Washington State

Amtrak *Cascades* Capital Cost Estimates 2006 Technical Report

VOLUME 3

Washington State Department of Transportation

February 2006

Prepared by the Freight Systems Division
Washington State Department of Transportation

February 2006

For more information, contact:

- Call the WSDOT State Rail Office at (360) 705-7900 or 1-800-822-2015;
- Write to the WSDOT State Rail Office P.O. Box 47407
  Olympia, WA 98504-7407;
- Fax your comments to (360) 705-6821; or
- E-mail your comments to rail@wsdot.wa.gov

Persons with disabilities may request this information be prepared and supplied in alternate forms by calling the WSDOT ADA Accommodation Hotline collect 206-389-2839. Persons with vision or hearing impairments may access the WA State Telecommunications Relay Service at TT 1-800-833-6388, Tele-Braille 1-800-833-6385, or Voice 1-800-833-6384, and ask to be connected to 360-705-7097.

Amtrak *Cascades*
Capital Cost Estimates 2006
Technical Report

VOLUME 3

Prepared for the

Washington State
Department of Transportation

By

HDR Engineering, Inc.

in association with

Transit Safety Management, Inc.
The Resource Group Consultants, Inc.

February 2006

Washington State
Department of Transportation

Table of Contents

List of Exhibits

Chapter One: Introduction

This technical white paper presents the capital cost estimates for each of the proposed infrastructure improvements associated with increased service of the Amtrak *Cascades* program over the next twenty years. Detailed information about each of these projects can be found in the *Amtrak Cascades Technical Report: Operating and Capital Plan*.

How were capital costs developed?

The following steps were taken in creating the cost estimates for each project

1. In order to identify costs associated with each project in the estimate each project site was visited and a rail inspection car ride was taken of the entire corridor. Existing rail studies/maps/previous estimates and other existing information regarding the project sites were gathered and incorporated into the cost estimate. Existing track charts were used to estimate existing structures, road crossings, drainage culverts and other existing conditions.

2. Estimated quantities were derived from project information provided in the twenty year plan and information gathered regarding existing conditions.

3. The unit cost data was developed based on engineering judgment and historical cost data from railroads and passenger rail operators. The first task in developing the cost data was to develop a list of work items that are typical in the scope of work of the proposed projects. The costs of these work items were then reviewed using various cost references and historical cost data. All costs include contractors' direct cost for the work, general expenses, overhead and profit.

4. The costs also include items such as engineering, construction management, tax, environmental mitigation costs and allowances for contingencies that were included as percentage add-ons. The engineering and construction management add-ons include the cost of preliminary engineering, final design, construction management and inspection services, and administration services. The environmental mitigation add-on covers environmental studies and actions taken to minimize the environmental impact of the projects. A design contingency was included to account for unseen items or quantity fluctuations and variances in unit costs. The design contingency of thirty percent reflects the planning level

of engineering data that was available and the preliminary design completion.

5. A final independent review and quality control check was performed on each estimate and the unit cost data.

Exhibit 1-1 at the end of this chapter shows the base unit costs that were used for this task.

What assumptions were made?

- Embankment and excavation was based on a minimum depth of four foot fill sections or four foot cut fill sections, with a crest of thirty feet and a two to one slope.

- Major drainage structures include: concrete arch, box, and pipes greater than eight feet in height or diameter.

- Turnout and crossover type, number and quantities are assumed and subject to BNSF Railway Company's review and approval.

- Railroad signal (Centralized Traffic Control (CTC) control point) to be installed at every turnout and crossover.

- Grade separation bridge deck widths are equal to thirty-six feet for two-lane roadways and 120-foot span for two tracks.

- Right-of-way cost estimates include land acquisition and house/building demolition. Right-of-way estimates were only used for projects where sufficient planning has been performed to allow for an order-of-magnitude estimate of such costs.

- Depending upon jurisdiction, sales tax varies. For consistency, a sales tax of 8.2 percent was used for all projects (including those in British Columbia). Sales tax was not applied to those items which are based on a percentage of total costs (environmental mitigation, engineering/administration, and construction management).

- All costs are in 2006 U.S. dollars.

Are there any risks associated with these cost estimates?

The estimates in this document are conceptual. Cost estimates can be conceptual, preliminary, or final (or someplace in between each of these steps, depending upon the level of project design). For conceptual cost estimates, known information is compiled, and then industry-wide, standard, "unit costs" are used to estimate how much a particular element would cost. For example, in order to estimate the cost of rail for a 10,000 foot siding, that length would be multiplied by the current, industry standard cost for the particular rail that would be used. However, if through further project design, it is discovered that an environmental critical area is located along the route, the route may have to be shifted, may have to bypass the critical area, or it may have to mitigate for that impact. These additional, refined costs are not considered in the conceptual cost estimate.

Other cost estimates included in this type of conceptual cost include the amount of track construction and existing track rehabilitation, the amount of signalization, the number and type of grade crossings and the number of bridges and culverts by type and length. This information is accurate and generally does not change throughout the design process. However, as mentioned above, the specific circumstances for the construction of each item are unknown.

The specifics of any installation or construction are not available during the conceptual stage of engineering. The unknown site-specific information will cause the cost of the individual items to vary. Some may cost less at completion and some more. Experience indicates that for the level of detail of the available information, a contingency[1] of thirty percent is sufficient for the cost-increasing details to be found during engineering in the corridor and the cost of environmental mitigation will generally be twenty percent of the construction total.

The estimates can also be affected by time. There can be significant unpredictable factors in addition to the normally predictable effect of inflation. In recent years, the costs of building materials, notably steel and concrete, and fuel have been volatile. As development spreads, property values for vacant land may increase considerably or land that was vacant at the time of the estimate may have been developed.

---

[1] *Contingency is an amount intended to mitigate the unknown. As the level of detail in project plans increases, the contingency in the estimate is reduced because there is less that is unknown. The contingency in the final engineered estimate is small because the estimate includes all information that it is possible to know without beginning construction. There are almost always surprises, but their effect is generally small enough to fall within the contingency amount. Occasionally, a surprise such as the discovery of historical artifacts or underground water can have an impact that exceeds the amount estimated for contingency.*

Exhibit 1-1
Unit Costs Sheet

		UNITS	UNIT COST
I. EARTHWORK			
	1. Embankment	CY	$20
	2. Common Excavation	CY	$10
	3. Rock Excavation	CY	$50
	4. Clear & Grub	AC	$4,000
	5. General Excavation	CY	$15
	6. Subballast	CY	$30
	7. Seeding	AC	$2,500
	8. Place Topsoil	CY	$25
II. TRACK			
	1. Track Construction		
	New Track	TF	$140
	Rehab Track	TF	$100
	Yard Track	TF	$125
	Lineover Track	TF	$25
	2. Track/Turnout Removal/Relocation		
	Remove Existing Track	TF	$10
	Relocate Existing Track	TF	$100
	Remove Existing Turnout	Each	$5,000
	Relocate Existing Turnout	Each	$35,000
	Remove Existing Crossover	Each	$10,000
	Relocate Existing Crossover	Each	$70,000
	2. Turnouts		
	Split Point Derail	Each	$45,000
	#9	Each	$110,000
	#11	Each	$120,000
	#15	Each	$142,000
	#20	Each	$168,000
	#24	Each	$178,000
	#33	Each	$360,000
	#48	Each	$500,000
	3. Crossovers		
	#9	Each	$230,000
	#11	Each	$250,000
	#15	Each	$285,000
	#20	Each	$336,000
	#24	Each	$355,000
	#33	Each	$730,000
	#48	Each	$1,010,000

Legend:
CY = cubic yards **TF = track feet** **LF = linear foot**
SF = square feet **SY = square yards** **LS = lump sum**

Exhibit 1-1 (Continued)
Unit Costs Sheet

		UNITS	UNIT COST
	4. Bridges		
	<32' Precast Concrete	TF	$5,000
	32'-45' Precast Concrete	TF	$6,500
	45'-80' IB	TF	$9,000
	80'-160' Deck Plate Girder	TF	$20,000
	90'-160' TPG	TF	$20,000
	>160' Thru Rivited Truss	TF	$30,000
	Remove Existing Bridge	TF	$500
	5. Culvert Crossings		
	Major Culverts (>36" Diameter)	LF	$600
	Minor Culverts (<36" Diameter)	LF	$100
	6. Other Drainage	LS	--
	7. Retaining Walls		
	Cast-in-Place	SF	$75
	Soldier Pile < 20'	SF	$75
	Soldier Pile with Tie Back > 20'	SF	$100
	Soil Nail	SF	$55
	8. Station Platform	LS	$2,500,00
III. ROADWAY			
	1. Roadway Construction	SY	$60
	2. At-Grade Crossing		
	Concrete Crossing Panels Installed	TF	$800
	Urban Major Crossing Approaches	SY	$75
	Urban Minor Crossing Approaches	SY	$75
	Rural Major Crossing Approaches	SY	$75
	Rural Minor Crossing Approaches	SY	$75
	3. Grade-Separation Crossing		
	Bridge	SF	$150
	Roadway (earthwork & paving)	SY	$50
	MSE Wall	SF	$40
	Embankment (fill)	CY	$25
	Misc. (non-typical per project)	LS	--
	4. Crossing Signals		
	a. Upgrade Signal - Barrier Gates	Each	$200,000
	b. New Signal	Each	$250,000

Legend:
CY = cubic yards **TF = track feet** **LF = linear foot**
SF = square feet **SY = square yards** **LS = lump sum**

Exhibit 1-1 (Continued)
Unit Costs Sheet

		UNITS	UNIT COST
IV. RAILROAD SIGNALS			
	Per Power Turnout	Each	$250,000
	Per Mile	Mile	$750,000
	Electric Locks	Each	$25,000
V. UTILITY RELOCATION/ADJUSTMENT			
	Transmission Lines	LS	$1
	Fiber Optic Lines	LF	$95
	Miscellaneous	LS	$1
VI. CONTINGENCIES (30%)			
		LS	
VII. ENVIRONMENTAL MITIGATION (20%)			
		LS	
VIII. ENGINEERING/ADMINISTRATION (7%)			
IX. CONSTRUCTION MANAGEMENT (6%)			
		LS	
X. RIGHT-OF-WAY			
	Undeveloped	AC	$20,000
	Residential	AC	$100,000
	Commercial	AC	$250,000
	Industrial	AC	$350,000
XI. TAX (8.2%)			

Legend:
CY = cubic yards **TF = track feet** **LF = linear foot**
SF = square feet **SY = square yards** **LS = lump sum**

Chapter Two: Summary of Capital Costs

Using the methodology discussed in Chapter One, capital costs for each infrastructure project were developed. These costs were estimated using current year dollars (2006). **Appendix A** presents detailed cost sheets for each of these projects. Total project costs have been estimated to be approximately $6.4 to $6.7 billion depending upon the location of the Vancouver, BC terminus.

Exhibits 2-1 and **2-2** present a summary of capital costs for each project. Based upon the proposed implementation phasing (timetable) of each project, **Exhibits 2-3** through **2-8** indicate the general location of each project. These exhibits also reference the page number for each proposed improvement's detailed conceptual cost estimate.

Appendix B lists the frequent abbreviations used in these cost sheets. In addition, for the purposes of long term decision-making, costs were also inflated to reflect potential costs when the project was actually built. **Appendix C** presents these inflated costs.

Exhibit 2-1
Summary of Capital Costs: Seattle to Vancouver, BC

PROJECT NAME	CONSTRUCTION COST (in millions)
TIMETABLE A	
Mount Vernon Siding	$8.4
TIMETABLE B	
Swift Customs Facility	$13.8
Stanwood Siding	$9.9
PA Junction/Delta Junction Improvements	$34.4
Bellingham GP Improvements	$2.3
Colebrook Siding	$11.4
TIMETABLE C, D and E	
Sound Transit	$207.0
Bow to Samish Siding Extension	$50.5
Bellingham Siding Extension	$102.6
Ballard Bridge Speed Increase	$11.5
Scott Road Station	$86.3
Still Creek to CN Junction	$12.9
Vancouver Terminal Control System	$6.9
Sperling to Willingdon Junction	$11.4
Brunette to Piper Siding	$28.6
Willingdon Junction	$16.0
CN Junction	$6.3
Frasier River Bridge	$575.0
TIMETABLE F	
Marysville to Mount Vernon High Speed Track	$322.5
Burlington to Bellingham High Speed Track	$408.5
Bellingham to Blaine High Speed Track	$197.7
Everett Junction to Everett Second Main Track	$22.9
Advanced Signal System (Seattle to Blaine)	$159.0
Advanced Signal System (Blaine to Brownsville)	$69.0
White Rock Bypass	$312.7
Colebrook to Brownsville High Speed Tracks	$91.8

Exhibit 2-2
Summary of Capital Costs: Seattle to Portland, OR

PROJECT NAME	CONSTRUCTION COST (in millions)
TIMETABLE A	
Felida Crossover	$2.2
Woodland Crossover	$2.8
Titlow Crossover	$4.0
Ruston Crossover	$3.6
Sound Transit Phase 1 and 2	$304.0
TIMETABLE B	
Vancouver Rail Project	$86.6
Kelso to Martin's Bluff Rail Project	$464.3
Leary Crossover (Centennial Crossover)	$1.7
Pattison Crossover (Centennial Crossover)	$1.7
Winlock Crossover	$3.4
Ketron Crossover	$3.4
Tenino Crossover	$3.4
North Portland Junction to Kenton	$58.7
TIMETABLE C	
Point Defiance Bypass	$412.0
Reservation to Stewart Third Main	$48.3
Centralia Steam Plant Coal Track and Power Switches	$6.1
Woodland Siding	$15.3
Newuakum Siding	$3.4
King Street Station Track Improvements	$92.0
Seattle Maintenance Facility	$109.0
China Creek Crossover	$1.7
Sound Transit Phase 3	$160.0
Auburn South Third Main	$23.9
TIMETABLE D	
Winlock to Chehalis Third Main Track	$149.9
Chehalis Siding	$11.3
Chehalis Junction Crossover	$3.5
East St. Johns Siding and Main Track Relocation	$40.4
Lake Yard North Leads	$26.0
Portland Union Station	$7.6
Advanced Signal System	$308.0
TIMETABLE E	
Chehalis to Hannaford Third Main Track	$66.6
Ostrander to Winlock Third and Fourth Main Track	$283.1
TIMETABLE F	
Felida to MP 114 Third Main Track	$173.1
Hannaford to Nisqually Third Main Track	$512.5
Columbia River Bridge (joint Washington/Oregon project)	$575.0

