Final Value Engineering Study Report

City of Shoreline

Aurora Ave. Corridor Improvements
N 165th to N 185th

Shoreline, WA

Contact: Randy Barber, PE, CVS
(206) 674-6113
April 11, 2008
2008058

May 27, 2008

Ms. Kris Overleese, PE
Capital Projects Manager
City of Shoreline
17544 Midvale Ave. N., Suite 100
Shoreline, WA 98133-4921

Re: Aurora Corridor Project
Value Analysis/Engineering Study

Dear Kris:

Transmitted herewith are 10 copies of the Final Value Engineering Study Report for the Aurora Corridor Project. This final report is incorporates review comments from the City and other stakeholders.

The team appreciates your assistance and cooperation as well as that from the design team personnel and all other stakeholders. Should you have any questions please telephone me at (206) 674-6113.

Sincerely,

Randy Barber

Randy Barber, PE, CVS
Principal

cc: 2008058

OLYMPIC ASSOCIATES COMPANY

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Content

Summary Information

Documentation of Study (Workbooks)

Support Data

Executive Summary

Background

Olympic Associates Company was retained by the City of Shoreline to perform a value engineering (VE) study for the Aurora Avenue Corridor Improvement Project from N 165th to N 185th. Study dates were from April 8-10, 2008, with a presentation to City staff and the HDR design team on Friday, April 11.

Project Description

The project, referred to by City staff as the 'middle mile', abuts the phase 1 project that constructed improvements from N 145th to N 165th on the south, and phase 3 improvements from approximately 500 feet north of N 185th. The project is funded through a variety of sources, including local, state, and federal funding. Design parameters, such as right-of-way width, roadway widths (including lane and median widths), above grade amenities (such as luminaire pole types), etc. from the first phase are being continued in this phase. The access management scheme, such as U-turns and business/access/transit (BAT) lanes, are an integral part of the improvements.

Results and Recommendations

Goals for the study included identifying options to reduce business impacts during construction; identifying low impact development and stormwater options that are cost effective; identifying opportunities to reduce the overall construction schedule; and exploring options to reduce maintenance costs. In addition to these areas, pedestrian circulation, both during and post construction, was a need that was reviewed.

The VE team recommends the following ideas be incorporated into the design documents in order to achieve the City's goals for the project.

- Review opportunities to decrease the contract time. Ideas IE-2, -4, -6, and -7 address this issue.
- Review stormwater flow and treatment options. Ideas AR-2, -5, and -6 address these issues.
- Identify opportunities to improve visibility, safety, traffic control and access during construction. Ideas IE-3, -5, IS-2, -9, and -11 address these issues.

VE Study Team

Facilitator – Randy Barber, PE, CVS
Civil engineers – Jaime Saez, PE (Saez Consulting) and Zach Gray, PE (KPFF)
City representative – Kris Overleese, PE
Construction logistics – Mike Myette, PE (Utility Contractors Association of Washington)

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1.1 VALUE IMPROVEMENT MATRIX

Aurora Ave. Corridor Improvements **Shoreline, WA**

N 165th to N 185th **April 2008**

WkBk No.	*PROPOSAL*	*VE PROPOSAL RESULTS*	*IMPLEMENTATION/ OWNER RESPONSE*	
Accommodate Runoff		Amount*	Implement Status	Comments (Idea No.)
AR-2	Review options for a regional approach to stormwater runoff		R	(2, 3, 4)
AR-5	Use ecology embankments within the median		R	(5)
AR-6	Bore through the glacial til strata to unsaturated outwash for infiltration	-$572,000	R	This idea has been rejected from a water quality perspective, but is being investigated as a flow control option (6)
AR-10	Use Langeberg property for laydown/staging		C	(10)

WkBk No.	*PROPOSAL*	*VE PROPOSAL RESULTS*	*IMPLEMENTATION/ OWNER RESPONSE*	
Improve Efficiency		Amount*	Implement Status	Comments (Idea No.)
IE-1	Assign a utility coordinator	+$20,000	A	(11)
IE-2	Identify staging areas within project limits	+$12,000	A	(12)
IE-3	Have contractors develop a traffic control plan	+$26,000	A	(13, 38)
IE-4	Develop sequencing plan for the overall construction		A	(14)
IE-5	Use plastic zip barrier to improve delineation of access points		C	(15)
IE-6	Add incentive clauses to contract documents		C	(16, 24)
IE-7	Maximize daylight working hours	-$450,000	C	(17)
IE-11	Hold specialized meetings for key stakeholders		A	(21, 20)
IE-12	Put enforcement provisions into agreements with utility franchisees		C	(22)
IE-15	Calculate traffic control costs from phase 1 and the anticipated construction sequence		A	(25)
IE-16	Provide utility stubs (both dry and wet) for future development		A	(26)
IE-19	Optimize the construction duration allowed by specification	-$548,000	A	(29)
IE-23	Identify work that must be performed at night	-$41,000	A	(33)

1.1 VALUE IMPROVEMENT MATRIX

Aurora Ave. Corridor Improvements **Shoreline, WA**

N 165th to N 185th **April 2008**

WkBk No.	*PROPOSAL*	*VE PROPOSAL RESULTS*	*IMPLEMENTATION/ OWNER RESPONSE*	
Improve Safety		Amount*	Implement Status	Comments (Idea No.)
IS-2	Increase temporary illumination; provide a bid item for this work		A	(35)
IS-8	Provide a list of traffic control personnel (on-call)		A	(41)
IS-9	Identify a traffic control supervisor in the contract documents	+$130,000		(42)
IS-10	Specify that equipment cannot be parked within the road right-of-way		R	(43)
IS-11	Research alternative traffic control options with suppliers		A	(44)
IS-12	Review locations where handrails should be installed		A	(45)

WkBk No.	*PROPOSAL*	*VE PROPOSAL RESULTS*	*IMPLEMENTATION/ OWNER RESPONSE*	
Miscellaneous		Amount*	Implement Status	Comments (Idea No.)
MI-2	Have a construction delivery schedule of 12 months		C	(49)
MI-3	Utilize an A+B bidding concept to allow the City to select the optimum relationship between cost and schedule	-$2,185,000	R	(50)
MI-5	Schedule informational meetings well in advance of advertisement		A	(52)
MI-7	Schedule one-on-one meetings with potential bidders to review/discuss the 90% plans		C	(54)
MI-13	Utilize the contractor's perspective in the constructability review process	+$12,000	C	(60)
MI-16	Comments related to qualifications of construction management representatives			(63)
MI-17	Review opportunities for use of the City-controlled conduits in the fiber optic trunk		A	(64)
MI-18	Coordinate with Shoreline School District on communication infrastructure needs and plans		A	(65)
MI-19	Incorporate City commitments to property owners into contract documents		A	(66)

1.1 VALUE IMPROVEMENT MATRIX

Aurora Ave. Corridor Improvements **Shoreline, WA**

N 165th to N 185th **April 2008**

Results Summary

Investigated Cost Savings	-$3,796,000	**Cost Savings Conditionally Accepted**	-$450,000	**Accepted Cost Savings**	-$589,000
Investigated Added Costs	+$70,000	**Added Costs Conditionally Accepted**	+$12,000	**Accepted Added Costs**	+$58,000

NOTES

Implementation / Owner/Response	*** Costs and Savings**
Value Meaning A Accepted, either partially or totally C Conditionally accepted R Not accepted.	Where amounts are shown, negative values represent savings; positive values represent costs - Savings + Costs

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1.2 CREATIVE IDEA LIST

Aurora Ave. Corridor Improvements **Shoreline, WA**

N 165th to N 185th **April 2008**

The following is a list of ideas and comments that resulted from the VE study shown below. Some of the ideas were selected for further development.

Idea No. = Idea numbers assigned to creative ideas generated during the creative phase.

The VE Team used the following criteria to evaluate the list of ideas.

- ☐ Supports community vision and council objectives
- ☐ No negative impacts to business operations
- ☐ Postively affects safety and operations
- ☐ Contributes to environmental impact mitigation

Score = The ideas were scored as follows to prioritize them for further development and documentation

Score	Results
ABD	Already being done
0-n	Number of votes by the VE team
DS	Design Suggestion (No estimate)
FF	Fatal Flaw

Resp. = Team member responsible for documentation.

Functions

AR	Accommodate Runoff
IE	Improve Efficiency
IS	Improve Safety
MI	Miscellaneous

Workbook No = The number assigned to an idea which serves as a key to the Value Improvement Matrix.

WkBk No.	*Resp.*	*Score*	*Idea No*	*Description*
Accommodate Runoff				
		ABD	1	Comply with runoff water quality standards
AR-2	ZG		2	Review options for a regional approach to stormwater runoff
			3	Purchase a parcel near Boeing Creek for water quality improvements
AR-			4	Use a portion of Boeing Creek Park as a water quality feature
AR-5	ZG	DS	5	Use ecology embankments within the median
AR-6	JS	2	6	Bore through the glacial til strata to unsaturated outwash for infiltration
AR-		FF	7	Incorporate opportunities for porous pavement use
AR-			8	Install a conventional storm drain system
AR-			9	Utilize the Langeberg property for water quality feature
AR-10	KO	DS	10	Use Langeberg property for laydown/staging
Creative Idea Not Developed				
IE-1	MM		11	Assign a utility coordinator
IE-2	JS	DS	12	Identify staging areas within project limits
IE-3	MM		13	Have contractors develop a traffic control plan
IE-4	JS		14	Develop sequencing plan for the overall construction

1.2 CREATIVE IDEA LIST

Aurora Ave. Corridor Improvements **Shoreline, WA**

N 165th to N 185th **April 2008**

WkBk No.	*Resp.*	*Score*	*Idea No*	*Description*
Creative Idea Not Developed				
IE-5	ZG	DS	15	Use plastic zip barrier to improve delineation of access points
IE-6	JS		16	Add incentive clauses to contract documents
IE-7	MM		17	Maximize daylight working hours
IE-		DS	18	Define working hours and lane closure flexibility in specifications
IE-		DS	19	State specific roles and responsibilities of City, contractor, and utility franchisees in specifications
			20	Have specifications indicate key stakeholders required at coordination meetings
IE-11	JS	DS	21	Hold specialized meetings for key stakeholders
IE-12	KO		22	Put enforcement provisions into agreements with utility franchisees
IE-		DS	23	Develop enforcement provisions related to construction schedule submittals
			24	Include incentives in the contract documents to achieve physical completion of the project
IE-15	JS	DS	25	Calculate traffic control costs from phase 1 and the anticipated construction sequence
IE-16	JS		26	Provide utility stubs (both dry and wet) for future development
IE-		FF	27	Hire Merlino Construction for phase 2 work
IE-		DS	28	Purchase long-lead items to improve the schedule
IE-19	MM		29	Optimize the construction duration allowed by specification
IE-			30	Implement a shutdown during holidays
IE-			31	Incorporate utility installation windows into contract documents
IE-			32	Identify shutdown/closure periods for Aurora to open up additional work areas
IE-23	MM	DS	33	Identify work that must be performed at night
IS-			34	Use reflective striping tape to delineate lanes during construction
IS-2	ZG	DS	35	Increase temporary illumination; provide a bid item for this work
IS-		DS	36	Draft contract language to address street illumination switchover
		ABD	37	Engage Shoreline Police Department to assist with traffic control
			38	Incorporate a pedestrian safety/circulation plan into the contract documents
IS-		DS	39	Reduce speed through the construction zone
IS-		DS	40	Maintain vertical and horizontal sight distances
IS-8		DS	41	Provide a list of traffic control personnel (on-call)
IS-9	MM	ABD	42	Identify a traffic control supervisor in the contract documents
IS-10		DS	43	Specify that equipment cannot be parked within the road right-of-way
IS-11	ZG	DS	44	Research alternative traffic control options with suppliers
IS-12	ZG	DS	45	Review locations where handrails should be installed
IS-		FF	46	Create an ordinance to disallow billboards in the City
IS-		DS	47	Erect a safety screen adjacent to the work zone
MI-		FF	48	Acquire Seattle City Light property between stations 185 and 189
MI-2			49	Have a construction delivery schedule of 12 months
MI-3	MM	DS	50	Utilize an A+B bidding concept to allow the City to select the optimum relationship between cost and schedule
		ABD	51	Require advanced notice for Aurora Ave. closures
MI-5	KO	DS	52	Schedule informational meetings well in advance of advertisement
MI-		FF	53	Use a GC/CM approach
MI-7		DS	54	Schedule one-on-one meetings with potential bidders to review/discuss the 90% plans

1.2 CREATIVE IDEA LIST

Aurora Ave. Corridor Improvements **Shoreline, WA**

N 165th to N 185th **April 2008**

WkBk No.	*Resp.*	*Score*	*Idea No*	*Description*
Creative Idea Not Developed				
MI-		FF	55	Have frontage properties benefitting from the improvements pay a fee in lieu of improvements
		ABD	56	Set the centerline profile elevation based on the vertical alignment of properties with conflicts
MI-		FF	57	Reduce lane widths to 10.5' and 12'
MI-		FF	58	Put a building moratorium on design and construction through phase 2
MI-		DS	59	Coordinate pay items with work scope
MI-13	KO		60	Utilize the contractor's perspective in the constructability review process
			61	Clearly state the intent of the various pay items
MI-		FF	62	Don’t follow WSDOT standards in plan preparation
MI-16	KO	ABD	63	Comments related to qualifications of construction management representatives
MI-17	KO	DS	64	Review opportunities for use of the City-controlled conduits in the fiber optic trunk
MI-18	KO	DS	65	Coordinate with Shoreline School District on communication infrastructure needs and plans
MI-19	KO	DS	66	Incorporate City commitments to property owners into contract documents

Responsibility

Code	*Responsible*
JS	Jaime Saez
KO	Kris Overleese
MM	Mike Myette
ZG	Zach Gray

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FUNCTION: Accommodate Runoff	**IDEA #** 2, 3, 4

TITLE: Review options for a regional approach to stormwater runoff

BASELINE DESIGN ASSUMPTION

Water quality treatment of stomwater runoff is handled mostly through the use of the Filterra filtration system. Approximately 93 Filterra units are currently proposed for mile-long project.

PROPOSED ALTERNATIVE

Review options for a regional stormwater runoff facility to address flow control and water quality. The VE team considered 4 options, with order of magnitude pricing in Appendix A to this workbook.

1. Use portion of Boeing Creek for stormwater runoff treatment.
2. Purchase parcel near Boeing Creek to provide treatment opportunities.
3. Explore other options for regional stormwater treatment facility.
4. Explore conventional treatment system (ie, wet vault) within corridor print.

DISCUSSION

This project is not required to provide stormwater treatment per the current regulations in place. The City has indicated a desire to incorporate sustainable and low impact development techniques into the project regardless of whether or not they are required. The benefit to cost ratio of the Filterra units is low in comparison to other potential treatment alternatives that may be available elsewhere in the project drainage basin (Ph 1 stormwater treatment costs ~$350,000 vs. the estimated $1,000,000+ for Filterra units). Options to mitigate project stormwater runoff and associated water quality LID's should be explored elsewhere where more benefit can be acquired with the same cost. Filterra systems have an advantage in maintenance costs. Maintenance required for these units should be considerable in comparison to other possible options within the Boeing Creek drainage basin.

The cost to install the Filterra system is estimated to be just over $1,000,000. Cost could be added to stormwater improvements already slated for Boeing Creek Park or added to another potential system to be located either within the project limits or off-site within the basin area.

ADVANTAGES	**DISADVANTAGES**
● Potential to provide more runoff treatment than just the Aurora Corridor	● Usable land and property may not be available to provide function
● Reduces total number of facilities having to be maintained	● Potential contraints with funding an off-site facility as part of this project
● Increased benefit to surrounding bird and wildlife	● Goes against City desire to see LID devices within corridor
● Project landscape pallet and plant selection is not driven by specific plant species required to be planted within Filterra unit	●

RECOMMENDATION/RESULT

Consider available opportunities to provide stormwater runoff treatment outside of the Aurora Corridor footprint.

2008058

SEE APPENDIX A

Appendix A

Review options for a regional approach to stormwater runoff

The VE team reviewed 3 possible alternatives for a regional stormwater facility to address flow control and water quality. It should be noted that maintenance is increased with each option.

1. Use a portion of Boeing Creek for stormwater treatment -
   This option does not require property purchase, but would require improvements made to the channel to provide both stormwater treatment and flow control. Costs associated with this option are estimated to be between $400,000-600,000. This option may have limited opportunities to provide surface improvements due to space constraints. A net savings compared to the Filterra systems of approximately $400,000-600,000 is possible.

2. Purchase a parcel near Boeing Creek to provide treatment opportunities -
   Purchase of approximately ½ acre at current prices would be approximately $1M, with an additional $300,000-500,000 in improvements required. This option would likely increase cost in the range of $300,000-500,000 to implement.

4. Explore a conventional treatment system within the corridor footprint -
   An option such as an underground vault is a possibility, though it is contrary to the desires of the community to provide a natural stormwater collection/treatment system. This option could run between $750,000-1,250,000.

The VE team recommends option 1 if the decision to provide a regional stormwater runoff collection/treatment facility is decided upon.

FUNCTION: Accommodate Runoff	**IDEA #** 5
TITLE: Use ecology embankments within the median	

BASELINE DESIGN ASSUMPTION

Ecology embankments are not currently shown in median areas.

PROPOSED ALTERNATIVE

Include ecology embankments in median areas where applicable.

DISCUSSION

Ecology embankments within median areas are not proposed at this stage of design. Consider utilizing embankments in median areas to treat stormwater runoff from road surface where road geometry will allow.

ADVANTAGES	**DISADVANTAGES**
• Reduces maintenance for treatment of stormwater runoff	• Roadway geometry may not allow portions of roadway to flow to center
• Promotes desire to utilize natural stormwater treatment methods	•
•	•
•	•
•	•

RECOMMENDATION/RESULT

Evaluate whether ecology embankments in center median areas are viable without significantly affecting roadway profile and cross-section geometry.

2008058 DESIGN SUGGESTION

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FUNCTION: Accommodate Runoff	**IDEA #** 6

TITLE: Bore through the glacial til strata to unsaturated outwash for infiltration

BASELINE DESIGN ASSUMPTION

Use of conventional and low impact development systems. Flow control is not required or provided.

PROPOSED ALTERNATIVE

Bore through the glacial til soil strata to reach the permeable and unsaturated recessional-outwash (Qva) layer and route stormwater flow into catch basins at drain chimneys.

DISCUSSION

A specific geotechnical exploration is required, with a pilot bore hole located in areas with the highest likelihood of reaching the recessional outwash layer below. We suggest locating near N 175th St along the Aurora corridor based on the NRCS soil maps. This is also a low point in the Boeing Creek basin on the project. In the event that the results prove positive, further exploration should be undertaken for design purposes. A similar system was designed by AES and used on a private development at Redmond Ridge for approximately 90 acres of development at Snoqualmie Ridge, and for the Puyallup School District.

ADVANTAGES	**DISADVANTAGES**
● Eliminates or reduces the proposed conveyance system	● Cost of additional geotechnical exploration
● Provides the desired flow control that would mitigate current flooding conditions	● Cost of drain chimneys connecting to outwash layer below
● Serves as a supplemental water quality measure	● Potential impact to downstream flow of outwash
● Preferred LID method of flow control	●

RECOMMENDATION/RESULT

Implement if proven feasible.

COST SUMMARY	**Initial Cost**	**Subsequent Cost (Present Value)**	**Net Present Value (Initial plus subsequent)**
Baseline Design Assumption	$ 1,209,000	$ -	$ 1,209,000
Proposed Alternate	$ 637,000	$ -	$ 637,000
Total (proposed less baseline)	$ (572,000)	$ -	**$ (572,000)**

2008058 SAVINGS

VE WORKBOOK # AR-6

Aurora Ave. Corridor Improvements **Shoreline, WA**
N 165th to N 185th **April 2008**

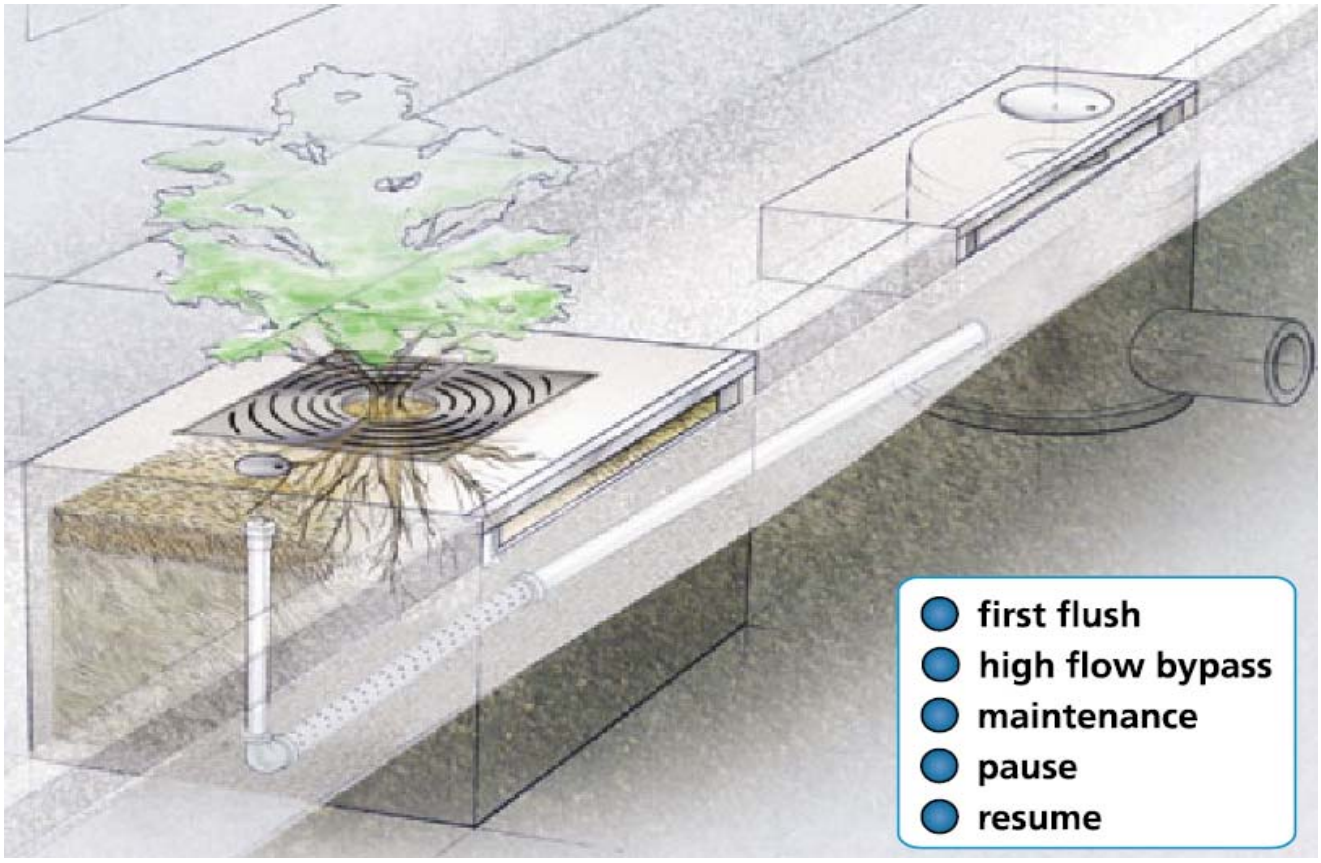
FUNCTION: Accommodate Runoff						**IDEA #** 6		
TITLE: Bore through the glacial til strata to unsaturated outwash for infiltration								
CONSTRUCTION ELEMENT	**Markup**	**BASELINE DESIGN ASSUMPTION**				**PROPOSED ALTERNATIVE**		
Description	%	Unit	Qty	Unit Cost $	TOTAL $	Qty	Unit Cost $	TOTAL $
Geotechnical exploration	30%	ea				1	40,000	52,000
18" bore holes 50' deep with filter media and drain rock backfill	30%	ea				100	1,500	195,000
CB type 2	30%	ea				100	3,000	390,000
CB type 2	30%	ea	93	3,000	362,700			
Filterra 4x4	30%	ea	93	7,000	846,300			
TOTAL COSTS*					**1,209,000**			**637,000**
							TOTAL (PROPOSED less BASELINE)	**-572,000**

Note: Total Costs are rounded to nearest thousand dollars SAVINGS

FUNCTION: Accommodate Runoff	**IDEA #** 6

TITLE: Bore through the glacial til strata to unsaturated outwash for infiltration

SKETCH OF BASELINE ASSUMPTION

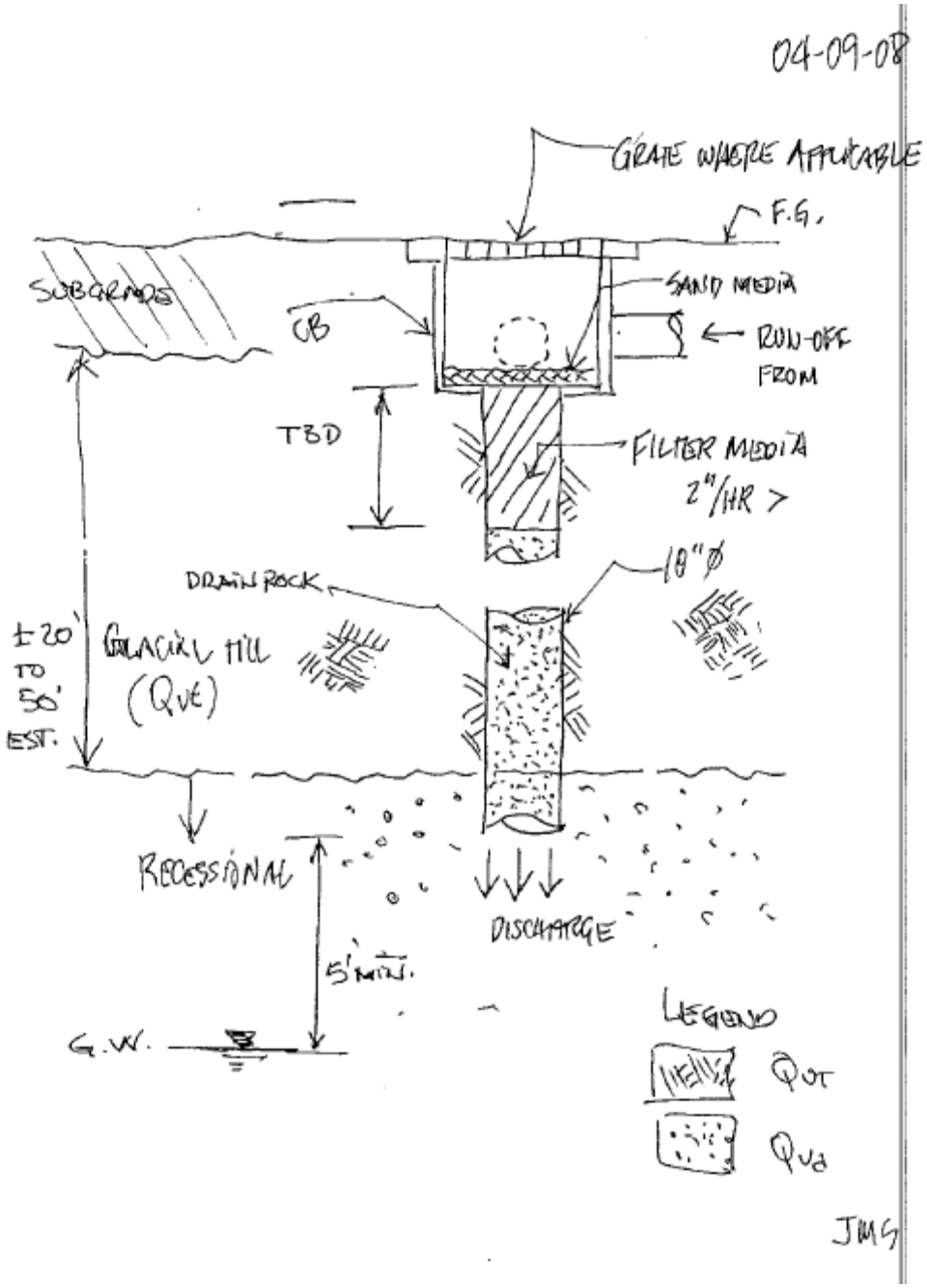


Filterra

FUNCTION: Accommodate Runoff	**IDEA #** 6

TITLE: Bore through the glacial til strata to unsaturated outwash for infiltration

SKETCH OF PROPOSED ALTERNATIVE



FUNCTION: Accommodate Runoff	**IDEA #** 10

TITLE: Use Langeberg property for laydown/staging

BASELINE DESIGN ASSUMPTION

The entire Langeberg property at 185th & Aurora is to be purchased (that needed for the project and the uneconomic remnant). An existing purchase and sale agreement exists with property owner. The site is contaminated and the City's goal is to quantify contamination and negotiate with property owner by mid 2008. City is also considering the sale of the uneconomic remnant portion of parcel (approximately 2/3 of the parcel). Purchased property to be used for addition of free right turn lane and corner amenities including curb ramp and signal equipment.

