY OF OLYMPIA	DRAWING NUMBER
UPDATED DATE 1/07	SANITARY SEWER	23-18-2
ADOPTED 1/73		SHEET 1 OF 8

S1/2 OF NW1/4 OF SECTION 23 T18N R2W



T23I18R2W
REVISED 6-3-00

SANITARY SEWER SYMBOLS

CATCH BASIN — FLOW ARROW
CLEAN-OUT — SANITARY SEWER MANHOLE
SANITARY SEWER PUMP STATION
** LOCATOR NOTES

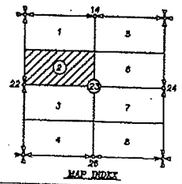
FIELD TEE
CLEAN-OUT — SANITARY SEWER MANHOLE
CATCH BASIN — STORM DRAIN MANHOLE

S.T.E.P. SEWER SYMBOLS
VALVE — $ ALARM
STEP20 — * AIR RELEASE VALVE
SINGLE SERVICE — △ REDUCER
DOUBLE SERVICE — < PIG PORT

THE LOCATIONS OF UTILITY STRUCTURES ARE BASED ON RECORD INFORMATION AND ARE NOT SURVEYED. THIS MAP IS INTENDED TO SHOW THE GENERAL LAYOUT OF THE UTILITY ONLY. PROPERTY OWNERSHIP, AND AN INDEX TO MORE DETAILED ENGINEERING PLANS.

SEWER BASIN LEGEND

BASIN 0 ----- MAIN INTERCEPTORS
BASIN 2 ----- TUMWATER
BASIN 3 ----- INDIAN CREEK
BASIN 4 ----- HENDERSON
BASIN 6 ----- WEST BAY
BASIN 7 ----- PERCIVAL CREEK

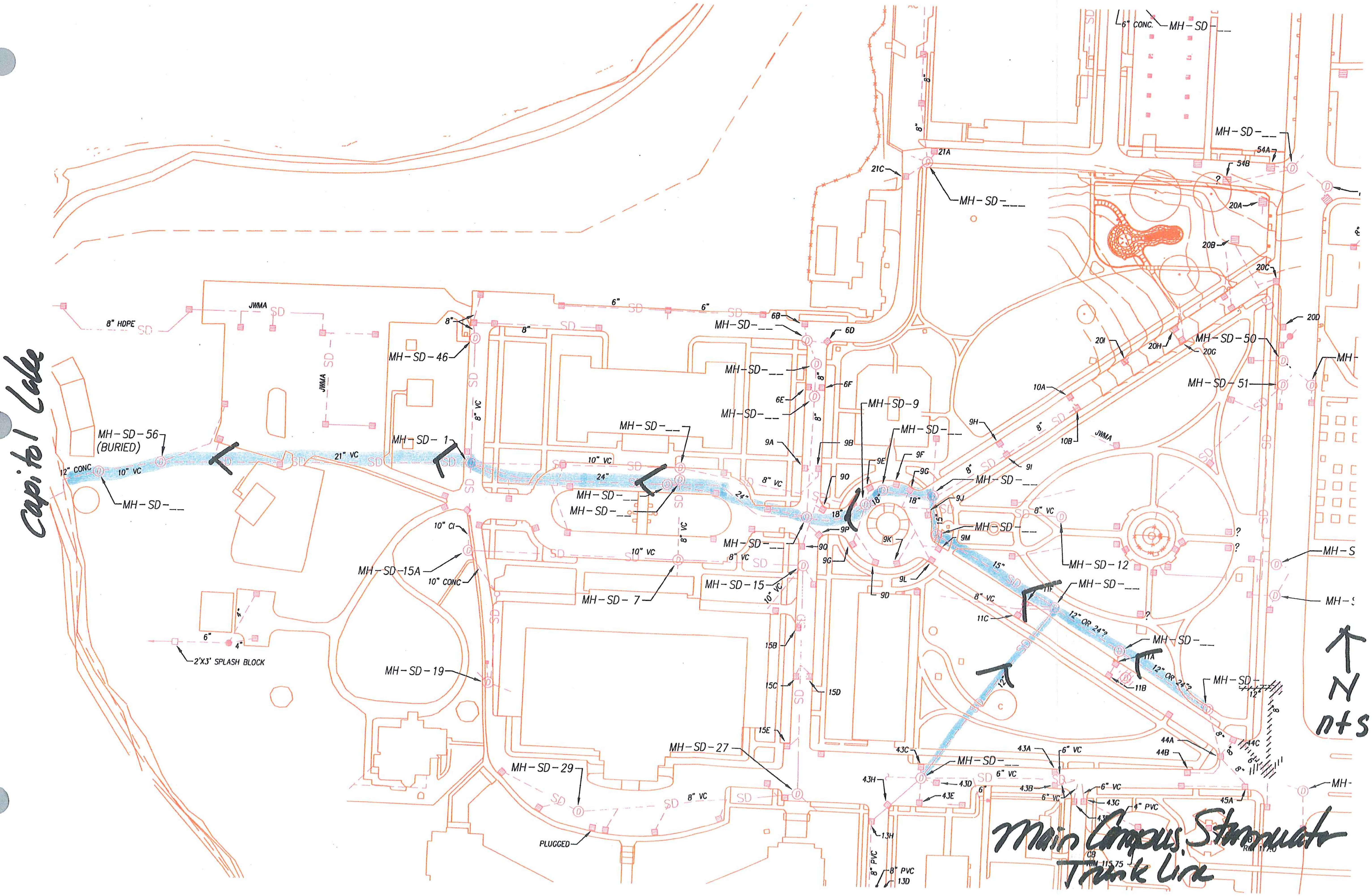


SCALE: 1"=100'	CITY OF OLYMPIA	DRAWING NUMBER
UPDATED DATE 12/05	SANITARY SEWER	23-18-2
ADOPTED 1/73		SHEET 2 OF 8

Approx Grnd Elevations from GeoData

ATTACHMENT #3

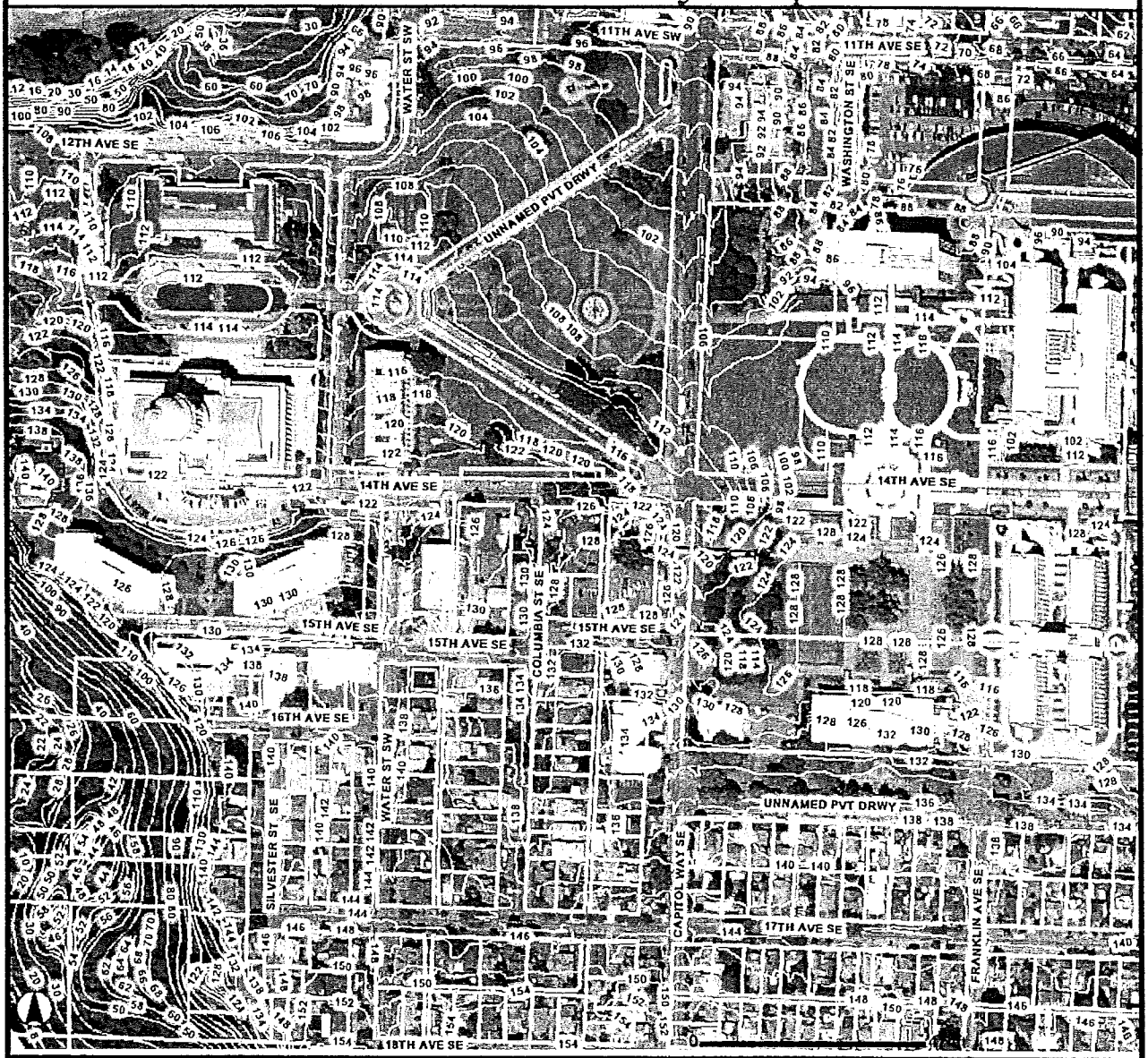
EXHIBIT OF WEST CAMPUS MAIN STORMWATER TRUNKLINE


Capitol Lake
Main Campus Stormwater Trunk Line
N
nts
MH-SD-56 (BURIED)
12" CONC
10" VC
21" VC
8" HDPE
JWMA
MH-SD-46
MH-SD-1
24"
10" VC
MH-SD-15A
10" CI
10" CONC
MH-SD-19
MH-SD-7
MH-SD-15
MH-SD-27
MH-SD-29
PLUGGED
2'X3' SPLASH BLOCK
MH-SD-9
MH-SD-12
MH-SD-50
MH-SD-51
12" OR 24"?
6" VC
4" PVC
8" PVC

ATTACHMENT #4

THURSTON COUNTY GEODATA MAP

Thurston County Map



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2404 Heritage Court SW, 3rd Floor
Olympia, WA 98502-6031

LEGEND

- Major Roads
- Roads
- Streams
- Contours
- Wetlands
- Wetland Buffers
- Flood Zones
- Water Bodies
- Zoning
- Cities
- Parcels

ATTACHMENT #5

CAPITOL CAMPUS INFRASTRUCTURE STUDY AMENDMENT #1 12/4/2000

I. EXECUTIVE SUMMARY

Documented herein are the findings of Phase 2 of a multi-phase project that will develop a master plan for campus utilities. The objective of this phase of work was to assess the condition and capacity of select campus utilities with regard to their ability to serve present requirements. The next and final phase of this project will evaluate the impact of buildings proposed in the master plan, and develop five biennia budgets for submission to the Legislature.

Subject utilities included natural gas, steam and condensate, domestic/fire water, sanitary/combined sewer, storm drain and primary power. For most utilities, boundaries for the study included installations outside of buildings located on the East and West Campuses.

Our investigation did not uncover widespread difficulties or patterns of significant problems with any of the subject utilities. There is no evidence to suggest that a major failure is imminent. For the most part, these utilities appear to be in reasonable condition and appear to have sufficient capacity to meet present demands. Highlights for each utility are listed below.

Natural Gas: No work is required to maintain the present level of service or support the master plan. Investigation of potential problems that could be caused by the unstable hillside east of the Powerhouse is recommended.

Steam and Condensate: Relatively modest upgrades are necessary to address safety concerns and assure continued operation to meet the present demand for steam. Investigation of the potential difficulties that could be caused by the unstable hillside are also recommended. Some auxiliary equipment will need to be replaced to meet requirements of the master plan.

Primary Power: Replacement of some cables is recommended due to age. Maintenance of flooded manholes should be addressed. An evaluation of the suitability of a radial type distribution system is suggested. Procedures for utilizing alternate feeders during emergency conditions should be developed.

Domestic/Fire Water, Combined/Sanitary Sewer, and Storm Drain: Replacement of some piping due to age and the type of material is recommended to maintain the present level of service.

II. SCOPE OF WORK

The Capitol Campus Infrastructure Study is a multi-phase project which will culminate in a long-term master plan for maintenance, upgrade and expansion of campus utility systems. Effort in prior Phases 1A and 1B was expended to update utility maps that were prepared initially by the State of Washington. Effort in Phase 2, the subject of this report, was expended to evaluate the ability of these systems to meet present demands. Effort in future Phase 3 will consider the impact of proposed facilities and develop the master plan accordingly. Applicable findings from two separate and concurrent projects, the Chilled Water System Study and the Hillside Stabilization Study, will also be incorporated into the master plan as results from these studies become available.

This report addresses Phase 2 of the Infrastructure Study. The objectives of this phase were evaluation of the distribution and/or collection elements of subject utilities in terms of their physical condition and ability to satisfy present requirements. Energy utilities within the scope of work included natural gas, steam and condensate, and primary (12.47 kV) power. Non-energy utilities included domestic/fire water, sanitary/combined sewer and storm drain. These six utilities, along with chilled water (which is being evaluated in a separate project), are the utilities that will be included in future master planning efforts. Geographic boundaries for this study included areas outside of buildings on both the East and West campuses, and within boundaries shown on Attachment #12, except that non-energy utilities were to be evaluated only to the east of Cherry Lane and Water Street. Non-energy utilities to the west of these roads are included in the Hillside Stabilization Study. Distribution and collection elements included main piping or conductor runs, and excluded run-outs for individual facilities. Further clarifications to the scope of work are included within the section devoted to the applicable utility.

This work was performed for the State of Washington, Department of General Administration, Division of Engineering and Architectural Services, as directed by Eduardo Roque, Project Manager. The Owner's representatives were Andre Stepelton and Ronald Moorehead. Wieland Lindgren Engineers, Inc. (WLE) was

the prime consultant and lead engineering team for energy utilities. KPFF Consulting Engineers (KPFF) was a sub-consultant to WLE and the lead engineering team for non-energy utilities located east of Cherry Lane and Water Street. SVR Design Company (SVR) was the prime consultant working under a separate contract with the State for the Hillside Stabilization Study and non-energy utilities located within the extreme western portion of the campus.

III. NATURAL GAS

A. SCOPE OF WORK

The scope of work for natural gas was limited to the 6" branch run from Capitol Way South to the Powerhouse. Although there are 10 metered service entrances for the campus, this is the only service entrance that warrants consideration for master planning purposes.

B. APPROACH

The condition of the exposed and State-owned portion of this utility was evaluated by site observation. This includes approximately 150 lineal feet of pipe between the Powerhouse and the pressure reducing station and meter assembly atop the hill to the east. The condition of the remaining, concealed and utility-owned portion could not be evaluated. This includes approximately 1,860 lineal feet of direct-buried pipe upstream from the meter assembly.