Exhibit 2-3
Timetable A: Location of Project Improvements

Exhibit 2-4
Timetable B: Location of Project Improvements

Exhibit 2-5
Timetable C: Location of Project Improvements

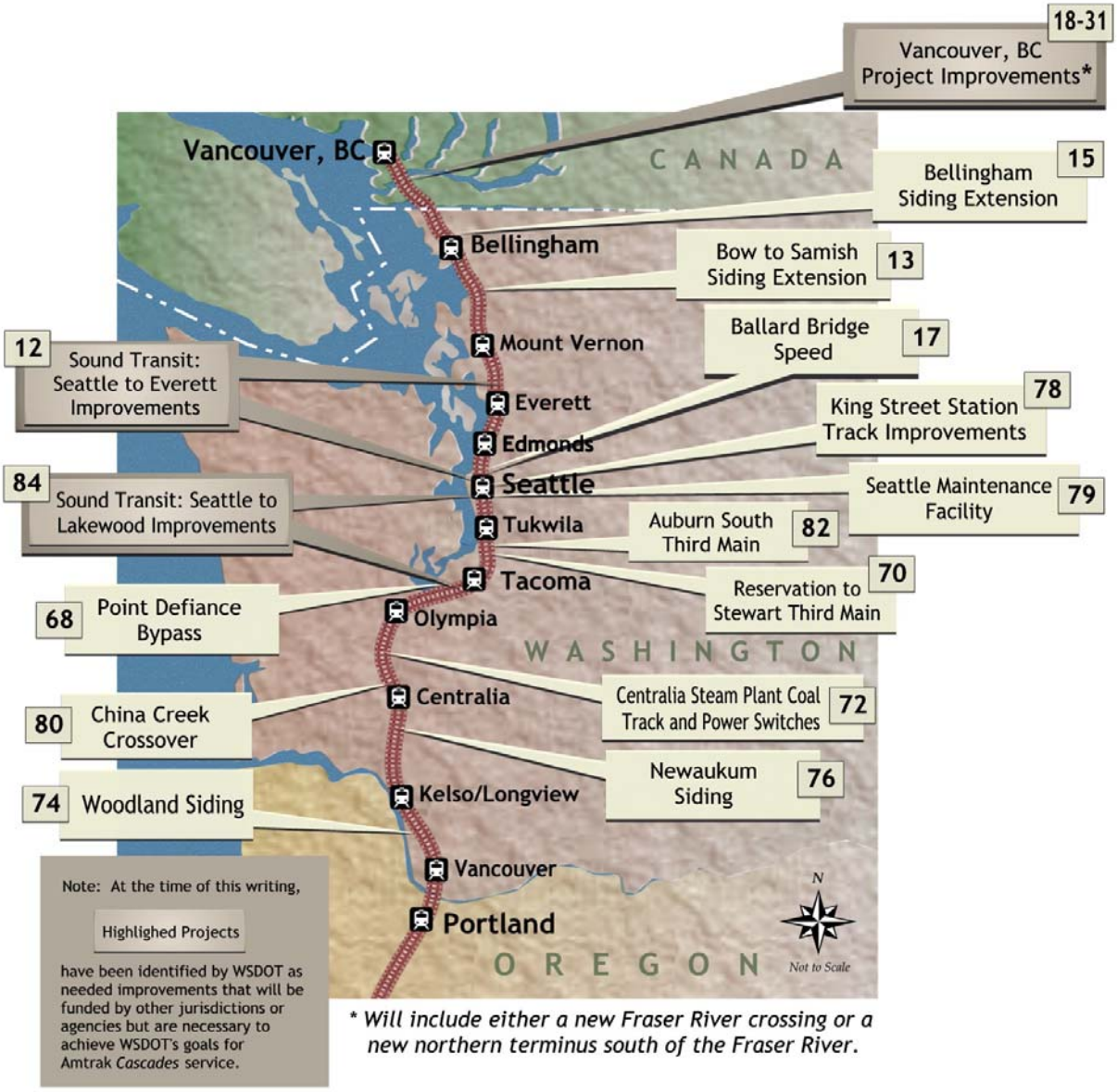

Exhibit 2-6
Timetable D: Location of Project Improvements

Exhibit 2-7
Timetable E: Location of Project Improvements

Exhibit 2-8
Timetable F: Location of Project Improvements

This page intentionally left blank.

Appendices

Appendix A: Capital Cost Estimates Worksheets

UNIT COSTS SHEET 2006

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	ACE guide and past projects
Common Excavation	CY	$10		$ -	recent past projects
Rock Excavation	CY	$50		$ -	$50 ok for soft but to low for hammer or blast
Embankment	CY	$20		$ -	Includes close borrow - numerous estimates
General Excavation *	CY	$15		$ -	numerous recent project estimates
Subballast	CY	$30		$ -	numerous recent project estimates
Erosion Controls	LS			$ -	
Seeding	AC	$2,500		$ -	ACE guide
Place Topsoil	CY	$25		$ -	ACE guide
Tunnel	MI			$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140		$ -	recent estimates ST , Pasco
Rehab Track	TF	$100		$ -	WSDOT study w/o rail $100 with
Yard Track	TF	$125		$ -	All relay material and light rail on the Ind SL
Lineover Track	TF	$25		$ -	Only minor and minor materials - recent estimates
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	w/o salvage and with - scrap value only
Relocate Existing Track	TF	$100		$ -	All below recent eng estimates WSDOT, ST, Pasco
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	Per Don McCammon, due to higher material costs
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS			$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800		$ -	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75		$ -	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					
Bridge	SF	$150		$ -	Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000		$ -	
Per Mile	MI	$750,000		$ -	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	

	Miscellaneous	LS	$1		$ -	
					$ -	
CONTINGENCIES (30%)		LS		30%	$ -	
			CONSTRUCTION TOTAL		**$ -**	
ENVIRONMENTAL MITIGATION (20%)		LS		20%	$ -	
	Wetland Compensation	AC			$ -	
				SUBTOTAL	**$ -**	
ENGINEERING/ADMINISTRATION (7%)		LS		7%	$ -	
CONSTRUCTION MANAGEMENT (6%)		LS		6%	$ -	
RIGHT OF WAY						
	Undeveloped	AC	$20,000		$ -	
	Residential	AC	$100,000		$ -	
	Commercial	AC	$250,000		$ -	
	Industrial	AC	$350,000		$ -	
					$ -	
TAX (8.2%)				8.2%	$ -	

TOTAL $ -

Misc. unit costs

Item	Unit	Cost
Demo existing passenger platform	LS	$50,000
Demo existing roadway	SY	$15
Demo existing overhead bridge	SF	$30
Crash wall	LF	$300

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Title

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15		$ -	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140		$ -	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800		$ -	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75		$ -	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					

Title

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000		$ -	
Per Mile	MI	$750,000		$ -	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ -	
		CONSTRUCTION TOTAL		**$ -**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ -	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ -**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ -	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ -	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ -	

TOTAL $ -

Assumptions: ***Track Miles***

General Layout shown on track charts (MP 5.62 to MP 10.01) 4.39 $ / mile

Title

UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Mt. Vernon Siding (MP 65.5 - MP 67.5)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	31500	$ 472,500	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	4500	$ 630,000	
Rehab Track	TF	$100	6075	$ 607,500	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000	0	$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000	1	$ 168,000	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100	120	$ 12,000	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	240	$ 192,000	MP 65.60º; MP 66.06ºº; MP 67.12º Blackburn & Pacific
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75	1400	$ 105,000	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					

Mt. Vernon Siding (MP 65.5 - MP 67.5)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	2	$ 400,000	º - Upgraded signals
New Signal	EA	$250,000	1	$ 250,000	ºº - New signals
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	1	$ 250,000	
Per Mile	MI	$750,000	2.00	$ 1,502,131	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 1,376,739	
		CONSTRUCTION TOTAL		**$ 5,965,870**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 1,193,174	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 7,159,044**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 417,611	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 357,952	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 489,201	
			TOTAL	**$ 8,423,808**	

Assumptions:

			Track Miles	
Rehab Existing Siding	*(MP 66.2 to*	*MP 67.4)*	*1.15*	
Extend siding 4500'			*0.85*	
			2.00	*$4,205,930 / mile*

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Swift Customs Facility (MP 116.4)

	UNITS	UNIT COST	QUANTITY	TOTAL
The configuration of this facility is currently known only in general terms. The final configuration must meet the requirements of US and Canada customs.	LS	$12,000,000 (2003)	1	$12,000,000
Exchange the alignments of the current main track and siding *Extend the existing siding to allow all customs-related switching to occur clear of the main track* *Construct a second siding* *Construct additional tracks and other facilities to satisfy the requirements of US and Canada customs.*	LS	$13,800,000 (2006) *	1	$13,800,000

* Unit cost based upon typical cost of similar projects. Estimate in 2003 dollars was escalated by 15% based upon aggregate average increase in construction unit costs for similar projects

Stanwood Siding

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	45091	$ 676,368	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	6442	$ 901,824	
Rehab Track	TF	$100	6600	$ 660,000	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10	550	$ 5,500	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000	1	$ 35,000	Move south siding switch 0.1 mi north (clearance issue at adjacent OHBR)
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000	1	$ 168,000	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100	240	$ 24,000	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	240	$ 192,000	MP 56.92 Logan Rd. (292nd St.)[oo]; MP 57.42 Detting Rd. (300th St.)[o]
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75	1400	$ 105,000	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	

Stanwood Siding

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
				$ -	
Grade-Separation Crossing					
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	1	$ 200,000	º - Upgraded signals
New Signal	EA	$250,000	1	$ 250,000	ºº - New signals
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	1	$ 250,000	
Per Mile	MI	$750,000	2.47	$ 1,852,500	
Electric Locks	EA	$25,000	2	$ 50,000	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 1,611,058	
		CONSTRUCTION TOTAL		**$ 6,981,250**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 1,396,250	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 8,377,500**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 488,687	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 418,875	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 572,462	
			TOTAL	**$ 9,857,524**	

Assumptions: ***Track Miles***

Rehab Existing Siding	*(MP 55.28 to*	*MP 56.53)*	*1.25*
Extend Siding	*(MP 56.53 to*	*MP 57.75)*	*1.22*
			2.47

$3,990,901 / mile

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

PA Junction/Delta Junction Improvements (MP 0.0 - MP 10.9)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10	5200	$ 52,000	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20	5200	$ 104,000	
General Excavation *	CY	$15	53134	$ 797,016	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	24563	$ 3,438,848	
Rehab Track	TF	$100	8818	$ 881,760	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100	3960	$ 396,000	Curve realignments
Remove Existing Turnout	EA	$5,000	3	$ 15,000	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000	9	$ 1,080,000	
#15	EA	$142,000	0	$ -	
#20	EA	$168,000	2	$ 336,000	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000	1	$ 250,000	
#15	EA	$285,000	0	$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Bridge 37 speed increase improvements	LS	$5,000,000	1	$ 5,000,000	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100	240	$ 24,000	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	120	$ 96,000	MP 7.89 Private Rd.^{oo}; MP 8.08 Private Rd.^{oo}; MP 8.16 Railroad Ave.^{oo}
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75	500	$ 37,500	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					

PA Junction/Delta Junction Improvements (MP 0.0 - MP 10.9)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	0	$ -	º - Upgraded signals
New Signal	EA	$250,000	3	$ 750,000	ºº - New signals
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	4	$ 1,000,000	
Per Mile	MI	$750,000	5.74	$ 4,305,000	
Electric Locks	EA	$25,000	5	$ 125,000	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 5,606,437	
		CONSTRUCTION TOTAL		**$ 24,294,561**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 4,858,912	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 29,153,473**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 1,700,619	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 1,457,674	
RIGHT OF WAY					
Undeveloped	AC	$20,000	4	$ 80,000	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 1,992,154	
			TOTAL	**$ 34,383,920**	

Assumptions:			***Track Miles***	
New Track	*(MP 10.9 to*	*MP 10.46)*	*0.44*	
Rehab Track	*(MP 10.46 to*	*MP 9.76)*	*0.70*	
Two New Tracks	*(MP 9.76 to*	*MP 9.)*	*1.52*	
Rehab Track	*(MP 9. to*	*MP 8.03)*	*0.97*	
New Track	*(MP 8.03 to*	*MP 7.8)*	*0.23*	
New Yard Track		*13,000'*	*2.46*	
Realign Curve C0A-C	*(MP .5 to*	*MP .75)*	*0.25*	
Realign Curve 80-A	*(MP 8. to*	*MP 8.2)*	*0.20*	
Realign Curve 1783			*0.30*	
			7.07	*$4,861,896 / mile*

CTC PA Jct. - Delta Jct.

Increase speed on Bridge 37.0 to Passenger 50 Freight 35
Original plan to remove south span of Snohomish River Bridge obviated by reconfiguration of Delta Jct. interlocking

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Bellingham Georgia-Pacific Curve (MP 96 - MP 97)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15		$ -	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	1350	$ 189,000	
Rehab Track	TF	$100	1600	$ 160,000	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000	3	$ 15,000	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000	1	$ 120,000	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
Demolition **	LS	$710,000	1	$ 710,000	G-P structure
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800		$ -	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75		$ -	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					

Bellingham Georgia-Pacific Curve (MP 96 - MP 97)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000		$ -	
Per Mile	MI	$750,000		$ -	
Electric Locks	EA	$25,000	1	$ 25,000	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$22,000	1	$ 22,000	Driveway & guardrail (per TSM)
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 372,300	
		CONSTRUCTION TOTAL		**$ 1,613,300**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 322,660	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 1,935,960**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 112,931	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 96,798	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 132,291	
			TOTAL	**$ 2,277,980**	

Assumptions:
Realign Curve and Rehab Siding
Remove Three Existing Turnouts

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

*** Note: Unit costs based upon typical cost of similar structures and may vary from those in the conceptual estimates for other projects.*

Colebrook Siding (MP 131.5 - MP 133.5)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	70700	$ 1,060,500	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	10100	$ 1,414,000	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000	2	$ 336,000	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600	30	$ 18,000	
Minor Culverts (< 36" Diameter)	LF	$100	180	$ 18,000	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800		$ -	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75		$ -	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					

Colebrook Siding (MP 131.5 - MP 133.5)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	2	$ 500,000	
Per Mile	MI	$750,000	3.8	$ 2,850,000	Signalize new track and existing track
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 1,858,950	
		CONSTRUCTION TOTAL		**$ 8,055,450**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 1,611,090	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 9,666,540**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 563,882	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 483,327	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 660,547	

TOTAL $ 11,374,295

Assumptions: ***Track Miles***

New Siding Track *1.90* *$5,986,471 / mile*

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Sound Transit (Seattle - Everett)

	UNITS	UNIT COST	QUANTITY
Estimate and description furnished by BNSF includes the following components:	LS	$180,000,000 (2003)	1
CTC between Seattle and MP 8 *Second Main Track between Galer Street and MP 5.4* *Second Main Track between MP 7 and MP 8* *Second Main Track between MP 16 and MP 18* *Second Main Track between MP 27 and MP 28* *Lowell Siding extension west from PA Jct to East Portal of Everett Tunnel.* *Commuter train platform track at Everett passenger station and commuter equipment layover tracks*	LS	$207,000,000 (2006) *	1

* Preliminary estimate provided by BNSF in 2003 escalated by 15% based upon aggregate average in construction unit costs for similar projects.

TOTAL
$180,000,000
$207,000,000

dollars was
crease in

Bow to Samish Siding Extension (MP 80.9 - MP 83.5)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50	90000	$ 4,500,000	Widen rock cut at Windy Pt. MP 82.6 (20' W x 40' H x 1000' L)
Embankment	CY	$20	165000	$ 3,300,000	Embankment along Samish Bay (in addition to 90,000 CY obtained from blasting at Windy Pt.) and Chuckanut Dr. bridge approaches
General Excavation *	CY	$15	69485	$ 1,042,272	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	9926	$ 1,389,696	
Rehab Track	TF	$100	4066	$ 406,560	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000	2	$ 10,000	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000	2	$ 336,000	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000	1	$ 336,000	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000	168	$ 5,040,000	MP 82.14 168' CTG
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100	150	$ 15,000	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
Roadway Removal	SY	$15	6500	$ 97,500	MP 82.05 Chuckanut Dr.