PROPOSED ALTERNATIVE

Utilize entire site for laydown/staging area during construction. Utilize uneconomic remnant for natural stormwater system treatment area.

DISCUSSION

It is anticipated that the April 2008 testing and soil characterization will reveal onsite and ROW contamination. This assumption is based on prior onsite and ROW testing. It is anticipated this site and the ROW will be remediated prior to, or as part of, the Aurora Project. This site is on the north end of this segment of the Aurora Project, will be completely owned by the City, and could be a laydown/staging area to serve the north end of the project. The uneconomic remnant could be used by the City for a natural stormwater system treatment area.

ADVANTAGES	**DISADVANTAGES**
● Laydown = north end of project, not directly adjacent to a business, City owned, could sell property for profit after project if desired.	● Laydown = busy intersection, not very large parcel, needs to be cleaned up (how to phase?)
● Stormwater treatment = will be City owned property, City gateway intersection, room to do rain garden, potential to partner with Sky Nursery, could be more effective than Filterra systems	● Stormwater treatment = top of watershed (maybe not a lot of water to drain here)
●	●
●	●
●	●

RECOMMENDATION/RESULT

Use as laydown/staging area during construction. Strategize site cleanup and project start/laydown area needs. As a natural stormwater system, evaluate opportunities to use this site for natural stormwater system installation, utilize natural stormwater system as educational opportunity, and beautify this intersection. Potential to team with Sky Nursery for development/maintenance of natural stormwater system vegetation.

2008058 DESIGN SUGGESTION

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VE WORKBOOK # IE-1

Aurora Ave. Corridor Improvements **Shoreline, WA**
N 165th to N 185th **April 2008**

FUNCTION: Improve Efficiency	**IDEA #** 11
TITLE: Assign a utility coordinator	

BASELINE DESIGN ASSUMPTION

The 30% plans and estimate do not deal with the assignment of a utility coordinator to the project during construction.

PROPOSED ALTERNATIVE

Propose that a utility coordinator be assigned to the project by the construction contractor as an integral part of the construction team.

DISCUSSION

Because of the large quantity of existing utilities on this project and because of the difficulty in organizing and scheduling the work of these utilities during construction, there is a high possibility that delays and claims may result from the interruption of the contractors' production and sequencing of the work. Having a coordinator on the project to specifically deal with the utilities help reduce the risk from this complicated issue. This position should be clearly spelled out in the specifications. Although at this time it will be necessary to add an item to the contract total amount that will increase the contract, our experience is that when an utility coordinator is assigned to the work, a savings will be made because delays and claims for utility claims will be greatly reduced or eliminated.

ADVANTAGES	**DISADVANTAGES**
● Establishes one point of contact for coordination	● Utility coordinator may be difficult to find with experience
● Creates a central clearing house for the utility companies and contractor	● Coordinator not trusted by utility companies
● Addresses problems/scheduling issues upfront at coordination meetings	●
●	●

RECOMMENDATION/RESULT

It is recommended that a utility coordinator be assigned by the contractor and a pay item be established for activity.

COST SUMMARY	**Initial Cost**	**Subsequent Cost (Present Value)**	**Net Present Value (Initial plus subsequent)**
Baseline Design Assumption	$ -	$ -	$ -
Proposed Alternate	$ 20,000	$ -	$ 20,000
Total (proposed less baseline)	$ 20,000	$ -	**$ 20,000**

2008058 COST

VE WORKBOOK # IE-1

Aurora Ave. Corridor Improvements **Shoreline, WA**
N 165th to N 185th **April 2008**

FUNCTION: Improve Efficiency							**IDEA #** 11	
TITLE: Assign a utility coordinator								
CONSTRUCTION ELEMENT	**Markup**	**BASELINE DESIGN ASSUMPTION**				**PROPOSED ALTERNATIVE**		
Description	%	Unit	Qty	Unit Cost $	TOTAL $	Qty	Unit Cost $	TOTAL $
Add a utility coordinator	30%	ea				1	15,000	19,500
TOTAL COSTS*								**20,000**
							TOTAL (PROPOSED less BASELINE)	**20,000**

Note: Total Costs are rounded to nearest thousand dollars COST

FUNCTION: Improve Efficiency	**IDEA #** 12
TITLE: Identify staging areas within project limits	

BASELINE DESIGN ASSUMPTION

No staging areas have been identified on the 30% drawings.

PROPOSED ALTERNATIVE

Identify and secure temporary use of properties adjacent to the work zone with ideally an acre of area or more.

DISCUSSION

For a project of this magnitude, a minimum of one acre of property for staging and laydown during construction is ideal. This would minimize logistics for contractor during construction in lieu of an offsite location. Refer to proposed sketch for detail of possible sites.

ADVANTAGES	**DISADVANTAGES**
● Facilitates operations during construction	● Requires early coordination and additional City and property owner negotiations for easement or purchase
● Minimizes mobilization from and to an offsite lay-down and staging area	● Increases cost of temporary lease and or purchase of property
● Reduces cost	●
● Possible use as a permanent drainage mitigation facility if located downstream of basin	●
● Increases safety and reduces risk from construction traffic	●

RECOMMENDATION/RESULT

Implement and have avaialble in contract documents

COST SUMMARY	**Initial Cost**	**Subsequent Cost (Present Value)**	**Net Present Value (Initial plus subsequent)**
Baseline Design Assumption	$ 13,000	$ -	$ 13,000
Proposed Alternate	$ 25,000	$ -	$ 25,000
Total (proposed less baseline)	$ 12,000	$ -	**$ 12,000**

2008058 COST

FUNCTION: Improve Efficiency						**IDEA #** 12		
TITLE: Identify staging areas within project limits								
CONSTRUCTION ELEMENT	**Markup**	**BASELINE DESIGN ASSUMPTION**				**PROPOSED ALTERNATIVE**		
Description	%	Unit	Qty	Unit Cost $	TOTAL $	Qty	Unit Cost $	TOTAL $
Lease of 1 acre (10% of purchase value/yr)	30%	ls				1	10,000	13,000
Labor	30%	hr				80	120.00	12,480
Lay-down and staging area offsite	30%	ls	1	5,000	6,500			
Mobilization from offsite lay-down and staging area	30%	ls	1	5,000	6,500			
TOTAL COSTS*					**13,000**			**25,000**
							TOTAL (PROPOSED less BASELINE)	**12,000**

Note: Total Costs are rounded to nearest thousand dollars COST

FUNCTION:	Improve Efficiency	**IDEA #**	12

TITLE: Identify staging areas within project limits

SKETCH OF BASELINE ASSUMPTION

None proposed with 30% documents

FUNCTION: Improve Efficiency	**IDEA #** 12

TITLE: Identify staging areas within project limits

SKETCH OF PROPOSED ALTERNATIVE

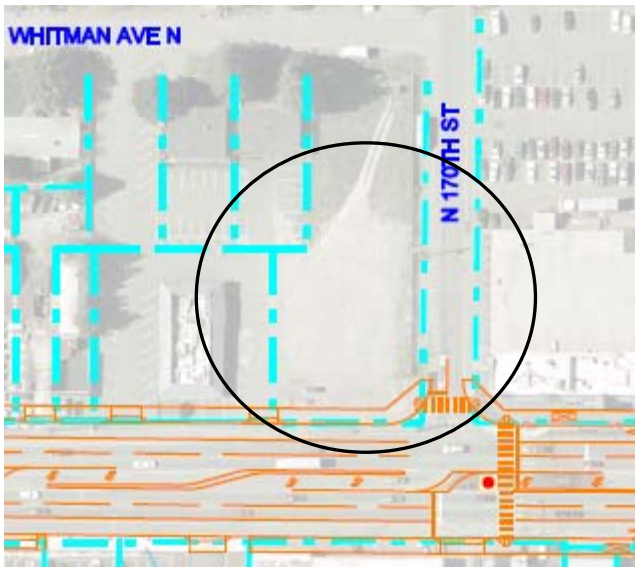
Possible properties:
1. Tsakonas property located north of Sugar's and south of N 170th St west of Aurora; this is an unimproved site.
2. Horton property located on east side of Aurora south of Ronald Pl; this site is unimproved currently utilized as a nursery.
3. Wedge property between Aurora and Roland Pl north end that city intends to purchase; currently developed.
4. Seattle City Light - strip along the east side of Aurora north of Ronald Pl to N 185t St
5. Langeberg site located at the SW quad of N 185th and Aurora currently being mitigated for contamination (old gas station) that the city plans to purchase.
6. frontage area of the Fred Meyer property on the east side of Aurora between Hollywood video and the Langeberg property.

FUNCTION:	**IDEA #** 12

TITLE: Identify staging areas within project limits

SKETCH OF PROPOSED ALTERNATIVE

1. Tsakonas property located north of Sugars' and South of N170th St west of Aurora; this is an unimproved site.

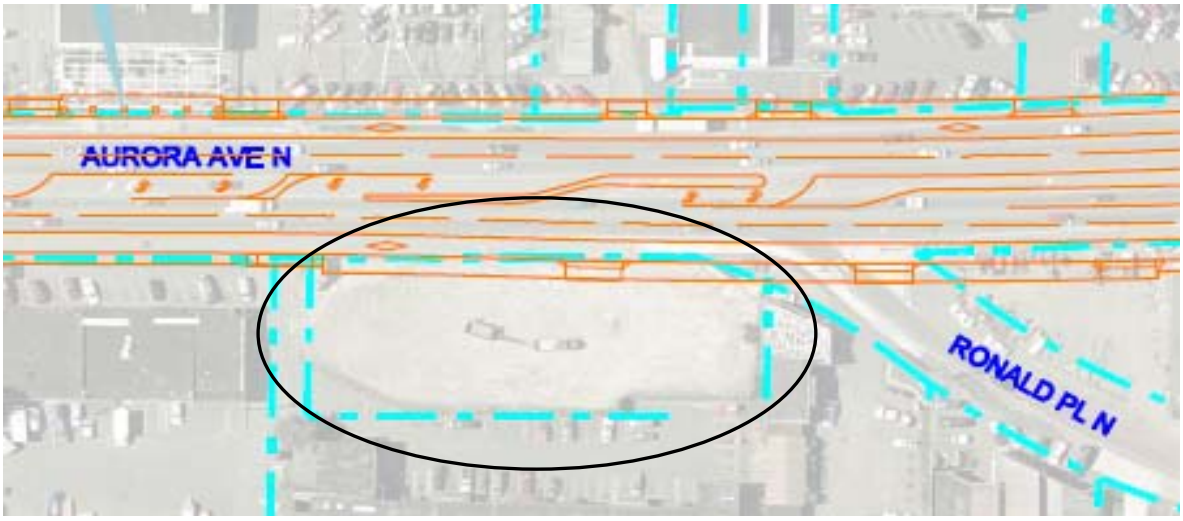


FUNCTION:	**IDEA #** 12

TITLE: Identify staging areas within project limits

SKETCH OF PROPOSED ALTERNATIVE

2. Horton property located on east side of Aurora south of Ronald Pl; this site is unimproved and currently utilized as a nursery.



FUNCTION:	**IDEA #** 12

TITLE: Identify staging areas within project limits

SKETCH OF PROPOSED ALTERNATIVE

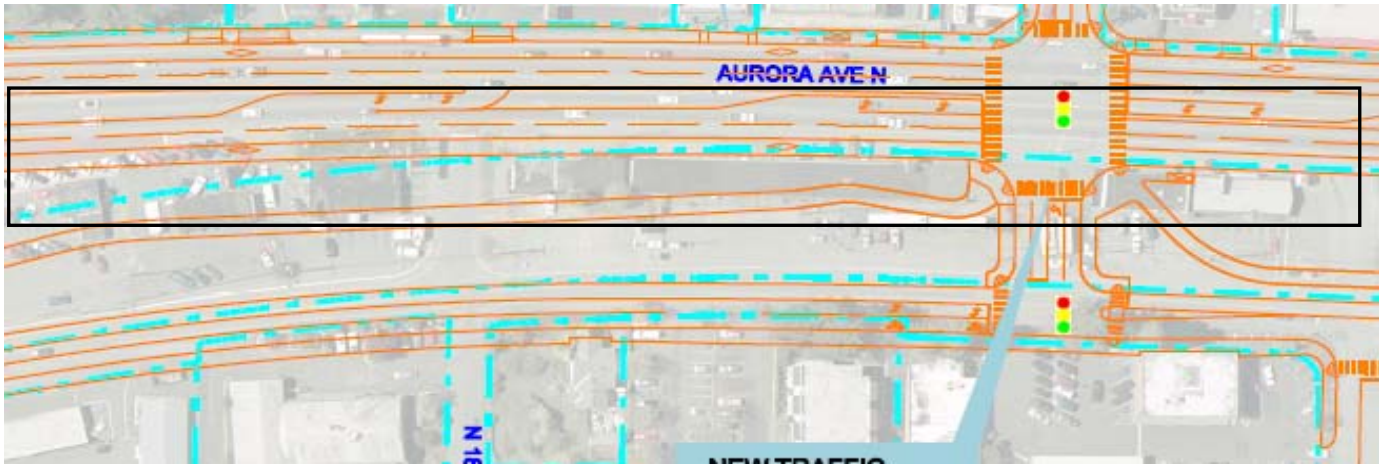
3. Wedge property between Aurora and Roland Pl north end that city intends to purchase; currently developed.

FUNCTION:	**IDEA #** 12

TITLE: Identify staging areas within project limits

SKETCH OF PROPOSED ALTERNATIVE

4. Seattle City Light - strip along east side of Aurora north of Ronald Pl to N 185t St



FUNCTION:	**IDEA #** 12

TITLE: Identify staging areas within project limits

SKETCH OF PROPOSED ALTERNATIVE

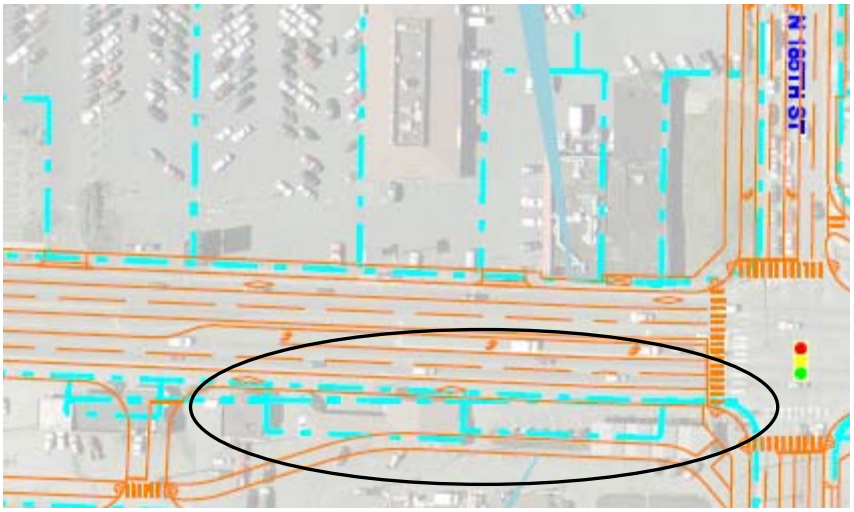
5. Langberg site located at the SW quad of N 185th and Aurora currently being mitigated for contamination (old gas station) that the city plans to purchase.

FUNCTION:	**IDEA #** 12

TITLE: Identify staging areas within project limits

SKETCH OF PROPOSED ALTERNATIVE

6. Frontage area of the Fred Meyer property on the east side of Aurora between Hollywood Video and the Langeberg property.



FUNCTION: Improve Efficiency	**IDEA #** 13
TITLE: Have contractors develop a traffic control plan	

BASELINE DESIGN ASSUMPTION

Contract special provisions have not been developed as of this date. The assumption is the contractor will be required to utilize the standard plan (K plans) for traffic control. These plans cover normal lane closures, normal lane tapers, and standard signing and delineations.

PROPOSED ALTERNATIVE

Specify that contractor-prepared traffic control plans be all encompassing and include Metro bus locations, pedestrian travel routes, crosswalk locations, suggested speeds through the project, flagger locations, uniform police locations, etc.

DISCUSSION

On a project of this type (heavy traffic/high pedestrian counts, bus locations, many businesses, etc.), it is mandatory for the contractor to thoroughly plan their work and accommodate the public and businesses. In doing a thorough plan, safety is maximized, conflicts with pedestrians and business impacts reduced, and, if well thought out, efficiencies improved. If the traffic control plan is well thought out, there may be a potential to reduce time on the contract because the project can be constructed in a more uniform pattern. This plan will include, as a minimum, flagger positions, uniform police use, pedestrian movement and protection, bus shelter locations and time of use of this plan. It must be approved prior to use and implementation.

ADVANTAGES	**DISADVANTAGES**
● Increases safety	● May be extra cost associated with details required by this special provision
● Improves image	● Increases administration cost for reviewing plan
● Improves efficiency	●
● Easier for project management (both owner and contractor)	●

RECOMMENDATION/RESULT

It is recommended the contractor be required by specification to provide a traffic control plan for all major construction activities that impact the travelled roadway.

COST SUMMARY	**Initial Cost**	**Subsequent Cost (Present Value)**	**Net Present Value (Initial plus subsequent)**
Baseline Design Assumption	$ -	$ -	$ -
Proposed Alternate	$ 26,000	$ -	$ 26,000
Total (proposed less baseline)	$ 26,000	$ -	**$ 26,000**

2008058 COST

FUNCTION: Improve Efficiency						**IDEA #** 13		
TITLE: Have contractors develop a traffic control plan								
CONSTRUCTION ELEMENT	**Markup**	**BASELINE DESIGN ASSUMPTION**				**PROPOSED ALTERNATIVE**		
Description	%	Unit	Qty	Unit Cost $	TOTAL $	Qty	Unit Cost $	TOTAL $
Extra cost associated with details in Special Provisions	30%					1	10,000	13,000
Administrative cost for reviewing	30%					1	10,000	13,000
TOTAL COSTS*								**26,000**
							TOTAL (PROPOSED less BASELINE)	**26,000**

Note: Total Costs are rounded to nearest thousand dollars COST

FUNCTION: Improve Efficiency	**IDEA #** 14

TITLE: Develop sequencing plan for the overall construction

BASELINE DESIGN ASSUMPTION

Standard WSDOT construction phasing plan is likely. No staging plans have been developed yet.

PROPOSED ALTERNATIVE

Prepare a more in depth proposed construction phasing plan that considers through traffic, frontage, community, utilities, and traffic control impacts

DISCUSSION

The design of the project should compliment the anticipated construction sequencing. Contractor input can be solicited at this stage of design and used to compliment input from the community and businesses regarding a potential execution strategy. This plan should be used as an aide in the design process to verify that all work anticipated within a given phase can be constructed without reliance on work from a future phase, and a greater number of potential impacts are identified and addressed. This information can be included in the contract documents with notes that should bidders desire to deviate from the proposed plan, they would be responsible for any interferences or issues resulting from the revised sequencing plan.

ADVANTAGES	**DISADVANTAGES**
• Reduces conflicts between utility systems (wet vs. dry)	• Requires extra coordination effort during design
• Improves coordination between grading, paving, and underground utility installations	•
• Reduces frontage impacts	•
• Increases potential for shorter construction duration	•
•	•

RECOMMENDATION/RESULT

Recommend implementation of this idea.

2008058 DESIGN SUGGESTION

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FUNCTION: Improve Efficiency	**IDEA #** 15
TITLE: Use plastic zip barrier to improve delineation of access points	

BASELINE DESIGN ASSUMPTION

Portable plastic barriers are currently not included in project to delineate driveway access points.

PROPOSED ALTERNATIVE

Add portable plastic or work zone barriers to clearly delineate driveway ingress locations.

DISCUSSION

During the first mile of construction, some drivers indicated that it was difficult to understand where to cross through orange traffic drums to access businesses and parcels. The City has been asked to better delineate access points during the next phase of construction. Barriers could alternate between orange and white to signify access point locations as opposed to orange drums along the extent of the work area. By providing better access point delineation coupled with wide driveway widths may help to increase the number of people wanting to frequent a business during the construction period.

ADVANTAGES	**DISADVANTAGES**
• Improves access point delineation leading to increased safety	• Increases project cost
•	•
•	•
•	•
•	•

RECOMMENDATION/RESULT

Recommend exploring various options for implementing a portable plastic barrier system that better delineates driveway access points along construction work zone areas.

2008058 DESIGN SUGGESTION

FUNCTION: Improve Efficiency	**IDEA #** 15

TITLE: Use plastic zip barrier to improve delineation of access points

SKETCH OF PROPOSED ALTERNATIVE

FUNCTION: Improve Efficiency	**IDEA #** 16
TITLE: Add incentive clauses to contract documents	

BASELINE DESIGN ASSUMPTION

Includes a standard time for completion specification with liquidated damages.

PROPOSED ALTERNATIVE

Include a detailed special provision in the project construction documents to include financial incentives to the contractor to complete construction in advance of project schedule.

DISCUSSION

Incentives are generally used on public projects that have significant impacts to users and the community. Allowing the contractor the option to work extended days (over 8 hour days) and weekends will be needed to compact the construction schedule. The contract should specify the incentive terms and amount, as well as a cap on the total incentive that can be earned.

As construction impacts business access and visibility, revenue disrupts traffic flow, and has significant

ADVANTAGES	**DISADVANTAGES**
● Reduces overall impacts on users	● Increases costs
● Potentially reduces schedule	● Extended contractor hours increases construction management cost
● motivates the contractor to expedite and take ownership of coordination among all parties, including utility franchises	● Increases noise potential
●	●
●	●

RECOMMENDATION/RESULT

It is recommended the City and the design team review options in VE report that reduce impact on the public and choose the one that best fits this situation.

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FUNCTION: Improve Efficiency	**IDEA #** 17
TITLE: Maximize daylight working hours	

BASELINE DESIGN ASSUMPTION

Assume that baseline design did not look at scheduling working hours at this time.

PROPOSED ALTERNATIVE

A special provision should be written that addresses work hours within the traveled way and details work that may begin outside the traveling lanes. Provisions should allow work to be performed as long as contractors comply with noise and other regulations.