The capacity of this main run of piping was evaluated by manual calculation of pipe pressure drop with two of three equally-sized boilers in the Powerhouse operating at full load and 80% efficiency. Although subject to confirmation in the next phase of work, this appears to be the ultimate operating condition that would exist upon completion of all facilities proposed in the master plan.

C. FINDINGS

The outward appearance of exposed pipe suggests that this pipe is in good condition. Unknown at this time, however, is the potential and adverse impact upon pipe stresses that would be caused by downward movement of the underlying

hillside and pipe supports. Evaluation of such a condition is beyond the scope of work for this project.

Regarding pipe capacity, calculations indicate that the maximum pressure drop in this segment of piping would be approximately 1 psi for friction and 10 psi for losses through the pressure reducing station and meter assembly. Calculations of friction losses are included as Attachment #2. Starting with a nominal 60 psig pressure in the natural gas main beneath Capitol Way South, the estimated minimum pressure at the service entrance to the Powerhouse would be 49 psig. Since the required pressure at this location is approximately 10 psig, the 6" branch run to the Powerhouse is adequately sized for all future facilities contemplated in the master plan. Select components of the pressure reducing station and meter assembly, which are owned by the utility, may have to be upgraded as the peak demand for natural gas grows above the present maximum value.

Included for reference as Attachment #1 are the monthly consumption and cost for natural gas service to the Powerhouse from mid 1993 through 1999.

D. RECOMMENDATIONS

Evaluations performed for this study indicate that no work is required for the natural gas utility in the infrastructure master plan. However, an investigation of incremental pipe stresses that would be caused by unintended movement of pipe supports on the hillside should be considered.

IV. STEAM & CONDENSATE

A. SCOPE OF WORK

In addition to the scope of work described in Section II, the scope for steam and condensate included evaluation of the condition and capacity of associated equipment and piping in the Powerhouse.

B. APPROACH

Evaluation of central plant equipment for the steam and condensate system began with interviews of Powerhouse employees and visual inspections of Powerhouse

equipment and piping. Information gathered during the interviews and inspections was then reviewed and analyzed to determine the system's condition, capacities and weaknesses.

This evaluation was taken one step further, actually into the scope of work for future master planning work, by considering the impact of changes proposed by the master plan. First, the existing peak demand for steam was pro-rated, on a square-foot basis, among all facilities that are currently served with steam. Next, peak demand was decreased for all buildings that are proposed to be demolished. Finally, peak demand was increased for all existing buildings that could be converted to steam and all proposed buildings that are likely to be served with steam. The same average load per square-foot was used for all buildings except the proposed central chiller plant, for which an approximate steam load was available. Results are tabulated in Attachment #3.

Evaluation of the steam distribution and condensate collection piping systems also began with interviews of Powerhouse personnel to learn of maintenance issues and component failures. Large portions of the piping system on the west side of the West campus are installed within an underground, walk-in type utilidor. Some portions on the East campus are exposed within a parking garage. This accessible, but insulated, piping was observed during a previous phase of work during which utility maps were prepared. Piping between the West and East campuses, and most branch piping to individual buildings is not accessible and could not be observed.

Based upon these observations and analyses, proposed system upgrades and modifications were determined. Upgrades and modifications are separated into three categories: Upgrades for Safety, Repairs/Upgrades for Continued Operation, and Upgrades/Modifications for the Master Plan.

C. FINDINGS

For the purpose of this evaluation, steam and condensate systems were split into two distinct segments: equipment and piping within the Powerhouse, and piping beyond the Powerhouse. Please note that this evaluation does not include branch piping to existing buildings.

1. Equipment and Piping within the Powerhouse

a. History

The Powerhouse was originally built in the 1920's. A major modernization in 1960 included installation of existing boiler #3, a Wick's 30,000 lbs/hr boiler.

In 1970, existing boilers #1 and #2 were installed, both Cleaver Brooks 30,000 lbs/hr units.

In the early 1970's, the steam turbine driver for the induced draft fan for boiler #3 was replaced with an electric motor. In 1972, main steam and condensate headers were replaced. There were two major projects in 1976. First, a new fuel oil tank was installed. Second, a second floor was added to the building and a central chilled water plant was installed in this addition.

In 1980, controls for all three boilers were upgraded to a Bailey Net 90 controls system.

The next major work in the Powerhouse occurred in 1997 when boiler #1 was repaired and rebricked. This work was required due to a furnace explosion. In 1999, boiler #3 was rebricked; and in 2000, boiler #2 is being rebricked and upgraded with an integrated control system that provides single point positioning control and burner management functions.

b. Steam Generation System

The steam generating system is comprised of the boilers, deaerator, feedwater pumps, condensate tank and pumps, water treatment system, compressed air system, and fuel oil system.

(1) Boilers

There are three 30,000 lbs/hr boilers that operate between 100 and 110 psig for a total generating capacity of 90,000 lbs/hr. The current winter peak demand is approximately 23,000 lbs/hr, while minimum summer demand is approximately 3,000 lbs/hr. The full range of system demands at present can be met by one boiler operating between 10% and 76% of capacity. This installation allows for 100% warm back-up at all times, even if one boiler is out of service for repairs.

Boiler internals can be broken down into two parts: pressure parts including drums, tubes, headers and piping within the jurisdiction of the ASME Boiler and Pressure Vessel Code, and the furnace area.

Each boiler is subjected to an annual inspection that is performed by a state-licensed Boiler Inspector. The main purpose of this inspection is evaluation of the condition of pressure parts and safety components. Each of the plant's three boilers were subjected to this inspection in 1999. Based upon the inspection reports, there is no indication of fatigue or potential failure in any of the boiler's pressure parts.

Between 1997 and 2000, all three boilers will have received major rebricking of the furnace areas and new control systems. Based upon current State inspection reports and our own field surveys, along with upgrades in progress and continued adequate maintenance, it can be assumed that the boilers should operate satisfactorily without additional major improvements for a minimum of 10-to-15 years.

(2) Deaerator

The deaerator was installed in 1980. It was manufactured by Allied Steel Products and has a design flow rate of 60,000 lbs/hr. The deareator operates at approximately 8 psig. Due

to under sizing of the throttling valve, current operation is limited to 45,000 lbs/hr. Based upon historical data and exterior inspection, there are no indications that life expectancy will be less than that for the boilers.

(3) Feedwater Pumps

The feedwater pump system consists of two, Gould, model 3316 pumps which were installed in 1981. One of these pumps is driven by an electric motor, while the other is driven by a steam turbine. Each of these pumps is capable of providing 125 gpm at 500 feet of total dynamic head discharge pressure. The third feedwater pump is a motor-driven, Ingersoll Rand, model GTB which is capable of providing 150 gpm at 500 feet of total dynamic head discharge pressure.

Based upon a maximum load of 60,000 lbs/hr, which could be accommodated by two of the three boilers and the deareator (if equipped with the proper throttling valve), required feedwater flow would be approximately 120 gpm. This load would require one pump to operate at it's design point.

The pumps appear to be in relatively good condition. However, feedwater pump #1 historically loses it's seal at approximately 9-month intervals. The most common causes of this type of failure are misalignment, nozzle overloading, improper baseplate support or faulty grouting. Since this pump was supplied with a cast baseplate, the most likely candidates are either misalignment or nozzle overloading.

It was brought to our attention that under higher loads, it is not unusual for the feedwater pumps to experience cavitation. In reviewing the suction piping between the deareator and the feedwater pumps, it is apparent that there is an excess of offsets and fittings which undoubtedly contribute to this problem. Suction piping should be redesigned to eliminate unneeded offsets and reduce pressure drop.

(4) Condensate Tank and Pumps

The condensate tank and pumps are a packaged system that was fabricated by Skidmore. This package was provided with three pumps designed to alternate operation and equalize pump wear. This design does not allow for operation of more than one pump simultaneously. The condition of the packaged components looks good. Historical data indicates that this system has been trouble-free.

Condensate is returned between 160°F and 214°F. Condensate return temperature is monitored to assist in detecting steam trap leakage or failure. This approach to steam trap monitoring has been utilized for years in many facilities and is considered to be adequate. Make-up to the condensate receiver runs between 500 and 1000 gallons per day. This make-up is provided by a 1½-inch city water line that operates at 110 psig.

The pumps that were provided with this system are sized to provide 60 gpm at 30 psig. Although adequately sized for the plant's current operation, this system limits the steam plant's capacity to approximately 30,000 lbs/hr of steam production.

The receiver is significantly oversized for this pump application. It is approximately 6'-6" x 6'-6" x 5'-6" and has an approximate volume of 1,400 gallons.

If it is desired to increase plant capacity beyond 30,000 lbs/hr, retro-fit of larger pumps to the existing receiver, or control modifications that allow two pumps to operate simultaneously, should be investigated.

(5) Water Treatment System

Water quality is maintained by testing on a monthly basis. Results are provided to plant personnel, who in turn are

responsible for chemical injection as required. Chemicals are added by Milton Roy metering pumps. Pump operating ranges appear to be adequate to increase chemical injection as may be required by future loads.

An Ecowater Systems commercial series 5000 water softener is also used. This system includes two resin tanks and two brine tanks along with controllers that allow recharging of one set of tanks while the other set remains in operation. This system was installed in 1993 and appears to be in good condition. The capacity of this unit should be adequate for the anticipated increase in steam requirements. It can accommodate up to 24 gpm with a 30 psi pressure drop.

(6) Compressed Air System

Compressed air is provided by two compressors, one relatively new Quincy Northwest rotary screw compressor that can supply 100 cfm, and one old Quincy Northwest reciprocating compressor that can supply only 40 cfm. The older of the two compressors appears to be in less than good condition. Plant personnel indicated that this compressor has presented operational problems in the past, because it cannot keep up with the demand for control air. Based upon our survey, it is recommended that the newer compressor be retained and the older one be replaced.

(7) Fuel Oil System

The fuel oil system was initially installed in 1976. It was subsequently modified in the mid 1980's for use with No. 2 fuel oil. This system is only used if the supply of natural gas is curtailed. To date, the longest curtailment has been one week. Existing components appear to be in good condition.

Fuel oil storage is provided by an above-ground tank with a capacity of 310,000 gallons. Fuel oil transfer is provided by

four pumps: three manufactured by Delaval, and one smaller unit whose manufacturer is unknown. Each of the Delaval pumps is capable of delivering over 10 gpm, while the current maximum demand is approximately 3.5 gpm. Based upon a plant rating of 60,000 lbs/hr, fuel oil demand would be approximately 8.5 gpm and on-site storage would last more than three weeks.

2. Piping beyond the Powerhouse

Steam and condensate piping that runs from and to the Powerhouse respectively is either installed within a walk-in utilidor, installed within an inaccessible (small) utilidor, or installed within a parking garage. Due to this fact, we were unable to visually inspect the systems condition in some areas. The areas that were accessible, including the entrance to the utilidor at the Powerhouse, all sections of the walk-in utilidor on the West Campus, and exposed portions in the parking garage on the East Campus, showed no visual evidence of corrosion, distress or damage. A major pipe replacement project was performed in 1972 with provisions for new facilities that were to be constructed from that time forward. Based upon specifications and drawings for this work, it appears that Schedule 40, ASTM A53 piping was used, which is an industry standard that has proven to have excellent properties for this service. Life expectance for steam and condensate piping of this nature, which is not direct-buried, and which is subject to proper water treatment, is in the 40-to-60 year range. If a system is direct-buried, its life expectancy is in the 20-to-30 year range. During our investigation we saw no indication of direct-buried pipe.

Plant personnel experienced a break in steam trap piping around 1980. It was found that the piping between the steam and condensate headers was too stiff. Flex hoses were installed in trap piping at that time, which eliminated this problem. There was a weld failure in the condensate piping in the mid 1980's. No other failures were indicated by the staff.

A concern exists in regards to severe water hammer in condensate piping near Office Building Two. It appears as though a large amount of condensate is created by the two absorption chillers located in this building.

High-pressure / high-temperature condensate discharge from drip traps in this vicinity is routed to the condensate header where it mixes with cooler condensate from the chillers, which is causing areas of flash steam, which in turn is creating water hammer. There are a number of possible solutions for this condition. Spargers could be added within condensate piping in this area, where discharge piping from drip traps connects to the condensate header, to inject the high-temperature condensate as a spray. Or, a separate, small, high-pressure drip header could be added, without insulation, to dissipate heat prior to injection into the condensate header.

The main steam distribution header that runs from the Powerhouse north to the vicinity of the State Archives Building is a 12" pipe. It appears that this header would be the logical point of connection for any future expansion of the central steam to serve future loads. Taking a simplified approach to verifying the capacity of this line, we ignored all branch lines up to this point and assumed that all required steam would flow to this point. At the current peak demand of 23,000 lbs/hr, calculations indicate that total pressure drop from the plant to this point would be slightly more than one pound, and that ending velocity would be just under 1,800 feet per minute. Both of these figures are well within recommended limits for the application. If steam flow to this point was increased to 60,000 lbs/hr, or the capacity of two boilers, estimated total pressure drop would be slightly less than seven pounds, and ending velocity would be just over 4,900 feet per minute. Again, both of these figures are well within accepted design criteria. Calculations for both of these flow rates are included as Attachment #4.

D. RECOMMENDATIONS

1. Upgrades for Safety

a. During on-site review of existing conditions in the Powerhouse, it was noticed that seismic restraints for piping systems are not installed. It was common for boiler plants of this era to be constructed without seismic restraints. However, in recent years, most older facilities have been retrofit with such restraints.

If piping systems are not seismically restrained, a seismic event may displace or fracture the piping and subject equipment nozzles to forces that can cause major damage to the equipment. Obviously, plant personnel are also at risk. Therefore, design and installation of seismic restraints is recommended. During the design phase of this effort, the adequacy of supports for feedwater piping around all three boilers should be confirmed.

b. In many areas of the plant, insulation is either damaged or missing. All hot piping should be investigated to determine if insulation meets OSHA standards for personnel protection. Piping up to 7' from floors and elevated platforms, and piping within 3' of elevated platforms, should be insulated to provide a maximum surface temperature of 140°F. Many facilities limit surface temperatures to 100°F in order to minimize heat rejection into the plant.

c. A potential difficulty, similar to that described for the natural gas utility in Section III, may also exist for one segment of steam and condensate piping. The piping segment of concern is that portion which is installed within a utilidor that is partially buried in the hillside immediately west of the Powerhouse. Should this utilidor be moving with respect to the Powerhouse or with respect to the continuation of this utilidor to the east, which may have been documented by work in the Hillside Stabilization Study, then pipe stresses in steam and/or condensate piping may be increasing beyond safe values. An investigation of such unforeseen movements and resultant pipe stresses should be considered.

2. Repairs/Upgrades for Continued Operation

a. Suction piping to feedwater pumps should be redesigned to minimize pressure drop and eliminate cavitation. Continued operation of the pumps while cavitating can eventually cause severe damage to the pump impellers and casings, as well as reduce pump efficiency. During this redesign effort, feedwater pump #1 should be investigated to determine the cause of continuing and premature failure of its seals, and a design solution should be implemented.

b. To assure reliability of the compressed air system, the older of the two compressors should be replaced with one either identical or similar to the newer Quincy Northwest rotary screw unit.