Bow to Samish Siding Extension (MP 80.9 - MP 83.5)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	270	$ 216,000	MP 80.92º; MP 81.21 S. Blanchard
Urban Major Crossing Approaches	SY	$75		$ -	Rd.º; MP 81.41 S. Legg Rd.º; MP 81.83
Urban Minor Crossing Approaches	SY	$75	1400	$ 105,000	N. Legg Rd.º
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75	175	$ 13,125	Private GX MP 83.12ºº
				$ -	
Grade-Separation Crossing					
Bridge	SF	$150	36000	$ 5,400,000	MP 82.05 Chuckanut Dr. - Approx 48' x
Roadway (earthwork & paving)	SY	$50	6500	$ 325,000	750' replacement + 0.5mi new roadway
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
Demo existing bridge	SF	$30	32375	$ 971,250	MP 82.05 Chuckanut Dr. - Approx 35' x 925' existing
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	4	$ 800,000	º - Upgraded signals
New Signal	EA	$250,000	1	$ 250,000	ºº - New signals
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	4	$ 1,000,000	
Per Mile	MI	$750,000	2.65	$ 1,987,500	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 8,262,271	
		CONSTRUCTION TOTAL		**$ 35,803,174**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 7,160,635	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 42,963,809**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 2,506,222	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 2,148,190	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 2,935,860	

			TOTAL	**$ 50,554,082**

Assumptions:			***Track Miles***	
Rehab Existing Siding	*(MP 83.53 to*	*MP 82.76)*	*0.77*	
Extend Siding	*(MP 82.76 to*	*MP 80.88)*	*1.88*	
			2.65	*$19,077,012 / mile*

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Bellingham Siding Extension (MP 93.5 - MP 98.6)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50	528000	$ 26,400,000	Assume continuous 10' W x10' H section from MP 93.8 - MP 94.8
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	101270	$ 1,519,056	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	14467	$ 2,025,408	
Rehab Track	TF	$100	10190	$ 1,019,040	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000	2	$ 10,000	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000	3	$ 360,000	
#15	EA	$142,000		$ -	
#20	EA	$168,000	1	$ 168,000	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000	0	$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000	192	$ 960,000	MP 93.57 1902 WPT; MP 98.30 203' PT
32- 45' PRCT	TF	$6,500	494	$ 3,211,000	MP 97.07 494' CTG
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000	96	$ 1,920,000	MP 98.43 96' DPG, PT
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100	180	$ 18,000	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	270	$ 216,000	MP 93.60 Private Rd.^{oo}; MP 96.35 Bear Memorial Rd.^{o}; MP 96.65 Laurel-Georgia PC^{o}; MP 97.02^{o}; MP 97.16^{oo}
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75	1575	$ 118,125	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	

Bellingham Siding Extension (MP 93.5 - MP 98.6)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Close Grade Crossing	EA		3	$ -	MP 94.24, MP 96.24, MP 96.33
Grade-Separation Crossing					
Bridge	SF	$150	50000	$ 7,500,000	Three new OHBR (MP 94.24 Boulevard Park access road, MP 96.24 Pine St., MP 96.33 Cornwall St.)
Roadway (earthwork & paving)	SY	$50	11400	$ 570,000	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25	56900	$ 1,422,500	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	3	$ 600,000	º - Upgraded signals
New Signal	EA	$250,000	2	$ 500,000	ºº - New signals
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	2	$ 500,000	
Per Mile	MI	$750,000	7.8	$ 5,850,000	3.7 Miles of New Siding & 4.1 Miles of CTC on ML
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 16,466,139	
		CONSTRUCTION TOTAL		**$ 71,353,268**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 14,270,654	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 85,623,921**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 4,994,729	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 4,281,196	
RIGHT OF WAY					
Undeveloped	AC	$20,000	15.5	$ 309,091	Buy 50' ROW from MP 93.5 - MP 98.6; split equally between Undeveloped and Residential items
Residential	AC	$100,000	15.5	$ 1,545,455	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 5,850,968	

TOTAL $ 102,605,359

Assumptions:			***Track Miles***	
Rehab Existing Siding	*(MP 92.2 to*	*MP 93.56)*	*1.36*	
New Siding	*(MP 93.56 to*	*MP 96.7)*	*2.14*	
New Mainline	*(MP 96.1 to*	*MP 96.7)*	*0.60*	
Rehab Existing Siding	*(MP 94.81 to*	*MP 96.2)*	*0.39*	
Rehab Existing Siding	*(MP 96.7 to*	*MP 96.88)*	*0.18*	
			4.67	*$21,971,169 / mile*

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Ballard Bridge Speed Increase (MP 6.4)

	UNITS	UNIT COST	QUANTITY
Modify existing bridge for increased speed	LS	$10,000,000 (2003)	1
	LS	$11,500,000 (2006) *	1

The nature of the bridge improvements required for the speed increase must be determined by an engineering assessment. In addition to new mitre rails and locks, structural changes may be required including changes related to curved track on the bridge. The lump sum is an estimate based on improvements of similar magnitude to other bridges.

* Unit cost based upon typical cost of similar structures. Es
dollars was escalated by 15% based upon aggregate average
construction unit costs for similar projects

TOTAL
$10,000,000
$11,500,000

stimate in 200
e increase i

Willingdon Junction (MP 151.8)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15		$ -	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140		$ -	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800		$ -	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75		$ -	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					

Willingdon Junction (MP 151.8)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
Douglas Road Grade Separation **	LS	$8,700,000	1	$ 8,700,000	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000		$ -	
Per Mile	MI	$750,000		$ -	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 2,610,000	
		CONSTRUCTION TOTAL		**$ 11,310,000**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 2,262,000	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 13,572,000**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 791,700	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 678,600	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 927,420	
			TOTAL	**$ 15,969,720**	

Assumptions:
Close Douglas Rd. Crossing and Grade Separate Holdon Rd.

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

*** Note: Unit costs based upon typical cost of similar structures and may vary from those in the conceptual estimates for other projects.*

CN Junction (MP 154.5 to MP 155.3)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	26981	$ 404,712	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	3854	$ 539,616	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000	2	$ 240,000	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800		$ -	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75		$ -	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					

CN Junction (MP 154.5 to MP 155.3)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	3	$ 750,000	
Per Mile	MI	$750,000	2.0	$ 1,500,000	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 1,030,298	
		CONSTRUCTION TOTAL		**$ 4,464,626**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 892,925	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 5,357,552**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 312,524	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 267,878	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 366,099	
			TOTAL	**$ 6,304,052**	

Assumptions: ***Track Miles***

One New Track (MP 154.55 to MP 155.28) 0.73 $8,635,688 / mile

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Still Creek to CN Junction (MP 153.8 - MP 154.5)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	34559	$ 518,385	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	4937	$ 691,180	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000	1	$ 5,000	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000	2	$ 336,000	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000	2	$ 672,000	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100	60	$ 6,000	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	30	$ 24,000	MP 153.94 Grandview St.
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75	175	$ 13,125	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					

Still Creek to CN Junction (MP 153.8 - MP 154.5)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	1	$ 200,000	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	6	$ 1,500,000	
Per Mile	MI	$750,000	3.4	$ 2,550,000	CTC on Two Tracks
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (40%)	LS		40%	$ 2,606,276	Changed Contingency amount from 30% to 40% to account for poor soil conditions.
		CONSTRUCTION TOTAL		**$ 9,121,966**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 1,824,393	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 10,946,359**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 638,538	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 547,318	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 748,001	

TOTAL $ 12,880,216

Assumptions: ***Track Miles***

One New Track (MP 153.8 to MP 155.5) 0.94 $13,775,074 / mile

but only build 4,937' of new track

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Vancouver Terminal Control System (MP 156.0)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15		$ -	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140		$ -	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800		$ -	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75		$ -	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					

Vancouver Terminal Control System (MP 156.0)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	10	$ 2,500,000	
Per Mile	MI	$750,000	1.2	$ 900,000	
Electric Locks	EA	$25,000	4	$ 100,000	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (40%)	LS		40%	$ 1,400,000	Changed Contingency amount from 30% to 40% to account for poor soil conditions.
		CONSTRUCTION TOTAL		**$ 4,900,000**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 980,000	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 5,880,000**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 343,000	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 294,000	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 401,800	
			TOTAL	**$ 6,918,800**	

Assumptions:

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Sperling to Willingdon Junction (MP 149.8 - MP 151.8)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	72442	$ 1,086,624	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	10349	$ 1,448,832	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000	1	$ 35,000	MP 151.7
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000	2	$ 336,000	MP 149.9, MP 151.8
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000	1	$ 336,000	MP 149.9
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600	60	$ 36,000	
Minor Culverts (< 36" Diameter)	LF	$100	120	$ 12,000	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800		$ -	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75		$ -	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	

Sperling to Willingdon Junction (MP 149.8 - MP 151.8)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
				$ -	
Grade-Separation Crossing					
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	4	$ 1,000,000	
Per Mile	MI	$750,000	1.96	$ 1,470,000	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (40%)	LS		40%	$ 2,304,182	Changed Contingency amount from 30% to 40% to account for poor soil conditions.
		CONSTRUCTION TOTAL		**$ 8,064,638**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 1,612,928	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 9,677,566**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 564,525	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 483,878	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 661,300	
			TOTAL	**$ 11,387,269**	

Assumptions: ***Track Miles***

One New Track (MP 149.8 to MP 151.76) 1.96 $5,809,831 / mile

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Brunette to Piper Siding (MP 144.4 - MP 148.2)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	99792	$ 1,496,880	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	14256	$ 1,995,840	
Rehab Track	TF	$100	2000	$ 200,000	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000	2	$ 10,000	
Relocate Existing Turnout	EA	$35,000	2	$ 70,000	
Remove Existing Crossover	EA	$10,000	2	$ 20,000	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000	3	$ 360,000	
#15	EA	$142,000	0	$ -	
#20	EA	$168,000	1	$ 168,000	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000	0	$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000	1	$ 336,000	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000	208	$ 4,160,000	MP 145.33 (207' DPG and 209' CBG)
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600	150	$ 90,000	
Minor Culverts (< 36" Diameter)	LF	$100	330	$ 33,000	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	30	$ 24,000	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75	175	$ 13,125	MP 147.22 Caribou Rd.
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	

Brunette to Piper Siding (MP 144.4 - MP 148.2)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
				$ -	
Grade-Separation Crossing					
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	1	$ 200,000	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	13	$ 3,250,000	
Per Mile	MI	$750,000	2.70	$ 2,025,000	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (40%)	LS		40%	$ 5,780,738	Changed Contingency amount from 30% to 40% to account for poor soil conditions.
		CONSTRUCTION TOTAL		**$ 20,232,583**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 4,046,517	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 24,279,100**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 1,416,281	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 1,213,955	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 1,659,072	
			TOTAL	**$ 28,568,407**	

Assumptions: ***Track Miles***

One New Track (MP 145.5 to MP 148.2) 2.70 $10,580,892 / mile

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Fraser River Bridge (MP 141.3)

	UNITS	UNIT COST	QUANTITY	TOTAL
The information needed to make a more detailed conceptual estimate requires extensive engineering. No design work has been conducted. The estimate is based on the expected magnitude compared to other similar projects. Expected components of the project include	LS	$500,000,000 (2003)	1	$500,000,000
New north and south approaches on BNSF route to allow higher speed *Replace swing span of existing bridge with vertical lift span* *Second main track between north end of Fraser River Bridge and current end of second main track at Spruce* *Close or grade separate grade crossings between Fraser River Bridge and Braid*	LS	$575,000,000 (2006) *	1	$575,000,000

* Unit cost based upon typical cost of similar structures. Estimate in 2003 dollars was escalated by 15% based upon aggregate average increase in construction unit costs for similar projects

Scott Road Station (MP 141.0)

	UNITS	UNIT COST	QUANTITY
No design work has been conducted. Estimate based on anticipated cost of similar magnitude projects.	LS	$75,000,000 (2003)	1
	LS	$86,300,000 (2006) *	1

* Unit cost based upon typical cost of similar projects. Esti
dollars was escalated by 15% based upon aggregate averag
construction unit costs for similar projects.

TOTAL
$75,000,000
$86,300,000

imate in 2003
e increase in

Marysville to Mount Vernon High Speed Track (MP 39.2 - MP 67.5)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	1271794	$ 19,076,904	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	181685	$ 25,435,872	
Rehab Track	TF	$100	2000	$ 200,000	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000	3	$ 15,000	
Relocate Existing Turnout	EA	$35,000	2	$ 70,000	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000	1	$ 120,000	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000	2	$ 356,000	
#33	EA	$360,000	3	$ 1,080,000	
#48	EA	$500,000	1	$ 500,000	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000	3	$ 750,000	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000	0	$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000	4256	$ 21,280,000	MP 48.35 12' RCB (2 tracks); MP 50.10 633' PT; MP 50.51 1472' RCT/PT; MP 50.76 57' PT; MP 51.32 399' BDPT; MP 51.57 151' PT; MP 51.76 202' PT; MP 52.83 180' PT; MP 53.30 53' PT; MP 53.50 204' PT; MP 54.10 500' PT; MP 56.32 43' PT; MP 60.04 82' BDPT; MP 61.34 119' PT; MP 62.65 107' PT; MP 40.94 6' CA; MP 47.32 8' CA (2 tracks); MP 62.29 3' CA; MP 62.30 5' CA
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000	1524	$ 30,480,000	MP 49.52 15 - PRT/TPG 762' (2 tracks)
> 160' TRT	TF	$30,000	646	$ 19,380,000	MP 49.20 323' TRT (2 tracks)
Remove Existing Bridge	TF	$500		$ -	
Modify existing bridge for increased speed **	LS	$5,500,000	2	$ 11,000,000	MP 37.78 PT/TRT/TPG; MP 38.37 WF/DPG
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600	150	$ 90,000	
Minor Culverts (< 36" Diameter)	LF	$100	1470	$ 147,000	
				$ -	
Other Drainage	LS	$0		$ -	

Marysville to Mount Vernon High Speed Track (MP 39.2 - MP 67.5)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60	73200	$ 4,392,000	24' wide frontage roads to eliminate numerous hazardous GXs in the following ranges: MP 39.83 - MP 41.20; MP 42.45 - MP 43.35; MP 57.42 - MP 59.90; MP 61.55 - MP 62.00
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	1860	$ 1,488,000	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75	8400	$ 630,000	MP 39.32 Grove St.º; MP 39.83 80th St. N.E.º; MP 40.34º; MP 41.20 104th St. N.E.º; MP 42.04 116th St. N.E.º; MP 42.45 122nd St. N.E.º; MP 42.55º; MP 43.35 136th St. N.E.º; MP 45.90 172nd St. N.E.º; MP 48.37 Sill Rd.º; MP 48.81 212th St. N.W.º; MP 49.95 14th Ave. N.E.º; MP 50.17 227th St. N.W.º; MP 51.01 28th Ave.º; MP 52.41.ºº; MP 53.36 Miller Rd.º; MP 55.40 271st St.º; MP 56.92 Logan Rd. (292nd St. N.W.)ºº; MP 57.42 Detting Rd. (300th St.)º; MP 60.28ºº; MP 62.50 Spruce St.º; MP 62.56 Fir Island Rd.º; MP 63.58 Johnson Rd.ºº; MP 64.58 Stack Pole Rd.ºº; MP 65.60 Hickok Rd.º; MP 67.12 Blackburn & Pacificº
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75	1925	$ 144,375	Private GXs MP 45.50ºº, MP 47.99ºº, MP 51.90ºº, MP 56.20ºº, MP 59.90ºº, MP 60.28ºº, MP 61.19ºº, MP 61.55ºº, MP 66.06ºº
				$ -	
Grade-Separation Crossing					
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	36	$ 7,200,000	º - Upgraded signals
New Signal	EA	$250,000	9	$ 2,250,000	ºº - New signals
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	15	$ 3,750,000	
Per Mile	MI	$750,000	34.41	$ 25,807,500	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 52,692,795	
		CONSTRUCTION TOTAL		**$ 228,335,446**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 45,667,089	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 274,002,536**	

Marysville to Mount Vernon High Speed Track (MP 39.2 - MP 67.5)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 15,983,481	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 13,700,127	
RIGHT OF WAY					
Undeveloped	AC	$20,000	6.5	$ 130,000	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 18,723,507	

TOTAL $ 322,539,650

Assumptions: ***Track Miles***

One New Track	*(MP 39.19 to*	*MP 43.8)*	*4.61*
Two New Tracks	*(MP 43.8 to*	*MP 49.9)*	*12.20*
One New Track	*(MP 49.9 to*	*MP 67.5)*	*17.60*
			34.41

$9,373,428 / mile

Private Crossings are to be closed or equiped with auto gates.