DISCUSSION

The opportunity of moving a project toward completion is an advantage to the contractor and the owner. If the contractor has few limitations on work areas, they will be able to utilize crews better, maintain better production, provide a better sequencing plan, and provide a project completion quicker than anticipated in the design documents. Improved efficiencies should also reduce bid prices. Projected savings are avoided cost impacts to the community and not direct project savings.

ADVANTAGES	**DISADVANTAGES**
● Reduced impacts	● Charging of work days may be questionable
● Improved schedule	● Pedestrian and bus traffic may be disrupted
● More time available for more tedious work- sidewalk grading, lane widening	●
●	●
●	●

RECOMMENDATION/RESULT

Recommend that a study be made allowing contractor to work as many daylight hours as possible. Prepare Special Provisions that address work hours and allow maximum use of daylight hours.

COST SUMMARY	**Initial Cost**	**Subsequent Cost (Present Value)**	**Net Present Value (Initial plus subsequent)**
Baseline Design Assumption	$ 450,000	$ -	$ 450,000
Proposed Alternate	$ -	$ -	$ -
Total (proposed less baseline)	$ (450,000)	$ -	**$ (450,000)**

FUNCTION: Improve Efficiency								**IDEA #** 17
TITLE: Maximize daylight working hours								
CONSTRUCTION ELEMENT	**Markup**	**BASELINE DESIGN ASSUMPTION**				**PROPOSED ALTERNATIVE**		
Description	%	Unit	Qty	Unit Cost $	TOTAL $	Qty	Unit Cost $	TOTAL $
Potential reductions to the community								
Potential impact reductions - 20 days @ $2500/day savings		days	20	2,500	50,000			
Improvements to the community -		LS	1	400,000	400,000			
TOTAL COSTS*					**450,000**			
							TOTAL (PROPOSED less BASELINE)	**-450,000**

Note: Total Costs are rounded to nearest thousand dollars SAVINGS

FUNCTION: Improve Efficiency	**IDEA #** 21, 20
TITLE: Hold specialized meetings for key stakeholders	

BASELINE DESIGN ASSUMPTION

Stakeholder identification is being reviewed in the baseline design because of the responsibilities of the City and designer to address the concerns and issues.

PROPOSED ALTERNATIVE

Program meetings with key stakeholders such as franchise utilities and business owners, during construction. These meetings help the contractor/owner bring the construction project to the stakeholders in real time.

DISCUSSION

These meetings with stakeholders show commitment by the City to follow through on what was discussed during design. This provides a venue to discuss and address potential delays and issues from construction activities. This also helps put a face on the contractor and provides a comfort level for stakeholders.

ADVANTAGES	**DISADVANTAGES**
● Improves communication	● Increases number of meetings
● Improves credibility	● Potentially requires more coordination
● Minimizes surprises	●
● Demonstrates proactive approach	●
●	●

RECOMMENDATION/RESULT

Recommend drafting a specification to require these meetings at regular intervals with key stakeholders.

2008058 DESIGN SUGGESTION

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FUNCTION: Improve Efficiency	**IDEA #** 22

TITLE: Put enforcement provisions into agreements with utility franchisees

BASELINE DESIGN ASSUMPTION

City has franchise agreements with Seattle City Light, Seattle Public Utilities and Ronald Wastewater. No franchise agreements exist with telecommunication companies (Qwest, Verizon, T-Mobile) or the Shoreline School District. The franchise agreements do not necessarily address construction well. Separate agreements will be put together with each utility for construction of the project.

PROPOSED ALTERNATIVE

The school district claims they have no resources to participate in handling of their infrastructure in the project vicinity. A separate agreement should be put together with the school district to discuss financing and work completion of any school district infrastructure relocation.

DISCUSSION

The City needs to create an agreement with the school district. If the City decides to pay for the School District's infrastructure relocation (or rent them conduit that exists in the middle or Aurora), it needs to be an agreement.

ADVANTAGES	**DISADVANTAGES**
• Coordinated construction, certainty of who will pay	• City may choose to negotiate to pay
•	•
•	•
•	•
•	•

RECOMMENDATION/RESULT

Draft agreements between the City and Shoreline School District to specifically address how relocation of overhead communications infrastructure will be paid for.

2008058 DESIGN SUGGESTION

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FUNCTION: Improve Efficiency	**IDEA #** 25
TITLE: Calculate traffic control costs from phase 1 and the anticipated construction sequence	

BASELINE DESIGN ASSUMPTION

The estimate for the 30% plans has $1.3M included for traffic control. This is essentially the amount spent on traffic control in phase 1.

PROPOSED ALTERNATIVE

Coordinate the anticipated bid item amounts for traffic control with the final construction sequencing plan and schedule. Specify that the line item charge for traffic control labor be paid by the hour.

DISCUSSION

This will match the traffic control costs with the construction schedule and construction sequencing plan anticipated during construction. As traffic control is related to safety, paying by the hour provides the City with the flexibility to make changes as required.

ADVANTAGES	**DISADVANTAGES**
• More accurate estimate of costs	• Higher level of effort required
• Better planning	•
•	•
•	•
•	•

RECOMMENDATION/RESULT

Coordinate the anticipated bid item amounts for traffic control with the final construction sequencing plan and schedule.

2008058 DESIGN SUGGESTION

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FUNCTION:	Improve Efficiency	**IDEA #**	26
TITLE:	Provide utility stubs (both dry and wet) for future development		

BASELINE DESIGN ASSUMPTION

No provisions have been made for additional utility stubs.

PROPOSED ALTERNATIVE

In coordination with SPU and Ronald Wastewater District, establish a plan for future services to parcels fronting the roadway improvements. In addition, upgrade existing service connections and install new stub-outs to parcels not yet developed or identified for re-development.

DISCUSSION

After the final paving lift over Aurora was completed in Phase 1, SPU came in with water service connections and had to patch the new pavement. This idea would prevent this from happening in phase 2 after the final pavement lift in the proposed roadway improvements.

ADVANTAGES	**DISADVANTAGES**
● Reduces patching new pavement surface	● Requires additional coordination and tracking
● Maintains aesthetics	● Requires projecting of future development
● Improves public perception of City work	● Requires settng up late-comer agreements
●	●
●	●

RECOMMENDATION/RESULT

Implement this idea.

2008058 DESIGN SUGGESTION

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FUNCTION: Improve Efficiency	**IDEA #** 33
TITLE: Identify work that must be performed at night	

BASELINE DESIGN ASSUMPTION

The 30% plans do not address work hours.

PROPOSED ALTERNATIVE

Specify project areas where only night work is allowed.

DISCUSSION

The contractor, knowing this, may be able to get their suppliers and subcontractors to provide better pricing because their operations during the day would not be impacted by this project. Savings may be realized in the production areas due to better travel times and more trips. At times, working at night increases production because of less distractions to the employees. These locations would need to be coordinated with the construction sequencing plan and design development.

ADVANTAGES	**DISADVANTAGES**
• Increased resources	• Increases cost premium for night work
• Improves travel time	• Increases noise impact at night
• Increases productivity	•
• Reduces community impact	•
•	•

RECOMMENDATION/RESULT

Recommend incorporating a special provision into the contract to designate night work areas.

COST SUMMARY	**Initial Cost**	**Subsequent Cost (Present Value)**	**Net Present Value (Initial plus subsequent)**
Baseline Design Assumption	$ 432,000	$ -	$ 432,000
Proposed Alternate	$ 391,000	$ -	$ 391,000
Total (proposed less baseline)	$ (41,000)	$ -	**$ (41,000)**

2008058 SAVINGS

VE WORKBOOK # IE-23

Aurora Ave. Corridor Improvements **Shoreline, WA**
N 165th to N 185th **April 2008**

FUNCTION: Improve Efficiency							**IDEA #** 33	
TITLE: Identify work that must be performed at night								
CONSTRUCTION ELEMENT	**Markup**	**BASELINE DESIGN ASSUMPTION**				**PROPOSED ALTERNATIVE**		
Description	%	Unit	Qty	Unit Cost $	TOTAL $	Qty	Unit Cost $	TOTAL $
Crushed surfacing base course	30%	ton	5,000	31.00	201,500	5,000	28.50	185,250
Crushed surfacing top course	30%	ton	100	31.00	4,030	100	28.50	3,705
Select borrow incl haul	30%	ton	2000	18.00	46,800	2000	15.50	40,300
Traffic control	30%	1	138,420	1.00	179,946	138,420	0.90	161,951
TOTAL COSTS*					**432,000**			**391,000**
							TOTAL (PROPOSED less BASELINE)	**-41,000**

Note: Total Costs are rounded to nearest thousand dollars SAVINGS

FUNCTION: Improve Safety	**IDEA #** 35

TITLE: Increase temporary illumination; provide a bid item for this work

BASELINE DESIGN ASSUMPTION

Temporary illumination during construction activity is currently not included in design or as a bid item shown in the cost estimate. During certain times of the year the roadway corridor will be darkened to less than desirable illumination levels.

PROPOSED ALTERNATIVE

Provide bid item for temporary illumination and provide special provision in the specifications outlining what will be required by the contractor for temporary illumination during construction.

DISCUSSION

During the first mile of construction of the Aurora Corridor project, there were periods when the illumination levels were significantly decreased due to a variety of reasons. Concerns have been expressed about the lack of available lighting at times and a desire to increase the visibility of the roadway and construction interface. Providing illumination during the lighting switch-overs or during dark working hours will improve safety.

ADVANTAGES	**DISADVANTAGES**
• Increases visibility of roadway and construction zone	• Add cost and scheduling considerations to project
• Improves safety	•
•	•
•	•
•	•

RECOMMENDATION/RESULT

Recommend adding a bid item and special provision outlining the level of temporary illumination to be required.

2008058 DESIGN SUGGESTION

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FUNCTION:	Improve Safety	**IDEA #**	42

TITLE: Identify a traffic control supervisor in the contract documents

BASELINE DESIGN ASSUMPTION

30% documents have no special provisions. No line item seen in contract 30% estimate.

PROPOSED ALTERNATIVE

Add an item in the contract, "Traffic Control Supervisor", in Section 1-02.2 Traffic Control Management and Section 1-02.2(1) General.

DISCUSSION

This item provides a responsible person from the contractor's staff that is exclusively responsible for planning, conducting and performing the work safely. This person prepares traffic control plans that will include pedestrian path ways/crosswalks and Metro bus locations. The plans can also include driveways protection and delineation methods for driveways. Include flagger and uniform police locations during the work effort.

ADVANTAGES	**DISADVANTAGES**
• Provides advance notice on traffic control for a variety of work efforts	• Requires additional contract provision
• Identifies point of contact for the contractor	•
• Establishes emergency phone numbers and responsible person in charge	•
•	•
•	•

RECOMMENDATION/RESULT

Provide line item in contract. Follow sections 1-10.2 and 1-10.2(1)-1-02.2(1)B and 1-02.2(2)

COST SUMMARY	**Initial Cost**	**Subsequent Cost (Present Value)**	**Net Present Value (Initial plus subsequent)**
Baseline Design Assumption	$ -	$ -	$ -
Proposed Alternate	$ 130,000	$ -	$ 130,000
Total (proposed less baseline)	$ 130,000	$ -	**$ 130,000**

2008058 COST

FUNCTION: Improve Safety						**IDEA #** 42		
TITLE: Identify a traffic control supervisor in the contract documents								
CONSTRUCTION ELEMENT	**Markup**	**BASELINE DESIGN ASSUMPTION**				**PROPOSED ALTERNATIVE**		
Description	%	Unit	Qty	Unit Cost $	TOTAL $	Qty	Unit Cost $	TOTAL $
TCS	30%	ea				1	100,000	130,000
Add an item in the contract, "Traffic Control								
TOTAL COSTS*								**130,000**
							TOTAL (PROPOSED less BASELINE)	**130,000**

Note: Total Costs are rounded to nearest thousand dollars COST

FUNCTION: Improve Safety	**IDEA #** 44
TITLE: Research alternative traffic control options with suppliers	

BASELINE DESIGN ASSUMPTION

Standard traffic control devices, i.e. traffic drums, channelizers, cones, temporary paint markings, etc., are specified.

PROPOSED ALTERNATIVE

Explore alternative approaches for providing or supplementing traffic control techniques during construction of the project.

DISCUSSION

Concerns have been expressed about how traffic control was established for the first mile of the Aurora Corridor project. It was expressed that some users had a difficult time distinguishing lane demarcations and shifts, driveway access locations, etc., due to visibility/identification issues.

ADVANTAGES	**DISADVANTAGES**
● Increased traffic flow during construction	● Potential for added construction cost
● Improved safety during construction	●
●	●
●	●
●	●

RECOMMENDATION/RESULT

Recommend that design team explore alternative approaches to traffic control than previously employed methods during first mile.

2008058 DESIGN SUGGESTION

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FUNCTION: Improve Safety	**IDEA #** 45

TITLE: Review locations where hand rails should be installed

BASELINE DESIGN ASSUMPTION

Curbing and handrails will be used to provide safety at back of walk.

PROPOSED ALTERNATIVE

Review locations where it makes sense to provide curbing vs. handrails to meet safety requirements.

DISCUSSION

Certain back of walk locations along the first mile did not require handrails since the vertical drop was less than 30", which is the maximum height difference allowed without installing a handrail. Some vertical drops at certain areas such as intersections could still be problematic, especially for special needs users.

ADVANTAGES	**DISADVANTAGES**
• Improved safety	• Added cost
•	•
•	•
•	•
•	•

RECOMMENDATION/RESULT

Review all back of walk locations to see if handrails are still worth considering for drops less than 30" or if it is reasonable to install curbing to help maintain and keep pedestrian traffic on sidewalk areas and improve safety at back of walk locations. Verify that rails are being install in a consistent manner.

2008058 DESIGN SUGGESTION

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FUNCTION:	Miscellaneous	**IDEA #** 50
TITLE:	Utilize an A+B bidding concept to allow the City to select the optimum relationship between cost and schedule	

BASELINE DESIGN ASSUMPTION

The 30% plan set has not set a duration for the contract work.

PROPOSED ALTERNATIVE

Use the A+ B method to contract the work.

DISCUSSION

The A+B method is a means to reward a contractor for completing the project as quickly as possible. By providing a cost for each working day, the contract combines the cost to perform the work (A component) with the cost of the impact to the public (B component) to provide the lowest cost to the public. Under the A+ B method of contracting, the Owner contractually recognizes there is a monetary value for each working day that can be eliminated from the contract. Further, a contractor who can work faster, at a higher cost may provide the best value to the public. A recommended number of working days can be identified in the project documents. See attached for an explanation of the process.

ADVANTAGES	**DISADVANTAGES**
● Provides best value for the public	● Delays outside the owner's control may impact the contractor's schedule and void the incentive pay and reduction of time
● Allows job to vary from the traditional low bid procedure and still remain competitive	● Increases original contract estimate
● Allows alternate solutions that may take sufficiently less time but can not be specified as a proprietary solution	● Introduces items outside the contractor's control that may impact schedule
● Utilizes innovative solutions by specialty contractors that go beyond the designers' expertise	●
●	●

RECOMMENDATION/RESULT

Study A + B Method for inclusion in special provisions. Estimated savings to the traveling public could approach $2M in time and resources.

2008058 DESIGN SUGGESTION

Washington State Department of Transportation

Alternative Project Delivery

A+B Bidding

A+B bidding is a method of rewarding a contractor for completing a project as quickly as possible. By providing a cost for each working day, the contract combines the cost to perform the work (A component) with the cost of the impact to the public (B component) to provide the lowest cost to the public.

A+B bidding is a cost-plus-time bidding procedure. The low bidder is selected based on a combination of the traditional contract unit price items based bid (A) and the time component proposed by the bidder to complete the project or a critical portion of the project (B). The time to complete the project (B) is assigned a monetary value and combined with the contract items based bid (A) to select the contractor. The bidder with the lowest overall combined bid (A+B) is awarded the contract. In the actual contract, the contractor will only be reimbursed for unit items (A). The time allowed to complete the project is set at the bidders time component (B).

Contractor	Bid Amount	No. Days	Road User Cost	Combined	
A	$4,300,000	130	$12,000	$5,860,000	
B	$4,900,000	110	$12,000	$6,220,000	
C	$4,450,000	115	$12,000	$5,830,000	Combined Low

In the example above, Contractor C had the lowest combined total. A contract of $4,450,000 would be awarded to Contractor C with 115 working days. WSDOT is willing to pay a higher premium to Contractor C for a lower overall public impact.

On certain projects there may be a faster way to perform the work that has a slightly higher cost increment. Under the traditional bidding mechanisms, the contractor cannot plan to use this method during the bid procedures and remain competitive.

Under the A+B method of contracting, WSDOT contractually recognizes that there is a monetary value for each working day that can be eliminated from the contract. Further, a contractor who can work faster, at a higher cost, may provide the best value to the public.

A+B bidding should not be used on all contracts. When the allowable traffic restrictions are such that there is only one way to perform the project, WSDOT designers should simply state the allowable contract time. Examples of projects that could be considered for A+B bidding include:

- Widening projects where permanent traffic control is to be set up for an extended period of time.
- Projects which have multiple activities occurring which don't necessarily have to be done

sequentially.

- Projects where the contractors presence/activities will impact traffic regardless of whether traffic control is set up.
- Projects which allow alternate solutions where one solution may take significantly less time to construct but designers are hesitant to specify a proprietary solution.
- Projects in which innovative solutions by the contractor are sought (specialty work) which may be beyond WSDOT designer's expertise.

Incentive/disincentive (I/D) provisions may also be used to ensure early completion and discourage unbalanced bidding.

Project Selection Criteria for A + B Bidding

top

The following is a list of potential criteria that should be considered prior to a designer choosing an A+B selection mechanism for a project.

- Traffic restrictions, lane closures, or detours are likely to result in significant user costs. The contractual incentive of the "B" component cannot be readily apparent if the value is too low. On lower volume roads, with acceptable detours, user impacts are not likely to be high enough to justify selecting a higher priced project.
- Significant impacts to the local community or economy during construction warrant expediting the total length of the project. Some projects, despite their location on lower volume roadways, will have significant impacts on the local economy. In these cases a designer may decide that the potential to minimize the economic impacts justify the additional cost of acceleration.
- Traffic control staging, using specialized equipment or methods, can be structured to maximize a contractor's ability to reduce the time for completion at a reasonable increase in cost. This potential staging should be one that designers are hesitant to specify as it may reduce competition. For example, one competitor has an established plant adjacent to the project which could make access to the workzone more efficient and thereby potentially shorten the work window. Specifying the use of a sole-source in this instance would likely not provide a competitive price.
- The project is relatively free of utility conflicts, design uncertainties, right-of-way conflicts, or other issues, that may impact the award date or critical project scheduling, but remain outside of the contractor's control. Items that are outside of the contractors control but may impact the overall project delivery could make it exceedingly risky for a contractor to guarantee an early delivery.
- WSDOT seeks contractor expertise to facilitate an early completion. In some cases expertise within the contracting community may be able to provide a more efficient solution to a problem. Specialized work and mechanical/electrical projects could potentially fall within this category.

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Pre-Bid Procedures

Prior to bidding, WSDOT designers should investigate the feasibility of proposed construction procedures and identify any workable alternative approaches. Consider outreach to the contracting community, particularly when potential specialty work is being contemplated.

Identify potential third party (railroad, utilities, etc.) issues and take steps to mitigate any conflicts.

Involvement and buy-in of the Project Construction Office is critical to the success of this process. Any potential time risks should be within the control of the contractor. Involve the Construction Project Engineer in any decision regarding contract time.

When specifying A+B bidding WSDOT designers should avoid the temptation to reduce the maximum allowable time component down to impossibly low threshold. It should be recognized that, by putting a value on time, the best value bid might provide a lower unit price but require additional time.

In order to maintain a level playing field for bidders, open meetings to all interested bidders. One way of doing this is to make an announcement in the weekly Notice to Contractors at least three weeks prior to the meeting. Contact Pre-Contract Administration in WSDOT Headquarters at (360) 705.7017. Items to be considered and discussed include:

- Feasibility - The use of A + B bidding will allow WSDOT to realize the defined project goals effectively and within desired time constraints at an acceptable cost.
- Alternative Approaches - Determine if alternative approaches can be used in the project. If only one approach is determined to be feasible, require it in the contract.
- Third Party Conflict Resolution - The details of potential third party conflicts involving utilities, railroad agreements, environmental/archaeological issues, hazardous materials, public support issues, and other potential projects are addressed in a constructability review, and a plan worked out to mitigate the development of such conflicts.
- Assessment of Risk - Before a decision is made, the construction project office should carefully review the PS&E to determine that there will be few, if any, changes in the contract. If a contract has a large number of change orders, it is likely that any premiums paid by WSDOT to the contractor will be lost through contract negotiations on changes.

Background Information

Consideration for A+B Bidding

The considerations needed to determine if the project lends itself to A+B Bidding is the risk in using this type of tool is associated with changes and delays beyond the contractor's control. Contract time will have to be a consideration with regard to every change order. One way to reduce the chance of problems is to sort out the details of potential third party conflicts involving utilities, railroad agreements, environmental/archaeological issues, hazardous materials, biohazards, public support issues, and other potential problems. Address and mitigate these prior to construction.

Consider whether a contractor can accurately predict the durations of all activities for the project at the time of bid. Larger, more complex projects may not be appropriate.

A+B bidding potential for increase cost.

Potentially, A+B contracts can increase the construction cost. On a standard project, a contractor may see an opportunity to reduce the total impacts. A shorter duration solution may increase the primary item cost, but the reduction in impacts would reduce the overall traffic control cost. As the contractor does not share in the savings on traffic control, they are not likely to bid the shorter duration solution.

Designers should anticipate that there will be a cost for the reduction in days. Whether through acceleration, aggressive management of subcontractors, or specialty equipment, it is likely that the construction price will increase. In no case will the project cost increase greater than the incentive (road user benefit) being offered.

WSDOT construction engineering/inspection costs should be reduced due to the anticipated increase

in multiple activities occurring at the same time coupled with the reduced amount of traffic control being used.

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Safety Impact

Safety cannot be allowed to be impacted. Enforcement of the approved Work Zone Traffic Control Plans will remain with the Project Office.

Number of days for contractor

The contractor may be given a minimum number of days. The maximum amount of road user benefit costs would be provided in the special provision.

Change orders (added and deleted work) can effect A+B contracts

Change Orders will have to address lane rental individually. If a change requires additional traffic impacts, the amount specified in the contract will have to be modified as well.

How Credit is used with A+B contracts

The A+B specification identified time units in terms of working days. These working days, are established in the contractor's initial bid. The lowest combination of the construction cost combined with the time units required establishes the winning bid.

Once the contract is awarded time credits are tracked much like working days. Should a contractor go over the amount bid, the working days will continue to be charged. The unit item "Working Days - Additional" is included in the contract and entries made based upon an established value. These units are deducted as a standard item.

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Washington State Department of Transportation

Alternative Project Delivery

Lane Rental

Lane Rental is used to minimize the impacts of a project on the traveling public. It is a method of transferring the roadway user costs to the contractor. The contractor must rent a lane in order to close it. This creates a monetary incentive for the contractor to be innovative and minimize the duration of lane closures.

The contractor makes decisions that consider the roadway user costs, both during the bid and as the contract progresses. The contractor's bid consists of a combination of the cost to perform the work (A component) with the cost of the impact to the public (B component) to provide the lowest cost to the public. By providing a more aggressive scheduling package, a contractor may be able to gain a competitive advantage by decreasing the overall impact to the traveling public and thereby reducing the amount for bid consideration.

Design Phase

During the design phase, the public impacts of the project are evaluated. The appropriate lane rental units and charges are determined. Lane rental time credit units will vary in size (minutes, hours, days) depending on the road user impacts, and will be as defined in the special provisions. For example, any section of one lane for any part of a working day is equal to one unit.

Bid Process

During the bidding process, the contractor determines the number of lane closures that will be required to complete the work. This number is included in the bid proposal.

After bids are opened, the contractor's lane rental bid is combined with the price proposal. The project is awarded to the contractor with the lowest adjusted bid. The number of "free" lane rental units in the contract is modified to reflect the awarded contractor's bid.

A lane rental closure is applied anytime a lane is closed, for any reason, to progress contract work. The project office tracks lane rentals.

Should the contractor go over the allotted amount, all additional lane rentals will be charged to "Lane Rental - Additional."

If a contract progresses into liquidated damages, the project office continues to track lane rentals but

does not charge them.

Approval for Use

The State Construction Engineer has conditionally approved lane rental on a pilot basis. The use of lane rental requires the approval of the State Specifications Engineer for the following reasons:

- To assist in establishing an appropriate unit and value for the closure.
- To concur that the application is appropriate. Commitments regarding application and notification have been made to industry, and we want to give this tool a fair chance to be successful.
- Headquarters Construction needs to be aware of where lane rental is being used in order to monitor the effectiveness of the specification and provide lessons learned throughout the state.

How Lane Rental Works

The contract is awarded based on the lowest responsible bid, using the following formula:

The bid amount for evaluation = A+ (B x LRC)

A	Bidder's total estimate for all contract bid items (expressed in dollars).
B	Total number of days subject to lane closure, as defined previously, required to complete all contract work.
LRC	Lane rental cost. These costs can be variable and applied to one or more lanes during a construction project.

This formula is used as a measurement for awarding purposes only, and is not used to determine payment to the contractor. The low bidder may not be the successful bidder. A bidder who proposes to minimize user impacts realizes the value of that benefit as part of their bid. They also run the greatest risk for damages (overrun of lane rental time credits).

Once the contract is awarded, the number of lane rental closures is contractually set. The item "Lane Rental - Additional" is included in the contract to address any overruns in this item. An incentive provision is also included to reward the contractor if the work is completed earlier than the (B) portion bid.