3. Upgrades/Modifications for the Master Plan

The master building list that was used to estimate future steam loads is included as Attachment #3. This list includes all existing buildings and all proposed buildings contemplated by the master plan. It also denotes buildings that are scheduled for demolition, and buildings that are presently served with central steam or should be in the future. Two columns on the right side of this table indicate that floor area served by central steam is expected to increase from 1,626,275 square feet to 2,933,065 square feet, or increase by approximately 80%. Pro-rating existing maximum steam demand on a square foot basis, for all existing and future buildings, yields a potential maximum steam load of 41,626 lbs/hr (see second column from right in Attachment #3). If the energy source for space and domestic water heating systems for two large buildings, namely the Natural Resources Building (Phase I) and the Transportation Building, is converted from electricity to steam, the maximum steam load would be approximately 48,676 lbs/hr. Based upon this ultimate demand for steam, we recommend that all plant systems should have the capability to generate 60,000 lbs/hr of steam, or the full capacity of two of three boilers. To accommodate this criteria, the following modifications will be required:

a. The throttling valve and associated piping at the deaerator will need to be replaced to allow the deareator to operate at its design flow rate of 60,000 lbs/hr.

b. The condensate pumps or pump/tank assembly, and associated piping, will need to be replaced.

V. DOMESTIC/FIRE WATER

A. SCOPE OF WORK

The scope of work for domestic/fire water was the same as generally described in Section II for all utilities.

B. APPROACH

The condition and capacity assessment for this utility relied upon information contained in record documents provided by the State and obtained from the City, and information obtained during interviews with State engineering and maintenance personnel and City employees. The record documents provided the age and material of utility mains as well as pipe sizes. Engineering and maintenance staff presented historical background for the actual performance and maintenance of utility mains.

C. FINDINGS

In general, the State owns water mains on campus to the west of Capitol Way South, while the City maintains ownership to the east. Approximately one-half of the State-owned water mains are made of cast iron pipe, and the other half are ductile iron pipe. Approximately 70%, 20% and 10% of the City's water mains are made of cast iron, transite asbestos cement and ductile iron pipe respectively.

Cast iron pipe on the West Campus was installed approximately 75 years ago. It should be noted that a major installation of ductile iron pipe was completed on the West Campus in the late 1980's. Drawings for this work did not indicate whether the previous and mostly parallel cast iron system was retained-in-service or abandoned-in-place. Findings of recent utility work at the Governor's Mansion suggest that at least some of this old piping may still be active. However, since most of this pipe was installed to the west of Cherry Lane and Water Street, it is beyond the scope for this project.

Our interviews with State and City personnel revealed no current condition or capacity problems with the domestic/fire water system. Water pressure is generally

maintained at a constant 85-90 psig. No abnormally high water demands or pavement settlements were identified that would indicate leaky pipes.

D. RECOMMENDATIONS

The campus water system is functioning properly at present. However, cast iron pipe is nearing or has exceeded its useful life. Therefore, it would be prudent to include replacement of such mains in the upcoming master planning phase of work. Without consideration for the impact of future facilities, which will be considered during master planning efforts, we recommend a budget that accounts for replacing 25% of the existing cast iron pipe which is owned by the State. We assume that costs for similar replacement of City-owned cast iron pipe will be borne by the City.

Future building construction outlined in the master plan will increase demand on both the State-owned and City-owned portions of the existing water system. Computer modeling will be required to quantify this impact and determine whether additional piping should be replaced for capacity reasons. The State is obviously responsible for upgrading its portion of the system. Typically, the City will require property owners (the State in this case) to pay for utility upgrades that result from increased demand associated with the development. We understand that a quantitative analysis of water demand , and estimates of cost for pipe replacement, will be performed during the master plan phase of work.

VI. SANITARY/COMBINED SEWER and STORM DRAIN

A. SCOPE OF WORK

The scope of work for sanitary/combined sewer and storm drain utilities was the same as generally described in Section II for all utilities.

B. APPROACH

The condition and capacity assessment for these utilities relied upon information contained in record documents provided by the State and obtained from the City, and information obtained during interviews with zone engineering and maintenance personnel. The record documents provided the age and material of utility mains as well as pipe sizes. Engineering and maintenance staff presented historical

background for the actual performance and maintenance of utility mains. Video inspection was not conducted for this assessment.

C. FINDINGS

The State owns the combined/sanitary and storm mains on campus, while the City owns these mains in City right-of-way. The sanitary and storm mains are separate to the west of Cherry Lane and to the east of Franklin Street. Between Cherry Lane and Capitol Way South, localized sanitary and storm drain systems are conveyed to combined sewer mains.

The majority of the sanitary and combined sewer mains are made of vitrified clay pipe. The majority of the storm drains to the west of Capitol Way South also appear to be vitrified clay pipe, while storm mains to the east of Capitol Way South are generally asbestos concrete pipe. Vitrified clay pipe on the West Campus was installed approximately 75 years ago.

Our interviews with State personnel revealed no current condition or capacity problems with the sanitary, storm or combined sewer systems, except for a bottleneck in the storm sewer outfall to Capitol Lake. The outfall is a 12" pipe, which is preceded by a segment of 10" pipe that receives discharge from a 21" main. This situation should be addressed with corrective work recommended by the Hillside Stabilization Study. Also, approximately 3 years ago, a sewer main on campus near Parking Garage I/II backed up but caused no damage. Maintenance staff promptly flushed out the sewer main and have not experienced any problems since. No abnormally high sediment levels within the manholes or pavement settlements were identified that would indicate leaky pipes.

D. RECOMMENDATIONS

Currently, the sanitary and storm systems serving the campus are functioning properly. However, the vitrified clay pipe sewer mains on campus are nearing or have exceeded their useful life. Therefore, it would be prudent to include sewer main replacement costs in master planning projects. In consideration of age and material only, we recommend replacement of 25% of the existing vitrified clay pipe which is owned by the State. We assume that costs for similar replacement of City-owned vitrified clay pipe will be borne by the City.

Future building construction outlined in the master plan will increase demand on the existing sanitary and storm sewer systems. Likewise to that described for domestic/fire water, we understand that quantitative analyses of sanitary and storm demand, which account for the impact of proposed facilities, will be performed during the master planning phase for infrastructure utilities. Costs for all infrastructure projects will also be estimated at the time.

VII. PRIMARY POWER

A. SCOPE OF WORK

The scope of work for primary power was the same as generally described in Section II for all utilities, except that key information on radial run-outs to individual facilities is included herein when it was readily discovered during the course of the work.

B. APPROACH

The approach for primary power was much the same as that used for other utilities. It included research, field work and subsequent analysis of available data.

Research included of review of record drawings for existing installations, and review of utility invoice data determined at the Cherry Street Substation for late 1997 through early 2000. All data was provided to WLE by the State.

Field work included site observations of manhole faces and manhole interiors on the East Campus, and interviews with engineering and maintenance staff. Please note that site observations of primary power manholes on the West Campus were performed and documented in a previous phase of work. Interviews were intended to convey information on past maintenance procedures, circuiting issues, and recurring problems.

Analysis included determination of the capacity of primary feeders, and preliminary estimation of the maximum load on these feeders. For the purpose of this report, the ampacity of the feeders was determined using the National Electrical Code (NEC), Table 310-77, "Ampacities of Three Single-Insulated Copper Conductors in Underground Electrical Ducts". The underground electrical duct layout assumed for

the calculations is as shown in the NEC, Figure 310-60, Details 2 and 3, for four and six conduits respectively. This figure is included as Attachment #11. The analysis also assumes that the cable is rated at 15 kV, and is type MV-90 (90°C) as defined by the NEC. Using these parameters, the ampacity of a single, 500 kcm, copper conductor is 370 amperes for Detail 2 installations. The power capacity per circuit can then be calculated as 12.47 kV x 1.732 x 370 = 7990 kVA. For further information concerning cable ampacity calculations, please see Attachment #7.

C. FINDINGS

1. System Description

The existing 12.47 kV electrical distribution system consists of four primary radial feeders originating from Puget Sound Energy's (PSE) Cherry Street Substation, which is located near the intersection of Cherry Street and Wheeler Avenue. Proper names and numerals designate the four feeders: NRB Feeder (16), Jefferson Street Feeder (17), Legislature Feeder (25) and Capitol Way Feeder (26). The feeder conductors are sized at 500 kcm, rated for 15 kV and installed in concrete-encased polyvinyl chloride (PVC) conduits. Each feeder is normally isolated from all others. There is some redundancy in the system at both the facility level and the primary distribution level.

At the facility level, several buildings on campus can be fed by either of two feeders using manual - and in some cases, automatic - transfer switches. Buildings that are normally fed from feeder 16 can also be fed from feeder 17. Buildings that are normally fed from feeder 26 can also be fed from feeder 25 at the facilities level via transfer switches (manual or automatic, depending upon the individual switchgear involved). However, most of the buildings that are normally fed from feeder 25 cannot be fed from an alternate source at the facilities level.

At the primary distribution level, the feeders can be theoretically connected in two groups. The possible combinations are feeder 16 with 26, and feeder 17 with 25. Other combinations are not possible due to the system's design and layout. There are "Kirk Key" interlocks that prevent more than one source from energizing a single load or bus.

The "normal connected" loads for the four circuits, which are calculated in Attachment #8, are summarized below.

Circuit 16:	999 kVA
Circuit 17:	10,000 kVA
Circuit 25:	8,375 kVA
Circuit 26:	7,025 kVA

The actual demand, or "circuit loading", for these circuits will be less than the connected load as indicated in Attachment #7. The questions that remain unanswered to date are "How much less?" or "What is the actual demand or diversity factor for each feeder?" Circuit loading shown in Attachment #7 is calculated with a campus-wide diversity factor because actual demand for the entire Campus has been the only data provided thus far from PSE's demand records. WLE has requested actual demand per circuit, so that we can calculate feeder diversity factors and resultant circuit loadings, but to date has received only the total campus demand value. We will continue to pursue this information. It is considered to be quite valuable for accurately estimating the capabilities of the existing system.

2. System Limitations

At first glance, the primary power distribution system appears to be very flexible because it allows feeders to be interconnected and building loads to be transferred from one feeder to another. However, further analysis reveals that some feeders are normally loaded in excess of 50% of their individual capacity. This is not a problem as long as such feeders are not interconnected. However, when feeders are interconnected, they are connected in series due to the radial nature of the design. This means that the feeder closest to the utility substation may become overloaded if it is normally loaded beyond 50% of its capacity. The following possible and likely scenario clearly illustrates how distribution level redundancy is flawed. Please refer to Attachment #10, a one-line diagram for campus primary power, to aid in visualizing this worse case scenario.

Let us assume that feeder 16 is loaded at 60%, feeder 26 is loaded at 55%, feeder 17 is loaded at 70%, and feeder 25 is loaded at 75% capacity. We

will also assume that the electrical duct bank section between manholes PAA and PY is damaged by a construction backhoe (a realistic example). Damage to this section takes feeders 16 and 17 off line because they share the same concrete duct bank, thereby eliminating the possibility of transferring any load from 16 to 17. Recall that some loads may be served by normal and alternate feeders as described above. The only alternative is to isolate the faulted section by opening switches at Office Building Two and the PSE substation. Then, the switch at manhole PR can be closed to backfeed circuit 17 from 25, and the switch at manhole PGA can be closed to back feed circuit 16 from 26. Under these conditions, feeder 25 could be loaded at 145% of its capacity, and feeder 26 could be loaded at 115% of its capacity, if loads in all buildings remained the same. Both of these overload conditions represent violations of the NEC and hazards to people and property. The immediate effect will be seen in system voltage regulation problems. If the overloading continues, protective relaying at the substation may (should) disconnect yet another feeder.

Certainly, one systematic approach to preventing this duct bank casualty would be load shedding within buildings. Another approach would be complete disconnection of one or more buildings. The adverse affects of either approach could be offset if affected buildings were equipped with back-up generation capability. In either case, this scenario demonstrates the vulnerability of the system to damage at certain key segments of duck bank.

The system may also contain several other limitations at the facility level. However, since facility feeders are beyond the scope of this report, only potential limitations with major facilities are noted. The following buildings do not appear to contain a mechanism for complete and sustained back-up power. On-site generation, to some degree, is available at some sites. Their actual status in regards to suitability for current load profiles is not known.

Temple of Justice
General Administration Building
Office Building Two
Newhouse Building
Powerhouse
Capitol Conservatory

3. Manholes

Site observations revealed that some of the manholes on the East Campus were flooded and in need of either maintenance or replacement of a sump pump and/or float switch. In the previous phase of work, 10% of manholes on the West Campus were noted to be flooded with water. During an interview with Gene Sawyer, Capitol Campus Construction and Maintenance Superintendent, Gene also raised concerns over this issue, pointing out that manhole PF has drainage problems. Manholes PF, PV and PY have been identified as having sump pump or float switch problems. Attachment #6 documents the findings of manholes observed for this report.

4. Load Diversity Factors

As previously mentioned, the Capitol Campus is fed with four 12.47 kV feeders from PSE's Cherry Street Substation. Based upon utility invoice records summarized in Attachment #9, which help to define a campus-wide diversity factor, and upon assumed square-foot loading and calculation procedures per the NEC, each of these four feeders has sufficient capacity to serve normally-connected existing loads. However, and as also previously mentioned, WLE recommends that this determination should be confirmed with actual measurements of maximum demand per feeder. We have requested such data from PSE, and upon receipt, we will forward our findings to the State.

5. Cables

Primary conductors are 500 kcm cable rated at 15 kV. There are predominantly two types of cables installed within the system. One type has a cross-link-poly type of insulation, and the other has EPR insulation. Early formulas of cross-link-poly cables suffered from "treeing", a process during which insulation fails and water damages the conductors to the point of electrical fault. Since some manholes were observed to contain ground water, cables with EPR insulation would be the cable of choice for all future replacement and first-time installation projects. In general, and based upon record documents and site observations, the underground conductors are considered to be in good condition. However, there are certain cable

sections that have been selected for replacement within the next ten years.

Attachment #10 identifies cable sections that are recommended for replacement over the next 20 years due to age and expected cable life. Cables identified by blue markings are cables that have been replaced within the last 8 years or so. Medium voltage cables traditionally have a useful life of 25 to 30 years depending on installation practices, environment and loading.

Installation practices, such as pulling tension, bending radius, splice type, etc., are the biggest factors that determine if a cable will realize its full useful life. One set of cables was found which demonstrate this concern. **Conductor installations within manhole PE are the concern.** Although this installation is rather new, it is not in accordance with the cable manufacturer's recommended bending radius. This installation also violates the NEC. It appears that during the cable installation the cables were pulled too tightly between manholes. The subsequent tight loops within the manhole PE are applying undue mechanical stress to the insulation system. It is expected that the cable's longevity has been affected. Attachment #5 documents the findings of conductors observed for this report.