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

*** Note: Unit costs based upon typical cost of similar structures and may vary from those in the conceptual estimates for other projects.*

Burlington to Bellingham High Speed Track (MP 72.2 - MP 86.5)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	528528	$ 7,927,920	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	75504	$ 10,570,560	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000	1	$ 178,000	
#33	EA	$360,000	1	$ 360,000	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500	22755	$ 147,907,500	MP 73.31 41' PT; MP 73.88 42' PT; MP 75.38 65' PT; MP 77.00 70' PT; MP 78.85 97' PT; MP 82.14 22,440' Samish Bay trestle
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000	80	$ 1,600,000	MP 75.63 80' TPG
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
New Flyover	TF	$8,700	4500	$ 39,150,000	MP 74.3 (avoid existing sharp curve and cross SR-99 & I-5)
	TF			$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600	30	$ 18,000	
Minor Culverts (< 36" Diameter)	LF	$100	600	$ 60,000	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	510	$ 408,000	
Urban Major Crossing Approaches	SY	$75		$ -	

Burlington to Bellingham High Speed Track (MP 72.2 - MP 86.5)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Urban Minor Crossing Approaches	SY	$75	2800	$ 210,000	MP 73.22º; MP 74.33 Cook Rd.º; MP 77.32 Ershig Rd.º; MP 79.04 Bowhill Rd.º; MP 80.92 Colony Rd.º; MP 81.21 S. Blanchard Rd.º; MP 81.83 N. Legg Rd.º; MP 81.41 S Legg Rd.º
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75	175	$ 13,125	Private GX MP 74.81ºº
				$ -	
Grade-Separation Crossing					
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	12	$ 2,400,000	º - Upgraded signals
New Signal	EA	$250,000	1	$ 250,000	ºº - New signals
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	2.5	$ 625,000	
Per Mile	MI	$750,000	14.30	$ 10,725,000	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 66,720,932	
		CONSTRUCTION TOTAL		**$ 289,124,037**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 57,824,807	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 346,948,844**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 20,238,683	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 17,347,442	
RIGHT OF WAY					
Undeveloped	AC	$20,000	15.36	$ 307,200	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 23,708,171	
			TOTAL	**$ 408,550,340**	

Assumptions: ***Track Miles***

One New Track (MP 72.2 to MP 86.5) 14.30 $28,569,954 / mile
(New Alignments from MP 73.00 to MP 74.30 and MP MP 82.14 to MP 86.4)

Private Crossings are to be closed or equiped with auto gates.

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Bellingham to Blaine High Speed Track (MP 101.5 - MP 114.9)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	495264	$ 7,428,960	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	70752	$ 9,905,280	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100	1320	$ 132,000	
Remove Existing Turnout	EA	$5,000	1	$ 5,000	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000	1	$ 178,000	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000	8	$ 40,000	MP 103.39 8' CA
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000	0	$ -	
80-160' TPG	TF	$20,000	121	$ 2,420,000	MP 105.74 121' TPG
> 160' TRT	TF	$30,000	486	$ 14,580,000	MP 105.80 486' TRT
Remove Existing Bridge	TF	$500		$ -	
New Flyover	TF	$8,700	2500	$ 21,750,000	~MP 103.0
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600	90	$ 54,000	
Minor Culverts (< 36" Diameter)	LF	$100	900	$ 90,000	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	

Bellingham to Blaine High Speed Track (MP 101.5 - MP 114.9)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
ROADWAY					
Roadway Construction	SY	$60	103100	$ 6,186,000	Reconstruct Portal Way from MP 108.6 to MP 114.9 -- demo existing roadway (assume 30' width) and rebuild 28' (12' travel lane + 2' shoulder) east of exist alignment to make room for passenger main (exclude existing ~3100' roadway shift at Custer)
Roadway Removal	SY	$15	103100	$ 1,546,500	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	810	$ 648,000	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75	4200	$ 315,000	MP 101.63 Country Ln.º; MP 103.14º; MP 103.62 Slater Rd.º; MP 105.06 Hovander Rd.º; MP 106.01 2nd St.º; MP 106.22 Washington St.º; MP 107.07 Thornton Rd.ºº; MP 108.60 Brown Rd.º; MP 109.32 Grandview Rd.º; MP 111.77 Main St.º; MP 113.08 Valley View Rd.º; MP 113.60 Birch Bay Rd.º
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75	525	$ 39,375	Private GXs MP 109.06ºº, MP 110.90º, MP 112.29ºº
				$ -	
Grade-Separation Crossing					
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	18	$ 3,600,000	º - Upgraded signals
New Signal	EA	$250,000	3	$ 750,000	ºº - New signals
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	1	$ 250,000	
Per Mile	MI	$750,000	13.40	$ 10,050,000	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 23,990,435	
		CONSTRUCTION TOTAL		**$ 103,958,550**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 20,791,710	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 124,750,259**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 7,277,098	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 6,237,513	
RIGHT OF WAY					
Undeveloped	AC	$20,000	38	$ 760,000	Purchase 25' ROW from MP 108.6 to MP 114.9 for both RR and roadway construction (Portal Way; exclude existing ~3100' ROW shift at Custer)
Residential	AC	$100,000	2	$ 200,000	Purchase 15' ROW at Custer for freight siding
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 8,524,601	
			TOTAL	**$ 147,749,472**	

Assumptions: ***Track Miles***

One New Track (MP 101.5 to MP 114.9) 13.40 $11,026,080 / mile

Private Crossings are to be closed or equiped with auto gates.

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Everett Junction to Everett Second Main Track (MP 1783.6 - MP 1784.7)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	59136	$ 887,040	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	8448	$ 1,182,720	
Rehab Track	TF	$100	5000	$ 500,000	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10	3168	$ 31,680	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000	2	$ 20,000	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000	2	$ 284,000	
#20	EA	$168,000	1	$ 168,000	
#24	EA	$178,000	1	$ 178,000	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000	0	$ -	
#24	EA	$355,000	2	$ 710,000	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000	48	$ 960,000	MP 1784.00 Bond St. 48'
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100	1140	$ 114,000	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
Retaining walls	SF	$45	14400	$ 648,000	
Station Platform	LS	$2,500,000	1	$ 2,500,000	Platform & grade-separated ped crossing
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	60	$ 48,000	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75	350	$ 26,250	Public GX MP 1782.68^{oo}
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	

Everett Junction to Everett Second Main Track (MP 1783.6 - MP 1784.7)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Grade-Separation Crossing					
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	0	$ -	º - Upgraded signals
New Signal	EA	$250,000	1	$ 250,000	ºº - New signals
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	8	$ 2,000,000	
Per Mile	MI	$750,000	2.60	$ 1,950,000	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 3,737,307	
		CONSTRUCTION TOTAL		**$ 16,194,997**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 3,238,999	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 19,433,996**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 1,133,650	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 971,700	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 1,327,990	
			TOTAL	**$ 22,867,336**	

Assumptions:			***Track Miles***	
One New Track	*(MP 1783.6 to*	*MP 1784.6)*	*1.00*	
Rehab Everett Jct. Siding		*5280*	*1.00*	
Rebuild Bayside Track		*3168*	*0.60*	
			2.60	*$8,795,129 / mile*

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

White Rock Bypass (MP 117.1 - MP 130.8)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	641626	$ 9,624,384	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel **	MI	$109,000,000	0.5	$ 54,500,000	Alternative B2
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	91661	$ 12,832,512	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000	1	$ 5,000	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000	1	$ 500,000	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
New I-5 Ramp/Freeway Flyover **	TF	$8,700	2500	$ 21,750,000	
New Campbell River Bridge **	TF	$8,700	2640	$ 22,968,000	
New Nicokeki River Bridge **	TF	$8,700	1400	$ 12,180,000	700' (2 tracks)
New Serpentine River Bridge **	TF	$8,700	800	$ 6,960,000	400' (2 tracks)
New BC Rail & Colebrook Road Flyover **	TF	$8,700	800	$ 6,960,000	400' (2 tracks)
	TF			$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	

White Rock Bypass (MP 117.1 - MP 130.8)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	960	$ 768,000	Pipeline Rd.; Boblett Rd.; Street Rd.;
Urban Major Crossing Approaches	SY	$75		$ -	Tellie Rd.; Hwy 15.; Hwy 99A.; 10
Urban Minor Crossing Approaches	SY	$75	5600	$ 420,000	unnamed roads
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000	24	$ 6,000,000	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	1	$ 250,000	
Per Mile	MI	$750,000	17.36	$ 13,020,000	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 50,621,369	
		CONSTRUCTION TOTAL		**$ 219,359,265**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 43,871,853	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 263,231,118**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 15,355,149	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 13,161,556	
RIGHT OF WAY					
Undeveloped	AC	$20,000	147	$ 2,945,939	70' ROW take for length of bypass
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 17,987,460	
			TOTAL	**$ 312,681,221**	

Assumptions:

			Track Miles	
One New Track (via new alignment)	*(MP 117.08 to*	*MP 130.75)*	*9.91*	
Second Track	*(MP 123.3 to*	*MP 130.75)*	*7.45*	
			17.36	*$18,011,591 / mile*

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

*** Note: Unit costs based upon typical cost of similar structures and may vary from those in the conceptual estimates for other projects.*

Colebrook to Brownsville High Speed Track (MP 130.8 - MP 140.1)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10	141251	$ 1,412,506	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20	104450	$ 2,089,002	
General Excavation *	CY	$15	650496	$ 9,757,440	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	92928	$ 13,009,920	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000	1	$ 168,000	
#24	EA	$178,000	1	$ 178,000	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000	114	$ 570,000	MP 135.10 48' RCT; MP 135.27 24' RCT; MP 137.41 42' PT
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000	90	$ 1,800,000	MP 138.23 90' CTG
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600	150	$ 90,000	
Minor Culverts (< 36" Diameter)	LF	$100	1920	$ 192,000	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	

Colebrook to Brownsville High Speed Track (MP 130.8 - MP 140.1)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	210	$ 168,000	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75	700	$ 52,500	MP 137.03 River Rd.º; MP 138.94º
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75	525	$ 39,375	Private GXs MP 130.92ºº, MP 131.36ºº, MP 134.95º
				$ -	
Grade-Separation Crossing					
Bridge	SF	$150	18000	$ 2,700,000	Two new OHBR MP 132.4 (Hwy 10)
Roadway (earthwork & paving)	SY	$50	667	$ 33,350	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	4.5	$ 900,000	º - Upgraded signals
New Signal	EA	$250,000	2	$ 500,000	ºº - New signals
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	2	$ 500,000	
Per Mile	MI	$750,000	17.60	$ 13,200,000	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 14,208,028	
		CONSTRUCTION TOTAL		**$ 61,568,120**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 12,313,624	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 73,881,744**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 4,309,768	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 3,694,087	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000	14	$ 1,400,000	3.0 MI @ 75' wide - developed area and golf course
Commercial	AC	$250,000	14	$ 3,500,000	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 5,048,586	
			TOTAL	**$ 91,834,185**	

Assumptions:

			Track Miles	
Two New Tracks	*(MP 130.75 to*	*MP 139.)*	*16.50*	
One New Track	*(MP 139. to*	*MP 140.1)*	*1.10*	
			17.60	*$5,217,851 / mile*

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Advanced Signal System (Seattle - Blaine)

	UNITS	UNIT COST	QUANTITY	TOTAL
Advanced signal system for high speed track between Seattle and Blaine	LS	$138,000,000 (2003)	1	$138,000,000
	LS	$159,000,000 (2006) *	1	$159,000,000

* Unit cost based upon typical cost of similar projects. Estimate in 2003 dollars was escalated by 15% based upon aggregate average increase in construction unit costs for similar projects

An Advanced Signal System that provides at least cab signal indications, and as much as enforcement of compliance with cab signal indications is required by federal regulation for a speed of more than seventy-nine mph. Several systems are being developed that include elements of positive train separation or positive train control systems, which not only provide cab signal indications but also will control a train to prevent overrunning speed restrictions or movement authority. None of the systems being developed are ready for evaluation for use on the PNWRC.

Advanced Signal System (Blaine - Brownsville)

	UNITS	UNIT COST	QUANTITY
Advanced signal system for high speed track between Blaine - Brownsville	LS	$60,000,000 (2003)	1
	LS	$69,000,000 (2006) *	1

* Unit cost based upon typical cost of similar projects. Esti
dollars was escalated by 15% based upon aggregate averag
construction unit costs for similar projects.

An Advanced Signal System that provides at least cab signal indications, and as much as enforcement of compliance with cab signal indications is required by federal regulation for a speed of more than seventy-nine mph. Several systems are being developed that include elements of positive train separation or positive train control systems, which not only provide cab signal indications but also will control a train to prevent overrunning speed restrictions or movement authority. None of the systems being developed are ready for evaluation for use on the PNWRC.

TOTAL
$60,000,000
$69,000,000

imate in 2003
e increase in

ment of
eventy-nine
sitive train
t
eady for

UNIT COSTS SHEET 2006

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	ACE guide and past projects
Common Excavation	CY	$10		$ -	recent past projects
Rock Excavation	CY	$50		$ -	$50 ok for soft but to low for hammer or blast
Embankment	CY	$20		$ -	Includes close borrow - numerous estimates
General Excavation *	CY	$15		$ -	numerous recent project estimates
Subballast	CY	$30		$ -	numerous recent project estimates
Erosion Controls	LS			$ -	
Seeding	AC	$2,500		$ -	ACE guide
Place Topsoil	CY	$25		$ -	ACE guide
Tunnel	MI			$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140		$ -	recent estimates ST , Pasco
Rehab Track	TF	$100		$ -	WSDOT study w/o rail $100 with
Yard Track	TF	$125		$ -	All relay material and light rail on the Ind SL
Lineover Track	TF	$25		$ -	Only minor and minor materials - recent estimates
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	w/o salvage and with - scrap value only
Relocate Existing Track	TF	$100		$ -	All below recent eng estimates WSDOT, ST, Pasco
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	Per Don McCammon, due to higher material costs
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS			$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800		$ -	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75		$ -	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					
Bridge	SF	$150		$ -	Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000		$ -	
Per Mile	MI	$750,000		$ -	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	

	Miscellaneous	LS	$1		$ -	
					$ -	
CONTINGENCIES (30%)		LS		30%	$ -	
			CONSTRUCTION TOTAL		**$ -**	
ENVIRONMENTAL MITIGATION (20%)		LS		20%	$ -	
	Wetland Compensation	AC			$ -	
				SUBTOTAL	**$ -**	
ENGINEERING/ADMINISTRATION (7%)		LS		7%	$ -	
CONSTRUCTION MANAGEMENT (6%)		LS		6%	$ -	
RIGHT OF WAY						
	Undeveloped	AC	$20,000		$ -	
	Residential	AC	$100,000		$ -	
	Commercial	AC	$250,000		$ -	
	Industrial	AC	$350,000		$ -	
					$ -	
TAX (8.2%)				8.2%	$ -	

TOTAL $ -

Misc. unit costs

Item	Unit	Cost
Demo existing passenger platform	LS	$50,000
Demo existing roadway	SY	$15
Demo existing overhead bridge	SF	$30
Crash wall	LF	$300

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Title

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15		$ -	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140		$ -	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800		$ -	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75		$ -	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000		$ -	
Per Mile	MI	$750,000		$ -	

Title

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ -	
		CONSTRUCTION TOTAL		**$ -**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ -	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ -**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ -	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ -	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ -	
			TOTAL	**$ -**	

Assumptions: ***Track Miles***

General Layout shown on track charts (MP 5.62 to MP 10.01) 4.39 $ / mile

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Felida Crossover (MP 130.6)

	UNITS	UNIT COST	QUANTITY	TOTAL
2 No. 24 Power Crossovers (completed) Final cost	LS	$2,196,934	1	$2,196,934

Woodland Crossover (MP 118.8)

	UNITS	UNIT COST	QUANTITY	TOTAL
2 No. 24 Power Crossovers (completed) Final cost	LS	$2,769,092	1	$2,769,092

Titlow Crossover (MP 10.0)

	UNITS	UNIT COST	QUANTITY	TOTAL
2 No. 24 Power Crossovers Preliminary Engineering Estimate furnished by BNSF (2003)	LS	$3,970,000	1	$3,970,000
2006 Cost *	LS	$4,035,000	1	$4,035,000

* Preliminary estimate provided by BNSF in 2003 dollars was escalated by 1.63% based upon aggregate average increase in construction unit costs for similar projects.