Special Provisions / GSP

When using the Flexible Start Date provision several options may be considered, depending on the desired outcome.

Section 1-02.6, Preparation of Proposal

Supplement with the following:

A lane rental fee is included as part of this contract. The bidder shall establish the number of lanes necessary to complete the work by

utilizing lane closures in accordance with the Plans and these Specifications and include this number in the bid proposal.

Definition of
(***$$1$$***)
A Lane Rental Credit shall be assessed for
The number of lane rental credits allowed shall not exceed (***$$2 $$***) of lane closures and shall not be less than ***$$2$$*** of lane closure.

The product of the number of lane rental credits established by the bidder multiplied by the Lane Rental Cost shall be added to the bid total determined from all other bid items. The sum of these two amounts will be the amount used for comparison of bids to determine the lowest bid for award purposes. If a bidder fails to establish the number of lane rental credits, or if the bidder enters a number of lane rental credits not within the range specified above, the maximum credits shown above will be used for calculations to determine the lowest bid for award purposes. The product of lane rental credits times daily road user benefit costs will not be considered in determining payment to the contractor except as described in this special provision.

Note to designer: Requires an additional proposal page supplied through Pre-Contract Administration (similar to A+B bidding specification). Also requires the daily roadway user benefit to be entered on that additional proposal page.

Section 1-02.7, Amount of Bid Deposit:

Supplement with the following:

It will not be necessary for the bid deposit to include an amount to cover the product of lane rental credits of traffic control times daily road user benefit cost

Section 1-03.1, Consideration of Bids:

Supplement with the following:

Each bid submitted shall consist of two parts:

A = The dollar amount for all work to be performed under the contract
B = The total number of lane rental credits required to complete the work.

The lowest responsible bid will then be determined by the Contracting Agency as the lowest combination of (A) and (B) according to the following formula:

A + (B x Lane Rental Cost)

It is mutually agreed by the parties to the contract that ***$$3$$*** per lane rental credit of traffic impact is the stipulated adjustment for road user benefit costs. The preceding formula will only be used to determine the lowest responsible bidder and will not be used to determine final payment to the Contractor when the project is completed other than as described in this special provision.

Section 1-03.4. Contract Bond:

Supplement with the following:

It will not be necessary for the contract bond to include an amount to cover the product of lane rental credits of traffic impact times hourly road user benefit cost.

Measurement

In the event that the contractor exceeds the number of lane rental credits established in the bid the Engineer shall take a credit under the unit item Additional Lane Rental Credits." Upon physical completion, the contractor will be paid for an under-run in lane rental credits under the item "Additional Lane Rental Credits.

Payment

Credits and Payments will be made per unit as described elsewhere in this special provision.

Background Information

What considerations need to be made to determine if the project lends itself to lane rental?

The risk in using this type of tool is associated with changes and delays beyond the contractor's control. Changes in lane rental costs will have to be considered with regard to change orders. One way to reduce the chance of problems is to sort out the details of potential third party conflicts prior to construction, to the extent it is possible. These conflicts may involve utilities, railroad agreements, environmental/archaeological issues, hazardous materials, biohazards, public support issues, and other potential problems.

Consideration should also be given to whether a contractor, at the time of bid, can accurately predict the duration of all activities for the project. Larger, more complex projects may not be appropriate for lane rental.

Construction Cost with Lane Rental

Lane rental can increase construction cost. On a standard project, a contractor may see an opportunity to reduce the total impacts. A shorter duration solution may increase the primary item cost but reduce lane rental and overall traffic control costs. The contractor will try to determine the most advantageous bid while balancing the potential overrun in lane rental costs.

Designers should anticipate that there will be a cost for the reduction in days. Whether through acceleration, aggressive management of subcontractors, or specialty equipment, it is likely that the construction price will increase. In no case will the project cost increase greater than the incentive (road user benefit) being offered.

WSDOT construction engineering and inspection costs should be reduced due to the anticipated increase in multiple activities occurring concurrently coupled with the reduced amount of traffic control being used.

Safety Issues

Safety shall not be compromised. The contractor is required to comply with the approved Work Zone Traffic Control Plans along with other related contract requirements.

Number of Lane Rentals

A special provision allows for a maximum number of lane rentals to be specified. Doing so can provide an upper limit of the public impact allowed on the project. However, the purpose of a lane rental charge is ultimately to produce the best value product. If a contractor can provide a far cheaper bid with more public impacts, this may be the best solution. The challenge is to set the lane rental charge at an appropriate level.

Lane Rental Charges and Liquidated Damages

Section 1-08.9 states that liquidated damages are for delays that inconvenience the traveling public, obstruct traffic, interfere with and delay commerce, and increase risks to highway users. For that loss of lane use, WSDOT charges liquidated damages. We do not charge the contractor for lane closures during this time frame, it would be a duplication of the liquidated damages.

Change orders (added and deleted work)

Change orders need to adjust lane rental days as they would any other contract item that is impacted by the change. Projects that have a likelihood of a large number of changes may not be good candidates for lane rental.

Pricing Lane Rental by Time of Day

The lane rental may be broken out by time of day. We can also break out the number of lanes closed at a location.

Time Credits

The lane rental specification identified time in terms of units. These units, once defined, are established in the contractor's initial bid. The lowest combination of the construction cost combined with the time units required would establish the winning bid.

Once the contract is awarded, time credits will be tracked much like working days. Should a contractor go over the bid amount, the credits will continue to be charged. The unit item "Lane Rental Units - Additional" should be included in the contract and entries made based upon an established value. These units are deducted as a standard item.

Overrun of Lane Rental Days

Traffic control items are generally reimbursed as unit items. The intention of lane rental is not to punish, but rather to reward a contractor for sound management and appropriate risk taking.

Lane Rental Considerations

Consider these factors when selecting lane rental for a project:

- Traffic restrictions or lane closures with no (or limited) alternate routes result in a high user cost.
- The project is relatively free of third party conflicts that are outside the control of the contract (right of way

utility, environmental, etc.).

- There is a high degree of confidence that design uncertainties have been addressed in the plans.
- A reasonable contractor can accurately schedule (and bid) the amount of necessary lane closures to complete the work as described.
- "Closures" can be well defined.
- Opportunities exist to reduce closure times.
- User fees are substantial enough to offset the cost of the effort to reduce the closure time.

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FUNCTION: Miscellaneous	**IDEA #** 52
TITLE: Schedule informational meetings well in advance of advertisement	

BASELINE DESIGN ASSUMPTION

Bid period anticipated to be 4 weeks. This will be the first time contractors see plans and hear about the project.

PROPOSED ALTERNATIVE

Hold an open-house style meeting to give all interested contractors/subs/utilities the opportunity to hear about the project from City staff. In addition, investigate individual meetings with contractors to allow them to ask questions.

DISCUSSION

The goal is to have an educated contractor pool that can ask questions in private. This could increase competition and result in lower bids. The sooner the contractor gains knowledge about the project, the more competitive the bids.

ADVANTAGES	**DISADVANTAGES**
● Produces more competitive bids	● There may be a perceived fairness issue with the individual meetings
● Identifies plan/spec problems in advance	●
●	●
●	●
●	●

RECOMMENDATION/RESULT

`

2008058 DESIGN SUGGESTION

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FUNCTION: Miscellaneous	**IDEA #** 60
TITLE: Utilize the contractor's perspective in the constructability review process	

BASELINE DESIGN ASSUMPTION

Construction management staff (KBA) will provide constructability review.

PROPOSED ALTERNATIVE

Hire contractor or someone with similar experience to review plans/specs for constructability.

DISCUSSION

The VE group believes a contractor or person who has been responsible for construction can provide a valuable plan/spec review. That is superior to a constructability/bidability review prepared by a resident engineer or inspector. A contractor can better provide work sequencing/efficiency feedback. A review of the intent of various specifications and pay items would be part of this review.

ADVANTAGES	**DISADVANTAGES**
• Adds a different perspective on constructability, pay items, and efficiency	• Adds cost of additional review
• Identified logistical issues	•
•	•
•	•
•	•

RECOMMENDATION/RESULT

Engage a qualified, independent third party to review plans and specifications.

COST SUMMARY	**Initial Cost**	**Subsequent Cost (Present Value)**	**Net Present Value (Initial plus subsequent)**
Baseline Design Assumption	$ -	$ -	$ -
Proposed Alternate	$ 12,000	$ -	$ 12,000
Total (proposed less baseline)	$ 12,000	$ -	**$ 12,000**

FUNCTION: Miscellaneous							**IDEA #** 60	
TITLE: Utilize the contractor's perspective in the constructability review process								
CONSTRUCTION ELEMENT	**Markup**	**BASELINE DESIGN ASSUMPTION**				**PROPOSED ALTERNATIVE**		
Description	%	Unit	Qty	Unit Cost $	TOTAL $	Qty	Unit Cost $	TOTAL $
Constructibility Review		ea				1	12,000	12,000
TOTAL COSTS*								**12,000**
							TOTAL (PROPOSED less BASELINE)	**12,000**

Note: Total Costs are rounded to nearest thousand dollars COST

FUNCTION: Miscellaneous	**IDEA #** 63
TITLE: Comments related to qualifications of construction management representatives	

BASELINE DESIGN ASSUMPTION

KBA is under contract as the construction management team. They will provide constructability review at 60% & 90%. It is anticipated that they will provide a resident engineer, inspectors, and a documentation specialist.

PROPOSED ALTERNATIVE

Select CM representatives with experience in similar work.

DISCUSSION

It is key to understand the balance of resources to manage the project. It is critical to have a resident engineer that understands WSDOT specs, process, and workload needs. As there is state, local and federal funds with this project, paperwork management is critical. Tracking of documentation and documentation retrieval is a must.
Construction management team members should be experienced in similar work, working with high traffic volumes and pedestrian circulation, utility relocation, experienced in resource management. The VE team agrees with interviewing and selecting individuals to help execute the project, and to replace them as appropriate.

ADVANTAGES	**DISADVANTAGES**
• Selects personnel suited for the task	• Potential for CM to not have the desired expertise and personality on staff
• Reduces disputes	•
• Increases level of trust	•
•	•
•	•

RECOMMENDATION/RESULT

Screen CM field staff with a specific set of criteria in mind. Monitor performance and adjust personnel as required.

2008058 DESIGN SUGGESTION

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FUNCTION: Miscellaneous	**IDEA #** 64
TITLE: Review opportunities for use of the City-controlled conduits in the fiber optic trunk	

BASELINE DESIGN ASSUMPTION

There are three banks of Global Crossing conduit running down the middle of Aurora. Each bank of conduit has its own manhole/portal for access. The City of Shoreline owns one of the banks of conduit. At this time, the project is not planning to utilize the conduit.

PROPOSED ALTERNATIVE

Evaluate conduit system to understand if it could be utilized for the Aurora Project short term and long term.

DISCUSSION

The conduit is a resource that should not be ignored in project planning. The school district could potentially utilize the conduit and they could pay rent.

ADVANTAGES	**DISADVANTAGES**
● Provides potential cost savings	● None identified
● Provides potential revenue source	●
●	●
●	●
●	●

RECOMMENDATION/RESULT

Investigate utilization of this conduit during design.

2008058 DESIGN SUGGESTION

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FUNCTION:	Miscellaneous	**IDEA #** 65
TITLE:	Coordinate with Shoreline School District on communication infrastructure needs and plans	

BASELINE DESIGN ASSUMPTION

Shoreline School District will pay for undergrounding of their communication fiber the entire length of the project. The School District has no franchise agreement with the City.

PROPOSED ALTERNATIVE

The Aurora Project budget does not include significant costs for School District communication infrastructure.

DISCUSSION

The School District has said they have no funds and cannot pay for undergrounding of their fiber. Consider whether franchise agreement is appropriate for school district. Consider funding their undergrounding (maybe put them in the City owned Global Crossing conduit in the middle of Aurora and charging them rent). Any benefit the City provides could be returned in "in kind services" from the School District.
Coordinate with the School District to see if 1) City can use same fiber District has on poles, 2) District can pay for their infrastructure to go underground (or provide an "in kind service"), or 3) the District's fiber can go in the City conduit down the middle of Aurora Avenue.

ADVANTAGES	**DISADVANTAGES**
• Coordination between agencies on the Aurora Project could have City wide benefits for future planning	• Increases logistical and contractual requirements
•	•
•	•
•	•
•	•

RECOMMENDATION/RESULT

Continue to coordinate with School District to evaluate Aurora Project. Design team to look at utilizing Global Crossing/City conduit in Aurora. City management to review Shoreline School district infrastructure City-wide and discuss potential for franchise or cost sharing options.

2008058 DESIGN SUGGESTION

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FUNCTION: Miscellaneous	**IDEA #** 66

TITLE: Incorporate City commitments to property owners into contract documents

BASELINE DESIGN ASSUMPTION

The City is acquiring property and other rights for the project: temporary construction easements (cumulative 120 days for life of construction) and a property rights permit (restoration, undergrounding utilities to buildings, and driveway reconstruction). City is planning to include ROW plan and permits in construction documents.

PROPOSED ALTERNATIVE

In additional to including ROW plans and permits in the construction documents, hold a separate meeting with the contractor at the beginning of construction to discuss tracking of temporary construction easement uses and any special property owner commitments. Specifiy this requirement in the CM scope of work.

DISCUSSION

The City and contractor must be coordinated to respect private property temporary construction easements and private property owner impacts. The City and contractor need to have daily records that together can be used to track cumulative days within temporary construction easements.

ADVANTAGES	**DISADVANTAGES**
• Lessens impact on businesses	• Violation of TCEs could result in additional compensation to property owners (potentially lawsuit)
• Tracks commitments to property owners to ensure appropriate restoration	•
•	•
•	•
•	•

RECOMMENDATION/RESULT

Write specification for contractor inclusion of private property TCE use into daily reports.

2008058 DESIGN SUGGESTION

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3.1 Baseline Materials

Baseline materials provided at study

- Aurora Corridor Improvement Project (N 165th to N 185th) 30% project submittal (by HDR)
- Aurora Ave North Multimodal Corridor Project N 145th to N 165th Bid Tabulations (by CoS)
- Aurora Ave North Multimodal Corridor Project N 145th to N 165th Geotechnical Report (by CoS)
- Proposed agreements with franchise utilities on coordination and relocation (by CoS)
- Cost estimate for 30% project submittal (by HDR)
- Aurora Ave. North Multimodal Corridor Project N 145th to N 165th (by CoS)

3.2 Constraints

Project Constraints

- Median widths at 16’ to keep U-turns available for business access management
- WA DOT channelization plan
- Right-of-way section is fixed
- Roadway section is fixed
- Pole designs carry over from phase 1
- Seattle City Light property adjacent to Aurora Ave from 178th to 188th

3.3 VE Job Plan

1 Pre Workshop

- Identify team members
- Prepare for study

2 Information
Understand project and issues

- Gather, organize, analyze data
- Define costs and cost models
- Define problem – reason and scope of study
- Determine customer needs and value metrics

3 Function Analysis
Understand the purpose of the project and project parts

- Define Functions
- Evaluate Functions

4 Speculation
Generate ideas to improve value

- Blast and create
- What else will perform the function
- Innovative ideas

5 Evaluation
Select best ideas

- Analyze evaluate, rank ideas
- Select and refine best ideas

6 Development
Expand ideas and rationale

- Develop best ideas into VE proposals
- Develop, support and justification data

7 Presentation / Implementation
Select final design

- Prepare and issue a report
- Present report and sell VE proposals
- Report implemented ideas

8 Post Workshop

- Implement changes
- Monitor status

3.4 Attendee List

April				NAME	DISCIPLINE/ REPRESENTING	PHONE	e-mail
8	9	10	11				
X				Dan Wells	Transit Operations King County Metro	206-263-4745	Daniel.wells@kingcounty.gov
X	X	X	X	Kris Overleese	Project Manager City of Shoreline	206-546-0791	koverleese@ci.shoreline.wa.us
X			X	Todd Livingston	Design team HDR	425-450-6312	Todd.livingston@hdrinc.com
X				Paul Ferrier	Design team HDR	425-450-6296	Paul.ferrier@hdrinc.com
X	X	X	X	Zach Gray	VE civil engineer KPFF	206-622-5822	Zach.gray@kpff.com
X	X	X	X	Mike Myette	VE construction logistics UCAW	206-510-0499	mike@ucaw.org
X	X	X	X	Jaime Saez	VE civil engineer SCE	206-842-5188	Jaime@saezconsult.com
X			X	Kirk McKinley	Corridor Manager City of Shoreline	206-542-3901	kmckinle@ci.shoreline.wa.us
X	X	X	X	Randy Barber	Facilitator Olympic Associates	206-674-6113	rbarber@olympicassociates.com
			X	Alicia McIntire	City of Shoreline	206-546-2051	amcintire@ci.shoreline.wa.us
			X	Phil Ramon	City of Shoreline	206-546-2667	pramon@ci.shoreline.wa.us
			X	John Vicente	City of Shoreline	206-546-8903	jvicente@ci.shoreline.wa.us
			X	Jesus Sanchez	City of Shoreline	206-546-2519	jsanchez@ci.shoreline.wa.us
			X	Brian Breeden	City of Shoreline		bbreeden@ci.shoreline.wa.us
			X	Jerry Shuster	City of Shoreline		jshuster@ci.shoreline.wa.us
			X	Hazel Dela Cruz	City of Shoreline		hdelacruz@ci.shoreline.wa.us
			X	Tricia Juhnke	City of Shoreline	206-546-8887	tjuhnke@ci.shoreline.wa.us

April				NAME	DISCIPLINE/ REPRESENTING	PHONE	e-mail
8	9	10	11				
			X	Kevin Fagerstrom	Shoreline Police	206-546-7862	Kevin.fagerstrom@kingcounty.gov

3.5 Function Analysis

Function	Function Type
Improve Safety	**Basic**
Accommodate Access (business)	Required Secondary
Support Vision (community)	Secondary
Improve Efficiency (construction)	Secondary
Accommodate Jurisdictions	Secondary
Accommodate Runoff	Required Secondary
Improve Water Quality	Secondary
Define Core	Secondary
Support Education	Secondary
Encourage Development	Secondary
Accommodate Pedestrians	Required Secondary
Accommodate Transit	Required Secondary
Improve Access	Secondary
Encourage Growth	Secondary
Increase Level of Service	Required Secondary
Improve Image	Secondary

3.6 Observations

- WA DOT constraining the project geometrically
- Traffic staging opportunities exist with existing connecting side streets
- Two city-controlled conduits are in the fiber optic trunk
- Lots of auto and pedestrian traffic – safety consideration
- Safety and operational issues for contractors
- The fewer relocation or realignment options for pedestrian paths are preferred
- Good access to the Interurban Trail
- Businesses are drive-in
- Bus access looks to drive a high percentage of pedestrians
- SCL property may be option for construction staging
- SCL does not allow ponded water within their right-of-way
- SCL open space south of 185th and adjacent to Ronald Pl. would be a good place for water quality treatment
- Mixture of funding sources
- Jurisdictional disagreement regarding driveway widths
- Right-of-way acquisition could impact the schedule
- City is a 'CA' agency

3.7 Lessons Learned

- Coordinate locations for surface improvements at bus shelters
- Getting additional work or commitments from Seattle Public Utilities is difficult
- Interfaces at back of sidewalk and properties were not well planned in phase 1
- Make property rights clearer
- Review landscape plans to improve
- Traffic control strategies and penalties can be improved
- Clarify responsibilities between the City, contractor, and utilities
- Continue business briefings between City, contractor, and businesses
- Review project shutdown opportunities during holidays
- Lighting/temporary illumination should be improved (seasonal)
- Coordination between public and private development should be reviewed
- Coordinate final paving with completion of all underground work
- Tracking of utilities remaining on poles needs to be continuous

AURORA AVE. N.
N. 165th St. to N. 185th St.
30% ESTIMATE

ITEM NO.	TOTAL QUANTITY	UNIT PRICE	ITEM COST	SUB-TOTAL ** SECTION I-07.2(1) OF STANDARD SPECS	SUB-TOTAL ** SECTION I-07.2(2) OF STANDARD SPECS	STD. ITEM NO.	UNIT	ITEM	GROUP 1 CITY OF SHORELINF	GROUP 2 SEATTLE CITY LIGHT	GROUP 3 UTILITY COMM. / SERVICE CONNECTION	GROUP 4 SEATTLE PUBLIC UTILITY	GROUP 5 THIRD PARTY DAMAGE
								PREPARATION					
1	LUMP SUM		IN TOTALS			0001	L.S.	MOBILIZATION	L.S.	L.S.	L.S.		L.S.
2	1.73	$10,000.00	$17,300.00			0025	ACRE	CLEARING AND GRUBBING	1.73				
3	166.00	$500.00	$83,000.00			0049	EACH	REMOVING DRAINAGE STRUCTURE	166				
4	8386.00	$12.00	$100,632.00				L.F.	REMOING STORM SEWER PIPE	8386				
5	1.00	$23,650.00	$23,650.00			0050	L.S.	REMOVAL OF STRUCTURE AND OBSTRUCTION	1.00				
6	4443.00	$14.00	$62,202.00			0100	S.Y.	REMOVING CEMENT CONC. SIDEWALK	4443.00				
7	7630.00	$7.00	$53,410.00			0108	L.F.	REMOVING CEMENT CONC. CURB AND GUTTER	7630.00				
8	4737.00	$5.00	$23,685.00			0110	L.F.	REMOVING CEMENT CONC. CURB	4737.00				
9	51868.00	$6.00	$311,208.00			0120	S.Y.	REMOVING ASPHALT CONC. PAVEMENT	51868				
10	327.00	$5.00	$1,635.00			0130	S.Y.	REMOVING ASPHALT CONC. SIDEWALK	327				
11	70.00	$3.00	$210.00			0140	L.F.	REMOVING ASPHALT CONC. CURB	70				
12	64.00	$10.00	$640.00			0145	L.F.	REMOVING CONC. BARRIER	64				
13	1377.00	$10.00	$13,770.00			0150	S.F.	REMOVING TRAFFIC ISLAND	1377				
14	1589.00	$5.00	$7,945.00			0160	L.F.	REMOVING TRAFFIC CURB	1589				
15	35.00	$15.00	$525.00			0170	L.F.	REMOVING GUARDRAIL	35				
16	1.00	$250.00	$250.00			0182	EACH	REMOVING GUARDRAIL ANCHOR	1				
17	980.00	$5.00	$4,900.00			0220	L.F.	REMOVING CHAIN LINK FENCE	980				
18	54.00	$30.00	$1,620.00				L.F.	REMOVING AND RESETTING FENCE	54				
19	210.00	$50.00	$10,500.00				EACH	REMOVING AND RESETTING BOLLARDS	210				
20	10.00	$500.00	$5,000.00				EACH	REMOVING FIRE HYDRANT	10				
								GRADING					
21	15275.00	$20.00	$305,500.00			0310	C.Y.	ROADWAY EXCAVATION INCL. HAUL	15275.00				
22	6550.00	$17.00	$111,350.00			0408	TON	SELECT BORROW INCL. HAUL	6550.00				
23	2634.00	$2.50	$6,585.00			0470	C.Y.	EMBANKMENT COMPACTION	2634.00				
								DRAINAGE					
24	792.00	$27.50	$21,780.00			1160	L.F.	UNDERDRAIN PIPE 6 IN. DIAM.	792				
25	352.00	$6.00	$2,112.00				L.F.	BIOSWALE	352				
26	792.00	$25.00	$19,800.00				S.Y.	ECOLOGY EMBANKMENT	792				
								STORM SEWER					
27	9.00	$1,500.00	$13,500.00			3090	EACH	CATCH BASIN TYPE 1L	9				
28	59.00	$1,250.00	$73,750.00			3091	EACH	CATCH BASIN TYPE 1	59				
29	67.00	$3,000.00	$201,000.00			3105	EACH	CATCH BASIN TYPE 2 48 IN. DIAM.	67				
30	1.00	$3,500.00	$3,500.00			3106	EACH	CATCH BASIN TYPE 2 54 IN. DIAM.	1				
31	6.00	$6,500.00	$39,000.00			3107	EACH	CATCH BASIN TYPE 2 72 IN. DIAM.	6				
32	12080.00	$2.00	$24,160.00			3151	L.F.	TESTING STORM SEWER PIPE	12080				
33	1082.00	$30.00	$32,460.00				L.F.	SOLID WALL PVC STORM SEWER PIPE 4 IN. DIAM	1082				
34	4647.00	$45.00	$209,115.00			3602	L.F.	CORRUGATED POLYETHYLENE STORM SEWER PIPE 12 IN. DIAM.	4647				
35	4137.00	$55.00	$227,535.00			3607	L.F.	CORRUGATED POLYETHYLENE STORM SEWER PIPE 18 IN. DIAM.	4137				
36	2787.00	$90.00	$250,830.00			3608	L.F.	CORRUGATED POLYETHYLENE STORM SEWER PIPE 24 IN. DIAM.	2787				
37	93.00	$7,000.00	$651,000.00				EACH	FILTERRA 4 x 4	93				
								SANITARY SEWER					
38													
								WATER LINES					
39	33.00	$3,600.00	$118,800.00			3846	EACH	HYDRANT ASSEMBLY	33				
								STRUCTURE					
40	2082.00	$45.00	$93,690.00				S.F.	CEMENT CONC. RETAINING WALL <18 IN.	2082				
41	4548.00	$70.00	$318,360.00				S.F.	CEMENT CONC. RETAINING WALL	4548				
42	490.00	$120.00	$58,800.00				S.F.	CEMENT CONC. RETAINING WALL- SPECIAL	490				
								SURFACING					
43	18580.00	$30.00	$557,400.00			5100	TON	CRUSHED SURFACING BASE COURSE	18580				
44	975.00	$30.00	$29,250.00			5120	TON	CRUSHED SURFACING TOP COURSE	975				
								LIQUID ASPHALT					
45	33670.00	$1.00	$33,670.00			5334	EST.	ANTI-STRIPPING ADDITIVE	33670.00				