6. Switches

During an interview with Gene Sawyer, Gene pointed out that the electrical distribution system's submersible switches were recently replaced. However, the replacement switches were installed without viewing windows. This is in direct violation of Washington Administrative Code (WAC) 296-45-13, which states that medium voltages switches shall have a viewing window that allows free and clear visual access to the main and arc arresting blades. This viewing window allows an operator to determine if the switch is in the closed or open position prior to opening the door for maintenance or repair. It is our understanding that the installing contractor will replace all such switches or switch doors under the terms of their original contract.

WLE encourages caution and oversight during this work. If the contractor simply intends to replace the door with one that has an appropriate viewing window, any one or all of the warranty, the Factory Mutual Listing (if

applicable) and UL Listing may not hold. The doors must be "Listed" for use with the metal framework and the "can" of the switch upon which it is installed. Switches are typically a single "Listed" device. Therefore, the only door that is listed for the enclosure is the one that is mounted to it. When exterior surfaces and attributes of an electrical piece of utilization equipment are changed, **the UL Listing for that piece of equipment becomes void.** WLE recommends a strong position in these matters to ensure that the contractor replaces non-compliant switches at Capitol Campus' most earliest convenience.

D. RECOMMENDATIONS

1. Missing or non-functional sump pumps in flooded manholes need to be installed or repaired, and placed upon a periodic maintenance schedule. In general, cables in these flooded manholes have splices within the manhole. It is important to note that submerged splices have a higher probability of failure than dry splices. The cause of flooding in manholes PF, PV and PY needs to be investigated and corrected.

2. Observed conductors on the East Campus looked very good. However, noted exceptions appear in Attachment #5, and a preliminary schedule for cable replacement is given in Attachment #10. Regarding manhole PE, it would be prudent to plan an outage for cable replacement, compared to the alternative of suffering an unscheduled outage due to cable failure. It is uncertain how long these cables will provide trouble-free service. It is recommended that all spindled conductors be replaced in accordance with NEC Article 300-34. The decision to keep or replace these cables is a "risk management" decision.

3. The current status of feeder circuit capacity appears to be good. The system can operate during normal and emergency conditions with two exceptions. Circuits 17 and 25 have the potential to be overloaded during emergency conditions if a coordinated loading or load shedding procedure is not in place. Until design changes are made to the system, we recommend a review of current loading or load shedding procedures. This review should revisit the existing load profile. It is also recommenced that these

procedures should be reviewed with current electrical staff to ensure that employees are cognizant of conditions where caution must be exercised.

4. An overall evaluation of the present, radial, primary power distribution system is a prudent consideration. The strict radial system may no longer work for master planning purposes. Modifications that result in at least one loop arrangement would significantly enhance the system's overall reliability. It is expected that adding future loads to this system would have adverse impact to another building's "alternate" source". If an existing circuit is at or near capacity, it can no longer function as an alternate source. At the minimum, such an evaluation should consider items listed below. We expect to begin this evaluation during next phase of work which will consider the impact of future facilities.

   a. Current operations and constraints.

   b. Design criteria for back-up power requirements, including review of building generation and normal/alternate power circuits.

   c. Which overcurrent technology is best suited for the application.

   d. Construction costs.

   e. Maintenance issues and costs.

   f. Reliability.

5. We recommend that additional protection should be considered for some cable sections to minimize the possibility that excavation could cause accidental damage. This protection might consist of a more substantial warning system, like a wood or concrete barrier, or it might take the form of a cautionary directive to those groups on the campus that could be involved with earthwork operations or contracting. Cable sections of concern include the following:

   Cherry Street Substation to Manhole PAC
   Manhole PAC to Manhole PAB

Manhole PAB to Manhole PAA
Other cable segments with a history of "near misses"
Other areas of continuous site improvement

6. The electrical distribution submersible switches that were recently installed need to be replaced or brought into compliance with Washington State Labor and Industry Codes.

--- End of Report ---

D. Structural Engineering Technical Memo MKA

D. Structural Engineering Technical Memo MKA

System	Framing	Pros	Cons
Structural Steel Framing with Composite Concrete and Steel Deck	Steel wide flange beams and girders Column grids from 20ft to 60ft	Fast speed of erection Works with complex geometry Lowest system weight results in lowest foundation demands No deck shoring required High level of seismic performance Lateral bracing provides openness at garage interior Compound drainage slopes are easy to achieve Future changes are easily accomodated Easily accomodates office column grid geometry	Corrosion protection system for steel beams adds cost Steel prices subject to more rapidmarket fluctuations Higher long term maintenance costs due to periodic paint touch-up Elastomeric membrane recommended Close beam spanning makes lighting less efficient Higher level of vibration and sound transmission Spray on fireproofing of structural members may be required Fireproofing must be waterproof and must adhere to steel in wet conditions Longer lead time for fabrication May require expensive epoxy paint system on steel members in exposed areas Corrosion of metal deck is possible Delamination of concrete from metal deck when corrosion occurs Coordination of beam penetrations for mechanical systems more difficult
Cast in Place Post Tensioned Concrete One Way Slab and Wide-Shallo Beams	20" deep x 8ft wide PT beams. Spacing can vary from 18 to 36 feet 5" to 8" PT slab span depends on beam spacing selected Column spacing 40ft to 65ft	High level of durability High level of seismic performance Spans are efficient Low long term maintenance demand Easily lit Low corrosion potential No fireproofing required Finished concrete has a good appearance Low level of vibration and sound transmission Compound drainage slopes are easy to achieve	Slower speed of erection Future penetrations require structural considerations to avoid PT cables Higher building weight than steel option will increase foundation demand Deck shoring/re-shoring required Complex geometry adds cost Concrete moment frame and concrete shear walls are the lateral system options. Shearwalls create blind spots Future changes to PT beams and slabs is difficult and costly Mechanical systems run below structure increasing overall system depth
Cast in Place Post Tensioned Concrete Flat Plate	8" to 10" flat concrete slab. Spans up to 34ft.	High level of durability High level of seismic performance Inexpensive forming systems cycle quickly Low long term maintenance demand Easily lit Low corrosion potential No fireproofing required Finished concrete has a good appearance Low level of vibration and sound transmission Compound drainage slopes are easy to achieve Perception of "High Quality" Mechanical and fire protection system penetrations installed in the field Lowest depth of excavation saves excavation and shoring cost	Slower speed of erection Future penetrations require structural considerations Higher building weight than steel option will increase foundation demand Deck shoring/re-shoring required Complex geometry adds cost Concrete moment frame and concrete shear walls are the lateral system options. Shearwalls create blind spots Spans are limited introducing more interior columns and less efficient parking Shrinkage of concrete associated with PT systems creates need for permanent joints and delayed pour-back strips Access to PT stressing heads difficult below grade
Cast in Place Reinforced Flat Plate	10" to 12" flat concrete slab. Spans up to 30ft.	High level of durability High level of seismic performance Inexpensive forming systems cycle quickly Low long term maintenance demand Easily lit Low corrosion potential No fireproofing required Finished concrete has a good appearance Low level of vibration and sound transmission Compound drainage slopes are easy to achieve Perception of "High Quality" Mechanical and fire protection system penetrations installed in the field Low depth of excavation saves excavation and shoring cost	Slower speed of erection Higher building weight than steel option will increase foundation demand Deck shoring/re-shoring required Complex geometry adds cost Concrete moment frame and concrete shear walls are the lateral system options. Shearwalls create blind spots Spans are limited introducing more interior columns and less efficient parking

E. Mechanical Engineering Technical Memo

Hargis

E. Mechanical Engineering Technical Memo

Hargis

MEMO

To: **NBBJ**

Date: October 12, 2007

From: Brian Haugk – Hargis Engineers, Inc.

Regarding: Capitol Campus South Edge Sub-Campus Plan – Project Request Report
Mechanical Engineering Technical Memo

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1 Infrastructure Analysis – Mechanical Site Utilities

1.1 Summary

Our assessment of the mechanical infrastructure is based on preliminary review of background information, available studies, conversations with facility staff and multiple site visits.

The boiler capacity is sufficient for the new South Edge project with some additional modifications to the condensate pumps, feed water tanks, etc. The chiller capacity for cooling is not available as the current chilled water plant is at the end of its life and the capacity can not handle the size of the building(s) proposed. The gas, water, fire and sewer are all available adjacent the site and have enough capacity to support the new South Edge project. The waste lines are made of clay and will require an upgrade.

The "Capitol Campus Infrastructure Study Master Plan", dated May 25, 2001 and prepared by Wieland Lindgren Engineers, indicates that a new central chilled water plant with distribution piping to serve the entire campus will be incorporated over the next five biennia. As of today, one chiller has been replaced and some piping work has been completed. In addition, the study also notes "Steam and condensate require relatively modest upgrades to address safety and concerns and assure continued operation to meet the present demand for steam. Some auxiliary equipment will need to be replaced to meet requirements of the master plan." The work required for the master plan at the main steam plant has not yet begun. Based on standard heating loads, the steam plant can support the new South Edge project with the "modest upgrades"

required to expand the capacity. The steam valving for each building is no longer functional and will require replacement to allow for phasing of the new buildings to minimize downtime at the existing buildings not being impacted by this scope of work.

1.2 Existing Conditions – Site Utilities and Infrastructure

1.2.1 Gas

A 6" gas line runs along Capitol Way that could potentially serve the new South Edge project. Potential uses for the gas service include a café or kitchen and domestic water heating and hydronic water heater off of the main steam plant. Cost savings and sustainability opportunities are available with the use of gas. With the central boiler/steam plant in flux, the gas availability adds opportunities to the new South Edge project.

Gas is currently not used for domestic water heating. Domestic water heating is generated through a heat exchanger served by the steam plant.

1.2.2 Steam and Condensate

The steam and condensate is distributed throughout the campus via 14 feet deep tunnels and utilidors. The service utilidor stops at west side of the north entrance of the Cherberg building. A utilidor or tunnel system to support extending the steam and condensate piping would be required to be routed from the existing location at Cherberg to the new South Edge building mechanical room to support the space heating. The size of the steam piping that serves the Cherberg building is at capacity. The piping would need to be increased or a separate set of steam pipes would be required from the Legislative building to the new South Edge project.

1.2.3 Water and Fire

The Wieland Lindgren Engineers report notes and confirmed by the maintenance department that the existing water piping is owned by the state west of Capitol Way and is constructed of a cast iron, transite asbestos cement and ductile iron pipe. The bulk of the piping installed from Capitol Way to Cherry St was installed 75 plus years ago. Water pressure was noted to be 85-90 psi. Flow was not mentioned in the report and fire hydrant testing was not available.

1.2.4 Sanitary Sewer

The Wieland Lindgren Engineers report notes that the existing sewer piping is owned by the state west of Capitol Way. The sanitary sewer is combined with the storm water system from Cherry Way to Capitol Way. The piping is constructed of vitrified clay and was installed 75 plus years ago. The owner has not had any significant issues with the sewer line backing up. The pipe main is 12" in size tied into a 21" main.

1.2.5 Chiller System

The chilled water system has hydronic chilled water piping routed in a loop throughout the campus. The line size down Cherry Street is 12". The 12" line serves the Insurance, Newhouse and Cherberg building. Valves at each building were replaced approximately 3 years ago with pressure independent valves to improve the chilled water system. The piping to this location can handle capacities to 1000 tons of cooling. The chiller plant has (3) 680 ton water cooled chillers with cooling towers. Minimal additional capacity exists within the hydronic piping infrastructure. Approximately 800 tons is designated for the Cherberg, Insurance and Newhouse buildings. Capacity exists for a new 60,000 SF facility within the piping. If the Newhouse building is removed, additional capacity can be gained. The chiller plant will require additional chiller(s) and cooling tower(s) to support the new building.

1.3 Scope of Upgrades - Site Utilities and Infrastructure

1.3.1 Steam and Condensate

Depending on the square footage of the new South Edge building, the steam piping routed within 14th Ave SW would need to be increased in size to handle the capacity required for the new building. Based on the sizes of the existing steam and condensate piping in conjunction with a 100,000 plus square foot new building, the steam and condensate piping is more than likely needing to be upsized. Calculations based on envelope, glazing, insulation and the type of mechanical system for the new building will all dictate the sizing requirements.

1.3.2 Water and Fire

Based on the age of the piping and not knowing the exact size of the piping and the distribution system to all of the campus buildings, the main piping should be replaced and a survey completed to calculate the total fixture units for the remaining buildings and master plan to ensure the size of the piping is adequate to support the campus. The domestic water size for the new South Edge building is estimated in the range from 4" – 6" depending on the total square footage of the building. The fire sprinkling water size for the new South Edge building is estimated in the range from 6" – 8" depending on the total square footage of the building. A double detector check valve exterior to the building will be required.

1.3.3 Sanitary Sewer

Based on the age of the piping and the type of the piping and the distribution system to all of the campus buildings, the main piping should be replaced and a survey completed to calculate the total fixture units for the remaining buildings and master plan to ensure the size of the piping is adequate to support the campus. The sanitary sewer size for the new South Edge building is estimated in the range from 4" – 8" depending on the total square footage of the building.

1.3.4 Heating / Cooling

To accommodate the South Campus project, we anticipate that steam and chilled water system would be extended to each new building from the existing underground utilidor/tunnel system. Based on the preliminary project concepts, the new loads are estimated in Table 1 and Table 2 below:

Occupancy	*Area (sf)*	*Heating Load (MBH)*	*Cooling Load (Tons)*
Office	170,000	6800	550
Parking	280,000	N/A	N/A
Data Center	3,000	0	80
Total	453,000	6800	630

Table 1: Mechanical Heating/Cooling Load - Phase 1 Building (Alternate B2)

Occupancy	*Area (sf)*	*Heating Load (MBH)*	*Cooling Load (Tons)*
Office	50,000	2000	160
Parking	70,000	N/A	N/A
Data Center	0	0	0
Total	120,000	2000	160

Table 2: Mechanical Heating/Cooling Load - Phase 2 Building (Alternate B2)

The mechanical service requirements and associated coordination with the main distribution system will need to be coordinated further during the predesign phase in conjunction with the master plan and the North Edge scope of work.

2 Building Systems - Mechanical

2.1 Overview

The building plumbing, mechanical and fire protection systems will be designed to be safe, reliable and flexible while meeting the program requirements of the facility. Coordination with the gas utility company will be done during the early parts of DD. Coordination with the city on backflow requirements will also be done for both fire protection and domestic water service. New gas, water, sewer and fire services will be provided in both the Phase 1 and Phase 2 buildings.

The Phase 1 building will include the Legislative Service Center data center, including relocation of equipment from existing facilities within the Legislative Building and the Chandler Court data center. Multiple Computer Room Air Conditioning units with economizers will be provided for this space.

To accommodate the varied program requirements, changing technology and occupied space changes the building mechanical systems will be designed with flexibility in mind. A raised floor system would provide significant flexibility for the mechanical systems along with improved indoor air quality and better temperature control. A raised floor system should be considered for this project.

2.1.1 Plumbing

All plumbing equipment will be new and designed based on the state's mechanical standards. All domestic service will be supplied by copper piping.

Domestic hot water will be a loop distributed system with either centralized or decentralized water heaters. A separate water heater will service the café or kitchen. All waste piping will be routed with ¼" slope and be either cast iron or no-hub piping. Vent piping shall be ABS or cast iron. Gas piping shall be schedule 40 black steel pipe.