Ruston Crossover (MP 5.1)

	UNITS	UNIT COST	QUANTITY	TOTAL
2 No. 24 Power Crossovers Preliminary Engineering Estimate furnished by BNSF	LS	$3,500,000	1	$3,500,000
2006 Cost *	LS	$3,557,000	1	$3,557,000

* Preliminary estimate provided by BNSF in 2003 dollars was escalated by 1.63% based upon aggregate average increase in construction unit costs for similar projects.

Sound Transit Phase 1 and 2

	UNITS	UNIT COST	QUANTITY	TOTAL
Estimate and description furnished by BNSF includes the following components:	LS	$264,000,000 (2003)	1	$264,000,000
CTC Tacoma - Seattle *Third main track at Tacoma MP 1.6 - Reservation* *Alignment change and speed increase at Tacoma MP 40 - MP 39.5* *Connection to Tacoma Rail at Reservation* *No. 24 crossover River Road MP 37.8* *No. 24 crossover MP 37* *No. 24 crossover MP 29.7* *No. 24 crossover MP 24* *Controlled siding adjacent to Auburn Yard, No 24 switch access to both ends of Auburn Yard-No 20 turnouts* *No. 24 crossover MP 21* *No. 24 crossover MP 17* *Controlled siding MP 15.8 - MP 11.4* *Crossover between Main 2 and siding MP 13.2* *Third Main Track Tukwila - Seattle including extensive rearrangement of main tracks and yard tracks to separate freight car storage and switching from through operation.* *Changes to Tukwila, Black River, and Argo interlockings to allow higher speed* *No. 24 crossover MP 6.5* *No. 20 crossover MP 2.2* *Alignment change between MP 1.2 and MP 0.3* *King Street Station: rehab all tracks, construct one new track, changes in turnout arrangement at both ends of station to facilitate passenger train movements, power switches both ends of station*	LS	$304,000,000 (2006) *	1	$304,000,000

* Preliminary estimate provided by BNSF in 2003 dollars was escalated by 15% based upon aggregate average increase in construction unit costs for similar projects.

Vancouver Rail Project

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10	786000	$ 7,860,000	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20	25000	$ 500,000	
General Excavation *	CY	$15		$ -	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	41420	$ 5,798,800	
Rehab Track	TF	$100	6375	$ 637,500	
Yard Track	TF	$125	2465	$ 308,125	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10	5445	$ 54,450	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000	17	$ 85,000	
Relocate Existing Turnout	EA	$35,000	1	$ 35,000	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000	1	$ 110,000	
#11	EA	$120,000	12	$ 1,440,000	
#15	EA	$142,000	2	$ 284,000	
#20	EA	$168,000		$ -	
#24	EA	$178,000	3	$ 534,000	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000	5	$ 1,250,000	
#15	EA	$285,000	4	$ 1,140,000	
#20	EA	$336,000	2	$ 672,000	
#24	EA	$355,000	4	$ 1,420,000	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
Retaining Walls **	SF	$50	81145	$ 4,057,250	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800		$ -	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75		$ -	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					

Vancouver Rail Project

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Bridge	SF	$150	28800	$ 4,320,000	
Roadway (earthwork & paving)	SY	$50	6570	$ 328,500	
MSE Wall	SF	$40	22600	$ 904,000	
Embankment (fill)	CY	$25	19500	$ 487,500	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	25	$ 6,250,000	
Per Mile	MI	$750,000	10	$ 7,500,000	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
Miscellaneous	LS	$500,000	1	$ 500,000	
CONTINGENCIES (30%)	LS		30%	$ 13,942,838	
		CONSTRUCTION TOTAL		**$ 60,418,963**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 12,083,793	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 72,502,755**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 4,229,327	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 3,625,138	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
Right-of-way **	AC	$55,000	24	$ 1,320,000	
TAX (8.2%)			8.2%	$ 4,954,355	
			TOTAL	**$ 86,631,575**	

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

*** Note: This information was developed in the preliminary engineering process. Unit costs and quantity count method shown may vary from those in the conceptual estimates for other projects.*

Kelso to Martin's Bluff Rail Project (MP 96.3 - MP 112.2)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000	228	$ 912,000	
Common Excavation	CY	$10	971969	$ 9,719,690	
Rock Excavation	CY	$50	232439	$ 11,621,950	
Embankment	CY	$20	1301736	$ 26,034,720	
General Excavation *	CY	$15		$ -	
Subballast	CY	$30	282962	$ 8,488,860	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500	114	$ 285,000	
Place Topsoil	CY	$25	60693	$ 1,517,325	
Tunnel	MI	$0		$ -	
Erosion Controls **	LS	$1,100,000	1	$ 1,100,000	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	120647	$ 16,890,580	
Rehab Track	TF	$100	2047	$ 204,700	
Yard Track	TF	$125	119412	$ 14,926,500	
Lineover Track	TF	$25	87336	$ 2,183,388	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10	4312	$ 43,120	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000	37	$ 185,000	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000	22	$ 2,420,000	
#11	EA	$120,000	48	$ 5,760,000	
#15	EA	$142,000	9	$ 1,278,000	
#20	EA	$168,000	41	$ 6,888,000	
#24	EA	$178,000	13	$ 2,314,000	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
Coweman River Bridge **	EA	$2,500,000	1	$ 2,500,000	MP 100.15
MP 101.63 Bridge **	EA	$315,000	1	$ 315,000	
Owl Creek Bridge **	EA	$920,000	1	$ 920,000	MP 102.15
Kalama River Bridge **	EA	$10,400,000	1	$ 10,400,000	MP 105.61
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600	247	$ 148,200	
Minor Culverts (< 36" Diameter)	LF	$100	891	$ 89,100	
				$ -	
Other Drainage **	LS	$5,500,000	1	$ 5,500,000	
Retaining Walls					
C.I.P.	SF	$75	331075	$ 24,830,588	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100	127450	$ 12,745,000	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60	10784	$ 647,040	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	390	$ 312,000	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75	225	$ 16,875	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	

Kelso to Martin's Bluff Rail Project (MP 96.3 - MP 112.2)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
				$ -	
Grade-Separation Crossing					
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
Kalama River Road **	EA	$5,500,000	1	$ 5,500,000	
Oak Street Bridge **	EA	$5,500,000	1	$ 5,500,000	
Pedestrian Bridge **	EA	$2,700,000	1	$ 2,700,000	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	4	$ 800,000	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000		$ -	
Per Mile	MI	$750,000	28	$ 21,210,000	
Electric Locks	EA	$25,000		$ -	
Control Points	LS	$17,600,000	1	$ 17,600,000	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous **	LS	$11,900,000	1	$ 11,900,000	Misc. Relocations
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 70,921,991	
		CONSTRUCTION TOTAL		**$ 307,328,626**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 61,465,725	
Wetland Compensation **	AC	$60,000	317	$ 19,020,000	
			SUBTOTAL	**$ 387,814,351**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 21,513,004	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 18,439,718	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
Right-of-Way **	AC	$273,000	60	$ 16,380,000	
TAX (8.2%)			8.2%	$ 25,200,947	

TOTAL $ 469,348,019

Assumptions: ***Track Miles***

One New Track (MP 112.2 to MP 96.3) 15.90 $29,518,743 / mile

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

*** Note: This information was developed in the preliminary engineering process. Unit costs and quantity method shown may vary from those in the conceptual estimates for other projects.*

Leary Crossover (MP 32.4)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10	2600	$ 26,000	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20	2600	$ 52,000	
General Excavation *	CY	$15		$ -	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140		$ -	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000	1	$ 355,000	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800		$ -	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75		$ -	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					

Leary Crossover (MP 32.4)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	2	$ 500,000	
Per Mile	MI	$750,000		$ -	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 279,900	
		CONSTRUCTION TOTAL		**$ 1,212,900**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 242,580	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 1,455,480**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 84,903	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 72,774	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 99,458	
			TOTAL	**$ 1,712,615**	

Assumptions:

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Pattison Crossover (MP 31.7)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10	2600	$ 26,000	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20	2600	$ 52,000	
General Excavation *	CY	$15		$ -	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140		$ -	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000	1	$ 355,000	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800		$ -	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75		$ -	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					

Pattison Crossover (MP 31.7)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	2	$ 500,000	
Per Mile	MI	$750,000		$ -	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 279,900	
		CONSTRUCTION TOTAL		**$ 1,212,900**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 242,580	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 1,455,480**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 84,903	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 72,774	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 99,458	
			TOTAL	**$ 1,712,615**	

Assumptions:

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Winlock Crossover (MP 71.8)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10	5200	$ 52,000	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20	5200	$ 104,000	
General Excavation *	CY	$15		$ -	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140		$ -	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000	2	$ 710,000	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800		$ -	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75		$ -	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					

Winlock Crossover (MP 71.8)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	4	$ 1,000,000	
Per Mile	MI	$750,000		$ -	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 559,800	
		CONSTRUCTION TOTAL		**$ 2,425,800**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 485,160	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 2,910,960**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 169,806	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 145,548	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 198,916	
			TOTAL	**$ 3,425,230**	

Assumptions:

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Tenino Crossover (MP 43.3)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10	5200	$ 52,000	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20	5200	$ 104,000	
General Excavation *	CY	$15		$ -	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140		$ -	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000	2	$ 710,000	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800		$ -	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75		$ -	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					

Tenino Crossover (MP 43.3)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	4	$ 1,000,000	
Per Mile	MI	$750,000		$ -	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 559,800	
		CONSTRUCTION TOTAL		**$ 2,425,800**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 485,160	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 2,910,960**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 169,806	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 145,548	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 198,916	
			TOTAL	**$ 3,425,230**	

Assumptions:

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Ketron Crossover (MP 18.4)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10	5200	$ 52,000	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20	5200	$ 104,000	
General Excavation *	CY	$15		$ -	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140		$ -	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000	2	$ 710,000	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800		$ -	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75		$ -	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					

Ketron Crossover (MP 18.4)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	4	$ 1,000,000	
Per Mile	MI	$750,000		$ -	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 559,800	
		CONSTRUCTION TOTAL		**$ 2,425,800**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 485,160	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 2,910,960**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 169,806	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 145,548	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 198,916	
			TOTAL	**$ 3,425,230**	

Assumptions:

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

North Portland Junction to Kenton (BNSF MP 8.1; UP MP 5.6 - MP 9.0)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20	100000	$ 2,000,000	
General Excavation *	CY	$15		$ -	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	21000	$ 2,940,000	2nd UP MT between N.P. Jct. & Kenton via Pen. Jct.; N.P. Jct expansion
Rehab Track	TF	$100	9000	$ 900,000	Rehab UP MT between N.P. Jct & Pen. Jct., and industry lead & siding between Pen. Jct. and Kenton
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10	5200	$ 52,000	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000	13	$ 455,000	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000	10	$ 1,200,000	Nine are hand-throw
#15	EA	$142,000	2	$ 284,000	
#20	EA	$168,000	3	$ 504,000	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000	7	$ 2,352,000	
#24	EA	$355,000	2	$ 710,000	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000	650	$ 3,250,000	UP Kenton Line Columbia Slough 650'
32- 45' PRCT	TF	$6,500	60	$ 390,000	UP Kenton Line MP 7.26 Industry Road 60'
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000	200	$ 4,000,000	UP Kenton Line MP 7.42 N. Columbia Blvd. 200'
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	450	$ 360,000	UP Kenton Line GXs: N Hurst Ave. (30'

North Portland Junction to Kenton (BNSF MP 8.1; UP MP 5.6 - MP 9.0)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Urban Major Crossing Approaches	SY	$75		$ -	2tk)ºº, N Chautauqua Blvd. (60' 1tk)º, N
Urban Minor Crossing Approaches	SY	$75	2800	$ 210,000	Peninsular Ave. (60')º, N Tyndall Ave.
Rural Major Crossing Approaches	SY	$75		$ -	(60' 1tk)º, two private GXs ~MP 7.0 (30'
Rural Minor Crossing Approaches	SY	$75		$ -	1tk each)ºº, private GX ~MP 7.1 (60'
				$ -	tk)ºº, NE Lombard Pl. (120' 1tk)º
Grade-Separation Crossing					
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	4	$ 800,000	º - Upgraded signals
New Signal	EA	$250,000	4	$ 1,000,000	ºº - New signals
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	24	$ 6,000,000	
Per Mile	MI	$750,000	5.68	$ 4,261,364	
Electric Locks	EA	$25,000	3	$ 75,000	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 9,523,009	
		CONSTRUCTION TOTAL		**$ 41,266,373**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 8,253,275	
Environmental Permitting	LS	$436,250	1	$ 436,250	
			SUBTOTAL	**$ 49,955,897**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 2,888,646	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 2,475,982	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 3,383,843	
			TOTAL	**$ 58,704,368**	

Assumptions:

General Layout shown on track charts
- *UP Kenton Line MP 5.6 - 9.0*
- *BNSF Fallbridge Sub MP 8.1*

Track Miles

5.68 *$10,331,969 / mile*

Earthwork, structure & environmental quantities obtained from estimate performed by HDR/Portland for I-5 Trade Corridor Project
Trackwork & signal quantities by TSM, checked by HDR/Seattle

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Point Defiance Bypass -- River Road to Nisqually (MP 37.9X - MP 24.6)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10	311190	$ 3,111,900	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15		$ -	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	96440	$ 13,501,600	
Rehab Track	TF	$100	58958	$ 5,895,800	
Yard Track	TF	$125	15075	$ 1,884,375	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10	18809	$ 188,090	
Relocate Existing Track	TF	$100	4708	$ 470,800	
Remove Existing Turnout	EA	$5,000	13	$ 65,000	
Relocate Existing Turnout	EA	$35,000	6	$ 210,000	
Remove Existing Crossover	EA	$10,000	3	$ 30,000	
Relocate Existing Crossover	EA	$70,000	2	$ 140,000	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000	2	$ 240,000	
#15	EA	$142,000	2	$ 284,000	
#20	EA	$168,000	2	$ 336,000	
#24	EA	$178,000	2	$ 356,000	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000	3	$ 750,000	
#15	EA	$285,000	7	$ 1,995,000	
#20	EA	$336,000	2	$ 672,000	
#24	EA	$355,000	5	$ 1,775,000	
#33	EA	$730,000	1	$ 730,000	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500	1700	$ 850,000	Sta 53+00 (Frt House Square, single track, timber trestle)
Construct New Bridge at Sta 18+00 **	TF	$5,500	120	$ 660,000	Utility crossing, single track, 120'
Construct New Bridge at Sta 35+00 **	TF	$8,700	150	$ 1,305,000	Portland Ave, single track, 150'
Construct New Bridge at Sta 53+00 **	TF	$5,500	3400	$ 18,700,000	Freight House Square, double track, 1700'
Construct New Bridge at Sta 382+00 **	TF	$8,700	50	$ 435,000	over county road, single track
Construct New Bridge at Sta 535+00 **	TF	$11,000	4800	$ 52,800,000	High speed flyover, single track, 4800'
Construct New Bridge at Sta 583+00 **	TF	$8,700	2200	$ 19,140,000	Freight RR Bridge, single track, 2200'
Rebuild Old Pacific Highway Overpass **	LS	$5,500,000	1	$ 5,500,000	MP 24.29
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
Retaining Walls	LF	$1,100	10250	$ 11,275,000	
Station Platform	LS	$2,500,000	3	$ 7,500,000	25x800' platform and grade separated pedestrian crossing
Other Drainage	MI	$55,000	8.5	$ 467,500	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	