AURORA AVE. N.
N. 165th St. to N. 185th St.
30% ESTIMATE

ITEM NO.	TOTAL QUANTITY	UNIT PRICE	ITEM COST	SUB-TOTAL ** SECTION I-07.2(1) OF STANDARD SPECS	SUB-TOTAL ** SECTION I-07.2(2) OF STANDARD SPECS	STD. ITEM NO.	UNIT	ITEM	GROUP 1 CITY OF SHORELINF	GROUP 2 SEATTLE CITY LIGHT	GROUP 3 UTILITY COMM. / SERVICE CONNECTION	GROUP 4 SEATTLE PUBLIC UTILITY	GROUP 5 THIRD PARTY DAMAGE
								CEMENT CONCRETE PAVEMENT					
46	265.00	$400.00	$106,000.00				C.Y.	CEMENT CONC. PAVEMENT FOR BUS ZONE	265.00				
47	1224.00	$150.00	$183,600.00				S.Y.	SCORED CEMENT CONC. PAVEMENT FOR CROSSWALK	1224.00				
48	42.00	$150.00	$6,300.00				S.Y.	STAMPED CEMENT CONC. PAVEMENT FOR PEDESTRIAN MEDIAN	42.00				
								HOT MIX ASPHALT					
49	31621.00	$4.50	$142,294.50			5711	S.Y.	PLANNING BITUMINOUS PAVEMENT	31621				
50	32770.00	$70.00	$2,293,900.00			5767	TON	HMA CL. 1/2 IN. PG 64-22	32770				
51	72876.00	$1.00	$72,876.00			5830	CALC	JOB MIX COMPLIANCE PRICE ADJUSTMENT	72876				
52	45878.00	$1.00	$45,878.00			5835	CALC	COMPACTION PRICE ADJUSTMENT	45878				
53	1.00	$5.00	$5.00			5837	CALC	ASPHALT COST PRICE ADJUSTMENT	1.00				
54	902.00	$150.00	$135,300.00			5873	TON	HMA FOR APPROACH CL. 1/2 PG. 64-22	902				
								IRRIGATION AND WATER DISTRIBUTION					
55	1.00	$95,490.00	$95,490.00			6071	L.S.	IRRIGATION SYSTEM	1				
								EROSION CONTROL AND PLANTING					
56	1.00	$200,000.00	$200,000.00				L.S.	TEMPORARY EROSION CONTROL	1				
57	400.00	$45.00	$18,000.00			6435	C.Y.	MULCHING	400.00				
58	3100.00	$45.00	$139,500.00			6405	C.Y.	TOP SOIL TYPE A	3100.00				
59	85.00	$300.00	$25,500.00			6552	EACH	PSIPE LARGE TREE, 3 IN. CAL.	85				
60	38.00	$200.00	$7,600.00			6552	EACH	PSIPE MEDIUM TREE, 2 IN. CAL.	38				
61	4300.00	$12.00	$51,600.00			6552	EACH	PSIPE SHRUBS, 1 GAL.	4,300				
62	4300.00	$2.00	$8,600.00			6552	S.F.	PSIPE GROUNDCOVER. 4 IN. POT	4,300				
63	1.00	$25,000.00	$25,000.00			6606	EST.	PLANT ESTABLISHMENT - SECOND YEAR	0.00				
64	1.00	$15,000.00	$15,000.00			6608	EST.	PLANT ESTABLISHMENT - THIRD YEAR	0.00				
65	400.00	$45.00	$18,000.00			6580	C.Y.	BARK OR WOOD CHIP MULCH	400				
66	4700.00	$80.00	$376,000.00				EACH	SILVA CELL	4700				
67	2600.00	$25.00	$65,000.00				C.Y.	SILVA CELL EXCAVATION	2600				
68	2100.00	$6.00	$12,600.00				S.Y.	GEOTEXTILE FABRIC FOR SILVA CELL	2100				
69	1500.00	$5.00	$7,500.00				S.Y.	ROOT BARRIER FOR STREET TREES	1500				
70	134.00	$1,300.00	$174,200.00				EACH	TREE GRATES	134				
								TRAFFIC					
71	14301.00	$20.00	$286,020.00			6700	L.F	CEMENT CONC. TRAFFIC CURB AND GUTTER	14301				
72	11795.00	$28.00	$330,260.00			6701	L.F	CEMENT CONC. TRAFFIC CURB	11795				
73	124.00	$10.00	$1,240.00			6727	L.F	EXTRUDED CURB	124				
74	1158.00	$20.00	$23,160.00			6841	L.F	PRECAST DUAL FACED SLOPED MOUNTABLE CURB	1158				
75	12.00	$35.00	$420.00				L.F	SLOPED NOSE CURB	12				
76	1.00	$1,300,000.00	$1,300,000.00				L.S.	TRAFFIC CONTROL LUMP SUM	1				
77	26050.00	$0.25	$6,512.50			6806	L.F.	PAINT LINE	26050				
78	490.00	$1.75	$857.50			6807	L.F.	PLASTIC LINE	490				
79	7640.00	$0.35	$2,674.00			6817	L.F.	PAINTED WIDE LINE	7640				
80	8300.00	$0.35	$2,905.00			6827	L.F.	PAINTED WIDE LANE LINE	8300				
81	3190.00	$6.00	$19,140.00			6857	S.F.	PLASTIC CROSSWALK LINE	3190				
82	741.00	$7.00	$5,187.00			6859	L.F.	PLASTIC STOP LINE	741				
83	111.00	$100.00	$11,100.00			6833	EACH	PLASTIC TRAFFIC ARROW	111				
84	68.00	$60.00	$4,080.00			6871	EACH	PLASTIC TRAFFIC LETTER	68				
85	4.00	$300.00	$1,200.00			6867	EACH	PLASTIC BICYCLE LANE SYMBOL	4				
86	23.99	$325.00	$7,796.75			6882	HUND	RAISED PAVEMENT MARKER TYPE 1	23.99				
87	16.68	$395.00	$6,588.60			6884	HUND	RAISED PAVEMENT MARKER TYPE 2	16.68				
88	1.00	$40,000.00	$40,000.00			6890	L.S.	PERMANENT SIGNING	1				
89	1.00	$500,000.00	$500,000.00			6904	L.S.	ILLUMINATION SYSTEM, COMPLETE	1				
90	1.00	$250,000.00	$250,000.00			6912	L.S.	TRAFFIC SIGNAL SYSTEM, COMPLETE N 175TH ST	1				
91	1.00	$230,000.00	$230,000.00			6912	L.S.	TRAFFIC SIGNAL SYSTEM, COMPLETE N 175TH ST/ MIDVALE	1				
92	1.00	$250,000.00	$250,000.00			6912	L.S.	TRAFFIC SIGNAL SYSTEM, COMPLETE N 185TH ST	1				
93	1.00	$200,000.00	$200,000.00			6912	L.S.	TRAFFIC SIGNAL SYSTEM, COMPLETE N 185TH ST/ MIDVALE	1				
94	1.00	$90,000.00	$90,000.00				L.S.	PEDESTRIAN TRAFFIC SIGNAL SYSTEM, COMPLETE N 170TH ST	1				
95	1.00	$90,000.00	$90,000.00				L.S.	PEDESTRIAN TRAFFIC SIGNAL SYSTEM, COMPLETE N 182TH ST VIC.	1				
96	1.00	$150,000.00	$150,000.00				L.S.	SIGNAL INTERCONNECT SYSTEM, COMPLETE	1				
97	1.00	$120,000.00	$120,000.00				L.S.	TRANSIT SIGNAL PRIORITY (TSP)	1				
98	1.00	$30,000.00	$30,000.00				L.S.	INTELLIGENT TRANSPORTATION SYSTEM (ITS)	1				

AURORA AVE. N.
N. 165th St. to N. 185th St.
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								OTHER ITEMS					
99	9228.00	$15.00	$138,420.00			7006	C.Y.	STRUCTURE EXCAVATION CLASS B INCL. HAUL	9228				
100	37452.00	$2.00	$74,904.00			7008	S.F.	SHORING OR EXTRA EXCAVATION CLASS B	37452				
101	1.00	$175,000.00	$175,000.00			7038	L.S.	ROADWAY SURVEYING	1.00				
102	7161.00	$50.00	$358,050.00			7055	S.Y.	CEMENT CONC. SIDEWALK	7161				
103	1011.00	$55.00	$55,605.00			7059	S.Y.	CEMENT CONC. DRIVEWAY ENTRANCE TYPE 1	1011				
104	980.00	$55.00	$53,900.00			7059	S.Y.	CEMENT CONC. DRIVEWAY ENTRANCE TYPE 2	980				
105	738.00	$55.00	$40,590.00			7059	S.Y.	CEMENT CONC. DRIVEWAY ENTRANCE TYPE 3	738				
106	41.00	$1,500.00	$61,500.00				EACH	CURB RAMP TYPE A	41				
107	1.00	$1,500.00	$1,500.00				EACH	CURB RAMP TYPE A-3	1				
108	577.00	$100.00	$57,700.00				S.Y.	STAMPED CEMENT CONC. FOR MEDIAN	577				
109	3000.00	$24.00	$72,000.00				L.F	CEMENT CONC. CURB FOR PERVIOUS PAVERS	3000				
110	13000.00	$13.00	$169,000.00				S.F.	CONCRETE UNIT PAVERS - PERVIOUS	13000				
111	4.00	$500.00	$2,000.00				EACH	TEMPORARY ASPHALT TRANSITION RAMP TO SHOULDER	4				
112	6.00	$750.00	$4,500.00			9605	EACH	CONNECTION TO DRAINAGE STRUCTURE	6				
113	49.00	$600.00	$29,400.00			3080	EACH	ADJUST MANHOLE	49				
114	2.00	$500.00	$1,000.00			3100	EACH	ADJUST CATCH BASIN	2				
115	67.00	$500.00	$33,500.00				EACH	ADJUST VALVE / METER BOX	67				
116	4.00	$500.00	$2,000.00				EACH	ADJUST VAULT	4				
117	1.00	$25,000.00	$25,000.00			7715	EST,	FORCE ACCOUNT UNFORSEEN PRIVATE PROPERTY INTERFACE ISSUES	25,000.00				
118	1.00	$75,000.00	$75,000.00			7715	EST,	FORCE ACCOUNT UTILITY LOCATION	75,000.00				
119	1.00	$75,000.00	$75,000.00			7715	EST,	FORCE ACCOUNT RESOLUTION OF CONFLICTS WITH EXISTING	75,000.00				
120	1.00	$10,000.00	$10,000.00			7480	EST,	ROADSIDE CLEANUP	1.00				
121	1.00	$5,000.00	$5,000.00			7725	EST.	REIMBURSEMENT FOR THIRD PARTY DAMAGE	1.00				
122	1.00	$2,500.00	$2,500.00			7728	CALC	MINOR CHANGE	1.00				
123	1.00	$5,000.00	$5,000.00			7736	L.S.	SPCC PLAN	1.00				
				SEATTLE CITY LIGHT (Joint Trench)									
124	70.00	$100.00	$7,000.00				EACH	REMOVING UTILITY POLE		70.00			
125	86.00	$20.00	$1,720.00			5120	TON	CRUSHED SURFACING TOP COURSE		86			
126	95.00	$125.00	$11,875.00			5739	TON	HMA FOR PAVEMENT REPAIR CL. 1/2 IN. PG 64-22		95			
127	2.00	$1,000.00	$2,000.00				EACH	UTILITY POLE		2			
128	1.00	$1,250,000.00	$1,250,000.00				L.S.	TRENCH EXCAVATION, BEDDING AND BACKFILL		1			
129	50000.00	$2.00	$100,000.00			7007	S.F.	SHORING OR EXTRA EXCAVATION TRENCH			50000.00		
130	11132.00	$5.50	$61,226.00				L.F.	SCL - CONDUIT 3 IN. DIAM. PVC SCH. 40		11132			
131	22625.00	$7.00	$158,375.00				L.F.	SCL - CONDUIT 4 IN. DIAM. PVC SCH. 40		22625			
132	44156.00	$8.50	$375,326.00				L.F.	SCL - CONDUIT 5 IN. DIAM. PVC SCH. 40		44156			
133	26.00	$10.00	$260.00				L.F.	SCL - CONDUIT 6 IN. DIAM. PVC SCH. 40		26			
134	13.00	$3,500.00	$45,500.00				EACH	SCL - 444 PRECAST CONCRETE HANDHOLE		13			
135	1.00	$7,500.00	$7,500.00				EACH	SCL- 577LA PRECAST VAULT		1			
136	3.00	$20,000.00	$60,000.00				EACH	SCL- 712LA PRECAST VAULT		3			
137	22.00	$38,000.00	$836,000.00				EACH	SCL- 814LA PRECAST VAULT		22			
138	3.00	$15,000.00	$45,000.00				EACH	SCL- 5106 PRECAST VAULT		3			
139	3.00	$40,000.00	$120,000.00				EACH	SCL101010 VISTA SWITCH PRECAST VAULT		3			
			##########										
				SERVICE CONNECTIONS / COMM. UTILITIES									
143	630.00	$20.00	$12,600.00			5120	TON	CRUSHED SURFACING TOP COURSE			630		
144	888.00	$100.00	$88,800.00			5739	TON	HMA FOR PAVEMENT REPAIT CL. 1/2 IN. PG 64-22			888		
145	1.00	$300,000.00	$300,000.00				L.S.	TRENCH EXCAVATION, BEDDING AND BACKFILL			1		
146	6243.00	$7.00	$43,701.00				L.F.	SCL - CONDUIT 4 IN. DIAM. PVC SCH. 40			6243		
147	2075.00	$7.00	$14,525.00				L.F.	COMCAST - CONDUIT 2 IN. DIAM. PVC SCH. 40			2075		
148	9282.00	$7.00	$64,974.00				L.F.	COMCAST - CONDUIT 4 IN. DIAM. PVC SCH. 40			9282		
149	2499.00	$4.50	$11,245.50				L.F.	VERIZON - CONDUIT 2 IN. DIAM. PVC SB			2499		
150	29474.00	$7.00	$206,318.00				L.F.	VERIZON - CONDUIT 4 IN. DIAM. PVC SB			29474		
					SEATTLE PUBLIC UTILTIES								
151	5838.00	$10.00	$58,380.00				L.F.	REMOVING WATERLINE				5838.00	

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152	**600.00**	$20.00	$12,000.00			5120	TON	CRUSHED SURFACING TOP COURSE				600.00	
153	**1200.00**	$20.00	$24,000.00			0408	TON	SELECT BORROW INCL. HAUL				1200.00	
154	**650.00**	$20.00	$13,000.00			3815	C.Y.	BANKRUN GRAVEL FOR TRENCH BACKFILL				650.00	
155	**665.00**	$100.00	$66,500.00			5739	TON	HMA FOR PAVEMENT REPAIT CL. 1/2 IN. PG 64-22				665.00	
156	**2877.00**	$70.00	$201,390.00			3867	L.F.	DUCTILE IRON PIPE FOR WATER MAIN 8 IN. DIAM.				2877.00	
157	**2954.00**	$120.00	$354,480.00			3874	L.F.	DUCTILE IRON PIPE FOR WATER MAIN 24 IN. DIAM.				2954.00	
			$729,750.00										

I	**RIGHT OF WAY**		Unit	QUANTITY	COST	TOTAL
	1	**Land Purchase**	SF	$46,642.00	$55	$2,565,310
	2	**Cost - to - Cure**	EA	$37.00	$35,000	$1,295,000
	3	**Partial Building Take**	SF		$90	$0
	4	**Demolition / Business Relocation**	EA		$500,000	$0
	5	**Acquistion / Admin. Cost**	**EA**	**$37.00**	**$7,000**	$259,000
	6	**Condemanation Contingency**	**EST**	**10.00%**		**$411,931.0**
	7	**Right of Way Total**				**$4,531,241.00**
II	**CONSTRUCTION COST**					
			UNIT	**QUANTITY**	COST	TOTAL
	8	**Demolition / Clearing / Earthwork**	**SF**	**1.13**	$1,260,000.00	$1,423,800.00
	9	**New Bridge and Bridge Widening**	**SF**		$160.00	$0.00
	10	**New Pavement**	**LANE MILE**	**7.54**	$300,000.00	$2,262,000.00
	11	**Sidewalks**	**SY**	**17,105.00**	$63.00	$1,077,615.00
	12	**curb and Guter**	**LF**	**27,642.00**	$15.00	$414,630.00
	13	**Bus Shelters**	**EA**	**10.00**	**15000**	$150,000.00
	14	**Walls**	**SF**	**20,850.00**	$90.00	$1,876,500.00
	15	**Noise Walls**	**SF**		$32.00	$0.00
	16	**Drainage System**	**LANE MILE**	**7.54**	$260,000.00	$1,960,400.00
	17	**Landscaping**	**MILE**	**1.13**	$1,000,000.00	$1,130,000.00
	18	**Utility Modifications**	**MILE**	**1.13**	$1,575,000.00	$1,779,750.00
	19	**Temporary Water Pollution Control**	**SF**	**196,627.00**	$1.20	$235,952.40
	20	**Traffic Signal New**	**EA**	**1.00**	$270,000.00	$270,000.00
	21	**Traffic Signal Modifications**	**EA**	**3.00**	$210,000.00	$630,000.00
	22	**ITS**	**MILE**	**1.13**	$125,000.00	$141,250.00
	23	**Traffic Striping/Signage/Channelization**	**MILE**	**1.13**	$84,000.00	$94,920.00
	24	**Illumination System**	**MILE**	**1.13**	$735,000.00	$830,550.00
	25	**Construction Traffic Control**	**%**	**12%**	**of lines 8-24**	$1,713,284.09
	26	**Miscellaneous Items**	**%**	**20%**	of lines 8-25	$3,198,130.30
	27	**Construction Subtotal (Lines 8-26)**			**Round to nearest 100**	$19,188,781.79
	28	**Mobilization**			**10% of line 27**	$1,918,878.18
	29	**Subtotal (Lines 23 and 24)**				$21,107,659.96
	30	**Sales Tax**			**included in unit prices**	
	27	**CONSTRUCTION TOTAL**	**(Lines 2 and 36)**			**$21,107,659.96**
III	**PROJECT DEVELOPMENT**					
	28	**Design Total**	**14% of Line 27**			**$2,955,072.39**
	29	**CONSTRUCTION MANAGEMENT TOTAL**	**11% OF Line 27**			**$2,321,842.60**
IV	**ESTIMATED COST (2008 Dollars)**		**Lines 7, 27,28 and 29)**			**$30,915,815.96**
	30	**Contingencies Total**	**30% of Line IV**			**$9,274,744.79**
V	**Overall Total Cost**		**Line IV and 30**			**$40,190,560.74**

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CITY OF SHORELINE

AURORA AVENUE NORTH MULTIMODAL CORRIDOR PROJECT

N 145TH ST TO N 165TH ST

Bid Tabulation

					ENGINEERS ESTIMATE		GARY MERLINO CONST CO		WILDER CONST CO	
	Schedule A									
NO.	**ITEM DESCRIPTION**	**SECTION**	**UNIT**	**QUANTITY**	**UNIT PRICE**	**COST ($)**	**UNIT PRICE**	**COST ($)**	**UNIT PRICE**	**COST ($)**
	SECTION 1 - PREPARATION									
A1	MOBILIZATION	1-09	LS	1	$1,289,192	$1,289,191.71	$1,540,000	$1,540,000.00	$400,000	$400,000.00
A2	TIME RELATED OVERHEAD	1-09	LS	1	$0.00	$0.00	$50,000.00	$50,000.00	$1,650,000.00	$1,650,000.00
A3	CONTRACTOR SURVEYING - ROADWAY	1-05	LS	1	$120,000.00	$120,000.00	$150,000.00	$150,000.00	$250,000.00	$250,000.00
A4	CONTRACTOR SURVEYING - PAVEMENT PLANING	1-05	LS	1	$25,000.00	$25,000.00	$10,000.00	$10,000.00	$7,000.00	$7,000.00
A5	CONTRACTOR SURVEYING - STRUCTURE	1-05	LS	1	$10,000.00	$10,000.00	$30,000.00	$30,000.00	$20,400.00	$20,400.00
A6	MODIFY EXISTING IRRIGATION SYSTEM	1-07.17	FA	1	$7,500.00	$7,500.00	$7,500.00	$7,500.00	$7,500.00	$7,500.00
A7	UTILITY POTHOLING	1-07	FA	1	$75,000.00	$75,000.00	$75,000.00	$75,000.00	$75,000.00	$75,000.00
A8	RESOLUTION OF EXISTING UTILITY CONFLICTS	1-	FA	1	$75,000.00	$75,000.00	$75,000.00	$75,000.00	$75,000.00	$75,000.00
A9	CLEARING	2-01	ACRE	4.0	$5,000.00	$20,000.00	$10,000.00	$40,000.00	$12,000.00	$48,000.00
A10	REMOVE EXISTING DRAINAGE STRUCTURE	2-02	EA	110	$400.00	$44,000.00	$300.00	$33,000.00	$120.00	$13,200.00
A11	REMOVE EXISTING STORM SEWER PIPE	2-02	LF	5850	$7.00	$40,950.00	$10.00	$58,500.00	$6.00	$35,100.00
A12	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	2-02	LS	1	$11,510.00	$11,510.00	$100,000.00	$100,000.00	$30,000.00	$30,000.00
A13	REMOVING PAVEMENT - < 5” IN THICKNESS	2-02	SY	11,900	$6.50	$77,350.00	$14.00	$166,600.00	$8.00	$95,200.00
A14	REMOVING PAVEMENT - > 5” IN THICKNESS	2-02	SY	46,900	$8.00	$375,200.00	$14.00	$656,600.00	$8.00	$375,200.00
A15	REMOVING CEMENT CONCRETE SIDEWALK	2-02	SY	2,336	$7.50	$17,520.00	$14.00	$32,704.00	$10.00	$23,360.00
A16	REMOVING ASPHALT SIDEWALK	2-02	SY	1,092	$8.00	$8,736.00	$14.00	$15,288.00	$6.00	$6,552.00
A17	REMOVING CURB, INCL. TRAFFIC CURB AND CONCRETE CURB AND/OR GUTTER	2-02	LF	12,420	$3.00	$37,260.00	$5.00	$62,100.00	$3.00	$37,260.00
A18	REMOVING TRAFFIC ISLAND	2-02	SF	9,332	$8.00	$74,656.00	$2.00	$18,664.00	$1.00	$9,332.00
A19	REMOVING GUARDRAIL	8-11	LF	410	$5.00	$2,050.00	$15.00	$6,150.00	$10.00	$4,100.00
A20	REMOVING GUARDRAIL ANCHOR	8-11	EA	3	$150.00	$450.00	$400.00	$1,200.00	$260.00	$780.00
A21	TREE REMOVAL	2-01	EA	31	$200.00	$6,200.00	$300.00	$9,300.00	$500.00	$15,500.00
A22	REMOVING PAINT LINE	8-21	LF	40,000	$0.30	$12,000.00	$0.35	$14,000.00	$0.40	$16,000.00
A23	REMOVING PAINTED TRAFFIC MARKING	8-22	EA	64	$50.00	$3,200.00	$30.00	$1,920.00	$31.00	$1,984.00
A24	REMOVAL OF SIGNAL EQUIPMENT AT NORTH 145TH STREET	8-20	LS	1	$12,400.00	$12,400.00	$12,000.00	$12,000.00	$10,000.00	$10,000.00
A25	REMOVAL OF NORTH 155TH STREET TRAFFIC SIGNAL SYSTEM	8-20	LS	1	$30,000.00	$30,000.00	$15,000.00	$15,000.00	$13,000.00	$13,000.00
A26	REMOVAL OF NORTH 160TH STREET TRAFFIC SIGNAL SYSTEM	8-20	LS	1	$30,000.00	$30,000.00	$10,000.00	$10,000.00	$10,000.00	$10,000.00
A27	REMOVAL OF NORTH 165TH STREET TRAFFIC SIGNAL SYSTEM	8-20	LS	1	$10,000.00	$10,000.00	$10,000.00	$10,000.00	$8,000.00	$8,000.00
A28	REMOVE AND RESET EXIST. FENCE	2-02	LF	414	$15.00	$6,210.00	$40.00	$16,560.00	$20.00	$8,280.00
A29	REMOVE MAILBOX	2-02	EA	31	$20.00	$620.00	$100.00	$3,100.00	$150.00	$4,650.00
A30	REMOVING AND RESETTING EXISTING BOLLARDS	2-02	EA	50	$300.00	$15,000.00	$500.00	$25,000.00	$300.00	$15,000.00
A31	REMOVAL AND RELOCATION OF EXISTING PRIVATE IMPROVEMENTS	2-02	LS	1	$95,650.00	$95,650.00	$20,000.00	$20,000.00	$40,000.00	$40,000.00
A32	UNFORSEEN PRIVATE PROPERTY INTERFACE ISSUES	2-02	FA	1	$25,000.00	$25,000.00	$25,000.00	$25,000.00	$25,000.00	$25,000.00
A33	REMOVAL AND DISPOSAL OF ASBESTOS MATERIAL	2-02	FA	1	$1,000.00	$1,000.00	$1,000.00	$1,000.00	$1,000.00	$1,000.00