2.1.2 HVAC

The proposed mechanical system will involve a complete review of the boiler and chiller system infrastructure to determine the feasibility of tying into the central plant or providing an independent system for the new South Edge building. The steam plant has capacity to support the South Edge building, but would require a significant amount of piping and tunneling work along 14th Avenue SW. If both the chiller and steam heating are routed in the same tunnel, savings would result. If an independent plant was used at the South Edge building, improved energy and maintenance strategies could be implemented by using a more efficient heating and cooling system. Boiler and chiller efficiencies and maintenance have increased dramatically over the last 40 years.

A raised floor system would allow for an equalized distribution system and the flexibility required for the program requirements of this building and would allow the flexibility in moving walls without significantly impacting the mechanical systems. The raised floor system would utilize a diffuser designed for a raised floor application. By distributing the air at the floor and returning the air high in the space, indoor air quality would dramatically be increased resulting in less sick days and improved work performance.

Exhaust systems will be provided at all restrooms, laundry areas, health rooms, and kitchen areas. All HVAC equipment will be located within mechanical spaces for ease of access and maintenance. Ductwork shall meet all SMACNA standards. Supply, return and transfer ductwork shall be lined 1" thick to prohibit noise transfer. Outside air ductwork shall be wrapped.

Controls shall be by an approved vendor of the state. Controls for the HVAC equipment will be based on occupancy sensors, carbon dioxide sensors and indoor air quality. A morning warm-up cycle, daily scheduling, independent zone control and economizer cycles will be included within the controls. Motorized dampers will be provided to control the amount of outside air. Other cost savings measures will be reviewed.

2.1.3 Fire Protection

The building will be completely protected with a fire protection system. A dry sprinkler system will be required at portions of the building and within the garage space(s). Head types will match owner standards. The fire sprinkler header will be provided with an approved double detector check valve assembly and wet and dry pipe risers with alarm valves. Piping will be steel and baskets/guards will be used where heads are installed that are subjected to abuse.

2.2 Sustainable Design Strategies

Sustainable design strategies will be implemented throughout this project to meet or exceed the project's LEED objectives.

2.2.1 Water Savings

Water saving fixtures is an easy addition to the programming requirements for this building. Individual lavatories can have metered faucets with aerators. Water closets can be vitreous china with dual manual flush valves. These valves save water based on use. Urinals can be vitreous china with ultra low flush technology reducing the water requirement from 0.6 gpf to 0.16 gpf.

Gray water systems are a great way to save water usage. A central system that would serve water closets and urinals would save a significant amount of water. A gray water system should be explored.

2.2.2 Energy Performance

The HVAC system needs to be optimized to maximize the energy performance based on a payback of X years determined by the state. Many systems exist with today's technology that provides great energy performance with a minimal first cost impact. In conjunction with energy performance, filter of the air should be reviewed from both a performance standpoint and maintenance.

2.2.3 Environmental Quality

By providing more outside air that is filtered properly, the environment of the building will be improved in many ways and should be explored. By using more outside air, heat recovery should be explored and implemented to ensure that energy is not wasted. Zoning of spaces is critical and needs to be reviewed to ensure flexibility along with the controllability of the space resulting in a positive environment with good thermal comfort. By improving the zoning, the controllability of the system will also be improved.

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F. Electrical Engineering Technical Memo

Hargis

F. Electrical Engineering Technical Memo

Hargis

M E M O

To: **NBBJ**

Date: October 12, 2007

From: Erik Stearns – Hargis Engineers, Inc.

Regarding: Capitol Campus South Edge Sub-Campus Plan – Project Request Report
Electrical Engineering Technical Memo

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1 Infrastructure Analysis – Electrical Site Utilities

1.1 Summary

Based on our review of background information and available related studies, it appears that the existing campus primary electrical service will require upgrades to accommodate the new South Edge project while maintaining the feeder redundancy currently on campus. Power distribution Feeder #25, serving the Legislative buildings on campus and the central mechanical plant (the "Power Plant"), was loaded at approximately 33% of feeder ampacity in October 2006 when a rebalancing of electrical load on the system was completed. With the addition of the South Edge project to Feeder #25 - assuming Alternate B2 will be constructed – it appears that the existing feeder would not be able to accommodate the added load based upon code-required calculations.

The existing campus primary power system is configured with some level of redundancy in the feeders. We would expect that desired system operation would limit the feeder load to less than 50% of capacity, to allow for system redundancy, growth and to allow for the additional system capacity required to accommodate code-required calculated loads for new buildings. In order to maintain this level of redundancy, a new campus primary power feeder will be required.

The "Capitol Campus Infrastructure Study Master Plan", dated May 25, 2001 and prepared by Wieland Lindgren Engineers, indicates that "...with the additional load for the Capitol Campus, an upgrade of the substation distribution system will be required, including additional feeders from Capitol or one of the adjacent substations". Our review indicates that these power system upgrades have not yet been designed or constructed. Due to the magnitude of planned projects throughout the Capitol

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Campus, the existing primary power distribution system will need to be evaluated carefully to ensure that the new loads can be accommodated while maintaining the expected level of service reliability and availability to the entire campus. This holistic review is beyond the current scope of this project.

1.2 Existing Conditions

1.2.1 Power

The Capitol Campus takes power service from the Puget Sound Energy (PSE) "Capitol Substation" - located at the intersection of Cherry Street SE and Wheeler Avenue SE - via a primary metered, 12.47kV, 3 phase service. Four underground 12.47kV, 3 phase distribution feeders are routed through the campus to serve the various buildings and loads. The primary distribution feeders are in direct-buried raceways encased in concrete.

Per the infrastructure master plan, the existing feeder conductors are 500 kcmil copper with an ampacity of 370 Amps. The primary feeder short circuit and overcurrent protection device size is not known. Some campus feeders are configured such that the loads can be switched between two feeders, providing some level of redundancy.

The loads on four existing primary distribution feeders, taken in October 2006 after a project to rebalance the loads on the system, are indicated in Table 1.

Feeder	*PSE Feeder Name*	*Load (Amps) on 10/2006*	*Voltage*
Feeder #16	"NRB Feeder"	118	12.47kV, 3 phase
Feeder #17	"Jefferson St Feeder"	120	12.47kV, 3 phase
Feeder #25	"Legislature Feeder"	122	12.47kV, 3 phase
Feeder #26	"Capitol Way Feeder"	Not in Service	12.47kV, 3 phase

Table 1: Capitol Campus Primary Power Feeders

The State of Washington is planning for upgrades to the existing primary distribution system, with design commencing in late 2007 or early 2008, primarily to address safety and reliability issues. We are not aware of a planned project to upgrade distribution capacity as described in the infrastructure master plan. We are also not clear why Feeder #26 was taken out of service, but this feeder may provide the needed capacity required to serve the new campus loads.

The existing underground primary power system is located in the vicinity of the South Edge project. Specifically, Feeder #25 and Feeder #16 are installed to the north and

west of the project site along 14th Ave SW and Water Street SW. Feeder #25 and Feeder #26 are also installed to east of the project site, along Capitol Way S. Existing manholes are available for connecting into the existing underground feeders.

On the site of the existing Visitors Center, just east of the buildings, an existing underground vault "MH-P-PGA" is installed. This vault, sized approximately 10'x20'x8' high, was installed in 1997/1998 and includes two primary sectionalizing switches and interconnection of three campus primary distribution feeders. The location of the vault will need to be coordinated with the proposed project to confirm if it needs to be removed or replaced.

1.2.2 Emergency / Standby Power

Emergency and/or standby power is installed at many individual buildings, including the Legislative, Cherberg, O'Brien and Pritchard buildings to serve life safety and select building loads. Emergency / standby power is generally not provided for complete facility backup for Legislative buildings. A central emergency / standby generator plant does not exist.

1.3 Scope of Upgrades

1.3.1 Power

To accommodate the South Edge project, we anticipate that new primary feeder(s) and new alternate (redundant) feeder(s) would be extended to each new building from the existing underground ductbank and manhole system in the vicinity of the project. Based on the preliminary project concepts, we estimate the new loads, assuming that heating and cooling is provided from the campus central plant, as indicated in Table 2 and Table 3.

Occupancy	*Area (sf)*	*NEC Calculated Load (kVA)*	*Estimated Peak Demand Load (kVA)*
Office	170,000	2,550	1,275
Parking	280,000	560	280
Data Center	3,000	600	450
Total	453,000	3,710	2,005

Table 2: Electrical Load - Phase 1 Building (Alternate B2)

Occupancy	*Area (sf)*	*NEC Calculated Load (kVA)*	*Estimated Peak Demand Load (kVA)*
Office	50,000	750	375
Parking	70,000	140	70
Data Center	0	0	0
Total	120,000	890	445

Table 3: Electrical Load - Phase 2 Building (Alternate B2)

The electrical service requirements and associated coordination with the primary distribution system will need to be coordinated further during the predesign phase.

1.3.2 Emergency / Standby Power

At a minimum, a new emergency / standby generator system will be provided to support code-required emergency loads and critical building functions for the South Edge building(s), including the Legislative Service Center data center electronics and cooling.

The owner has expressed a desire to review options for a centralized standby generator plant that would support all Legislative buildings including the South Edge project during a power outage. A report dated June 29, 2006, titled "Assessment of Capitol Campus Emergency Electrical Service to Five Legislative Buildings", and authored by D. Hittle & Associates indicates that an option to install two (2) 2000kW standby engine generators could be paralleled to provide standby power to these buildings via the primary power distribution system. To also support the proposed South Edge project from this standby generator system, we anticipate a third 2000kW generator would be required.

The predesign phase of the South Edge project, as well as any planned upgrades to the campus primary power system, will need to take into account this programmatic requirement and study the related impacts in more detail. The campus primary power distribution system, as well as the Puget Sound Energy utility interface, will need to revisited and likely reworked to accommodate such a large generator plant.

2 Building Systems – Electrical

2.1 Overview

The building electrical systems will be designed to be safe, reliable and flexible while meeting the program requirements of the facility.

New primary transformer vaults and main electrical service entrance equipment will be provided in both the Phase 1 and Phase 2 buildings. Electrical rooms will be provided on at each floor which will house panelboards and step-down transformers to serve building lighting, mechanical and plug loads.

A standby generator plant and paralleling switchgear, as described above, will be provided within the Phase 1 building to provide generator power to Legislative buildings during a utility outage. This system will require extensive coordination with the utility (PSE) and the campus primary power distribution system.

Small emergency generator(s) will still be required for code-required emergency loads within the buildings to meet code requirements for separation of emergency wiring systems and the time required to bring emergency power on line.

The Phase 1 building will include the Legislative Service Center data center, including relocation of equipment from existing facilities within the Legislative Building and the Chandler Court data center. A single—module static UPS system, power distribution units and standby generator backup will be provided for this space.

To accommodate the varied program requirements and changing technology the building electrical systems will be designed with flexibility in mind. A raised floor system would provide significant flexibility for the electrical systems and should be considered for this project.

2.2 Sustainable Design Strategies

Sustainable design strategies will be implemented throughout this project to meet or exceed the project's LEED objectives.

The project lighting systems will be designed to optimize energy efficiency through use of advancing technology and application of lighting where it is needed. Automatic lighting controls - including use of occupancy sensors, daylight harvesting controls and similar strategies – will be utilized to reduce energy consumption as well as peak electrical demand.

For exterior lighting, full cutoff light fixtures will be utilized wherever possible to reduce light pollution and comply with dark sky requirements.

The power distribution system will be segregated to allow for separate monitoring of energy consumption and trending for specific load types (i.e. lighting, mechanical and plug loads).

Renewable energy systems, such as the application of photovoltaics (PV) could also be considered. However, based on traditional economic analysis in the northwest, a PV installation will most likely not be economically viable nor will it help the project from a LEED rating perspective. Should rebate or grant money be available for a PV project, the economics for a PV installation would be improved. Should a demonstration project be desired, we feel that the South Edge project could be a good candidate.

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G. Telecommunications Technical Memo

Hargis

G. Telecommunications Technical Memo Hargis

M E M O

To: **NBBJ**

Date: October 12, 2007

From: Paul Thomas – Hargis Engineers, Inc.

Regarding: Capitol Campus South Edge Sub-Campus Plan – Project Request Report
Telecommunications Technical Memo

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1. Infrastructure Analysis – Telecommunications

1.1 Summary

The below information was obtained during our site survey and documents the current underground and aerial topology of existing network, CATV, and telecommunication services entering the South Edge site. This information was obtained in coordination with David Tobin and his knowledge of the existing facilities

1.2 Existing Conditions

The Visitors Center appears to be a "Stand Alone" facility, receiving its services via direct connections to the Qwest vault system located along 14th Ave. Demarcation could not be verified and is assumed to be located within the building. It was also noted that there may be a CATV presence within the facility based upon the location of a service pedestal located within the landscaped area between the foot bridge and the South side of the building.

The Newhouse building is connected to the campus systems via approximately three (3) 2" conduits that route underground from the Southeast corner of the John A. Cherberg building and stub into a wall mounted junction box on the East wall of the Newhouse building.

The assumed infrastructure connecting the buildings is as follows:

600 pair of Category 3 copper (2 - 300 pair cables)
24 strand - 50 micron Multi-mode optical fiber cable
These connections route to the MDF located in the basement of the building.

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The Press House structures are currently being served via aerial facilities. Each building has a connection to a utility pole located to the south and extending across 15th Ave SW. Additional coordination with the utilities will be required to accommodate relocation.

1.2.1 Telecommunications outside Plant Facilities

To accommodate the South Campus project, we anticipate that new underground facilities will be extended to each new building from a newly constructed manhole system or utility corridor. The assumed path would route from the North side of the Cherberg building east along 14th AVE.

Coordination with Qwest would be required to minimize potential conflicts with the existing duct bank routing from Capitol Way to the Cherberg building.

Our assumption is that any facilities being extended to the South Edge site would be coordinated as a joint utility construction project and would include private systems as well as all other associated facilities.

1.2.2 Telecommunications Voice Systems

The primary PBX is located within the Legislative building and has copper facilities connecting to surrounding buildings. Our assumption is that this system would remain in its current location and new copper facilities would be installed between the Legislative building and the South Edge Campus.

Depending upon the expansion capabilities of the system additional cabinets may be required to accommodate the increased headcount within the new buildings.

Other options may include the addition of a remote cabinet within the South Edge buildings connecting back to the primary system via optical fiber connectivity, or the implementation of a Voice-over IP solution.

1.2.3 Data / Video Systems

The basic topology of the network within the Capitol Campus appears to be in a Star configuration meaning that the infrastructure connections each building runs back to a consolidated location of distribution. It's our understanding that there may be a desire to construct a new Data Center area within phase 1 of the South Edge campus

construction. Our assumption is that the Chandler Place Data Center functionality would migrate to this location as well some DIS and WTV systems.

Based upon our survey of the Chandler Place facility and the equipment room located in the Legislative building, the data center would need to be approximately 3000 sqft. to house the existing systems and allow for future expansion.

Should this facility temporarily house the O'Brien building hearing rooms, additional considerations to accommodate TVW and the extensive Audio/Visual systems would be required.

2. Design Considerations

Below are a few design considerations for the construction of South Edge campus and the Data Center facility.