Point Defiance Bypass -- River Road to Nisqually (MP 37.9X - MP 24.6)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	1006	$ 804,800	Pacific Ave.; S. Wilkeson St.; S 68th St.;
Urban Major Crossing Approaches	SY	$75		$ -	Steilacoom Blvd. SW; 108th St. SW;
Urban Minor Crossing Approaches	SY	$75	4200	$ 315,000	Bridgeport Way SW; Chicago Ave. SW;
Rural Major Crossing Approaches	SY	$75		$ -	North Thorne Lane SW; Berkeley St.
Rural Minor Crossing Approaches	SY	$75		$ -	SW; 41st Division Dr.; Barksdale Ave.;
				$ -	Old Pacific Highway
Grade-Separation Crossing					
Bridge	SF	$150	6200	$ 930,000	MP 9.87 Mounts Rd. replacement
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
Demo existing bridge **	SF	$30	1200	$ 36,000	MP 9.87 Mounts Rd.
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	9	$ 1,800,000	
New Signal	EA	$250,000	3	$ 750,000	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	47	$ 11,750,000	
Per Mile	MI	$750,000	28.80	$ 21,600,000	
Electric Locks	EA	$25,000	5	$ 125,000	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1,100,000	1	$ 1,100,000	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1,100,000	1	$ 1,100,000	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 57,473,660	
		CONSTRUCTION TOTAL		**$ 249,052,525**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 49,810,505	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 298,863,029**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 17,433,677	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 14,943,151	
RIGHT OF WAY					
Undeveloped	AC	$20,000	16	$ 320,000	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 20,422,307	
		PROJECT SUBTOTAL		**$ 351,982,165**	
Sound Transit Lakewood-Tacoma Commuter Rail Project	LS	$60,000,000	1	$ 60,000,000	
			TOTAL	**$ 411,982,165**	

Assumptions:

See backup sheets for breakdown of material quantities

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

*** Note: Unit costs based upon typical cost of similar structures and may vary from those in the conceptual estimates for other projects.*

Reservation 3rd Main -- Stewart Avenue to River Road (MP 34.0X - MP 39.0X)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	134904	$ 2,023,560	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	19272	$ 2,698,080	
Rehab Track	TF	$100	4856	$ 485,600	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000	1	$ 142,000	
#20	EA	$168,000		$ -	
#24	EA	$178,000	1	$ 178,000	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000	1	$ 285,000	
#20	EA	$336,000		$ -	
#24	EA	$355,000	1	$ 355,000	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000	68	$ 340,000	MP 34.12X 2 - 31' IB, RCT; MP 37.57X 6' CA
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600	60	$ 36,000	Assume 30' Extensions for Single Track and 60' Extension for Double Track
Minor Culverts (< 36" Diameter)	LF	$100	270	$ 27,000	Assume 30' Extensions for Single Track and 60' Extension for Double Track
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
Retaining Walls	LF	$1,000	3750	$ 3,750,000	type unknown
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	210	$ 168,000	per below
Urban Major Crossing Approaches	SY	$75		$ -	

Reservation 3rd Main -- Stewart Avenue to River Road (MP 34.0X - MP 39.0X)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Urban Minor Crossing Approaches	SY	$75	700	$ 52,500	MP 34.08X Stewart Ave. E.º; MP 35.21X 52nd Ave.º
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75	525	$ 39,375	Private GXs MP 34.87Xºº, MP 35.50Xºº, MP 36.08Xºº, MP 38.27Xºº
				$ -	
Grade-Separation Crossing					
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
Rebuild road overpasses	LS	$5,000,000	2	$ 10,000,000	Gay Rd. E and River Road
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	2	$ 400,000	º - Upgraded signals
New Signal	EA	$250,000	4	$ 1,000,000	ºº - New signals
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	6	$ 1,500,000	
Per Mile	MI	$750,000	3.65	$ 2,737,500	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 7,865,285	
		CONSTRUCTION TOTAL		**$ 34,082,900**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 6,816,580	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 40,899,479**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 2,385,803	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 2,044,974	
RIGHT OF WAY					
Undeveloped	AC	$20,000	9.2	$ 184,000	Assumes 50' ROW take on all curves greater than 1º40' for length of curve.
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 2,794,798	
			TOTAL	**$ 48,309,054**	

Assumptions: ***Track Miles***

One New Track (MP 34.1 to MP 37.75) 3.65 $13,235,357 / mile

Sta 13270+00 to Sta 13071+80
13168+50

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Centralia Steam Plant Coal Track and Power Switches (MP 51.8)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	0	$ -	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	0	$ -	
Rehab Track	TF	$100	10560	$ 1,056,000	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000	1	$ 5,000	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000	0	$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000	1	$ 168,000	
#24	EA	$178,000	0	$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000	0	$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600	60	$ 36,000	
Minor Culverts (< 36" Diameter)	LF	$100	60	$ 6,000	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	60	$ 48,000	Big Hanaford Rd.
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75	350	$ 26,250	Big Hanaford Rd.
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					

Centralia Steam Plant Coal Track and Power Switches (MP 51.8)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000	1	$ 250,000	Big Hanaford Rd.
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	1	$ 250,000	
Per Mile	MI	$750,000	2.0	$ 1,500,000	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 1,003,575	
		CONSTRUCTION TOTAL		**$ 4,348,825**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 869,765	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 5,218,590**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 304,418	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 260,930	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 356,604	
			TOTAL	**$ 6,140,541**	

Assumptions:

Replace existing #11 HT TO with #20 PO TO and add 2.0 MI CTC to Steam Plant Lead

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Woodland Siding (MP 115.5 - MP 117.0)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	60984	$ 914,760	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	8712	$ 1,219,680	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10	1000	$ 10,000	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000	2	$ 70,000	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000	2	$ 90,000	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000	2	$ 284,000	
#20	EA	$168,000		$ -	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000	0	$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	60	$ 48,000	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75	350	$ 26,250	MP 115.76 Scott Ave.
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	

Woodland Siding (MP 115.5 - MP 117.0)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
				$ -	
Grade-Separation Crossing					
Bridge	SF	$150	11800	$ 1,770,000	MP 116.63 Davidson Ave. (four-lane)
Roadway (earthwork & paving)	SY	$50	14200	$ 710,000	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25	31100	$ 777,500	
Misc. (non-typical per project)	LS	$0	0	$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	1	$ 200,000	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	4	$ 1,000,000	
Per Mile	MI	$750,000	1.65	$ 1,237,500	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 2,507,307	
		CONSTRUCTION TOTAL		**$ 10,864,997**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 2,172,999	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 13,037,996**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 760,550	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 651,900	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 890,930	

TOTAL $ 15,341,376

Assumptions: ***Track Miles***

Woodland Siding (Leaving room for 2nd Mainline) *(MP 117.1 to MP 115.45)* *1.65* *$9,297,803 / mile*

Grade Separation at MP 116.63

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

*** Note: Unit costs based upon typical cost of similar structures and may vary from those in the conceptual estimates for other projects.*

Newaukum Crossover (MP 60.7)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10	5200	$ 52,000	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20	5200	$ 104,000	
General Excavation *	CY	$15		$ -	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140		$ -	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000	2	$ 710,000	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800		$ -	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75		$ -	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					

Newaukum Crossover (MP 60.7)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	4	$ 1,000,000	
Per Mile	MI	$750,000		$ -	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 559,800	
		CONSTRUCTION TOTAL		**$ 2,425,800**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 485,160	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 2,910,960**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 169,806	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 145,548	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 198,916	
			TOTAL	**$ 3,425,230**	

Assumptions:

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

King Street Station (MP 0.0X)

	UNITS	UNIT COST	QUANTITY	TOTAL
Conceptual development continuing; most effective alternative not established. Estimate based on approximation of likely cost of the alternatives. Increase the number of through station tracks from three to a minimum of five including associated power switches at both ends of the station.	LS	$80,000,000 (2003)	1	$80,000,000
	LS	$92,000,000 (2006) *	1	$92,000,000

* Unit cost based upon typical cost of similar projects. Estimate in 2003 dollars was escalated by 15% based upon aggregate average increase in construction unit costs for similar projects.

Seattle Maintenance Facility (MP 1.0X)

	UNITS	UNIT COST	QUANTITY	TOTAL
The Seattle Maintenance Facility is a joint WSDOT / Amtrak project. Design is partially complete; however, the timing of the requested closure of the Holgate Street crossing in the middle of the proposed facility may have a significant effect on the specific arrangement of the facility and the final cost.	LS	$95,000,000	1	$95,000,000
New storage tracks, train washer, inspection building for arriving trains, locomotive and car maintenance shop and administrative office.	LS	$109,000,000 (2006) *	1	$109,000,000

* Unit cost based upon typical cost of similar projects. Estimate in 2003 dollars was escalated by 15% based upon aggregate average increase in construction unit costs for similar projects.

China Creek Crossover (MP 53.5)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10	2600	$ 26,000	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20	2600	$ 52,000	
General Excavation *	CY	$15		$ -	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140		$ -	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000	1	$ 355,000	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800		$ -	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75		$ -	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					

China Creek Crossover (MP 53.5)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	2	$ 500,000	
Per Mile	MI	$750,000		$ -	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 279,900	
		CONSTRUCTION TOTAL		**$ 1,212,900**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 242,580	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 1,455,480**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 84,903	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 72,774	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 99,458	
			TOTAL	**$ 1,712,615**	

Assumptions:

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Auburn South Third Main Track (MP 20.9X - MP 24.2X)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	118272	$ 1,774,080	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	16896	$ 2,365,440	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10	1000	$ 10,000	Industry spur
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000	1	$ 5,000	Reconfigure Thomas w/ #33s
Relocate Existing Turnout	EA	$35,000	1	$ 35,000	Industry spur
Remove Existing Crossover	EA	$10,000	1	$ 10,000	Reconfigure Thomas w/ #33s
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000	1	$ 178,000	
#33	EA	$360,000	6	$ 2,160,000	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000	1	$ 355,000	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000	39	$ 195,000	MP 23.8X 2 - 39' WF
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	120	$ 96,000	Public GXs MP 21.22º, MP 21.41Xº
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75	700	$ 52,500	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					

Auburn South Third Main Track (MP 20.9X - MP 24.2X)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	2	$ 400,000	º - Upgraded signals
New Signal	EA	$250,000	0	$ -	ºº - New signals
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	12	$ 3,000,000	
Per Mile	MI	$750,000	3.20	$ 2,400,000	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 3,910,806	
		CONSTRUCTION TOTAL		**$ 16,946,826**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 3,389,365	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 20,336,191**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 1,186,278	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 1,016,810	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 1,389,640	
			TOTAL	**$ 23,928,918**	

Assumptions: ***Track Miles***

One New Track (MP 20.9 to MP 24.1) 3.20 $7,477,787 / mile

Yard track construction no longer part of this project

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Sound Transit Phase 3 (MP 2.8X - MP 10.5X)

	UNITS	UNIT COST	QUANTITY	TOTAL
Estimate and description furnished by BNSF includes the following components:	LS	$139,000,000 (2003)	1	$139,000,000
Relocate main tracks east of all freight trackage. Changes to Tukwila, Black River, and Argo interlockings for through movement via BNSF route on all main tracks. Third main track between MP 21 and MP 18.6.	LS	$160,000,000 (2006) *	1	$160,000,000

* Preliminary estimate provided by BNSF in 2003 dollars was escalated by 15% based upon aggregate average increase in construction unit costs for similar projects.

Winlock to Chehalis Third Main Track (MP 59.5 - MP 72.0)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50	20000	$ 1,000,000	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	462370	$ 6,935,544	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	66053	$ 9,247,392	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000		$ -	
#33	EA	$360,000	2	$ 720,000	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000	74	$ 370,000	MP 68.19 3 - 19' PT; MP 66.73 4' CA; MP 66.19 7' CA; MP 62.46 6' CA
32- 45' PRCT	TF	$6,500	45	$ 292,500	Rogers Rd. overpass
45-80' IB	TF	$9,000	183	$ 1,647,000	MP 70.45 3 - 61' DPG
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000	206	$ 4,120,000	MP 59.49 2 - 103' TPG
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
Flyovers **	TF	$8,700	4000	$ 34,800,000	New flyovers MP 59.5 (Newaukum River & BNSF, 2000') and MP 67.5 (BNSF & SR 603, 2000')
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600	90	$ 54,000	
Minor Culverts (< 36" Diameter)	LF	$100	1440	$ 144,000	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	

Winlock to Chehalis Third Main Track (MP 59.5 - MP 72.0)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	270	$ 216,000	
Urban Major Crossing Approaches	SY	$75		$ -	Public GXs MP 71.44 Walnut St.º; MP 71.29 Fir St.º; MP 70.72ºº; MP 69.74 Hawkins Rd.º
Urban Minor Crossing Approaches	SY	$75	1400	$ 105,000	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75	175	$ 13,125	Private GX MP 68.80ºº
Close Crossing **	LS	$5,500	1	$ 5,500	MP 69.24 Private Road Crossing
Grade-Separation Crossing					
Bridge	SF	$150	31000	$ 4,650,000	Grade-separate new alignment crossings of Summerville Rd., SR 603, Haywire Rd., Conrad Rd. and Avery Rd. (assume 2-lane bridges w/ 1000' approaches); Rogers Rd. realignment (Roadway only)
Roadway (earthwork & paving)	SY	$50	48800	$ 2,440,000	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25	111100	$ 2,777,500	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	6	$ 1,200,000	º - Upgraded signals
New Signal	EA	$250,000	1	$ 250,000	ºº - New signals
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	3	$ 750,000	
Per Mile	MI	$750,000	12.51	$ 9,382,500	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 24,336,018	
			CONSTRUCTION TOTAL	**$ 105,456,079**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 21,091,216	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 126,547,295**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 7,381,926	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 6,327,365	
RIGHT OF WAY					
Undeveloped	AC	$20,000	51.12	$ 1,022,400	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 8,647,399	
			TOTAL	**$ 149,926,384**	

Assumptions: ***Track Miles***

One New Track (MP 59.49 to MP 72.) 12.51 $11,984,523 / mile

Private Crossings are to be closed or equiped with auto gates.