					ENGINEERS ESTIMATE		GARY MERLINO CONST CO		WILDER CONST CO	
	Schedule A									
NO.	**ITEM DESCRIPTION**	**SECTION**	**UNIT**	**QUANTITY**	**UNIT PRICE**	**COST ($)**	**UNIT PRICE**	**COST ($)**	**UNIT PRICE**	**COST ($)**
A34	SAWCUTTING	2-02	SF	29,530	$3.00	$88,590.00	$3.00	$88,590.00	$3.50	$103,355.00
	SECTION 2 - GRADING					$0.00		$0.00		$0.00
A35	ROADWAY EXCAVATION INCL. HAUL	2-03	CY	9,400	$15.00	$141,000.00	$28.00	$263,200.00	$33.00	$310,200.00
A36	REMOVAL OF CONTAMINATED SOIL	2-09	CY	200	$100.00	$20,000.00	$150.00	$30,000.00	$200.00	$40,000.00
A37	UNSUITABLE FOUNDATION EXCAVATION INCLUDING HAUL	7-08	CY	2,400	$20.00	$48,000.00	$28.00	$67,200.00	$4.00	$9,600.00
A38	GRAVEL BORROW INCL. HAUL	2-03	TON	31,800	$13.00	$413,400.00	$15.00	$477,000.00	$3.50	$111,300.00
A39	GRAVEL BORROW INCL. HAUL - FOR BACKFILL OF STRUCTURE EXCAVATIONS	2-03	TON	1,500	$13.00	$19,500.00	$15.00	$22,500.00	$30.00	$45,000.00
A40	EMBANKMENT COMPACTION	2-03	CY	19,820	$2.50	$49,550.00	$3.00	$59,460.00	$0.50	$9,910.00
	SECTION 4 - DRAINAGE					$0.00		$0.00		$0.00
A41	CONCRETE INLET	7-05	EA	8	$715.00	$5,720.00	$1,000.00	$8,000.00	$800.00	$6,400.00
A42	PVC UNDERDRAIN PIPE 6 IN. DIAM.	7-01	LF	50	$15.00	$750.00	$25.00	$1,250.00	$25.00	$1,250.00
A43	PVC DRAIN PIPE 6 IN. DIAM.	7-01	LF	150	$15.00	$2,250.00	$25.00	$3,750.00	$25.00	$3,750.00
A44	PVC DRAIN PIPE 8 IN. DIAM.	7-01	LF	25	$18.00	$450.00	$26.00	$650.00	$28.00	$700.00
A45	WASHED GRAVEL BACKFILL FOR DRAINS	7-01	TON	30	$18.00	$540.00	$30.00	$900.00	$40.00	$1,200.00
A46	QUARRY SPALLS	8-15	TON	50	$30.00	$1,500.00	$50.00	$2,500.00	$45.00	$2,250.00
A47	TRENCH DRAIN	7-01	LF	5	$100.00	$500.00	$350.00	$1,750.00	$250.00	$1,250.00
	SECTION 5 - STORM SEWER					$0.00		$0.00		$0.00
A48	SOLID WALL PVC STORM SEWER PIPE 6 IN. DIAM.	7-04	LF	30	$20.00	$600.00	$40.00	$1,200.00	$35.00	$1,050.00
A49	CORRUGATED POLYETHYLENE STORM SEWER PIPE 12 IN. DIAM.	7-04	LF	4,625	$25.00	$115,625.00	$43.00	$198,875.00	$48.00	$222,000.00
A50	CORRUGATED POLYETHYLENE STORM SEWER PIPE 18 IN. DIAM.	7-04	LF	1,860	$34.00	$63,240.00	$58.00	$107,880.00	$50.00	$93,000.00
A51	CORRUGATED POLYETHYLENE STORM SEWER PIPE 24 IN. DIAM.	7-04	LF	1,750	$50.00	$87,500.00	$100.00	$175,000.00	$85.00	$148,750.00
A52	CORRUGATED POLYETHYLENE STORM SEWER PIPE 30 IN. DIAM.	7-04	LF	330	$85.00	$28,050.00	$150.00	$49,500.00	$120.00	$39,600.00
A53	CORRUGATED POLYETHYLENE STORM SEWER PIPE 36 IN. DIAM.	7-04	LF	390	$100.00	$39,000.00	$175.00	$68,250.00	$120.00	$46,800.00
A54	DUCTILE IRON STORM SEWER PIPE 10 IN. DIAM.	7-04	LF	260	$40.00	$10,400.00	$80.00	$20,800.00	$50.00	$13,000.00
A55	DUCTILE IRON STORM SEWER PIPE 12 IN. DIAM.	7-04	LF	2,575	$50.00	$128,750.00	$60.00	$154,500.00	$100.00	$257,500.00
A56	DUCTILE IRON STORM SEWER PIPE 18 IN. DIAM.	7-04	LF	150	$60.00	$9,000.00	$70.00	$10,500.00	$110.00	$16,500.00
A57	CLASS V REINF. CONC. STORM SEWER PIPE 30 IN. DIAM.	7-04	LF	300	$110.00	$33,000.00	$100.00	$30,000.00	$180.00	$54,000.00
A58	THRU CURB INLET FRAME AND GRATE WITH VERTICAL CURB INSTALLATION	7-05	EA	14	$250.00	$3,500.00	$1,000.00	$14,000.00	$140.00	$1,960.00
A59	CATCH BASIN TYPE 1	7-05	EA	139	$1,000.00	$139,000.00	$1,000.00	$139,000.00	$1,300.00	$180,700.00
A60	CATCH BASIN TYPE 1L	7-05	EA	8	$1,150.00	$9,200.00	$1,100.00	$8,800.00	$1,400.00	$11,200.00
A61	CATCH BASIN TYPE 2 48 IN. DIAM.	7-05	EA	40	$2,000.00	$80,000.00	$2,000.00	$80,000.00	$3,000.00	$120,000.00
A62	CATCH BASIN TYPE 2 54 IN. DIAM.	7-05	EA	8	$2,700.00	$21,600.00	$2,700.00	$21,600.00	$3,700.00	$29,600.00
A63	CATCH BASIN TYPE 2 60 IN. DIAM.	7-05	EA	4	$3,000.00	$12,000.00	$3,500.00	$14,000.00	$6,000.00	$24,000.00
A64	CATCH BASIN TYPE 2 72 IN. DIAM.	7-05	EA	4	$5,000.00	$20,000.00	$6,000.00	$24,000.00	$6,500.00	$26,000.00
A65	STORMWATER TREATMENT SYSTEM A	7-22	EA	1	$64,209.26	$64,209.26	$100,000.00	$100,000.00	$40,000.00	$40,000.00
A66	STORMWATER TREATMENT SYSTEM B	7-22	EA	1	$37,670.67	$37,670.67	$60,000.00	$60,000.00	$30,000.00	$30,000.00
A67	STORMWATER TREATMENT SYSTEM C	7-22	EA	1	$107,385.56	$107,385.56	$150,000.00	$150,000.00	$70,000.00	$70,000.00

					ENGINEERS ESTIMATE		GARY MERLINO CONST CO		WILDER CONST CO	
	Schedule A									
NO.	**ITEM DESCRIPTION**	**SECTION**	**UNIT**	**QUANTITY**	**UNIT PRICE**	**COST ($)**	**UNIT PRICE**	**COST ($)**	**UNIT PRICE**	**COST ($)**
A68	STORMWATER TREATMENT SYSTEM D	7-22	EA	1	$12,284.26	$12,284.26	$25,000.00	$25,000.00	$10,000.00	$10,000.00
A69	FLOW SPLITTER	7-05	EA	3	$6,300.00	$18,900.00	$6,000.00	$18,000.00	$7,000.00	$21,000.00
A70	DEBRIS BARRIER	7-04	EA	6	$75.00	$450.00	$750.00	$4,500.00	$390.00	$2,340.00
	SECTION 8 - STRUCTURE									
A71	STRUCTURE EXCAVATION CLASS A	2-09	CY	1,528	$15.00	$22,920.00	$28.00	$42,784.00	$21.00	$32,088.00
A72	SHORING OR EXTRA EXCAVATION CLASS A	2-09	LS	1	$1,700.00	$1,700.00	$10,000.00	$10,000.00	$500.00	$500.00
A73	SHAFT - 3' - 0" DIAMETER	6-16	LF	1,021	$125.00	$127,625.00	$175.00	$178,675.00	$160.00	$163,360.00
A74	FURNISHING SOLDIER PILE - W24X84	6-16	LF	925	$80.00	$74,000.00	$67.00	$61,975.00	$125.00	$115,625.00
A75	FURNISHING SOLDIER PILE - W24X117	6-16	LF	627	$105.00	$65,835.00	$90.00	$56,430.00	$140.00	$87,780.00
A76	SOLDIER PILE SIDEWALK	6-16	LF	450	$280.00	$126,000.00	$250.00	$112,500.00	$310.00	$139,500.00
A77	SHOTCRETE FACING	6-16	SF	4,120	$18.00	$74,160.00	$16.00	$65,920.00	$17.00	$70,040.00
A78	TIMBER LAGGING	6-16	MBM	20	$2,000.00	$40,000.00	$1,500.00	$30,000.00	$1,400.00	$28,000.00
A79	PREFABRICATED DRAINAGE MAT	6-16	SY	200	$40.00	$8,000.00	$25.00	$5,000.00	$50.00	$10,000.00
A80	REMOVE SOLDIER PILE SHAFT OBSTRUCTIONS	6-16	FA	1	$20,000.00	$20,000.00	$20,000.00	$20,000.00	$20,000.00	$20,000.00
A81	ST. REINF. BAR FOR RETAINING WALL	6-02	LBS.	4,400	$1.20	$5,280.00	$2.60	$11,440.00	$3.00	$13,200.00
A82	CONCRETE CLASS 4000	6-02	CY	46	$425.00	$19,550.00	$900.00	$41,400.00	$750.00	$34,500.00
	SECTION 9 - SURFACING									
A83	CRUSHED SURFACING BASE COURSE	4-04	TON	14,930	$17.00	$253,810.00	$30.00	$447,900.00	$35.00	$522,550.00
A84	CRUSHED SURFACING BASE COURSE FOR TRAIL	4-04	CY	88	$30.00	$2,640.00	$175.00	$15,400.00	$60.00	$5,280.00
	SECTION 12 - ASPHALT TREATED BASE									
A85	ASPHALT TREATED BASE	4-06	TON	169	$60.00	$10,140.00	$62.00	$10,478.00	$67.00	$11,323.00
	SECTION 13 - CEMENT CONRETE PAVEMENT									
A86	INTERGRALLY COLORED CONCRETE FOR CROSSWALKS	8-38	SY	1,652	$95.00	$156,940.00	$110.00	$181,720.00	$150.00	$247,800.00
A87	CEMENT CONCRETE PAVEMENT - INCLUDING DOWELS, REBAR AND COLOR ADMIXTURE	5-05	SY	1,308	$85.00	$111,180.00	$85.00	$111,180.00	$100.00	$130,800.00
	SECTION 14 - HOT MIX ASPHALT					$0.00		$0.00		$0.00
A88	PLANING BITUMINOUS PAVEMENT	5-04	SY	18,115	$5.00	$90,575.00	$3.50	$63,402.50	$3.00	$54,345.00
A89	HMA CL. 1/2" PG 64-22	5-04	TON	9,960	$57.00	$567,720.00	$60.00	$597,600.00	$54.00	$537,840.00
A90	HMA CL. 1" PG 64-22	5-04	TON	9,492	$57.00	$541,044.00	$54.00	$512,568.00	$50.00	$474,600.00
A91	HMA CL. 1/2" PG 58-22	5-04	TON	2,140	$57.00	$121,980.00	$54.00	$115,560.00	$51.00	$109,140.00
A92	HMA CL. 1" PG 58-22	5-04	TON	287	$57.00	$16,359.00	$60.00	$17,220.00	$80.00	$22,960.00
A93	TEMPORARY PAVEMENT	5-04	TON	3,150	$57.00	$179,550.00	$1.00	$3,150.00	$30.00	$94,500.00
	SECTION 16 - IRRIGATION AND WATER DISTRIBUTION					$0.00		$0.00		$0.00
A94	IRRIGATION SYSTEM	8-03	LS	1	$164,000.00	$164,000.00	$250,000.00	$250,000.00	$220,000.00	$220,000.00
	SECTION 17 - EROSION CONTROL AND PLANTING					$0.00		$0.00		$0.00
A95	SWPPP	1-07	LS	1	$3,500.00	$3,500.00	$500.00	$500.00	$2,400.00	$2,400.00
A96	EROSION CONTROL BLANKET	8-01	SY	2,070	$2.50	$5,175.00	$5.00	$10,350.00	$2.00	$4,140.00
A97	SEEDING, FERTILIZING AND MULCHING	8-01	ACRE	1	$4,300.00	$4,300.00	$5,000.00	$5,000.00	$1,800.00	$1,800.00
A98	INLET PROTECTION	8-01	EA	250	$75.00	$18,750.00	$75.00	$18,750.00	$85.00	$21,250.00
A99	CHECK DAM	8-01	LF	200	$20.00	$4,000.00	$25.00	$5,000.00	$20.00	$4,000.00
A100	STABILIZED CONSTRUCTION ENTRANCE	8-01	SY	1,000	$20.00	$20,000.00	$25.00	$25,000.00	$9.00	$9,000.00
A101	STREET CLEANING	8-01	HR	0		$0.00		$0.00		$0.00
A102	SILT FENCE	8-01	LF	2,000	$5.00	$10,000.00	$6.00	$12,000.00	$7.00	$14,000.00
A103	ESC LEAD	8-01	DAY	200	$225.00	$45,000.00	$50.00	$10,000.00	$40.00	$8,000.00
A104	CLEARING LIMIT FENCE	8-01	LF	6,255	$1.50	$9,382.50	$4.00	$25,020.00	$3.00	$18,765.00

					ENGINEERS ESTIMATE		GARY MERLINO CONST CO		WILDER CONST CO	
Schedule A										
NO.	**ITEM DESCRIPTION**	**SECTION**	**UNIT**	**QUANTITY**	**UNIT PRICE**	**COST ($)**	**UNIT PRICE**	**COST ($)**	**UNIT PRICE**	**COST ($)**
A105	EROSION/WATER POLLUTION CONTROL	8-01	FA	1	$100,000.00	$100,000.00	$100,000.00	$100,000.00	$100,000.00	$100,000.00
A106	PSIPE PARKWAY MAPLE (3" - 3-1/2" CAL.)	8-02	EA	51	$200.00	$10,200.00	$350.00	$17,850.00	$220.00	$11,220.00
A107	PSIPE GREEN COLUMN MAPLE (2" - 2-1/2" CAL..)	8-02	EA	44	$175.00	$7,700.00	$175.00	$7,700.00	$125.00	$5,500.00
A108	PSIPE PACIFIC SUNSET MAPLE (3" - 3-1/2" CAL..)	8-02	EA	80	$200.00	$16,000.00	$400.00	$32,000.00	$220.00	$17,600.00
A109	PSIPE PAPERBARK MAPLE (2" CAL..)	8-02	EA	14	$400.00	$5,600.00	$350.00	$4,900.00	$400.00	$5,600.00
A110	PSIPE AUTUMN APPLAUSE ASH (2" - 2-1/2" CAL..)	8-02	EA	24	$350.00	$8,400.00	$300.00	$7,200.00	$275.00	$6,600.00
A111	PSIPE VINE MAPLE (8'-10' HT.)	8-02	EA	35	$150.00	$5,250.00	$125.00	$4,375.00	$175.00	$6,125.00
A112	PSIPE EDITH BOGUE MAGNOLIA (2" CAL..)	8-02	EA	7	$350.00	$2,450.00	$220.00	$1,540.00	$325.00	$2,275.00
A113	PSIPE PERSIAN IRONWOOD (2" CAL., SINGLE TRUNK)	8-02	EA	6	$280.00	$1,680.00	$320.00	$1,920.00	$310.00	$1,860.00
A114	PSIPE PERSIAN IRONWOOD (2" CAL., MULTI TRUNK)	8-02	EA	24	$250.00	$6,000.00	$375.00	$9,000.00	$420.00	$10,080.00
A115	PSIPE MOUNT VERNON ENGLISH LAUREL (1 GAL.)	8-02	EA	4,657	$7.50	$34,927.50	$8.00	$37,256.00	$8.00	$37,256.00
A116	PSIPE KELSEYI DOGWOOD (1 GAL.)	8-02	EA	1,530	$7.00	$10,710.00	$7.00	$10,710.00	$5.00	$7,650.00
A117	PSIPE "PINK PAVEMENT" RUGOSA ROSE (1 GAL.)	8-02	EA	1,341	$7.00	$9,387.00	$9.00	$12,069.00	$5.50	$7,375.50
A118	PSIPE EMERALD CARPET RUBUS (1 GAL.)	8-02	EA	1,295	$6.50	$8,417.50	$7.00	$9,065.00	$5.25	$6,798.75
A119	PSIPE SULPHUREUM BARRENWORT (1 GAL.)	8-02	EA	4,876	$9.00	$43,884.00	$8.00	$39,008.00	$7.00	$34,132.00
A120	PSIPE CREEPING MAHONIA (1 GAL.)	8-02	EA	5,122	$7.00	$35,854.00	$7.00	$35,854.00	$5.00	$25,610.00
A121	PSIPE INGWERSENS CRANESBILL (1 GAL.)	8-02	EA	2,887	$7.00	$20,209.00	$8.00	$23,096.00	$5.00	$14,435.00
A122	PSIPE ST. JOHNSWORT (1 GAL.)	8-02	EA	4,795	$6.50	$31,167.50	$7.00	$33,565.00	$5.00	$23,975.00
A123	PSIPE GLADWIN IRIS (1 GAL.)	8-02	EA	589	$7.00	$4,123.00	$9.00	$5,301.00	$8.00	$4,712.00
A124	PSIPE SALAL (1 GAL.)	8-02	EA	3,454	$6.00	$20,724.00	$7.00	$24,178.00	$5.00	$17,270.00
A125	PSIPE MAJESTIC LILY TURF (1 GAL.)	8-02	EA	413	$7.00	$2,891.00	$8.00	$3,304.00	$5.75	$2,374.75
A126	PSIPE DROOPING SEDGE (1 GAL.)	8-02	EA	479	$7.00	$3,353.00	$8.00	$3,832.00	$5.75	$2,754.25
A127	PSIPE HOLDEN CLOUGH IRIS (1 GAL.)	8-02	EA	20	$7.00	$140.00	$10.00	$200.00	$17.00	$340.00
A128	PSIPE CAMASSIA (BULB.)	8-02	EA	3,000	$0.40	$1,200.00	$3.00	$9,000.00	$1.50	$4,500.00
A129	PSIPE DWARF MUGO PINE (12"-15" SPREAD)	8-02	EA	30	$25.00	$750.00	$25.00	$750.00	$13.00	$390.00
A130	PSIPE SPRING BOUQUET VIBURNUM (5 GAL.)	8-02	EA	10	$35.00	$350.00	$35.00	$350.00	$25.00	$250.00
A131	PSIPE VETCHII BOSTON IVY (1 GAL.)	8-02	EA	30	$8.00	$240.00	$25.00	$750.00	$8.00	$240.00
A132	PSIPE OTTO LUYKEN LAUREL (12"-15" SPREAD)	8-02	EA	5	$25.00	$125.00	$26.00	$130.00	$15.00	$75.00
A133	PSIPE COMPACT STRAWBERRY TREE (5 GAL.)	8-02	EA	124	$38.00	$4,712.00	$36.00	$4,464.00	$27.00	$3,348.00
A134	PSIPE FAIRY WAND (2 GAL.)	8-02	EA	84	$25.00	$2,100.00	$22.00	$1,848.00	$15.00	$1,260.00
A135	PSIPE MOON BAY HEAVENLY BAMBOO (5 GAL.)	8-02	EA	50	$45.00	$2,250.00	$65.00	$3,250.00	$41.00	$2,050.00
A136	PSIPE DUKE BLUEBERRY (2'-3" HT.)	8-02	EA	22	$20.00	$440.00	$20.00	$440.00	$13.00	$286.00
A137	PSIPE TORO BLUEBERRY (2'-3" HT.)	8-02	EA	52	$20.00	$1,040.00	$20.00	$1,040.00	$13.00	$676.00
A138	PSIPE LEGACY BLUEBERRY (2'-3" HT.)	8-02	EA	54	$40.00	$2,160.00	$20.00	$1,080.00	$13.00	$702.00
A139	PSIPE TONDA DI GIFFONI HAZELNUT (7'-8' HT.)	8-02	EA	11	$40.00	$440.00	$250.00	$2,750.00	$200.00	$2,200.00
A140	PSIPE HALLE'S GIANT HAZELNUT (7'-8' HT.)	8-02	EA	4	$20.00	$80.00	$250.00	$1,000.00	$200.00	$800.00
A141	PSIPE VANCOUVER JADE KINNIKINNICK (1 GAL.)	8-02	EA	1,554	$6.50	$10,101.00	$7.00	$10,878.00	$6.00	$9,324.00
A142	PSIPE DAVID VIBURNUM (1 GAL.)	8-02	EA	130	$7.00	$910.00	$7.00	$910.00	$6.00	$780.00
A143	PSIPE EMERALD GREEN ARBORVITAE (5'-6' HT.)	8-02	EA	7	$7.00	$49.00	$56.00	$392.00	$66.00	$462.00
A144	PSIPE HIDECOTE LAVENDER (1 GAL.)	8-02	EA	52	$7.00	$364.00	$8.00	$416.00	$7.00	$364.00
A145	PSIPE STELLA DE ORO DAYLILY (1 GAL.)	8-02	EA	52	$7.00	$364.00	$8.00	$416.00	$7.00	$364.00
A146	PSIPE HAHNS ENGLISH IVY (1 GAL.)	8-02	EA	2,941	$6.50	$19,116.50	$7.00	$20,587.00	$5.00	$14,705.00
A147	TOPSOIL TYPE A	8-02	CY	2,608	$35.00	$91,280.00	$35.00	$91,280.00	$40.00	$104,320.00
A148	SAWDUST/MANURE MULCH	8-02	CY	574	$40.00	$22,960.00	$38.00	$21,812.00	$41.00	$23,534.00
A149	COMPOST	8-02	CY	781	$35.00	$27,335.00	$30.00	$23,430.00	$25.00	$19,525.00
A150	SOD INSTALLATION	8-02	SY	470	$11.25	$5,287.50	$7.00	$3,290.00	$10.00	$4,700.00