Building

- Redundant Communications entrance facilities
  This would allow for the installation of a Ring topology network, minimizing the risk of a single point of failure in the system.
  Provide a minimum of 50 feet of separation between system entries.
- Dedicated service provider facilities within the building

Internal Spaces

- Computer Flooring (Raised Access Floor)
  We would recommend a minimum of 12-18 inches to allow for the distribution of HVAC, Power and communications cabling within the space.
- Dedicated telecommunications grounding system
- FM200 fire suppression system
- Dedicated cooling system (7/24)

H. Parking & Circulation Technical Memo

Shea, Carr & Jewell

H. Parking & Circulation Technical Memo

Shea, Carr & Jewell

MEMORANDUM

TO:	Larry Goetz, AIA NBBJ
FROM:	Jean Carr, Principal
DATE:	September 26, 2007
SUBJECT:	South Edge Sub Campus Plan Parking and Circulation Review SC&J Project No. 870-01

The South Edge Sub-Campus consists of the area of west campus which is currently occupied by the Newhouse Building, two press houses (the White House and Schumaker House), and the visitor information center. This memorandum is written to provide preliminary parking and circulation review for redevelopment of the site and provide recommendations for future analysis and consideration.

I. Existing Conditions

The Newhouse Building, two press houses (White House and Schumaker House) and visitor information center are currently on the site to be redeveloped. A total of 141 surface parking stalls are located in the Visitor Center and Newhouse lots, consisting of 57 visitor spaces and 84 assigned parking spaces. 21 spaces are also available on the east side of Water Street fronting the Newhouse Building.

The Newhouse Building houses 69 Senate employees. The number of press staff located in the White House and Schumaker House isn't known.

II. Redevelopment Proposal

The current redevelopment proposal includes demolishing the existing buildings and constructing two buildings totaling 170,000-220,000 square feet. 162 surface parking stalls will be removed (assuming the spaces on Water Street will be eliminated) and a parking structure will be integrated into one or both of the buildings.

The Phase 1 office building would be constructed on the east block of the site, where the Visitor Center and parking is currently located. It is anticipated that occupants of the Newhouse building (Senate and 69 State employees) will move to the new Phase 1 south-edge building temporarily, with their permanent offices planned to be located in the Phase 2 building. Occupants of the O'Brien Building (House of Representatives and 364 State employees) will be temporarily moved into the Phase 1 building while the O'Brien building is being renovated. Depending on the final square footage of the Phase I building, some shared legislative functions could also be located within it. The Newhouse building would then be demolished, the Phase 2 (west block) building would be constructed, and the Representatives and their staff would move back to the O'Brien Building. The Senators would move permanently into the Phase 2 building, and legislative sub-agencies and staff currently located off-campus would move into the Phase 1 building.

III. Parking Considerations

Initially, 77 parking stalls located at the visitor center will be lost while the Phase 1 building is under construction. At this time, it is not certain where the Visitor Center, currently located on the Phase 1 site, will be housed. The new location will need to include sufficient short-term parking for visitors coming to campus.

The west campus area currently is served predominantly by surface parking lots, on street parking, and a few small parking structures on the north edge of the campus. The majority of parking spaces are located in the east campus area. This parking is perceived as less convenient and therefore less desirable to state employees, the Legislature, and visitors. If there are opportunities to provide additional parking in the project beyond the minimum spaces needed for the project alone it would be beneficial to the users of west campus to have such spaces available.

The location of the south edge site is sensitive because it shares an edge with the South Capitol neighborhood. Residential streets within the neighborhood have historically received high parking pressure during peak activity periods at the Capitol Campus. This parking activity disrupts the residential nature of the neighborhood, and makes parking difficult for residents going to and from their homes. It will be important that parking associated with the new buildings and their construction doesn't overflow into the adjacent neighborhood when surface parking is eliminated.

Circulation

The existing pedestrian bridge across Capitol Boulevard moves pedestrians from the Plaza Garage and east campus to the Visitor Center. The bridge will be retained and improved in order to continue to provide safe and convenient access through the site to west campus.

The location of vehicular access to the parking structure must be carefully planned so that traffic going to and from the structure is not routed through the South Capitol neighborhood. Access will likely be from Sid Snyder Avenue, as far west of Capitol Boulevard as feasible in order to prevent vehicles entering the lot from queueing back to Capitol Boulevard.

As planning for Phase 1 moves forward and location of parking access is firmed up, general campus circulation, including the feasibility of closing Columbia Street, should be thoroughly evaluated. While closing Columbia Street may improve design options on the site, it could negatively impact access to and from the South Capitol neighborhood. Routing all vehicles leaving the south campus west to Water Street will increase traffic at a key pedestrian location where staff and visitors access the O'Brien and Cherberg Buildings, as well as the Legislative Building.

IV. Code Requirements

The City of Olympia parking standards for government offices (OMC 18.38.100 Vehicular and Bicycle Parking Standards) require 3.5 spaces per 1,000 square feet of gross building area. Depending on the final size of the buildings, this equates to 595-770 parking stalls for the building size ranges being proposed for the South Edge Sub-Campus. As the project moves into the development stage, the actual number of parking spaces needed and provided will be identified. The City of Olympia has indicated that it will be flexible in its requirements so that the needs of State government are met. If feasible, the project should include a generous amount of parking that not only meets the needs of the building tenants and contributes toward replacing the amount of parking lost, but also considers legislative activity and parking pressures on west campus, especially during Session.

V. Recommendations

1. Clearly identify the number of staff expected to work within the buildings during interim use and also after the House moves back to the O'Brien Building.

2. Evaluate the expected number of employees within the proposed building per 1,000 square feet of area to determine if the City regulation of 3.5 spaces/1,000 square feet of building area is a reasonable target for parking demand generated by the new buildings.

3. Evaluate potential to improve parking capacity on West Campus through the new parking garage. West Campus has the most employee and visitor activity, and there is a perception that convenient parking on campus is in short supply.

4. Conduct a campus-wide parking turnover study during Session to determine how Session impacts parking supply on both the west and east campus areas.

5. Determine the appropriate number of visitor spaces needed in the South Edge Sub Campus because of its proximity and convenience to the Legislative buildings and the potential for negative impacts of under parking the area on the adjacent residential neighborhood.

6. Evaluate potential traffic circulation issues associated with the closure of Columbia Street on both the campus and the South Capitol neighborhood.

7. Locate access points to the parking structures in a manner that minimizes disruption to circulation within west campus and that avoids impacts to the South Capitol neighborhood.

I. Historic & Archaeological Resources Technical Memo

Landau Associates

I. Historic & Archaeological Resources Technical Memo

Landau Associates

CULTURAL RESOURCES SURVEY COVER SHEET

Please submit reports to DAHP unbound

Author: Kara M. Kanaby, Douglas F. Tingwall, Linda Naoi Goetz, and Thomas C. Rust

Title of Report: Feasibility Study, Historic and Archaeological Resources, South Edge Capitol Campus Project, Olympia, Washington

Date: November 30, 2007

County (ies): Thurston Section: 47 Township: 18N Range: 2W
Quad: Tumwater (1959, photorevised 1968 and 1973) Acres: 2.87

CD submitted? Yes

Does this replace a draft? Yes

Sites Found? No

TCP(s) found? No

DAHP Archaeological Site #:

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REPORT CHECK LIST

Report should contain the following items:

- Clear objectives and methods
- A summary of the results of the survey
- A report of where the survey records and data are stored
- A research design that:
  - Details survey objectives
  - Details specific methods
  - Details expected results
  - Details area surveyed including map(s) and legal locational information
  - Details how results will be feedback in the planning process

Please be sure that any report and its coversheet, figures, appendices, attachments, correspondence, etc., submitted via CD has been compiled into one single PDF. Thank you!

REVISED
TECHNICAL MEMORANDUM

LANDAU ASSOCIATES
ENVIRONMENTAL | GEOTECHNICAL | NATURAL RESOURCES

TO: Larry Goetz, NBBJ

FROM: Kara M. Kanaby, Douglas F. Tingwall, Linda Naoi Goetz, and Thomas C. Rust

DATE: November 30, 2007

RE: FEASIBILITY STUDY, HISTORIC AND ARCHAEOLOGICAL RESOURCES SOUTH EDGE CAPITOL CAMPUS PROJECT OLYMPIA, WASHINGTON

INTRODUCTION AND REGULATORY CONTEXT

This technical memorandum addresses preliminary cultural resource findings, based on background records searches, for the Washington State Department of General Administration South Edge sub-campus plan (South Edge Capitol campus project), located in Olympia, Washington. The findings in this technical memorandum should be used for historic and archaeological resource planning as part of the overall South Edge Capitol campus project planning, preliminary programming, and preliminary design for proposed redevelopment of the property. Proposed plans include constructing one building for legislative offices and a second building for office space on the approximately 2.87-acre property. The project is located in Section 47 of Township18 North, Range 2 West, as shown on Figures 1 and 2. The findings in this technical memorandum can be used to preliminarily address the requirements of assessing potential impacts to cultural resources under the Revised Code of Washington (RCW 27.44 and 27.53), Washington State Environmental Policy Act (WAC 197-11), and the Washington Governor's Executive Order 05-05. No federal funding or permits will be part of the project process; therefore, the South Edge Capitol campus project will not be subject to Section 106 of the National Historic Preservation Act (36 CFR 800).

CULTURAL CONTEXT

The following sections provide overviews of the natural and cultural history for the South Edge Capitol campus project area and include summary descriptions of physiography, hydrography, climate, geology, soils, flora, fauna, prehistory, ethnohistory, and history. This information has bearing on the potential for archaeological and historic resources in the project area.

Environmental and Cultural Setting

The South Edge Capitol campus project is situated on an upland bench of glacial deposits that overlooks the western side of the southern end of Budd Inlet in Puget Sound. The upland topography has been glacially scoured, which is reflected in the generally north-flowing, local drainages such as Woodward Creek, Spurgeon Creek, and the Black River. Lakes in the vicinity have filled-in depressions or kettles in the upland topography left by large pieces of stagnating ice during the waning of the last ice age.

Given the influence of maritime and continental air masses, the climate of the project area is characterized by dry summers and wet winters with mild temperatures and moderate to heavy precipitation. Rainfall averages 33 inches annually and average temperatures range from 63°F in July to 39°F in December (Franklin and Dyrness 1988; Noble and Wallace 1966; Pringle 1990; Wallace and Molenaar 1961; Western Regional Climate Center 2007).

The project area lies within the western hemlock (*Tsuga heterophylla*) zone of the Puget Lowland, which also contains Douglas fir (*Pseudotsuga menziesii)*, western red cedar (*Thuja plicata*), western white pine (*Pinus monticola*), lodge-pole pine (*Pinus contorta*), red alder (*Alnus rubra*), and big-leaf maple (*Acer macrophyllum*) trees. Understory species commonly found in the project area include swordfern (*Polystichum munitum*), bracken fern (*Pteridium aquilinum*), Oregon grape (*Berberis nervosa*), vine maple (*A. circinatum*), huckleberry (*Vaccinium* spp.), berry vines (*Rubus* spp.), creambush ocean-spray (*Holodiscus discolor*), salal (*Gaultheria shallon*), and twinflower (*Linnaea borealis*) (Franklin and Dyrness 1988). Currently, the local surrounding area hosts prairie ecotones, upland mixed coniferous and deciduous forests, and riparian zones around streams and lakes.

The biotic communities in the Olympia area were historically not limited to the current distribution of plants and animals. Historic, ethnographic, and archaeological data in the vicinity attest to the diversity of floral and faunal resources that were locally available for human procurement and that were used for food, medicinal purposes, tools, and adornment.

Historically, deer (*Odocoileus* spp.), elk (*Cervus canadensis*), black bear (*Ursus americanus*), cougar (*Felis concolor*), and coyote (*Canis latrans*) lived in the vicinity of Olympia (Dalquest 1948). In addition, a great variety of birds inhabit the area on a seasonal and annual basis. Moreover, the waterways and littoral zones around Olympia host a diverse array of sea mammals, fish and shellfish. Local drainages and lakes provide habitat to both anadromous and resident fish populations including coho salmon (*Oncorhynchus kisutch*), Chinook salmon (*O. tshawytscha*), rainbow trout (*Salmo gairdneri*), cutthroat trout (*O. clarki*), steelhead (*O. mykiss*), and whitefish (*Prosopium williamsoni*) (Streamnet.org 2007; Wydoski and Whitney 1979).

The most extensive glacial deposit manifested in the local topography around Olympia is the Vashon Drift, although earlier glacial deposits are distributed along the bases of the bluffs overlooking Budd Inlet, Eld Inlet, and Dana Passage (Walsh et al. 1987; Noble and Wallace 1966). Vashon Drift was deposited during the last continental ice sheet advance of the Fraser Glaciation approximately 18,000 to 14,000 years ago (Walsh et al. 1987; Noble and Wallace 1966; Thorson 1980; Wright and Frey 1965; Wright and Porter 1983). This deposit consists of approximately 200 ft (approximately 61 meters) of poorly sorted clays, silts, sands, gravels, and boulders that represent basal till and glacial outwash. Vashon till underlies Olympia on the eastern side of Budd Inlet and a combination of till and outwash is situated on the western side of the waterway (Walsh et al. 1987; Noble and Wallace 1966). Holocene-age deposits consist of alluvium and colluvium deposited by fluvial and hillslope processes. Other historic to recent deposits around Olympia include areas of modified land that represent natural land surfaces that have been graded, excavated, or filled.

The primary soils within the Olympia vicinity are assigned to the Alderwood-Everett association (Indianola loamy sand and Nisqually loamy sand) and consist of deep, moderately to excessively drained soils on relatively level glacial till plains (Pringle 1990). Typical soil profiles consist of variegated brown, yellowish brown, and olive brown sandy loams overlying basal glacial deposits.

Prehistory

Cultural change in Northwest Coast prehistory is evaluated on temporal and spatial variations in archaeological assemblage, subsistence, and settlement patterns within regional environmental contexts. The prehistoric record for Puget Sound is divided into three broad chronological periods: the early [15,000-5,000 years Before Present (BP)], middle (5,000-1,000 year BP), and late (1,000-250 years BP).

The early prehistoric period is characterized by chipped stone tools such as fluted projectile points, leaf-shaped projectile points, and cobble tools with associated core and blade industries. Subsistence patterns exhibit a reliance on inland hunting supplemented with fishing and marine invertebrate procurement in riverine and littoral contexts. Settlements were typically located on upland plateaus or river terraces, although littoral occupations may have been inundated by seismic or eustatic processes during the Holocene.

The middle prehistoric period represented a proliferation in tool diversity within regional assemblages. Notched stone projectile points were characterized by a decrease in size, and toolkits were supplemented with groundstone, bone, and antler industries. Subsistence practices showed an increased orientation toward marine and riverine habitats; shellfish, salmon, and sea mammals became more important resources during this period. Shell middens appear in the archaeological record during this

period. Occupation areas expanded to include modern shorelines and islands in Puget Sound, characterized by the earliest evidence of seasonal village sites.