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

*** Note: Unit costs based upon typical cost of similar structures and may vary from those in the conceptual estimates for other projects.*

Chehalis Siding (MP 56.8 - MP 58.3)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	55440	$ 831,600	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	7920	$ 1,108,800	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10	2640	$ 26,400	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000	2	$ 10,000	
Relocate Existing Turnout	EA	$35,000	2	$ 70,000	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000	1	$ 45,000	#11 POTO at south end doubles as second derail
#9	EA	$110,000		$ -	
#11	EA	$120,000	1	$ 120,000	Include with south end CP to double as a derail
#15	EA	$142,000	2	$ 284,000	
#20	EA	$168,000		$ -	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100	60	$ 6,000	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	

Chehalis Siding (MP 56.8 - MP 58.3)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	600	$ 480,000	Public GXs MP 58.01 Main St.º; MP
Urban Major Crossing Approaches	SY	$75		$ -	57.93 Center St.º; MP 57.88 Prindle St.º;
Urban Minor Crossing Approaches	SY	$75	3500	$ 262,500	MP 57.65 West St.º
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	4	$ 800,000	º - Upgraded signals
New Signal	EA	$250,000	0	$ -	ºº - New signals
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	4	$ 1,000,000	
Per Mile	MI	$750,000	1.50	$ 1,125,000	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 1,850,790	
		CONSTRUCTION TOTAL		**$ 8,020,090**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 1,604,018	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 9,624,108**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 561,406	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 481,205	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 657,647	
			TOTAL	**$ 11,324,367**	

Assumptions: ***Track Miles***

Extend Chehalis Siding (MP 56.8 to MP 58.3) 1.50 $7,549,578 / mile

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Chehalis Crossover (MP 57.7)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10	5200	$ 52,000	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20	5200	$ 104,000	
General Excavation *	CY	$15		$ -	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140		$ -	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000	4	$ 20,000	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000	2	$ 710,000	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800		$ -	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75		$ -	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					

Chehalis Crossover (MP 57.7)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	4	$ 1,000,000	
Per Mile	MI	$750,000		$ -	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 565,800	
		CONSTRUCTION TOTAL		**$ 2,451,800**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 490,360	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 2,942,160**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 171,626	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 147,108	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 201,048	
			TOTAL	**$ 3,461,942**	

Assumptions:

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

East St. Johns Siding and Main Track Relocation (MP 5.5 - MP 8.1)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20	56000	$ 1,120,000	Fill under 3rd main between UPRR UGBR and N. Portland Jct.
General Excavation *	CY	$15	90468	$ 1,357,020	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	12924	$ 1,809,360	
Rehab Track	TF	$100	4240	$ 424,000	
Yard Track	TF	$125	5620	$ 702,500	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10	9000	$ 90,000	
Relocate Existing Track	TF	$100	4000	$ 400,000	
Remove Existing Turnout	EA	$5,000	5	$ 25,000	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000	6	$ 60,000	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000	5	$ 600,000	
#15	EA	$142,000		$ -	
#20	EA	$168,000	1	$ 168,000	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000	2	$ 500,000	
#15	EA	$285,000		$ -	
#20	EA	$336,000	1	$ 336,000	
#24	EA	$355,000	2	$ 710,000	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000	0	$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000	306	$ 9,180,000	MP 7.43 306' TPCT
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800		$ -	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75		$ -	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	

East St. Johns Siding and Main Track Relocation (MP 5.5 - MP 8.1)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Grade-Separation Crossing					
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	8	$ 2,000,000	
Per Mile	MI	$750,000	3.25	$ 2,438,068	
Electric Locks	EA	$25,000	4	$ 100,000	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 6,605,984	
		CONSTRUCTION TOTAL		**$ 28,625,933**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 5,725,187	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 34,351,119**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 2,003,815	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 1,717,556	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 2,347,326	

TOTAL $ 40,419,817

Assumptions:	***Track Miles***	
New main track	*2.45*	
New yard track	*1.06*	
Rehab track	*0.80*	
	4.32	*$9,366,952 / mile*

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Lake Yard Improvements (MP 1.2 - MP 5.1)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20	7300	$ 146,000	Widen Doane Lake causeway
General Excavation *	CY	$15	40656	$ 609,840	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	5808	$ 813,120	
Rehab Track	TF	$100	8448	$ 844,800	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000	5	$ 25,000	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000	5	$ 50,000	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000	1	$ 120,000	
#15	EA	$142,000		$ -	
#20	EA	$168,000	1	$ 168,000	
#24	EA	$178,000	2	$ 356,000	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000	5	$ 1,250,000	
#15	EA	$285,000		$ -	
#20	EA	$336,000	2	$ 672,000	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75	26400	$ 1,980,000	Widen Doane Lake causeway; assume 0.25 mi long and 20' high
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800		$ -	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75		$ -	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	

Lake Yard Improvements (MP 1.2 - MP 5.1)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Grade-Separation Crossing					
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	0	$ -	Highway department will replace GX with OHBR
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	20	$ 5,000,000	New TO as listed above plus power seven TO at south end Lake Yard
Per Mile	MI	$750,000	2.70	$ 2,025,000	
Electric Locks	EA	$25,000	5	$ 125,000	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 4,255,428	
		CONSTRUCTION TOTAL		**$ 18,440,188**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 3,688,038	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 22,128,226**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 1,290,813	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 1,106,411	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 1,512,095	
			TOTAL	**$ 26,037,545**	

Assumptions:
Lake Yard to Willbridge: 1.1 miles of new main track
Rehab 1.6 miles of existing yard lead

Track Miles

1.10	
1.60	
2.70	*$9,643,535 / mile*

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Portland Union Station (MP 0.0)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	19467	$ 292,005	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	2781	$ 389,340	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000		$ -	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000	2	$ 240,000	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000		$ -	
#33	EA	$360,000		$ -	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000	1	$ 250,000	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000		$ -	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000		$ -	
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600		$ -	
Minor Culverts (< 36" Diameter)	LF	$100		$ -	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800		$ -	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75		$ -	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75		$ -	
				$ -	
Grade-Separation Crossing					

Portland Union Station (MP 0.0)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000		$ -	
New Signal	EA	$250,000		$ -	
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	7	$ 1,750,000	
Per Mile	MI	$750,000	1.6	$ 1,200,000	Install CTC in Portland Union Station
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 1,236,404	
		CONSTRUCTION TOTAL		**$ 5,357,749**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 1,071,550	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 6,429,298**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 375,042	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 321,465	
RIGHT OF WAY					
Undeveloped	AC	$20,000		$ -	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 439,335	
			TOTAL	**$ 7,565,141**	

Assumptions:

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Advanced Signal System (Portland - Seattle)

	UNITS	UNIT COST	QUANTITY	TOTAL
Advanced signal system for high speed track between Portland and Seattle	LS	$268,000,000 (2003)	1	$268,000,000
	LS	$308,000,000 (2006) *	1	$308,000,000

* Unit cost based upon typical cost of similar structures. Estimate in 2003 dollars was escalated by 15% based upon aggregate average increase in construction unit costs for similar projects.

An Advanced Signal System that provides at least cab signal indications, and as much as enforcement of compliance with cab signal indications is required by federal regulation for a speed of more than seventy-nine mph. Several systems are being developed that include elements of positive train separation or positive train control systems, which not only provide cab signal indications but also will control a train to prevent overrunning speed restrictions or movement authority. None of the systems being developed are ready for evaluation for use on the PNWRC.

Chehalis to Hannaford Third Main Track (MP 51.4 - MP 59.5)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	225456	$ 3,381,840	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	32208	$ 4,509,120	
Rehab Track	TF	$100	6864	$ 686,400	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10		$ -	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000	2	$ 10,000	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000	3	$ 30,000	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000	4	$ 568,000	
#20	EA	$168,000		$ -	
#24	EA	$178,000	1	$ 178,000	
#33	EA	$360,000	1	$ 360,000	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000	0	$ -	
#20	EA	$336,000	1	$ 336,000	
#24	EA	$355,000	5	$ 1,775,000	
#33	EA	$730,000		$ -	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000	120	$ 600,000	MP 55.86 4 - 30' WF
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000	326	$ 2,934,000	MP 58.65 224' CTG; MP 51.87 2 - 51' WF(SH)
80-160' DPG	TF	$20,000		$ -	
80-160' TPG	TF	$20,000	103	$ 2,060,000	MP 59.49 103' TPG
> 160' TRT	TF	$30,000		$ -	
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600	90	$ 54,000	
Minor Culverts (< 36" Diameter)	LF	$100	240	$ 24,000	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000	1	$ 2,500,000	25x1000', grade separate pedestrian crossing
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	

Chehalis to Hannaford Third Main Track (MP 51.4 - MP 59.5)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	650	$ 520,000	Public GXs MP 58.01 Main St.º; MP 57.93 Center St.º; MP 57.88 Prindle St.º; MP 57.65 West St.º; MP 55.18 Floral Ave.º; MP 54.82 W. Summa St.º; MP 54.60 (pedestrian xing only)ºº; MP 54.44 (pedestrian xing only)ºº; MP 54.17 Locust St.º; MP 54.10 Main St.º; MP 53.90 Maple St.º; MP 51.39º; Private GX MP 50.78ºº
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75	3500	$ 262,500	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75	175	$ 13,125	
				$ -	
Grade-Separation Crossing					
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
				$ -	
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	18	$ 3,600,000	º - Upgraded signals
New Signal	EA	$250,000	3	$ 750,000	ºº - New signals
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	18.5	$ 4,625,000	
Per Mile	MI	$750,000	8.70	$ 6,525,000	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 10,890,596	
		CONSTRUCTION TOTAL		**$ 47,192,581**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 9,438,516	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 56,631,097**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 3,303,481	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 2,831,555	
RIGHT OF WAY					
Undeveloped	AC	$20,000	0.61	$ 12,200	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 3,869,792	
			TOTAL	**$ 66,648,124**	

Assumptions:			***Track Miles***	
One New Track	*(MP 50.8 to*	*MP 59.5)*	*7.40*	
Rehab Siding	*(MP 52.3 to*	*MP 53.6)*	*1.30*	
			8.70	*$7,660,704 / mile*

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Ostrander to Winlock Third and Fourth Main Track (MP 72.0 - MP 95.0)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50	50000	$ 2,500,000	Widen Castle Rock cut
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	1272533	$ 19,087,992	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	181790	$ 25,450,656	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10	10560	$ 105,600	Castle Rock & Vader sidings
Relocate Existing Track	TF	$100	7920	$ 792,000	Freight mains in Castle Rock cut
Remove Existing Turnout	EA	$5,000	4	$ 20,000	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000		$ -	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000		$ -	
#33	EA	$360,000	5	$ 1,800,000	
#48	EA	$500,000	1	$ 500,000	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000	1	$ 355,000	
#33	EA	$730,000	1	$ 730,000	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000	620	$ 3,100,000	MP 93.24 5 - 14' BDPT (2 tracks); MP 93.05 3 - 14' BDPT (2 tracks); MP 91.75 3 - 14' WF (2 tracks); MP 89.08 56' PT (2 tracks); MP 86.35 3 - 22' WF (2 tracks); MP 93.98 4' CA; MP 90.27 10' CA (2 tracks); MP 89.06 10' CA (2 tracks); MP 88.42 10' CA (2 tracks); MP 88.06 10' CA (2 tracks); MP 86.64 7' CA (2 tracks); MP 83.48 7' CA (2 tracks); MP 83.04 7' CA (2 tracks); MP 80.75 5' CA; MP 78.78 6' CA; MP 76.70 7' CA; MP 73.92 8' CA
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000	237	$ 2,133,000	MP 78.39 3 - 79' DPG
80-160' DPG	TF	$20,000	420	$ 8,400,000	MP 93.49 CBG ~85' (2 tracks); MP 93.62 ~250'
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000	1356	$ 40,680,000	MP 84.88 2 - 173' TPG (2 tracks); MP 81.50 4 - 166' DPG
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600	360	$ 216,000	
Minor Culverts (< 36" Diameter)	LF	$100	2490	$ 249,000	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100	108000	$ 10,800,000	Widen Castle Rock cut
Soil Nail	SF	$55		$ -	
				$ -	

Ostrander to Winlock Third and Fourth Main Track (MP 72.0 - MP 95.0)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	790	$ 632,000	
Urban Major Crossing Approaches	SY	$75		$ -	
Urban Minor Crossing Approaches	SY	$75	2150	$ 161,250	MP 87.43 Cowlitz Ave.º; MP 80.45 Agren Rd.ºº; MP 77.83 7th St./SR 506º; MP 74.66 Ferrier St.º; MP 72.10 Campbell St.º
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75	1925	$ 144,375	Private GXs MP 92.29ºº, MP 92.22ºº; MP 90.23ºº, MP 83.80ºº, MP 82.85ºº, MP 82.72ºº, MP 81.29ºº, MP 76.95ºº, MP 74.01ºº, MP 73.48ºº
				$ -	
Grade-Separation Crossing					
Bridge	SF	$150	17800	$ 2,670,000	MP 87.91 Huntington Rd. overpass replacement (280' long, four lanes)
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
Demo existing bridge **	SF	$30	4500	$ 135,000	MP 87.91 Huntington Rd.
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	6	$ 1,200,000	º - Upgraded signals
New Signal	EA	$250,000	11	$ 2,750,000	ºº - New signals
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	14	$ 3,500,000	
Per Mile	MI	$750,000	34.43	$ 25,822,500	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 46,180,312	
		CONSTRUCTION TOTAL		**$ 200,114,685**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 40,022,937	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 240,137,622**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 14,008,028	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 12,006,881	
RIGHT OF WAY					
Undeveloped	AC	$20,000	28.36	$ 567,200	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 16,409,404	
			TOTAL	**$ 283,129,135**	

Assumptions: ***Track Miles***

One New Track	*(MP 72. to*	*MP 82.)*	*10.00*
Two New Tracks	*(MP 82. to*	*MP 93.4)*	*22.80*
One New Track	*(MP 93.4 to*	*MP 95.03)*	*1.63*
			34.43

$8,223,327 / mile

Private Crossings are to be closed or equiped with auto gates.

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

Felida to MP 114 Third Main Track (MP 114.0 - MP 130.5)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20	220000	$ 4,400,000	Embankment for new I-5 overpass
General Excavation *	CY	$15	674520	$ 10,117,800	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	96360	$ 13,490,400	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10	5280	$ 52,800	
Relocate Existing Track	TF	$100		$ -	
Remove Existing Turnout	EA	$5,000	3	$ 15,000	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000	1	$ 10,000	
Relocate Existing Crossover	EA	$70,000		$ -	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000	4	$ 568,000	
#20	EA	$168,000		$ -	
#24	EA	$178,000	1	$ 178,000	
#33	EA	$360,000	1	$ 360,000	
#48	EA	$500,000		$ -	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000	0	$ -	
#24	EA	$355,000	1	$ 355,000	
#33	EA	$730,000	1	$ 730,000	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000	86	$ 430,000	MP 125.88 48' RCT; MP 128.38 12' CA; MP 127.09 8' CA; MP 121.66 10' CA; MP 114.71 8' CA
32- 45' PRCT	TF	$6,500		$ -	
45-80' IB	TF	$9,000	103	$ 927,000	MP 114.90 52' DPG; MP 114.87 51' DPG
80-160' DPG	TF	$20,000	259	$ 5,180,000	MP 128.6 135' DPG; MP 124.46 124' DPG
80-160' TPG	TF	$20,000		$ -	
> 160' TRT	TF	$30,000	808	$ 24,240,000	MP 119.17 808' TRT (swing span)
Remove Existing Bridge	TF	$500		$ -	
				$ -	
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600	30	$ 18,000	
Minor Culverts (< 36" Diameter)	LF	$100	3030	$ 303,000	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	
				$ -	
Station Platform	LS	$2,500,000		$ -	
				$ -	
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
Roadway Removal	SY	$15	20500	$ 307,500	Approx 0.5 mi of I-5

Felida to MP 114 Third Main Track (MP 114.0 - MP 130.5)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	510	$ 408,000	
Urban Major Crossing Approaches	SY	$75		$ -	MP 123.32 Wildlife Refuge Rd.º; MP 122.53 Mill St.º; MP 122.39 Division St.º; MP 117.50 Whalen St.º; MP 116.63 Davidson St.º; MP 115.76 Scott Ave.º
Urban Minor Crossing Approaches	SY	$75	2100	$ 157,500	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75	875	$ 65,625	Private GXs MP 129.70ºº, MP 128.18ºº, MP 125.50ºº, MP 121.47ºº, MP 119.38ºº
				$ -	
Grade-Separation Crossing					
Bridge	SF	$150	66600	$ 9,990,000	I-5 Southbound at MP 114.9 (approx 900' long by 74' wide)
Roadway (earthwork & paving)	SY	$50	20500	$ 1,025,000	Approx 0.5 mi of new pavement
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
Demo existing bridge **	SF	$30	43500	$ 1,305,000	I-5 Southbound at MP 114.9 (approx 725' long by 60' wide)
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	9	$ 1,800,000	º - Upgraded signals
New Signal	EA	$250,000	5	$ 1,250,000	ºº - New signals
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	11	$ 2,750,000	
Per Mile	MI	$750,000	18.25	$ 13,687,500	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 28,236,338	
		CONSTRUCTION TOTAL		**$ 122,357,463**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 24,471,493	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 146,828,955**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 8,565,022	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 7,341,448	
RIGHT OF WAY					
Undeveloped	AC	$20,000	14.9	$ 298,000	
Residential	AC	$100,000		$ -	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 10,033,312	
			TOTAL	**$ 173,066,737**	

Assumptions: ***Track Miles***

One New Track (MP 112.2 to MP 130.45) 18.25 $9,483,109 / mile

Private Crossings are to be closed or equiped with auto gates.