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	Schedule A									
NO.	**ITEM DESCRIPTION**	**SECTION**	**UNIT**	**QUANTITY**	**UNIT PRICE**	**COST ($)**	**UNIT PRICE**	**COST ($)**	**UNIT PRICE**	**COST ($)**
A151	MEADOW SEEDING & MULCHING	8-02	ACRE	0.250	$4,300.00	$1,075.00	$5,000.00	$1,250.00	$5,200.00	$1,300.00
A152	GRASS SEEDING, FERTILIZING & MULCHING FOR LANDSCAPING	8-02	ACRE	0.400	$4,300.00	$1,720.00	$5,000.00	$2,000.00	$3,600.00	$1,440.00
A153	PLANT ESTABLISHMENT - SECOND YEAR	8-02	FA	1	$25,000.00	$25,000.00	$25,000.00	$25,000.00	$25,000.00	$25,000.00
A154	PROPERTY RESTORATION	8-02	FA	1	$55,000.00	$55,000.00	$55,000.00	$55,000.00	$55,000.00	$55,000.00
A155	STEEL EDGING	8-02	LF	1,420	$8.00	$11,360.00	$17.00	$24,140.00	$7.00	$9,940.00
A156	ROOT PATHS	8-02	LF	3,325	$11.00	$36,575.00	$6.00	$19,950.00	$6.00	$19,950.00
A157	ROOT BARRIER - 12" DEPTH	8-02	LF	2,665	$8.50	$22,652.50	$8.00	$21,320.00	$4.00	$10,660.00
A158	ROOT BARRIER -18" DEPTH	8-02	LF	1,245	$9.00	$11,205.00	$11.00	$13,695.00	$5.00	$6,225.00
A159	CRUSHED ROCK (LANDSCAPING)	8-02	TON	20	$20.00	$400.00	$40.00	$800.00	$50.00	$1,000.00
A160	GRAVEL BACKFILL FOR DRYWELLS	8-02	CY	30	$50.00	$1,500.00	$150.00	$4,500.00	$50.00	$1,500.00
A161	HOLD & MAINTAIN CITY-PROVIDED TREES	8-02	FA	1	$4,000.00	$4,000.00	$4,000.00	$4,000.00	$4,000.00	$4,000.00
A162	TREE GRATES	8-39	EA	134	$1,300.00	$174,200.00	$1,300.00	$174,200.00	$1,100.00	$147,400.00
	SECTION 18 - TRAFFIC					$0.00		$0.00		$0.00
A163	TYPE A CURB AND GUTTER	8-04	LF	21,918	$13.00	$284,934.00	$19.00	$416,442.00	$12.00	$263,016.00
A164	VERTICAL CURB	8-04	LF	111	$15.00	$1,665.00	$25.00	$2,775.00	$20.00	$2,220.00
A165	SLOPED NOSE CURB	8-04	LF	39	$40.00	$1,560.00	$35.00	$1,365.00	$20.00	$780.00
A166	EXTRUDED CURB TYPE 6	8-04	LF	3,695	$5.00	$18,475.00	$7.00	$25,865.00	$6.00	$22,170.00
A167	TYPE A PRECAST TRAFFIC CURB	8-07	LF	190	$12.00	$2,280.00	$10.00	$1,900.00	$8.00	$1,520.00
A168	TYPE C PRECAST TRAFFIC CURB	8-07	LF	660	$12.00	$7,920.00	$11.00	$7,260.00	$9.00	$5,940.00
A169	SINGLE SLOPE CONCRETE BARRIER	6-10	LF	80	$75.00	$6,000.00	$175.00	$14,000.00	$100.00	$8,000.00
A170	TEMPORARY CONC. BARRIER	6-10	LF	1,000	$11.00	$11,000.00	$30.00	$30,000.00	$10.00	$10,000.00
A171	PAINT LINE	8-22	LF	29,495	$0.20	$5,899.00	$0.10	$2,949.50	$0.30	$8,848.50
A172	PLASTIC LINE	8-22	LF	135	$1.25	$168.75	$1.25	$168.75	$2.00	$270.00
A173	PAINTED WIDE LINE	8-22	LF	9,251	$0.40	$3,700.40	$0.25	$2,312.75	$0.20	$1,850.20
A174	PLASTIC TRAFFIC ARROW	8-22	EA	82	$80.00	$6,560.00	$60.00	$4,920.00	$45.00	$3,690.00
A175	PAINTED DOTTED WIDE LINE	8-22	LF	6,926	$2.00	$13,852.00	$0.10	$692.60	$0.10	$692.60
A176	PLASTIC CROSSWALK LINE	8-22	SF	3,140	$4.00	$12,560.00	$1.50	$4,710.00	$2.00	$6,280.00
A177	PLASTIC STOP LINE	8-22	LF	800	$7.00	$5,600.00	$3.00	$2,400.00	$4.00	$3,200.00
A178	PAINTED TRAFFIC ARROW	8-22	EA	17	$30.00	$510.00	$25.00	$425.00	$25.00	$425.00
A179	PAINTED TRAFFIC LETTER	8-22	EA	91	$30.00	$2,730.00	$25.00	$2,275.00	$5.00	$455.00
A180	PLASTIC TRAFFIC LETTER	8-22	EA	96	$50.00	$4,800.00	$40.00	$3,840.00	$20.00	$1,920.00
A181	PAINTED ACCESS PARKING SPACE SYMBOL	8-22	EA	2	$100.00	$200.00	$40.00	$80.00	$51.00	$102.00
A182	RAISED PAVEMENT MARKER, TYPE 2	8-09	HUND	11	$315.00	$3,465.00	$300.00	$3,300.00	$325.00	$3,575.00
A183	TEMPORARY PAVEMENT MARKING	8-23	LF	18,000	$0.25	$4,500.00	$0.30	$5,400.00	$1.00	$18,000.00
A184	PERMANENT SIGNING	8-21	LS	1	$30,000.00	$30,000.00	$25,000.00	$25,000.00	$70,000.00	$70,000.00
A185	NORTH 145TH STREET TRAFFIC SIGNAL SYSTEM; COMPLETE	8-20	LS	1	$86,100.00	$86,100.00	$80,000.00	$80,000.00	$75,000.00	$75,000.00
A186	NORTH 152ND STREET TRAFFIC SIGNAL SYSTEM; COMPLETE	8-20	LS	1	$270,000.00	$270,000.00	$200,000.00	$200,000.00	$260,000.00	$260,000.00
A187	NORTH 155TH STREET TRAFFIC SIGNAL SYSTEM; COMPLETE	8-20	LS	1	$266,000.00	$266,000.00	$200,000.00	$200,000.00	$250,000.00	$250,000.00
A188	NORTH 160TH STREET TRAFFIC SIGNAL SYSTEM; COMPLETE	8-20	LS	1	$325,000.00	$325,000.00	$250,000.00	$250,000.00	$250,000.00	$250,000.00
A189	NORTH 165TH STREET TRAFFIC SIGNAL SYSTEM; COMPLETE	8-20	LS	1	$270,000.00	$270,000.00	$200,000.00	$200,000.00	$215,000.00	$215,000.00

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	Schedule A									
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A190	ILLUMINATION SYSTEM; COMPLETE	8-20	LS	1	$760,000.00	$760,000.00	$800,000.00	$800,000.00	$710,000.00	$710,000.00
A191	SIGNAL INTERCONNECT SYSTEM; COMPLETE	8-20	LS	1	$79,350.00	$79,350.00	$150,000.00	$150,000.00	$155,000.00	$155,000.00
A192	SEQUENTIAL ARROW SIGN	1-10	HRS	0		$0.00		$0.00		$0.00
A193	TYPE III BARRICADE	1-10	EA	14	$150.00	$2,100.00	$300.00	$4,200.00	$250.00	$3,500.00
A194	TRAFFIC CONTROL SUPERVISOR	1-10	HRS	0		$0.00		$0.00		$0.00
A195	TRAFFIC CONTROL LABOR	1-10	LS	1	$675,000.00	$675,000.00	$750,000.00	$750,000.00	$1,000,000.00	$1,000,000.00
A196	FORCE ACCOUNT TRAFFIC CONTROL LABOR	1-10	FA	1	$10,000.00	$10,000.00	$10,000.00	$10,000.00	$10,000.00	$10,000.00
A197	OFF DUTY UNIFORMED POLICE OFFICER (MIN. BID $45)	1-10	HRS	5,200	$45.00	$234,000.00	$55.00	$286,000.00	$45.00	$234,000.00
A198	TEMPORARY TRAFFIC CONTROL DEVICES	1-10	LS	1	$49,100.00	$49,100.00	$50,000.00	$50,000.00	$200,000.00	$200,000.00
A199	CONSTRUCTION SIGNS CLASS "A"	1-10	SF	480	$15.00	$7,200.00	$50.00	$24,000.00	$24.00	$11,520.00
A200	NORTH 145TH STREET TEMPORARY TRAFFIC SIGNAL SYSTEM, COMPLETE	8-20	LS	1	$50,000.00	$50,000.00	$20,000.00	$20,000.00	$21,000.00	$21,000.00
A201	NORTH 155TH STREET TEMPORARY TRAFFIC SIGNAL SYSTEM, COMPLETE	8-20	LS	1	$103,000.00	$103,000.00	$25,000.00	$25,000.00	$30,000.00	$30,000.00
A202	NORTH 160TH STREET TEMPORARY TRAFFIC SIGNAL SYSTEM, COMPLETE	8-20	LS	1	$103,000.00	$103,000.00	$25,000.00	$25,000.00	$27,000.00	$27,000.00
A203	NORTH 165TH STREET TEMPORARY TRAFFIC SIGNAL SYSTEM, COMPLETE	8-20	LS	1	$51,500.00	$51,500.00	$20,000.00	$20,000.00	$22,000.00	$22,000.00
A204	PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)	1-10	EA	4	$3,000.00	$12,000.00	$25,000.00	$100,000.00	$14,000.00	$56,000.00
A205	OPERATION OF PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)	1-10	HRS	18,000	$3.00	$54,000.00	$1.00	$18,000.00	$2.00	$36,000.00
A206	REMOVING MISCELLANEOUS TRAFFIC ITEMS	2-02	LS	1	$10,000.00	$10,000.00	$5,000.00	$5,000.00	$2,600.00	$2,600.00
	SECTION 19 - OTHER ITEMS					$0.00		$0.00		$0.00
A207	ABANDON AND FILL EXISTING 12 IN. DIAM. STORM SEWER PIPE	7-05	LF	215	$3.00	$645.00	$25.00	$5,375.00	$8.00	$1,720.00
A208	ABANDON AND FILL EXISTING 18 IN. DIAM. STORM SEWER PIPE	7-05	LF	270	$5.00	$1,350.00	$35.00	$9,450.00	$10.00	$2,700.00
A209	ABANDON AND FILL EXISTING 24 IN. DIAM. STORM SEWER PIPE	7-05	LF	210	$10.00	$2,100.00	$55.00	$11,550.00	$15.00	$3,150.00
A210	ADANDON EXISTING DRAINAGE STRUCTURE	7-05	EA	2	$200.00	$400.00	$200.00	$400.00	$630.00	$1,260.00
A211	CATCH BASIN INSERT	7-21	EA	17	$2,500.00	$42,500.00	$360.00	$6,120.00	$95.00	$1,615.00
A212	SOLID METAL COVER	7-05	EA	6	$250.00	$1,500.00	$250.00	$1,500.00	$400.00	$2,400.00
A213	CONSTRUCTION GEOTEXTILE FOR PERMANENT EROSION CONTROL	7-01	SY	500	$5.00	$2,500.00	$2.00	$1,000.00	$4.00	$2,000.00
A214	ADJUST DRAINAGE STRUCTURE TO GRADE	7-05	EA	12	$250.00	$3,000.00	$300.00	$3,600.00	$300.00	$3,600.00
A215	CONNECT TO EXISTING DRAINAGE STRUCTURE	7-05	EA	9	$500.00	$4,500.00	$1,000.00	$9,000.00	$550.00	$4,950.00
A216	ROTATE MANHOLE CONE	8-35	EA	2	$450.00	$900.00	$250.00	$500.00	$760.00	$1,520.00
A217	ADJUST UTILITY MANHOLE TO GRADE	7-05	EA	16	$300.00	$4,800.00	$600.00	$9,600.00	$300.00	$4,800.00
A218	MANHOLE 84 IN. DIAM. TYPE 3	7-05	EA	1	$3,500.00	$3,500.00	$10,000.00	$10,000.00	$12,000.00	$12,000.00
A219	MANHOLE ADDITIONAL HEIGHT 84 IN. DIAM. TYPE 3	7-05	LF	12	$300.00	$3,600.00	$300.00	$3,600.00	$310.00	$3,720.00
A220	ADJUST GAS VALVE TO GRADE	8-35	EA	49	$300.00	$14,700.00	$300.00	$14,700.00	$300.00	$14,700.00
A221	ADJUST GAS METER TO GRADE	8-35	EA	1	$300.00	$300.00	$500.00	$500.00	$1,000.00	$1,000.00
A222	ADJUST MONITORING WELL CASING TO GRADE	8-35	EA	9	$300.00	$2,700.00	$500.00	$4,500.00	$220.00	$1,980.00
A223	SHORING OR EXTRA EXCAVATION CL. B	2-09	LS	1	$83,000.00	$83,000.00	$10,000.00	$10,000.00	$75,000.00	$75,000.00
A224	CONTROLLED DENSITY FILL	2-09	CY	263	$75.00	$19,725.00	$100.00	$26,300.00	$130.00	$34,190.00
A225	MONUMENT CASE, COVER, AND PIPE	8-13	EA	10	$350.00	$3,500.00	$450.00	$4,500.00	$400.00	$4,000.00

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A226	CEMENT CONC. SIDEWALK	8-14	SY	8,839	$40.00	$353,560.00	$35.00	$309,365.00	$60.00	$530,340.00
A227	CEMENT CONC. SIDEWALK RAMP TYPE 1A	8-14	SY	38	$100.00	$3,800.00	$130.00	$4,940.00	$100.00	$3,800.00
A228	CEMENT CONC. SIDEWALK RAMP TYPE 1B	8-14	SY	217	$100.00	$21,700.00	$140.00	$30,380.00	$255.00	$55,335.00
A229	CEMENT CONC. SIDEWALK RAMP TYPE 2B	8-14	SY	12	$100.00	$1,200.00	$100.00	$1,200.00	$100.00	$1,200.00
A230	CEMENT CONC. SIDEWALK RAMP TYPE 4B	8-14	SY	12	$100.00	$1,200.00	$160.00	$1,920.00	$100.00	$1,200.00
A231	CEMENT CONC. DRIVEWAY ENTRANCE TYPE 1	8-06	SY	2,028	$50.00	$101,400.00	$55.00	$111,540.00	$48.00	$97,344.00
A232	CEMENT CONC. DRIVEWAY ENTRANCE TYPE 2	8-06	SY	193	$50.00	$9,650.00	$55.00	$10,615.00	$50.00	$9,650.00
A233	CEMENT CONC. DRIVEWAY ENTRANCE TYPE 3	8-06	SY	371	$50.00	$18,550.00	$55.00	$20,405.00	$50.00	$18,550.00
A234	STAMPED COLORED CONCRETE FOR PEDESTRIAN MEDIANS AND RAISED MEDIANS	8-37	SY	1,600	$65.00	$104,000.00	$60.00	$96,000.00	$135.00	$216,000.00
A235	INTEGRAL CURB	8-33	SF	150	$25.00	$3,750.00	$35.00	$5,250.00	$15.00	$2,250.00
A236	THICKENED EDGE SIDEWALK	8-14	SF	530	$20.00	$10,600.00	$20.00	$10,600.00	$42.00	$22,260.00
A237	PEDESTRIAN RIGHT-OF-WAY HAND/GUARD RAILING	6-24	LF	1,278	$95.00	$121,410.00	$170.00	$217,260.00	$105.00	$134,190.00
A238	PEDESTRIAN RIGHT-OF-WAY HAND/GUARD RAILING AT LOW WALL	6-24	LF	450	$80.00	$36,000.00	$130.00	$58,500.00	$75.00	$33,750.00
A239	CHAIN LINK FENCE	8-12	LF	120	$15.00	$1,800.00	$28.00	$3,360.00	$33.00	$3,960.00
A240	SKATE BLOCKS	8-40	EA	21	$123.00	$2,583.00	$100.00	$2,100.00	$60.00	$1,260.00
A241	GRAVITY BLOCK RETAINING WALL	6-29	SF	1,427	$25.00	$35,675.00	$45.00	$64,215.00	$35.00	$49,945.00
A242	MODULAR BLOCK RETAINING WALL	6-12	SF	4,116	$17.00	$69,972.00	$40.00	$164,640.00	$33.00	$135,828.00
A243	BUS SHELTER FOOTING	8-14	EA	8	$6,000.00	$48,000.00	$1,000.00	$8,000.00	$2,000.00	$16,000.00
A244	INSTALL CONSOLIDATED MAILBOX	2-02	EA	3	$2,000.00	$6,000.00	$600.00	$1,800.00	$750.00	$2,250.00
A245	PRECAST WHEEL STOP	8-04	EA	26	$125.00	$3,250.00	$65.00	$1,690.00	$56.00	$1,456.00
A246	SLURRY SEAL	5-06	SY	1,980	$3.00	$5,940.00	$5.00	$9,900.00	$5.11	$10,117.80
A247	TRAINING	1-07.11	HRS	2,000	$2.00	$4,000.00	$2.00	$4,000.00	$4.00	$8,000.00
A248	PROPERTY REMOVE AND REPLACE - SHORELINE VETERINARY CLINIC	8-02	LS	1	$25,000.00	$25,000.00	$50,000.00	$50,000.00	$25,000.00	$25,000.00
A249	PEPPER HILL (106+00 W) REPLACEMENT PARKING	8-41	LS	1	$4,800.00	$4,800.00	$10,000.00	$10,000.00	$8,000.00	$8,000.00
A250	UTILITY UNDERGROUNDING PROPERTY CONVERSIONS	8-30	LS	1	$145,000.00	$145,000.00	$300,000.00	$300,000.00	$240,000.00	$240,000.00
	SCHEDULE A TOTAL					**$13,420,082.11**		**$15,242,460.10**		**$15,301,027.35**
	SCHEDULE B (RONALD WASTE WATER ADJUSTMENTS)									
B01	ADJUST SEWER MANHOLE TO GRADE	7-05	EA	20	$350.00	$7,000.00	$500.00	$10,000.00	$480.00	$9,600.00
	SCHEDULE B TAX (8.8%)					$616.00		$880.00		$844.80
	SCHEDULE B TOTAL					$7,616.00		$10,880.00		$10,444.80
	SCHEDULE C (SEATTLE CITY LIGHT - UTILITY UNDERGROUNDING)									
C01	SCL - 3" CONDUIT - PVC SCH 40	8-30	LF	13500	$5.00	$67,500.00	$1.50	$20,250.00	$6.00	$81,000.00
C02	SCL - 4" CONDUIT - PVC SCH 40	8-30	LF	65,000	$6.50	$422,500.00	$2.00	$130,000.00	$7.50	$487,500.00
C03	SCL - 5" CONDUIT - PVC SCH 40	8-30	LF	40,000	$8.00	$320,000.00	$3.00	$120,000.00	$8.20	$328,000.00
C04	SCL - 3" STEEL BENDS - 2' RADIUS	8-30	LF	5	$100.00	$500.00	$70.00	$350.00	$110.00	$550.00
C05	SCL - 3" STEEL BENDS - 3' RADIUS	8-30	LF	15	$100.00	$1,500.00	$90.00	$1,350.00	$255.00	$3,825.00
C06	SCL - 3" STEEL BENDS - 4' RADIUS	8-30	LF	35	$100.00	$3,500.00	$120.00	$4,200.00	$315.00	$11,025.00

					ENGINEERS ESTIMATE		GARY MERLINO CONST CO		WILDER CONST CO	
	Schedule A									
NO.	**ITEM DESCRIPTION**	**SECTION**	**UNIT**	**QUANTITY**	**UNIT PRICE**	**COST ($)**	**UNIT PRICE**	**COST ($)**	**UNIT PRICE**	**COST ($)**
C07	SCL - 4" STEEL BENDS - 4' RADIUS	8-30	EA	165	$250.00	$41,250.00	$200.00	$33,000.00	$440.00	$72,600.00
C08	SCL - 4" STEEL BENDS - 5' RADIUS	8-30	EA	25	$250.00	$6,250.00	$250.00	$6,250.00	$450.00	$11,250.00
C09	SCL - 5" STEEL BENDS - 4' RADIUS	8-30	EA	30	$300.00	$9,000.00	$300.00	$9,000.00	$620.00	$18,600.00
C10	SCL - 5" STEEL BENDS - 5' RADIUS	8-30	EA	30	$300.00	$9,000.00	$400.00	$12,000.00	$700.00	$21,000.00
C11	SCL - 3" PVC-40 BENDS - 3' RADIUS	8-30	EA	5	$50.00	$250.00	$10.00	$50.00	$100.00	$500.00
C12	SCL - 4" PVC-40 BENDS - 4' RADIUS	8-30	EA	225	$50.00	$11,250.00	$15.00	$3,375.00	$145.00	$32,625.00
C13	SCL - 4" PVC-40 BENDS - 5' RADIUS	8-30	EA	10	$50.00	$500.00	$20.00	$200.00	$175.00	$1,750.00
C14	SCL - 4" PVC-40 BENDS - 10' OR GREATER RADIUS	8-30	EA	45	$100.00	$4,500.00	$50.00	$2,250.00	$275.00	$12,375.00
C15	SCL - 3" STEEL BENDS - 10' OR GREATER RADIUS	8-30	EA	50	$200.00	$10,000.00	$350.00	$17,500.00	$200.00	$10,000.00
C16	SCL - 4" STEEL BENDS - 10' OR GREATER RADIUS	8-30	EA	120	$400.00	$48,000.00	$430.00	$51,600.00	$215.00	$25,800.00
C17	SCL - 5" STEEL BENDS - 10' OR GREATER RADIUS	8-30	EA	165	$600.00	$99,000.00	$800.00	$132,000.00	$200.00	$33,000.00
C18	SCL - 233LA PRECAST CONCRETE HANDHOLE	8-30	EA	13	$2,000.00	$26,000.00	$2,000.00	$26,000.00	$3,200.00	$41,600.00
C19	SCL - 444LA PRECAST VAULT	8-30	EA	43	$3,000.00	$129,000.00	$2,700.00	$116,100.00	$6,400.00	$275,200.00
C20	SCL - 577LA PRECAST VAULT	8-30	EA	8	$7,000.00	$56,000.00	$6,700.00	$53,600.00	$7,000.00	$56,000.00
C21	SCL - 504LA PRECAST VAULT	8-30	EA	1	$4,000.00	$4,000.00	$2,800.00	$2,800.00	$4,700.00	$4,700.00
C22	SCL - 712-LA PRECAST VAULT	8-30	EA	5	$20,000.00	$100,000.00	$16,000.00	$80,000.00	$6,700.00	$33,500.00
C23	SCL - 712-TEE-CLX PRECAST VAULT	8-30	EA	5	$20,000.00	$100,000.00	$15,000.00	$75,000.00	$15,000.00	$75,000.00
C24	SCL - 818-10-LA PRECAST VAULT	8-30	EA	2	$40,000.00	$80,000.00	$43,000.00	$86,000.00	$25,000.00	$50,000.00
C25	SCL - 814-10-TEE-LA PRECAST VAULT	8-30	EA	5	$35,000.00	$175,000.00	$35,000.00	$175,000.00	$25,000.00	$125,000.00
C26	SCL - 814-10-TEE-CLX PRECAST VAULT	8-30	EA	9	$35,000.00	$315,000.00	$37,000.00	$333,000.00	$27,000.00	$243,000.00
C27	SCL - VISTA SWITCH CUSTOMIZED VAULT	8-30	EA	4	$45,000.00	$180,000.00	$36,000.00	$144,000.00	$28,000.00	$112,000.00
C28	SCL - RISERS - 4" STEEL CONDUIT	8-30	EA	10	$500.00	$5,000.00	$350.00	$3,500.00	$425.00	$4,250.00
C29	SCL - RISERS - 5" STEEL CONDUIT	8-30	EA	20	$700.00	$14,000.00	$750.00	$15,000.00	$500.00	$10,000.00
C30	SCL - RISERS - 4" PVC-80 ABOVE 10'	8-30	EA	10	$100.00	$1,000.00	$50.00	$500.00	$250.00	$2,500.00
C31	SCL - RISERS - 5" PVC-80 ABOVE 10'	8-30	EA	20	$100.00	$2,000.00	$75.00	$1,500.00	$200.00	$4,000.00
C32	TRENCH EXCAVATION, BEDDING AND BACKFILL	8-30	LS	1	$1,000,000.00	$1,000,000.00	$1,500,000.00	$1,500,000.00	$3,400,000.00	$3,400,000.00
C33	SHORING AND EXTRA EXCAVATION CL. B FOR UNDERGROUNDING	8-30	LS	1	$250,000.00	$250,000.00	$10,000.00	$10,000.00	$82,000.00	$82,000.00
	SCHEDULE C TOTAL					**$3,491,500.00**		**$3,165,375.00**		**$5,670,150.00**
	SCHEDULE D (TELECOMMUNICATIONS - UTILITY UNDERGROUNDING)									
D01	TRENCH EXCAVATION, BEDDING AND BACKFILL	8-30	LS	1	$208,011.00	$208,011.00	$350,000.00	$350,000.00	$360,000.00	$360,000.00
D02	FURNISH AND INSTALL VAULT AND CONDUIT SYSTEM, COMPLETE	8-30	LS	1	$227,595.00	$227,595.00	$175,000.00	$175,000.00	$240,000.00	$240,000.00
D03	SHORING AND EXTRA EXCAVATION CL. B FOR UNDERGROUNDING	8-30	LS	1	$56,900.00	$56,900.00	$5,000.00	$5,000.00	$500.00	$500.00
	SCHEDULE D TOTAL					**$492,506.00**		**$530,000.00**		**$600,500.00**
	SCHEDULE F (SEATTLE PUBLIC UTILITIES)									
F01	MOBILIZATION		LS	1	$46,000.00	$46,000.00	$10,000.00	$10,000.00	$5,000.00	$5,000.00

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	Schedule A									
NO.	**ITEM DESCRIPTION**	**SECTION**	**UNIT**	**QUANTITY**	**UNIT PRICE**	**COST ($)**	**UNIT PRICE**	**COST ($)**	**UNIT PRICE**	**COST ($)**
F02	PIPE, WM, D.I. CL 52, 12 IN, INC. FTNGS, TRENCHING, SHORING BACKFILL, TEMPORARY RESTORATION AND ALL OTHER ACTIVITES TO COMPLETE WATER MAIN INSTALLATION (per City of Seattle Std. Specs 2003 Ed. Section(s) 9-30, 7-11 and 7-15)		LF	3026	$ 135	$408,510.00	$ 67	$202,742.00	$ 75	$226,950.00
F03	PIPE, WM, D.I. CL 52, 8 IN, INC. FTNGS, TRENCHING, SHORING BACKFILL, TEMPORARY RESTORATION AND ALL OTHER ACTIVITES TO COMPLETE WATER MAIN INSTALLATION (per City of Seattle Std. Specs 2003 Ed. Section (s) 9-30, 7-11 and7-15)		LF	150	$ 120	$18,000.00	$ 64	$9,600.00	$ 85	$12,750.00
F04	PIPE, WM, D.I. CL 52, 6 IN, INC. FTNGS, TRENCHING, SHORING BACKFILL, TEMPORARY RESTORATION AND ALL OTHER ACTIVITES TO COMPLETE WATER MAIN INSTALLATION (per City of Seattle Std. Specs 2003 Ed. Section(s) 9-30, 7-11, 7-14 and 7-15)		LF	42	$ 120	$5,040.00	$ 62	$2,604.00	$ 85	$3,570.00
F05	HYDRANT, 6 IN CONN, (TYPE 311 MODIFIED) (per City of Seattle Std. Specs 2003 Ed. Section (s) 9-30 and 7-14)		EA	13	$ 1,800	$23,400.00	$ 3,500	$45,500.00	$ 3,100	$40,300.00
F06	WM BEDDING, MA Type 6 or 7 (per City of Seattle Std. Specs 2003 Ed. Section (s) 7-10 and 9-03)		CY	447	$ 40	$17,880.00	$ 66	$29,502.00	$ 60	$26,820.00
F07	VALVE, GATE,12 IN (per city of Seattle Std. Specs 2003 Ed. Section(s) 9-30 and 7-12)		EA	4	$ 1,100	$4,400.00	$ 1,400	$5,600.00	$ 1,700	$6,800.00
F08	VALVE, GATE,8 IN (per City of Seattle Std. Specs 2003 Ed. Section(s) 9-30 and 7-12)		EA	2	$ 850	$1,700.00	$ 700	$1,400.00	$ 1,100	$2,200.00
F09	VALVE BOX, CAST IRON (per City of Seattle Std. Specs 2003 Ed. Section(s) 9-30 and 7-12)		EA	6	$ 100	$600.00	$ 300	$1,800.00	$ 350	$2,100.00
F10	EXIST CASTING RESET		EA	41	$ 225	$9,225.00	$ 300	$12,300.00	$ 175	$7,175.00
F11	SUPPORT PLAN FOR INSTALLATION OF CB AND OFFSET INSTALLATION BY SPU CREWS, AT STA 120+82 RT 41'. MUST BE STAMPED BY PE REGISTERED IN THE STATE OF WASHINGTON (SEE NOTE 6 OF THE WATER NOTES).		LS	1	$ 750	$750.00	$ 10,000	$10,000.00	$ 1,000	$1,000.00
F12	EXCAVATION SUPPORT PER NOTE 25 OF "WATER NOTES" (TAPPING MACHINE)		EA	3	$ 4,500	$13,500.00	$ 7,000	$21,000.00	$ 2,000	$6,000.00
F13	EXCAVATION SUPPORT PER NOTE 25 OF "WATER NOTES" (CONNECTIONS, CUT/CAP and ABAN)		EA	8	$ 2,500	$20,000.00	$ 3,500	$28,000.00	$ 1,000	$8,000.00
F14	EXCAVATION SUPPORT PER NOTE 25 OF "WATER NOTES" (HYD RESET)		EA	2	$ 950	$1,900.00	$ 2,000	$4,000.00	$ 500	$1,000.00
F15	EXCAVATION SUPPORT PER NOTE 25 OF "WATER NOTES" (ABAN HYD)		EA	2	$ 850	$1,700.00	$ 2,000	$4,000.00	$ 650	$1,300.00
F16	EXCAVATION SUPPORT PER NOTE 25 OF "WATER NOTES" (SERVICE TRANSFER NEW WATER MAIN > 4")		EA	1	$ 1,200	$1,200.00	$ 3,500	$3,500.00	$ 1,000	$1,000.00
F17	EXCAVATION SUPPORT PER NOTE 25 OF "WATER NOTES" (SERVICE TRANSFER NEW WATER MAIN < 4")		EA	15	$ 650	$9,750.00	$ 1,000	$15,000.00	$ 650	$9,750.00