The late prehistoric period is characterized by assemblages containing exotic trade goods imported from indigenous populations in the Columbia Plateau as well as metal arrowheads and trade beads from Euro-American groups. Small side-notched and triangular stone projectile points persisted, but were superseded by an emphasis on bone and antler tools. Salmon became a major staple, indicated by the construction and maintenance of elaborate fish weirs. Aquatic subsistence practices were supplemented by terrestrial hunting and plant procurement. Permanent, ethnographically described village sites were established and persisted into the historic period (Carlson 1990; Kidd 1964; Nelson 1990; Wessen and Stilson 1987).

Ethnohistory

Prior to and during the Euro-American settlement of Washington, the south Puget Sound was occupied by the South Coast Salish Indians. The Squaxin occupied the area between Hood Canal and Case Inlet in the south Puget Sound (Hunn 1993; Ruby and Brown 1986; Spier 1936).

The Nisqually occupied territory as far north as Parkland-Spanaway, south past Rainier and Tenino, east into the foothills of Mount Rainier, and west into the lower Puget Sound. The Puyallup occupied territory along the Puyallup and White rivers, in the Commencement Bay and Tacoma area as well as Vashon Island. In some cases, the territory of the Nisqually and Puyallup overlapped in "common use areas," meaning that both tribes used the same territory (Carpenter 2002). The name Nisqually comes from *Squalliabsch* meaning "the people of the Grass Country, the people of the River" (Carpenter 2002). The name Puyallup comes from *Pwuya'lap*, the native name for the Puyallup River (Swanton 1978). The derivation of the tribal name Squaxin has alternately been interpreted as meaning "alone" or "split apart" (Ruby and Brown 1986; Waterman 2001). The Squaxin Tribe defines Squaxin or "Squawksin" as meaning "in between" or "piece of land to cross over to another bay" (squaxinislandmuseum.org 2007).

Winter villages established by the Nisqually, Puyallup, and Squaxin were cedar plank longhouses. During the summer months, temporary pole and mat structures were used that were easy to transport (Haeberlin and Gunther 1930; Suttles and Lane 1990). Cedar canoes were the primary means of transportation across the Puget Sound's inlets and waterways. In addition to canoes, the Nisqually used horses that they had obtained from the Klickitat (Ruby and Brown 1986).

Subsistence revolved around seasonal harvests of fish and shellfish (Haeberlin and Gunther 1930; Hunn 1993; Suttles and Lane 1990). The primary riverine and marine resources included herring, salmon, trout, flounder, and smelt, and the primary shellfish resources included butter clams, horse clams, little neck clams, geoduck, heart cockle, and Olympia oyster. In addition to marine resources, plants and

berries were gathered including camas, hazelnuts, red elderberry, blackberries, salmonberries, thimbleberries, dandelion roots, wild carrot, onion, and wapato. Other plant resources include licorice fern roots, cattails, sunflower roots, and acorns (Carpenter 2002; Haeberlin and Gunther 1930). Bear, deer elk, beaver, and rabbits were hunted as well (Carpenter 2002; Gunther 1945; Haeberlin and Gunther 1930; Hunn 1993; Suttles and Lane 1990).

Native American Place Names

The Olympia vicinity exhibits ethnographic locations in the form of toponyms or place names that describe areas associated with Coast Salish tradition, settlements, and subsistence. These traditional places are concentrated in the area of the seven inlets that make up the south Puget Sound (Waterman 2001). The ethnographer T.T. Waterman notes that toponyms vary according to tribal recollection and his informants admitted that many locations were lost to tradition over time (Waterman 1922, 2001).

Waterman (2001) notes a total of 14 place names in the area of Budd Inlet and Olympia. These place names are descriptive or associated with traditional subsistence locations including: *Xweuq!qwakwaÛdup* "where there are white shells on the ground" for a small promontory located north of Percival Creek and *O'laläts*, "where cattails grow" (Waterman 2001). Some toponyms represent village locations and mythical happenings. They include *B1s-tcɛ'txÛd* "frequented by black bears" for a village site located at the present-day city of Olympia and *Wedwa* "cougar" for a place on the southern side of Butler Cove near the shoreline. A cougar was swimming here during the myth period and was turned into a rock (Waterman 2001).

The number of place names evident in the south Puget Sound area attests to a significant historical presence of Salishan peoples affiliated with the descendants of the Nisqually, Puyallup, and Squaxin tribes. Currently, Indian tribes are concerned about development that occurs within their ceded territories and traditional use areas. These tribal groups often want to protect cultural properties, which include archaeological, traditional procurement, historic or landmark, and religious sites (Kennedy 1993).

History

Although Russian, Spanish, and British naval expeditions are thought to have penetrated the coastal waters off Washington as early as the middle 1500s, British Captain George Vancouver's arrival in 1792 marks the earliest undisputed record of Euro-American contact in the Puget Sound region. Many of the region's physiographic names such as Puget Sound, Hood Canal, Mount Baker, Mount Rainier, and Dungeness Spit were derived from members of Vancouver's party and the British admiralty (Cole and Darling 1990; Kirk and Alexander 1990; Marino 1990; Meany 1923; Morgan 1979).

Exploration was followed by incursions of Euro-American fur traders under the aegis of the Hudson's Bay Company during the 1830s. Early contacts between Euro-American traders and native populations proved disastrous to the latter as they fell victim to waves of malaria, tuberculosis, and smallpox epidemics in the late 1700s and middle 1800s (Cole and Darling 1990; Kirk and Alexander 1990; Marino 1990). The onset of the fur trade period was followed by further U.S. government-sponsored exploration under the command of Lieutenant Charles Wilkes in 1841. Part of the objective of this expedition was to map the southern Puget Sound area. Budd Inlet and Henderson Inlet were both named after members of the Wilkes expedition.

In 1833, the Hudson's Bay Company established Fort Nisqually near Sequalitchew Creek on the Nisqually delta, about 7 miles from the South Edge Capitol campus project. Early American settlers to the south Puget Sound area were given supplies from Fort Nisqually and the first American settlement was established near Tumwater Falls in 1845. The settlement was first named New Market, which was later changed to Tumwater (Meany 1923; Rathburn 1895). Settlers to the area found that the soil was good for farming and the plentiful timber conducive to a successful logging industry. In 1848, Edmund Sylvester and Levi Smith claimed adjacent donation land claims on what was to become the location of the City of Olympia. Upon the death of Levi Smith, Edmund Sylvester took over Smith's Donation Land Claim and in 1850 Smith's claim was dedicated as a town. During the early years, Smith's cabin functioned as a hotel and store until 1852, when George Barnes opened a General Store (Newell 1950; Newell 1975; Rathburn 1895).

In 1848, the Oregon Territory was created and incorporated the present-day area of Oregon and Washington State. As settlers moved northward, it was determined that the Oregon Territory was too big to be effectively managed and in 1853 the Washington Territory was created (Ficken and LeWarne 1988). Isaac Stevens was appointed to be the new territorial governor. Stevens arrived in Olympia in 1853 and made it the territorial capital. Edmund Sylvester offered 12 acres to the new territorial government and in 1855 the offer was accepted (Johnston 1988). This parcel now forms the core of the Capitol campus.

A two-story structure was constructed and was used from 1856 to 1902 when the legislature moved to the Thurston County Courthouse; the Olympia structure was located near the intersection of Cherry Lane and Diagonal North on the current campus (Gray 2007a; Johnston 1988). In 1893, a five-member State Capitol Commission was formed to find an architect to design and construct a capitol building. In 1894, the architect was selected and work began. However, only the foundations were constructed before the work was stopped by the economic depression of that year (Johnston 1988). In 1911, a new committee was formed to search for an architect to design the capitol (Johnston 1988). The New York firm Wilder & White was chosen to design and construct the new Capitol campus. Famed landscape architects the Olmsted Brothers were chosen to develop the surrounding landscape of the

Capitol campus (Johnston 1988; Woodbridge and Montgomery 1980). Construction of the Capitol campus began in 1911 on the Temple of Justice Building, with much of it completed in 1928 with the construction of the Legislative Building. The final phase of construction on the campus began in 1936 and concluded in 1940 with the Transportation Building, now known as the O'Brien Building (Artifacts Consulting and Susan Black and Associates 2001; Gray 2007a; Johnston 1988).

PREVIOUS INVESTIGATIONS/LITERATURE REVIEW

Cultural Resource Surveys

Fifteen cultural resource assessments have been conducted within a 1-mile radius of the proposed project location. These cultural resource investigations have been conducted for transportation, utility, and recreation projects and for overviews of the south Puget Sound region. In 1949, an archaeological site survey was conducted for the southwestern Puget Sound area and archaeological sites were identified and recorded. The area covered by the survey included all the shoreline from Allyn southward to Sandy Point (Howard 1949). In 1963, an archaeological site survey was conducted for the southern Puget Sound area. Archaeological sites that had been recorded in 1949 were relocated and new sites were identified within the vicinity of the South Edge Capitol campus project area (Tarver and Free 1963).

Another cultural report is associated with a park project located approximately 0.25 mile from the South Edge Capitol campus project and describes the discovery of a bottle dump during construction activity at Heritage Park in Olympia (Larson 2000). Heritage Park is located approximately 0.25 mile from the South Capitol campus project. The bottle dump was determined not to be significant but was recorded as an archaeological site (45TN242). Recommendations were made for an archaeologist to be present and monitor the ground-disturbing activities (Larson 2000).

Two cultural resource surveys have been conducted for transportation projects within approximately 1 mile of the project area. An archaeological reconnaissance was conducted for work along SR 5 between Trosper Road to Martin Way and no cultural resources were identified (Lorenz 1978). Archaeological resources monitoring was conducted along the Deschutes Parkway for earthquake repair. During archaeological monitoring of construction activity, a shell midden (archaeological site 45TN271) was identified and fire-modified rock, shell, petrified wood cobbles, and mammal and fish bone were observed (Murphy and Larson 2003a).

Six cultural resource reports have been prepared for various stages of the LOTT (Lacey, Olympia, Tumwater and Thurston counties) project and one cultural resource assessment has been conducted for the Percival Creek Pump Station project located within approximately 1.5 miles of the South Edge Capitol campus project location (Berger 2007; Lewarch et al. 2000; Murphy et al. 2001; Murphy and

Larson 2000, 2003b; Robbins and Larson 1997). During construction of the LOTT Capitol Lake Pump Station, located approximately 0.5 mile from the South Edge Capitol campus project area, the Deschutes Parkway Beach site (site 45TN241) was identified. The site is a displaced shell midden containing shell fragments and dark midden soil. Archaeologists determined that the Deschutes Parkway Beach site was not significant and is likely a disassociated portion of the Deschutes Parkway Shell midden (45TN233) located nearby (Murphy et al. 2001). A site assessment was conducted by the Squaxin Island Tribe for these middens and identified them as a shell midden and habitation site. Artifacts from the site included waterlogged wood, fiber, stone, bone, and shell artifacts (Croes et al. 2000). No cultural resources were identified during the cultural resources assessment for the Percival Creek Pump Station (Berger 2007).

Archaeological Sites

Eleven archaeological sites have been identified within a 1-mile vicinity of the South Edge Capitol campus project. Closest to the project area, within 0.25 mile, are two sites, 45TN5 and 45TN242. Site 45TN5 has been identified as a shell midden and contains shell, bone, charcoal, and fire-cracked rock (Free and Tarver 1963a). As previously mentioned, archaeological site 45TN242, the Heritage Bottle Dump, was observed during construction activity at Heritage Park. The bottle dump was identified as bottle refuse associated with the Olympia Brewing Company Bottling Works. The bottle dump contained blob top beer bottles, push-up pontil bottles, and ceramic stoppers as well as bottles representing early automatic machine bottling (Iverson and Roedel 2001).

Three sites (45TN232, 45TN233, and 45TN241) are located within 0.5 mile of the project area. Site 45TN232 has been identified as the roadbed of the Olympia and Chehalis Valley Railroad and was built in 1878 (Robbins 1997). As previously mentioned, site 45TN233, the Deschutes Parkway shell midden, and site 45TN241, the Deschutes Parkway Beach site, were identified during the LOTT project. Both sites have been recorded as shell middens; 45TN233 is considered to be a shell midden habitation site (Croes et al. 2000; Lewarch and Murphy 2000). Shell, fire-modified rock, fragmentary mammal bone, and a cryptocrystalline silica core were identified at site 45TN233 (Robbins 1998). Site 45TN241 contains fire-modified rock, debitage, and historic fill as well as wood and fiber artifacts (Croes et al. 2000; Lewarch and Murphy 2000).

Five sites are located within a 0.75-mile vicinity of the project area (45TN201, 45TN238, 45TN239, 45TN250, and 45TN271). Site 45TN201, Percival's dump, was uncovered during the construction activities for a new senior center. Artifacts observed included ceramic ale bottles, liquor and medical glass bottles, butchered animal bones, and ceramic fragments (Crooks 1986; Harvey and Stilson 1985). Site 45TN238 was identified as the remains of a possible historic structure and pilings built into the bay prior to the construction of the current bridge, which was built in 1921, and the damming of the

Deschutes River in 1951 (Liddle 1999a). Site 45TN239 has been identified as a historic debris scatter consisting of glass bottles, ceramic fragments, cans, the soles of shoes and bricks (Liddle 1999b). Site 45TN250 was identified as the Fourth Avenue Bridge Historic dump, circa 1880 to 1900, and contained shell fragments, ceramic fragments, glass bottle fragments, and sawn pig and cow bones (Cole 2002). Site 45TN271 has been identified as the Lower Deschutes Basin West shell midden, discovered during earthquake repairs to the Deschutes Parkway. The shell midden was determined to be stratified and intact prior to removal by construction equipment and contained shellfish fragments, mammal bones, petrified wood, charcoal and fire-modified rock (Murphy 2002).

Located within 1 mile of the South Edge Capitol campus project is site 45TN40, which appears to have been first recorded in 1963 as a shell midden. The 1963 site form notes the presence of both prehistoric and historic material including mixed shell, bone, charcoal, fire-cracked rock, antler wedge, buttons, and nails (Free and Tarver 1963b). The site was tested in 1975 and shellfish, cryptocrystalline artifacts, and fire-cracked rock were identified as well as historic material from the New Market settlement (Valley 1975). The site form was updated in 1998, and identified the site as a prehistoric and early historic shell midden. Shell, mammal bones, fish bone, fire-cracked rock, charcoal, and historic glass and ceramic fragments were present (Wessen 1998).

Historic Structures

Located within 1 mile of the project area are numerous historic structures and three Historic Districts listed on the National Register of Historic Places (NRHP) and the Washington Heritage Register (WHR). The South Capitol Neighborhood Historic District is located south and immediately adjacent to the Washington State Capitol campus and consists of early residential homes, representative of the late 19th to early 20th century style of architecture (Stevenson 1991). The Washington State Capitol Historic District is adjacent to the South Edge Capitol campus project and includes the Governor's Mansion, the Temple of Justice, and the Legislative Building (Vandermeer 1978). The Olympia Downtown Historic District covers 17 city blocks and most of Olympia's historic buildings, including the original town square and Old Capitol Building, as well as 19th and 20th century buildings (Stevenson 2004).