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	Schedule A										
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F18	EXCAVATION SUPPORT PER NOTE 25 OF "WATER NOTES" (SERVICE RELOCATIONS: EX WATER MAIN)		EA	13	$ 650	$8,450.00	$ 1,000	$13,000.00	$ 1,100	$14,300.00
F19	24" CASING: SEALED BTOH ENDS ASTM A-36, 24" ID, Excavate for installation (per City of Seattle Std. Specs 2003 Ed. Section(s) 9-30 and 7-11)		LF	161	$ 180	$28,980.00	$ 135	$21,735.00	$ 160	$25,760.00
	SCHEDULE F TAX (8.8%)					$54,646.68		$38,832.90		$35,356.20
	SCHEDULE F TOTAL					**$675,631.68**		**$480,115.90**		**$437,131.20**
	SCHEDULE H (INTERURBAN TRAIL AND BRIDGE)									
	SECTION 1 - SITE PREPARATION									
H1	MOBILIZATION	1-09	LS	1	$244,600	$244,600.00	$1,000	$1,000.00	$68,000	$68,000.00
H2	CONTRACT SURVEYING - STRUCTURE	1-05	LS	1	$25,000	$25,000.00	$15,000	$15,000.00	$15,000	$15,000.00
H3	CLEARING	2-02	ACRE	0.68	$5,000.00	$3,400.00	$10,000.00	$6,800.00	$1,200.00	$816.00
H4	REMOVE EXISTING DRAINAGE STRUCTURE	2-02	EA	3	$400.00	$1,200.00	$300.00	$900.00	$120.00	$360.00
H5	REMOVAL OF STRUCTURE AND OBSTRUCTION	2-02	LS	1	$40,000.00	$40,000.00	$1,000.00	$1,000.00	$25,000.00	$25,000.00
	SECTION 2 - GRADING					$0.00		$0.00		$0.00
H6	ROADWAY EXCAVATION INCL. HAUL	2-03	CY	1230	$13.00	$15,990.00	$28.00	$34,440.00	$26.00	$31,980.00
H7	GRAVEL BORROW INCL. HAUL	2-03, 7-08, 7-17	TON	4,100	$13.00	$53,300.00	$15.00	$61,500.00	$3.50	$14,350.00
H8	EMBANKMENT COMPACTION	2-03	CY	4,600	$2.50	$11,500.00	$3.00	$13,800.00	$0.50	$2,300.00
	SECTION 4 - DRAINAGE					$0.00		$0.00		$0.00
H9	CONCRETE INLET	7-05	EA	1	$715.00	$715.00	$1,000.00	$1,000.00	$1,200.00	$1,200.00
H10	QUARRY SPALLS	8-15	TON	10	$30.00	$300.00	$50.00	$500.00	$45.00	$450.00
H11	PVC UNDERDRAIN PIPE 6 IN. DIAM.	7-01	LF	275	$15.00	$4,125.00	$25.00	$6,875.00	$25.00	$6,875.00
H12	PVC DRAIN PIPE 6 IN. DIAM.	7-01	LF	50	$15.00	$750.00	$25.00	$1,250.00	$25.00	$1,250.00
H13	PVC DRAIN PIPE 8 IN. DIAM.	7-01	LF	250	$18.00	$4,500.00	$26.00	$6,500.00	$28.00	$7,000.00
H14	WASHED GRAVEL BACKFILL FOR DRAINS	7-01	TON	50	$18.00	$900.00	$30.00	$1,500.00	$40.00	$2,000.00
H15	TRENCH DRAIN	7-01	LF	25	$100.00	$2,500.00	$150.00	$3,750.00	$79.00	$1,975.00
	SECTION 5 - STORM SEWER					$0.00		$0.00		$0.00
H16	CORRUGATED POLYETHYLENE STORM SEWER PIPE 12 IN. DIAM.	7-04	LF	565	$25.00	$14,125.00	$43.00	$24,295.00	$42.00	$23,730.00
H17	CORRUGATED POLYETHYLENE STORM SEWER PIPE 24 IN. DIAM.	7-04	LF	86	$50.00	$4,300.00	$100.00	$8,600.00	$75.00	$6,450.00
H18	CATCH BASIN TYPE 1	7-05	EA	7	$1,000.00	$7,000.00	$1,000.00	$7,000.00	$1,300.00	$9,100.00
H19	CATCH BASIN TYPE 1L	7-05	EA	1	$1,150.00	$1,150.00	$1,100.00	$1,100.00	$1,400.00	$1,400.00
	SECTION 6 - SANITARY SEWER					$0.00		$0.00		$0.00
H20	PVC SANITARY SEWER PIPE 6 IN. DIAM	7-17	LF	25	$20.00	$500.00	$50.00	$1,250.00	$130.00	$3,250.00
H21	PVC SANITARY SEWER PIPE 10 IN. DIAM.	7-17	LF	50	$55.00	$2,750.00	$65.00	$3,250.00	$77.00	$3,850.00
H22	PVC SANITARY SEWER PIPE 15 IN. DIAM.	7-17	LF	40	$60.00	$2,400.00	$85.00	$3,400.00	$96.00	$3,840.00
H23	DUCTILE IRON SEWER PIPE 8 IN. DIAM.	7-17	LF	45	$150.00	$6,750.00	$80.00	$3,600.00	$110.00	$4,950.00
H24	CONNECT TO EXISTING SANITARY SEWER MANHOLE	7-05	EA	2	$500.00	$1,000.00	$1,000.00	$2,000.00	$4,000.00	$8,000.00
	SECTION 8 - STRUCTURE					$0.00	$28.00	$0.00		$0.00
H25	STRUCTURE EXCAVATION CLASS A INCL. HAUL	2-09	CY	720	$21.00	$15,120.00	$28.00	$20,160.00	$20.00	$14,400.00

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H26	SHORING OR EXTRA EXCAVATION CLASS A	2-09	LS	1	$39,000.00	$39,000.00	$5,000.00	$5,000.00	$12,200.00	$12,200.00
H27	GROUND PIER SOIL IMPROVEMENT AT NORTH 155TH ST BRIDGE	2-13	LS	1	$45,000.00	$45,000.00	$50,000.00	$50,000.00	$27,600.00	$27,600.00
H28	CONC. CLASS 4000 FOR STRUCTURE	6-02	CY	581	$450.00	$261,450.00	$615.00	$357,315.00	$550.00	$319,550.00
H29	CONC. CLASS 4000D FOR BRIDGE	6-02	CY	141	$650.00	$91,650.00	$930.00	$131,130.00	$860.00	$121,260.00
H30	ST. REINF. BAR	6-02	LB	121,000	$0.90	$108,900.00	$1.00	$121,000.00	$1.20	$145,200.00
H31	EPOXY-COATED ST. REINF. BAR	6-02	LB	18,000	$1.40	$25,200.00	$1.50	$27,000.00	$1.90	$34,200.00
H32	PRESTRESSED CONC. GIRDER TRAPEZOIDAL TUB	6-02	LF	508	$700.00	$355,600.00	$900.00	$457,200.00	$900.00	$457,200.00
H33	EXPANSION JOINT SYSTEM COMPRESSION SEAL -	6-02	LF	72	$40.00	$2,880.00	$25.00	$1,800.00	$54.00	$3,888.00
H34	STRUCTURAL EARTH WALL	6-13	SF	21,000	$25.00	$525,000.00	$28.00	$588,000.00	$25.00	$525,000.00
H35	BACKFILL FOR STRUCTURAL EARTH WALL INCL. HAUL	6-13	CY	7,500	$22.00	$165,000.00	$40.00	$300,000.00	$31.00	$232,500.00
H36	PRECAST CONCRETE PANEL PROTOTYPING	6-13	FA	1	$10,000.00	$10,000.00	$10,000.00	$10,000.00	$10,000.00	$10,000.00
H37	BRIDGE RAILING	6-22	LF	441	$90.00	$39,690.00	$300.00	$132,300.00	$190.00	$83,790.00
H38	STAIR RAILING	6-22	LF	118	$90.00	$10,620.00	$350.00	$41,300.00	$250.00	$29,500.00
H39	SINGLE RAIL RAILING	6-22	LF	252	$25.00	$6,300.00	$130.00	$32,760.00	$55.00	$13,860.00
H40	BARRIER FENCE AT AURORA AVENUE BRIDGE	6-19	LS	1	$140,000.00	$140,000.00	$50,000.00	$50,000.00	$195,000.00	$195,000.00
	SECTION 9 - SURFACING					$0.00		$0.00		$0.00
H41	CRUSHED SURFACING BASE COURSE	4-04	TON	321	$17.00	$5,457.00	$30.00	$9,630.00	$35.00	$11,235.00
H42	CRUSHED SURFACING BASE COURSE FOR TRAIL	4-04	CY	577	$30.00	$17,310.00	$125.00	$72,125.00	$50.00	$28,850.00
H43	CRUSHED SURFACING TOP COURSE	4-04	TON	91	$25.00	$2,275.00	$70.00	$6,370.00	$50.00	$4,550.00
H44	HMA CLASS 1/2" PG 58-22	5-04	TON	512	$53.00	$27,136.00	$70.00	$35,840.00	$62.00	$31,744.00
	SECTION 16 -IRRIGATION AND WATER DISTRIBUTION					$0.00		$0.00		$0.00
H45	IRRIGATION	8-03	LS	1	$10,000.00	$10,000.00	$7,500.00	$7,500.00	$10,000.00	$10,000.00
	SECTION 17 - EROSION CONTROL AND PLANTING					$0.00		$0.00		$0.00
H46	PSIPE KARPICK MAPLE (2" CAL.)	8-02	EA	4	$280.00	$1,120.00	$300.00	$1,200.00	$275.00	$1,100.00
H47	PSIPE INCENSE CEDAR (8'-10' HT.))	8-02	EA	2	$250.00	$500.00	$275.00	$550.00	$200.00	$400.00
H48	PSIPE SNOWCONE JAPANESE SNOWBELL (1 3/4" CAL.)	8-02	EA	3	$240.00	$720.00	$280.00	$840.00	$270.00	$810.00
H49	PSIPE COMPACT STRAWBERRY TREE (5 GAL.)	8-02	EA	6	$30.00	$180.00	$35.00	$210.00	$26.00	$156.00
H50	PSIPE FAIRY WAND (2 GAL.)	8-02	EA	21	$25.00	$525.00	$25.00	$525.00	$15.00	$315.00
H51	PSIPE ENKIANTHUS PERULATUS (5 GAL.)	8-02	EA	10	$35.00	$350.00	$40.00	$400.00	$28.00	$280.00
H52	PSIPE MOON BAY HEAVENLY BAMBOO (5 GAL.)	8-02	EA	36	$45.00	$1,620.00	$75.00	$2,700.00	$42.00	$1,512.00
H53	PSIPE VETCHII BOSTON IVY (1 GAL.)	8-02	EA	6	$8.00	$48.00	$12.00	$72.00	$7.00	$42.00
H54	PSIPE EMERALD GREEN ARBORVITAE (5'-6' HT.)	8-02	EA	13	$30.00	$390.00	$60.00	$780.00	$70.00	$910.00
H55	PSIPE WHITE ROCKROSE (1 GAL.)	8-02	EA	241	$7.00	$1,687.00	$7.00	$1,687.00	$6.00	$1,446.00
H56	PSIPE SALAL (1 GAL.)	8-02	EA	476	$6.00	$2,856.00	$7.00	$3,332.00	$5.00	$2,380.00
H57	PSIPE MAJESTIC LILY TURF (1 GAL.)	8-02	EA	288	$7.00	$2,016.00	$8.00	$2,304.00	$6.00	$1,728.00
H58	PSIPE HUNTINGTON CARPET ROSEMARY (1 GAL.)	8-02	EA	371	$7.00	$2,597.00	$8.00	$2,968.00	$7.00	$2,597.00
H59	PSIPE SULPHUREUM BARRENWORT (1 GAL.)	8-02	EA	132	$9.00	$1,188.00	$9.00	$1,188.00	$7.00	$924.00
H60	PSIPE SUSSEX CARPET HEBE (1 GAL.)	8-02	EA	272	$8.00	$2,176.00	$10.00	$2,720.00	$10.00	$2,720.00
H61	PSIPE ST. JOHNSWORT (1 GAL.)	8-02	EA	475	$6.50	$3,087.50	$7.00	$3,325.00	$5.00	$2,375.00
H62	TOPSOIL TYPE A	8-02	CY	213	$35.00	$7,455.00	$35.00	$7,455.00	$36.00	$7,668.00
H63	PLANT ESTABLISHMENT - SECOND YEAR	8-02	FA	1	$4,000.00	$4,000.00	$4,000.00	$4,000.00	$4,000.00	$4,000.00
H64	GRASS SEEDING, FERTILIZING & MULCHING FOR LANDSCAPING	8-02	ACRE	0.2	$4,300.00	$860.00	$5,000.00	$1,000.00	$3,000.00	$600.00
H65	SEEDING, FERTILIZING AND MULCHING	8-02	ACRE	0.5	$4,300.00	$2,150.00	$5,000.00	$2,500.00	$2,000.00	$1,000.00

					ENGINEERS ESTIMATE		GARY MERLINO CONST CO		WILDER CONST CO	
	Schedule A									
NO.	**ITEM DESCRIPTION**	**SECTION**	**UNIT**	**QUANTITY**	**UNIT PRICE**	**COST ($)**	**UNIT PRICE**	**COST ($)**	**UNIT PRICE**	**COST ($)**
H66	SAWDUST/MANURE MULCH	8-02	CY	30	$40.00	$1,200.00	$40.00	$1,200.00	$34.00	$1,020.00
H67	EROSION CONTROL BLANKET	8-01	SY	1050	$2.50	$2,625.00	$5.00	$5,250.00	$2.00	$2,100.00
H68	CHECK DAM	8-01	LF	20	$20.00	$400.00	$25.00	$500.00	$30.00	$600.00
H69	STABILIZED CONSTRUCTION ENTRANCE	8-01	SY	200	$12.00	$2,400.00	$25.00	$5,000.00	$10.00	$2,000.00
H70	STREET CLEANING	8-01	HRS	40	$100.00	$4,000.00	$100.00	$4,000.00	$180.00	$7,200.00
H71	SILT FENCE	8-01	LF	850	$5.00	$4,250.00	$6.00	$5,100.00	$6.00	$5,100.00
H72	CLEARING LIMITS FENCE	8-01	LF	1220	$2.00	$2,440.00	$4.00	$4,880.00	$3.00	$3,660.00
H73	INLET PROTECTION	8-01	EA	4	$75.00	$300.00	$75.00	$300.00	$100.00	$400.00
	SECTION 18 - TRAFFIC					$0.00		$0.00		$0.00
H74	PLASTIC LINE	8-22	LF	415	$1.80	$747.00	$1.25	$518.75	$2.00	$830.00
H75	PAINT LINE	8-22	LF	820	$0.25	$205.00	$0.10	$82.00	$1.00	$820.00
H76	PERMANENT SIGNING - INTERURBAN TRAIL	8-21	LS	1	$5,500.00	$5,500.00	$5,000.00	$5,000.00	$3,100.00	$3,100.00
H77	TRAFFIC CONTROL SUPERVISOR	1-10	HRS	100	$45.00	$4,500.00	$50.00	$5,000.00	$60.00	$6,000.00
H78	TRAFFIC CONTROL LABOR	1-10	LS	1	$9,600.00	$9,600.00	$5,000.00	$5,000.00	$12,000.00	$12,000.00
H79	OFF DUTY UNIFORMED POLICE OFFICER (MIN. BID $45)	1-10	HRS	100	$45.00	$4,500.00	$55.00	$5,500.00	$45.00	$4,500.00
H80	TEMPORARY TRAFFIC CONTROL DEVICES	1-10	LS	1	$3,500.00	$3,500.00	$1,000.00	$1,000.00	$3,900.00	$3,900.00
H81	CONSTRUCTION SIGNS CLASS "A"	1-10	SF	80	$15.00	$1,200.00	$50.00	$4,000.00	$31.00	$2,480.00
	SECTION 19 - OTHER ITEMS					$0.00		$0.00		$0.00
H82	STRUCTURE EXCAVATION CLASS B INCL. HAUL	2-09	CY	1880	$8.00	$15,040.00	$10.00	$18,800.00	$22.00	$41,360.00
H83	SHORING OR EXTRA EXCAVATION CLASS B	2-09	LS	1	$18,000.00	$18,000.00	$2,500.00	$2,500.00	$11,000.00	$11,000.00
H84	CONTROLLED DENSITY FILL	2-09	CY	46	$100.00	$4,600.00	$100.00	$4,600.00	$130.00	$5,980.00
H85	COMMERCIAL CONCRETE	7-08	CY	12	$200.00	$2,400.00	$300.00	$3,600.00	$250.00	$3,000.00
H86	FIXED BOLLARDS	8-39	EA	11	$600.00	$6,600.00	$1,500.00	$16,500.00	$1,100.00	$12,100.00
H87	REMOVABLE BOLLARDS	8-39	EA	4	$600.00	$2,400.00	$2,000.00	$8,000.00	$1,100.00	$4,400.00
H88	EMBEDDED BRONZE TRAIL MARKER	8-21	EA	3	$1,000.00	$3,000.00	$500.00	$1,500.00	$1,000.00	$3,000.00
H89	TIMBER GUARDRAIL	8-11	LF	180	$50.00	$9,000.00	$145.00	$26,100.00	$80.00	$14,400.00
H90	TRASH RECEPTACLE WITH DOME TOP	8-39	EA	2	$1,700.00	$3,400.00	$1,500.00	$3,000.00	$280.00	$560.00
H91	BENCH	8-39	EA	5	$2,500.00	$12,500.00	$2,000.00	$10,000.00	$960.00	$4,800.00
H92	ACCESS CONTROL GATE	8-11	EA	1	$3,500.00	$3,500.00	$5,000.00	$5,000.00	$2,200.00	$2,200.00
H93	6' WOOD FENCE	8-12	LF	160	$35.00	$5,600.00	$40.00	$6,400.00	$37.00	$5,920.00
H94	8' WOOD FENCE	8-12	LF	40	$40.00	$1,600.00	$45.00	$1,800.00	$37.00	$1,480.00
H95	DECORATIVE METAL FENCE	8-42	LF	1430	$90.00	$128,700.00	$150.00	$214,500.00	$90.00	$128,700.00
H96	CONSTRUCTION GEOTEXTILE FOR PERMANENT EROSION CONTROL	7-01	SY	280	$5.00	$1,400.00	$2.00	$560.00	$4.00	$1,120.00
H97	ROCK WALL WT-1	8-24	SF	164	$25.00	$4,100.00	$15.00	$2,460.00	$43.00	$7,052.00
H98	ROCK WALL WT-2	8-24	SF	1100	$15.00	$16,500.00	$15.00	$16,500.00	$34.00	$37,400.00
H99	ADANDON AND FILL EXISTING 15 IN. DIAM. SEWER PIPE	7-05	LF	77	$4.00	$308.00	$30.00	$2,310.00	$35.00	$2,695.00
H100	CONNECT TO EXISTING DRAINAGE STRUCTURE	7-05	EA	2	$400.00	$800.00	$1,000.00	$2,000.00	$860.00	$1,720.00
H101	MANHOLE 48 IN. DIAM. TYPE 1	7-05	EA	2	$3,200.00	$6,400.00	$3,000.00	$6,000.00	$6,000.00	$12,000.00
H102	MANHOLE ADDITIONAL HEIGHT 48 IN. DIAM. TYPE 1	7-05	LF	8	$200.00	$1,600.00	$150.00	$1,200.00	$500.00	$4,000.00
H103	SADDLE TYPE DROP IN MANHOLE 48 IN. DIAM. TYPE 1	7-05	EA	2	$4,200.00	$8,400.00	$3,000.00	$6,000.00	$7,000.00	$14,000.00
	SCHEDULE H TOTAL					**$2,691,083.50**		**$3,118,156.75**		**$2,962,213.00**

TOTAL OF ALL SCHEDULES

						ENGINEERS ESTIMATE		GARY MERLINO CONST CO		WILDER CONST CO
	Schedule A									
NO.	ITEM DESCRIPTION	SECTION	UNIT	QUANTITY	UNIT PRICE	COST ($)	UNIT PRICE	COST ($)	UNIT PRICE	COST ($)
	SCHEDULE A					$13,420,082.11		$15,242,460.10		$15,301,027.35
	SCHEDULE B (RONALD WASTE WATER ADJUSTMENTS)					$7,616.00		$10,880.00		$10,444.80
	SCHEDULE C (SEATTLE CITY LIGHT - UTILITY UNDERGROUNDING)					$3,491,500.00		$3,165,375.00		$5,670,150.00
	SCHEDULE D (TELECOMMUNICATIONS - UTILITY UNDERGROUNDING)					$492,506.00		$530,000.00		$600,500.00
	SCHEDULE F (SEATTLE PUBLIC UTILITIES)					$675,631.68		$480,115.90		$437,131.20
	SCHEDULE H (INTERURBAN TRAIL AND BRIDGE)					$2,691,083.50		$3,118,156.75		$2,962,213.00
	TOTAL BASE BID					**$20,778,419.29**		**$22,546,987.75**		**$24,981,466.35**

ADDITIVE ALTERNATE A1 (SCHEDULE H)

NO.	ITEM DESCRIPTION	SECTION	UNIT	QUANTITY	UNIT PRICE	COST ($)	UNIT PRICE	COST ($)	UNIT PRICE	COST ($)
A1-1	BARRIER AT AURORA AVENUE BRIDGE (ADDITIVE ALTERNATE A1)	6-20	LS	1	$480,000.00	$480,000.00	$615,000.00	$615,000.00	$425,250.00	$425,250.00
A1-2	DEDUCTION FOR "BARRIER FENCE AT AURORA AVENUE BRIDGE" (BID ITEM H40)	6-19	LS	1	($140,000.00)	-$140,000.00	$50,000.00	$50,000.00	$190,000.00	$190,000.00
	TOTAL ADDITIVE ALTERNATE A1					$340,000.00		$565,000.00		$235,250.00

ADDITIVE ALTERNATE A2 (SCHEDULE H)

NO.	ITEM DESCRIPTION	SECTION	UNIT	QUANTITY	UNIT PRICE	COST ($)	UNIT PRICE	COST ($)	UNIT PRICE	COST ($)
A2-1	BARRIER AT NORTH 155TH STREET BRIDGE (ADDITIVE ALTERNATE A2)	6-21	LS	1	$330,000.00	$330,000.00	$575,000.00	$575,000.00	$390,000.00	$390,000.00
A2-2	DEDUCTION FOR "BRIDGE RAILING" (BID ITEM H37)	6-22	LF	269	($90.00)	-$24,210.00	$300.00	$80,700.00	$190.00	$51,110.00
	TOTAL ADDITIVE ALTERNATE A2					$305,790.00		$494,300.00		$338,890.00

BID SUMMARY

TOTAL BASE BID	$20,778,419.29	$22,546,987.75	$24,981,466.35
TOTAL ADDITIVE ALTERNATE A1	$340,000.00	$565,000.00	$235,250.00
TOTAL ADDITIVE ALTERNATE A2	$305,790.00	$494,300.00	$338,890.00
TOTAL PROJECT COST	**$21,424,209.29**	**$23,606,287.75**	**$25,555,606.35**