South Edge Capitol Campus Project Area

Currently, the proposed project area contains four structures, three of which have been inventoried and are recommended eligible to the NRHP. The three historic structures are the Newhouse (Highway) Building, the Ayers Duplex, and the Carlyon House, which are commonly referred to as the "Press Houses." Background research was conducted at the Washington State Archives, Washington

State Department of Archaeology and Historic Preservation (DAHP), and the University of Washington's Special Collection between September 13 and 26, 2007. All three historic structures have been inventoried and are eligible for listing in the NRHP. The fourth structure is the Visitor Center, which was built in 1981 (Johnston 1988). Both the Visitor Center and the Newhouse Building are defined as public and historic facilities protected under RCW 79.24.710 and 79.24.720, which applies the Secretary of the Interior's Standards for the Treatment of Historic Properties.

The South Edge Capitol campus project area is on Block 3 of the Edward J. Allen Addition. An examination of historical Sanborn maps shows that the block remained empty until 1908, when a dwelling was constructed on Lot 9 (Sanborn 1912). The 1924 Sanborn map shows the Carlyon House on Lots 1 and 2 and the 1924 (1947) revised Sanborn map shows the Carlyon House, the Ayers Duplex, and the Highway (Newhouse) Building [Sanborn 1924 (1947)].

Newhouse (Highway) Building

Construction began on the Newhouse (Highway) Building in 1934 and was the first construction project after the completion of the Capitol campus. The building was designed by Joseph Wohleb. The construction of the Newhouse Building broke the traditional layout of the Capitol campus in that it was constructed outside the group plan and in the Art Deco style rather than the Neo-Classical Revival style of the Capitol campus (Durbin 2001; Johnston 1988). The Newhouse (Highway) Building was originally constructed for the Washington State Highway Department, which occupied the building through the 1950s.

The Newhouse Building was originally inventoried in 1974, and again in 2001 when it was determined to meet the criteria of the National Register of Historic Places and was eligible for listing on the NRHP as contributing to a Historic District (the Capitol campus), under Criteria A and C (Houser 2001). In 2004, a Historic American Buildings Survey (HABS) was completed on the Newhouse Building detailing the history and architectural information of the building in anticipation of exterior work to be completed after damage occurred from the 2001 Nisqually earthquake (Sullivan 2004).

Ayers Duplex

The Ayer's Duplex was constructed in 1936 and was designed by Elizabeth Ayers, the first woman to graduate from the University of Washington's architecture program and the first woman to be licensed in the State of Washington. Elizabeth Ayer went on to become a well-known architect who specialized in residential dwellings and developed her own style, which she called "English Colonial."

The Ayer's duplex was designed as an interpretation of the Colonial style (Roberts and Shaughnessy 1998; Stevenson 1998a,b; Wolverton 1970).

William Sullivan and his wife Marie resided in one half of the duplex during his 27-year tenure as the State Insurance Commissioner (Houser 2001; Stevenson 1998b; Stevenson n.d.). The duplex is associated with two well-known and prominent individuals, and is eligible for listing in the NRHP as a contributing element of the South Capitol Neighborhood Historic District (Houser 2001; Stevenson 1998b).

Carylon House

The Carlyon House was constructed in 1921 by P.H. and Edna Carlyon in the Craftman style. P.H. Carlyon was a dentist who became involved in local and state politics. Beginning in 1904, P.H. Carlyon was elected mayor of Olympia and by 1907 he was a member of the legislature, where he worked on projects benefiting the City of Olympia and the Capitol. The Carlyon House is eligible for listing in the NRHP as a contributing element of the South Capitol Neighborhood Historic district (Houser 2001; Stevenson 1998b; Stevenson 2003).

Visitor Center

The Visitor Center, or Visitor Information Center, was constructed in 1981 with funding from the 1979 Legislative Session. Although part of the Capitol campus, the Visitor Center's design does not reflect the architectural character of the remainder of the campus buildings (Johnston 1988). The Visitor Center is defined under RCW 79.24.710 as a public and historic facility. However, this building does not appear to meet any of the significance criteria that would render it eligible for listing in the NRHP.

RECOMMENDATIONS

As all three historic structures have been inventoried and are eligible for inclusion in the NRHP, adaptive reuse of the historic structures is recommended. Adaptive reuse would allow the historic structures to stay in their current location and setting and contribute to the feel of the surrounding neighborhood and Capitol campus. If adaptive reuse is not feasible, then the historic structures should be moved to another location, preferably within the vicinity of their original location and in a similar modern or historic setting, either as part of the extended state government complex of buildings or in a historical residential neighborhood. However, adaptive reuse or moving the buildings would be dependent on the findings of the structural assessment, which will indicate if any of the three structures are structurally sound to be able to be adaptively reused. Should either of these mitigation alternatives not be feasible,

HABS recordation of the Ayers Duplex and the Carlyon House should occur before they are demolished; HABS recordation should also occur on these buildings if they are retained or moved.

As part of the planning process, the original Capitol campus building layout and landscape plan by Wilder & White and the Olmsted Brothers, respectively, should be considered during design. Although the campus has expanded, designing any new buildings, their orientation, and the landscaping between to enhance the original plans will allow the alterations to reduce effects to the Washington State Capitol and South Capitol Neighborhood Historic districts and better blend the South Edge Capitol campus project elements into the current setting.

In addition, given the prehistoric and historic use of the area and archaeological materials documented in the vicinity, an archaeological survey of the areas of proposed alteration or construction should be conducted prior to ground disturbance.

Moreover, as a state capitol project, both DAHP and the affected tribes must be consulted to determine effects from the proposed project and to prepare a Memorandum of Understanding (MOU). The MOU should be prepared to specify the mitigation plans or alternatives agreed to by the lead agency, the State Historic Preservation Officer, Tribal Historic Preservation Officer(s), Cultural Resource Department/Program representatives/staff of all identified and concerned tribes, and other consulting parties, including the Olympia Heritage Commission. The signed MOU acknowledges that the lead agency advocating the proposed action has taken into account the effects of the undertaking on the historic properties and agreed to take measures to avoid or minimize these adverse effects.

In addition, under RCW 79.24.720, the Washington State Department of General Administration (GA) is responsible for the stewardship, preservation, operation, and maintenance of the public and historic facilities of the state capitol, subject to the policy direction of the state capitol committee and the legislative buildings committee, as well as the guidance of the capitol campus design advisory committee. As part of the GA's responsibilities for the Capitol campus facilities, it shall apply the U.S. Secretary of the Interior's standards for the treatment of historic properties, balance the functional requirements of state government operations with public access and the long-term preservation needs of the properties, and consult with the capitol furnishings preservation committee, the state historic preservation officer, the state arts commission, and the state facilities accessibility advisory committee in fulfilling the responsibilities provided for this regulation.

As noted previously, this project is not expected to have a federal nexus; no federal funding or permits are anticipated. However, should this change, the project will have to comply with Section 106 of the National Historic Preservation Act, which requires federal agencies to consider the effect of a proposed undertaking on historic properties. In addition, provisions for survey, recovery, analysis, and publication costs for cultural resources totaling not more than 1 percent of the total amount authorized

should be considered for appropriation for the project. Precedent for these funding provisions may be found in the Historical and Archaeological Data Preservation Act of 1974, also known as the Moss-Bennett Act (36 F.R. 8921; Gray, D., 2007b, personal communication).

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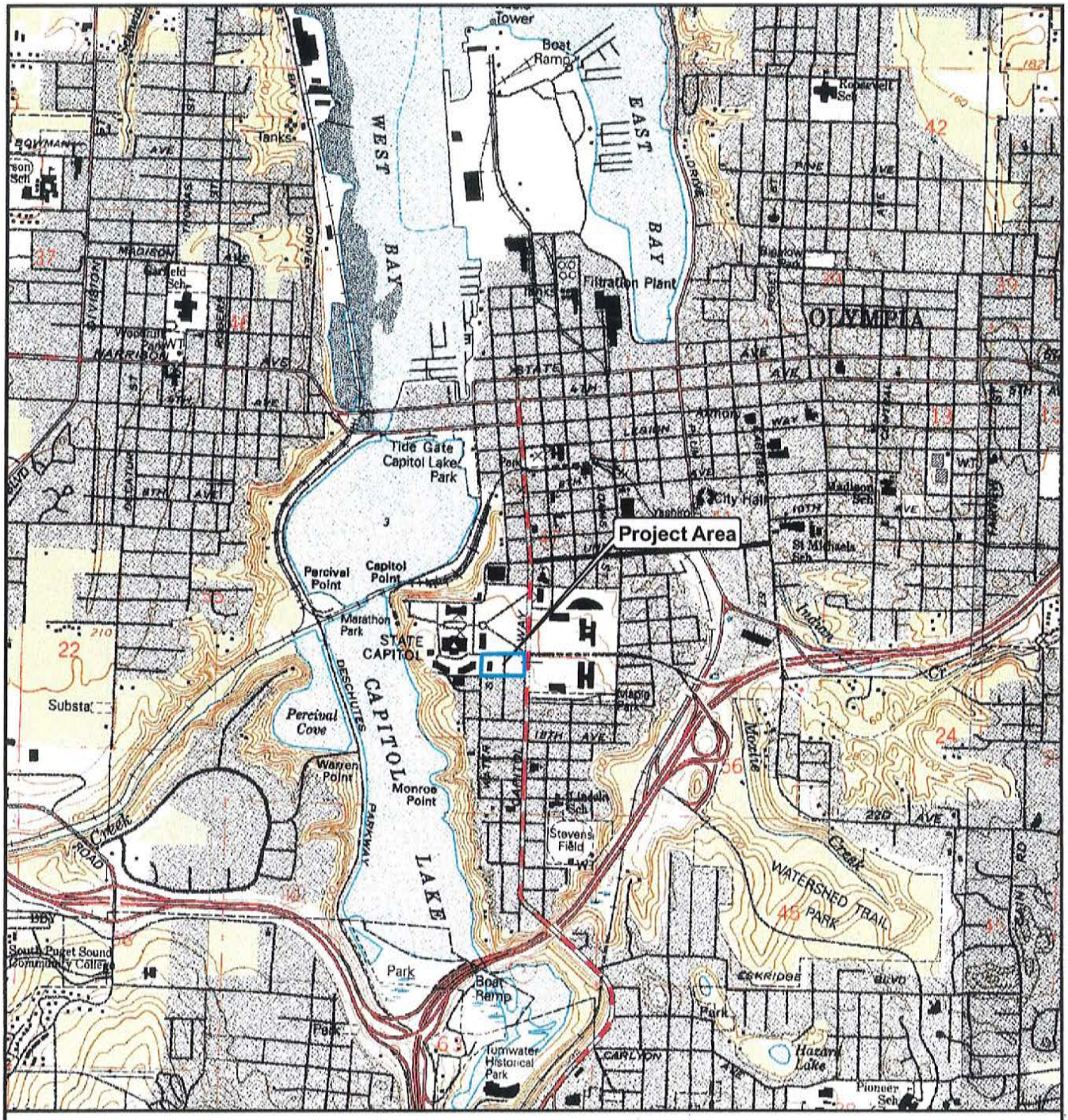
ATTACHMENTS

Figure 1: Vicinity Map
Figure 2: Location of Historic and Public Structures



Data Source: ESRI 2006

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South Edge Capitol Campus Olympia, Washington	**Vicinity Map**	Figure 1

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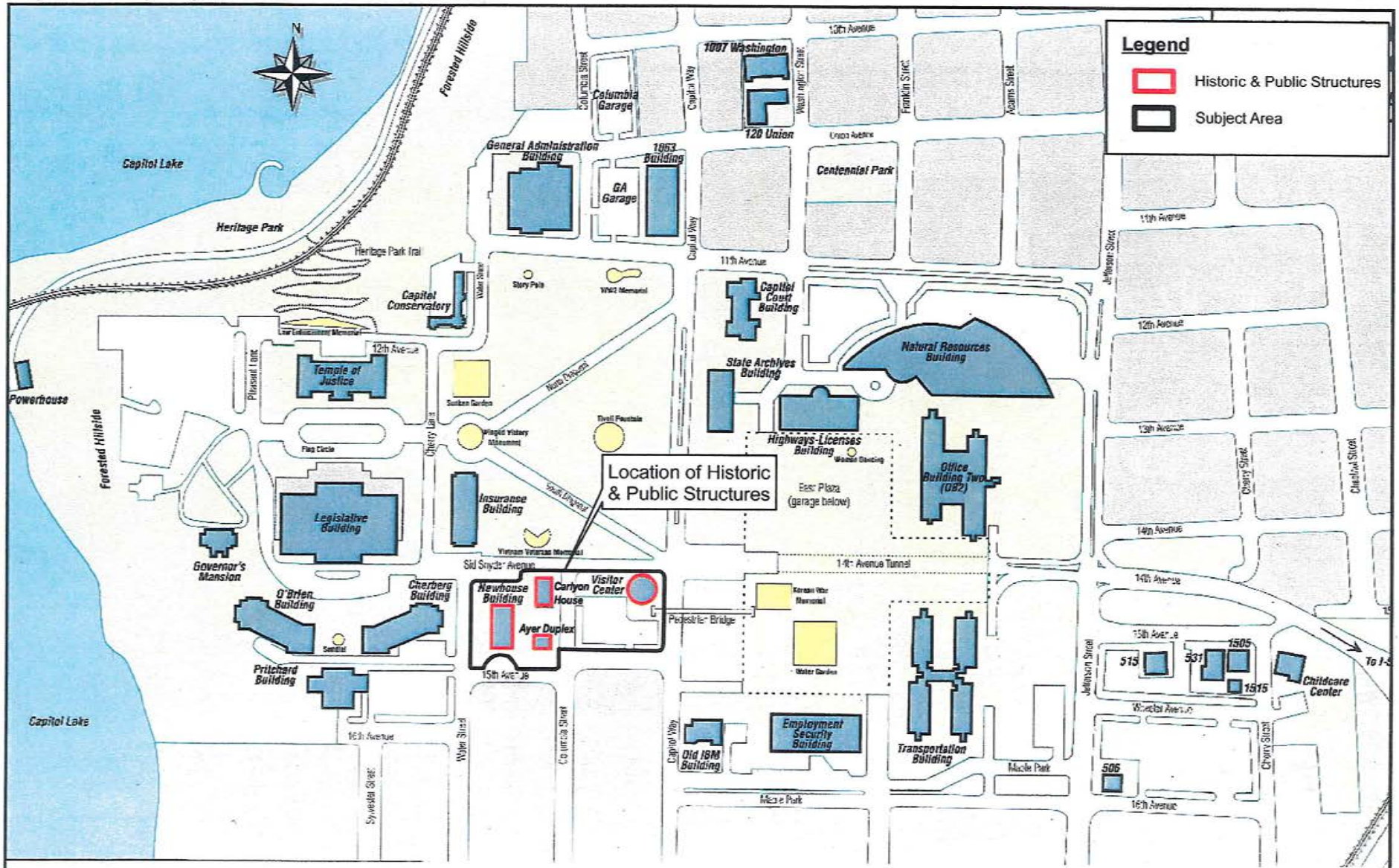

Data Source: Master Plan for the Capitol of the State of Washington June 2006

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South Edge Capitol Campus
Olympia, Washington

Location of Historic & Public Structures

Figure 2