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

*** Note: Unit costs based upon typical cost of similar projects and may vary from those in the conceptual estimates for other projects.*

Hannaford to Nisqually Third and Fourth Main Track (MP 24.1 - MP 51.4)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
EARTHWORK					
Clear & Grub	AC	$4,000		$ -	
Common Excavation	CY	$10		$ -	
Rock Excavation	CY	$50		$ -	
Embankment	CY	$20		$ -	
General Excavation *	CY	$15	1578472	$ 23,677,080	
Subballast	CY	$30		$ -	
Erosion Controls	LS	$0		$ -	
Seeding	AC	$2,500		$ -	
Place Topsoil	CY	$25		$ -	
Tunnel	MI	$0		$ -	
				$ -	
				$ -	
TRACK					
Track Construction					
New Track	TF	$140	225496	$ 31,569,440	
Rehab Track	TF	$100		$ -	
Yard Track	TF	$125		$ -	
Lineover Track	TF	$25		$ -	
				$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	$10	20700	$ 207,000	Bucoda & Tenino sidings and Nisqually relocation
Relocate Existing Track	TF	$100	5000	$ 500,000	Nisqually relocation
Remove Existing Turnout	EA	$5,000	5	$ 25,000	
Relocate Existing Turnout	EA	$35,000		$ -	
Remove Existing Crossover	EA	$10,000	1	$ 10,000	
Relocate Existing Crossover	EA	$70,000	1	$ 70,000	
				$ -	
Turnouts					
Split Point Derail	EA	$45,000		$ -	
#9	EA	$110,000		$ -	
#11	EA	$120,000		$ -	
#15	EA	$142,000		$ -	
#20	EA	$168,000		$ -	
#24	EA	$178,000	3	$ 534,000	
#33	EA	$360,000	1	$ 360,000	
#48	EA	$500,000	1	$ 500,000	
Crossovers					
#9	EA	$230,000		$ -	
#11	EA	$250,000		$ -	
#15	EA	$285,000		$ -	
#20	EA	$336,000		$ -	
#24	EA	$355,000	2	$ 710,000	
#33	EA	$730,000	1	$ 730,000	
#48	EA	$1,010,000		$ -	
Bridges					
< 32' PRCT	TF	$5,000	671	$ 3,355,000	MP 45.63 3 - 16' RCT (2 tracks); MP 40.17 105' PT (2 tracks); MP 39.14 71' RCT (2 tracks); MP 33.56 5 - 15' BDPT (1 track); MP 31.60 4 - 28' CBG (1 track); MP 26.13 20' CA; MP 42.65 10' CA (2 tracks) and MP 40.27 8' CA (2 tracks)
32- 45' PRCT	TF	$6,500	84	$ 546,000	MP 39.57 42' IB
45-80' IB	TF	$9,000		$ -	
80-160' DPG	TF	$20,000	6532	$ 130,640,000	MP 43.09 2 - 101' DPG (2 tracks); MP 42.77 2 - 65' DPG (2 tracks); MP 36.15 2 - 110' DPG, DRT (1 track); MP 30.75 2 - 124' WF (1 track); MP 25.38 900' Nisqually River 3-track bridge
80-160' TPG	TF	$20,000	288	$ 5,760,000	MP 47.38 144' TRT (2 tracks)
> 160' TRT	TF	$30,000	900	$ 27,000,000	MP 25.38 300' Nisqually River 3-track bridge
Remove Existing Bridge	TF	$500		$ -	
Remove Existing Bridge **	TF	$3,300	1314	$ 4,336,200	MP 25.38 Existing Nisqually River Bridge (2 tracks)
				$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	$600	30	$ 18,000	
Minor Culverts (< 36" Diameter)	LF	$100	1500	$ 150,000	
				$ -	
Other Drainage	LS	$0		$ -	
Retaining Walls					
C.I.P.	SF	$75		$ -	
Soldier Pile < 20'	SF	$75		$ -	
Soldier Pile w/ Tie Back > 20'	SF	$100		$ -	
Soil Nail	SF	$55		$ -	

Hannaford to Nisqually Third and Fourth Main Track (MP 24.1 - MP 51.4)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Retaining Walls	LF	$1,000	1000	$ 1,000,000	type unknown
Station Platform	LS	$2,500,000	2	$ 5,000,000	Centennial
Demo existing station platform **	LS	$50,000	1	$ 50,000	Centennial
				$ -	
ROADWAY					
Roadway Construction	SY	$60		$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	$800	1110	$ 888,000	
Urban Major Crossing Approaches	SY	$75		$ -	MP 49.17 Connor Rd.º; MP 46.75º; MP 45.30 184th St. S.E.º; MP 41.10 McDuff Rd.º; MP 36.55 S. Rich Rd.º; MP 34.84 N. Rich Rd.º; MP 31.42 Atchison Rd.º; MP 29.94 Marvin Rd.º
Urban Minor Crossing Approaches	SY	$75	2800	$ 210,000	
Rural Major Crossing Approaches	SY	$75		$ -	
Rural Minor Crossing Approaches	SY	$75	1925	$ 144,375	Private GXs MP 50.78ºº, MP 48.47ºº, MP 42.43ºº, MP 37.02ºº, MP 36.01ºº, MP 27.65ºº, MP 26.39ºº, MP 24.68ºº
				$ -	
Grade-Separation Crossing					
Bridge	SF	$150		$ -	
Roadway (earthwork & paving)	SY	$50		$ -	
MSE Wall	SF	$40		$ -	
Embankment (fill)	CY	$25		$ -	
Misc. (non-typical per project)	LS	$1		$ -	
Crash wall **	LF	$300	40	$ 12,000	MP 26.84 Reservation Rd.
Crossing Signals					
Upgrade Signal - Barrier Gates	EA	$200,000	12	$ 2,400,000	º - Upgraded signals
New Signal	EA	$250,000	8	$ 2,000,000	ºº - New signals
				$ -	
RR SIGNALS					
Per P.O. T.O.	EA	$250,000	13	$ 3,250,000	
Per Mile	MI	$750,000	42.71	$ 32,030,682	
Electric Locks	EA	$25,000		$ -	
				$ -	
UTILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	$1		$ -	
Fiber Optic Lines	LF	$95		$ -	
Miscellaneous	LS	$1		$ -	
				$ -	
CONTINGENCIES (30%)	LS		30%	$ 83,304,833	
		CONSTRUCTION TOTAL		**$ 360,987,610**	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	$ 72,197,522	
Wetland Compensation	AC	$0		$ -	
			SUBTOTAL	**$ 433,185,132**	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	$ 25,269,133	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	$ 21,659,257	
RIGHT OF WAY					
Undeveloped	AC	$20,000	12.42	$ 248,400	
Residential	AC	$100,000	25	$ 2,500,000	
Commercial	AC	$250,000		$ -	
Industrial	AC	$350,000		$ -	
				$ -	
TAX (8.2%)			8.2%	$ 29,600,984	

TOTAL $ 512,462,905

Assumptions:			***Track Miles***	
Two New Tracks	*(MP 50.8 to*	*MP 36.25)*	*29.10*	
One New Track	*(MP 36.25 to*	*MP 26.14)*	*10.11*	
Three New Tracks	*(MP 26.14 to*	*MP 24.98)*	*3.50*	
			42.71	*$11,999,344 / mile*

Private Crossings are to be closed or equiped with auto gates.

** General Excavation includes a fill section of 5' x 25' for 75% of the time and a cut section of 10' x 25' for 25% of the time*

*** Note: Unit costs based upon typical cost of similar projects and may vary from those in the conceptual estimates for other projects.*

Columbia River Bridge

	UNITS	UNIT COST	QUANTITY	TOTAL
The information needed to make a more detailed conceptual estimate requires extensive engineering. No design work has been conducted. The estimate is based on the expected magnitude compared to other similar projects. Expected components of the project include: New single track bridge including vertical lift span, approximately 2,800 feet Replace swing span of existing bridge with vertical lift span Turnout and crossovers at the north end of the Oregon Slough Bridge new arrangement of turnouts at the north end of the Columbia River Bridge	LS	$500,000,000 (2003)	1	$500,000,000
	LS	$575,000,000 (2006) *	1	$575,000,000

* Unit cost based upon typical cost of similar structures. Estimate in 2003 dollars was escalated by 15% based upon aggregate average increase in construction unit costs for similar projects.

Appendix B: List of Common Cost Estimate Abbreviations and Acronyms

Appendix B:
List of Common Cost Estimate Abbreviations and Acronyms

BDPT	Ballast Deck Pile Trestle - Wood
BNSF	BNSF Railway Company
CBG	Concrete Box Girder
CIP	Cast Iron Pipe
CTC	Centralized Traffic Control
CTG	Concrete "T" Girder
CY	Cubic Yards
DPG	Deck Plate Girder
DPGOD	Deck Plate Girder – Open Deck
EA	Each
LF	Linear Foot
LS	Lump Sum
MI	Miles
MP	Mile Post (Rail)
No.	Number
P.O.T.O.	Power Operated Turnout
PRCT	Precast Concrete
PT	Pile Trestle - Wood
RBM	Rail Bound Manganese Frog Turnout
RCT	Reinforced Concrete Trestle
RR	Railroad
SF	Square Feet
SPR	Spring Frog Turnout
Sta	Station
SY	Square Yards
TF	Track Feet
T.O.	Turnout
TRT	Thru Riveted Truss
TSTOD	Thru Steel Truss – Open Deck

This page intentionally left blank.

Appendix C:
Inflation-Adjusted Costs Based on Proposed Construction Year

Appendix C
Capital Costs Based on Proposed Year of Construction

Seattle to Vancouver, BC

Project/Land	2006	2007	2008	2009	2010	2011	2012	2013	2014
2005 (Timetable A and B)									
PA Jct. / Delta Jct.	**$34,383,920**	$ 35,415,437.60	$ 36,477,900.73						
Stanwood Siding	**$9,857,524**	$ 10,153,249.72	$ 10,457,847.21						
Bellingham GP Curve	**$2,277,980**	$ 2,346,319.40	$ 2,416,708.98						
Mt. Vernon Siding	**$8,423,909**	$ 8,676,626.27	$ 8,936,925.06						
SwiftCustoms Facility	**$13,800,000**	$ 14,214,000.00	$ 14,640,420.00						
Colebrook Siding	**$11,268,748**	$ 11,606,810.44	$ 11,955,014.75						
2009 (Timetable C, D, and E)									
Sound Transit	**$207,000,000**	$ 213,210,000.00	$ 219,606,300.00	$ 226,194,489.00	$ 232,980,323.67	$ 239,969,733.38	$ 247,168,825.38		
Bow to Samish Siding Extension	**$50,554,082**	$ 52,070,704.46	$ 53,632,825.59	$ 55,241,810.36	$ 56,899,064.67	$ 58,606,036.61	$ 60,364,217.71		
Bellingham Siding Extension	**$102,605,359**	$ 105,683,519.77	$ 108,854,025.36	$ 112,119,646.12	$ 115,483,235.51	$ 118,947,732.57	$ 122,516,164.55		
Ballard Bridge Speed	**$11,500,000**	$ 11,845,000.00	$ 12,200,350.00	$ 12,566,360.50	$ 12,943,351.32	$ 13,331,651.85	$ 13,731,601.41		
Vancouver BC									
Alternative 1:									
Willingdon Junction	**$15,969,720**	$ 16,448,811.60	$ 16,942,275.95	$ 17,450,544.23	$ 17,974,060.55	$ 18,513,282.37	$ 19,068,680.84		
CN Junction	**$6,304,052**	$ 6,493,173.56	$ 6,687,968.77	$ 6,888,607.83	$ 7,095,266.06	$ 7,308,124.05	$ 7,527,367.77		
Still Creek to CN Junction	**$12,880,216**	$ 13,266,622.48	$ 13,664,621.15	$ 14,074,559.79	$ 14,496,796.58	$ 14,931,700.48	$ 15,379,651.49		
Vancouver Terminal Control	**$6,918,800**	$ 7,126,364.00	$ 7,340,154.92	$ 7,560,359.57	$ 7,787,170.35	$ 8,020,785.47	$ 8,261,409.03		
Sperling to Willington Junction	**$11,387,269**	$ 11,728,887.07	$ 12,080,753.68	$ 12,443,176.29	$ 12,816,471.58	$ 13,200,965.73	$ 13,596,994.70		
Brunette to Piper Siding	**$28,568,407**	$ 29,425,459.21	$ 30,308,222.99	$ 31,217,469.68	$ 32,153,993.77	$ 33,118,613.58	$ 34,112,171.99		
Fraser River Bridge	**$575,000,000**	$ 592,250,000.00	$ 610,017,500.00	$ 628,318,025.00	$ 647,167,565.75	$ 666,582,592.72	$ 686,580,070.50		
Alterantive 2:									
Scott Road Station	**$86,300,000**	$ 88,889,000.00	$ 91,555,670.00	$ 94,302,340.10	$ 97,131,410.30	$ 100,045,352.61	$ 103,046,713.19		
2023 (Timetable F)									
Marysville to Mt. Vernon	**$322,539,650**	$ 332,215,839.50	$ 342,182,314.69	$ 352,447,784.13	$ 363,021,217.65	$ 373,911,854.18	$ 385,129,209.80	$ 396,683,086.10	$ 408,583,578.68
Burlington to Bellingham	**$408,550,340**	$ 420,806,850.20	$ 433,431,055.71	$ 446,433,987.38	$ 459,827,007.00	$ 473,621,817.21	$ 487,830,471.72	$ 502,465,385.88	$ 517,539,347.45
Bellingham to Blaine	**$147,749,472**	$ 152,181,956.16	$ 156,747,414.84	$ 161,449,837.29	$ 166,293,332.41	$ 171,282,132.38	$ 176,420,596.35	$ 181,713,214.24	$ 187,164,610.67
Everett Junction	**$22,867,336**	$ 23,553,356.08	$ 24,259,956.76	$ 24,987,755.47	$ 25,737,388.13	$ 26,509,509.77	$ 27,304,795.07	$ 28,123,938.92	$ 28,967,657.09
Advanced Signal (US)	**$159,000,000**	$ 163,770,000.00	$ 168,683,100.00	$ 173,743,593.00	$ 178,955,900.79	$ 184,324,577.81	$ 189,854,315.15	$ 195,549,944.60	$ 201,416,442.94
Advanced Signal (BC)	**$69,000,000**	$ 71,070,000.00	$ 73,202,100.00	$ 75,398,163.00	$ 77,660,107.89	$ 79,989,911.13	$ 82,389,608.46	$ 84,861,296.71	$ 87,407,135.62
White Rock Bypass	**$312,681,221**	$ 322,061,657.63	$ 331,723,507.36	$ 341,675,212.58	$ 351,925,468.96	$ 362,483,233.03	$ 373,357,730.02	$ 384,558,461.92	$ 396,095,215.77
Colebrook to Brownsville	**$91,834,185**	$ 94,589,210.55	$ 97,426,886.87	$ 100,349,693.47	$ 103,360,184.28	$ 106,460,989.80	$ 109,654,819.50	$ 112,944,464.08	$ 116,332,798.01

NOTES:
Shaded boxes indicate projects done by other jurisdiction or agency
Some projects did not have a ROW component and therefore was not included in calculations
Improvements were inflated by 3% compounded annually. This is based on WSDOT standard inflation numbers.

Appendix C
Capital Costs Based on Proposed Year of Construction

Seattle to Vancouver, BC

Project/Land	2015	2016	2017	2018	2019	2020	2021	2022	2023
2005 (Timetable A and B)									
PA Jct. / Delta Jct.									
Stanwood Siding									
Bellingham GP Curve									
Mt. Vernon Siding									
SwiftCustoms Facility									
Colebrook Siding									
2009 (Timetable C, D, and E)									
Sound Transit									
Bow to Samish Siding Extension									
Bellingham Siding Extension									
Ballard Bridge Speed									
Vancouver BC									
Alternative 1:									
Willingdon Junction									
CN Junction									
Still Creek to CN Junction									
Vancouver Terminal Control									
Sperling to Willington Junction									
Brunette to Piper Siding									
Fraser River Bridge									
Alterantive 2:									
Scott Road Station									
2023 (Timetable F)									
Marysville to Mt. Vernon	$ 420,841,086.04	$ 433,466,318.62	$ 446,470,308.18	$ 459,864,417.43	$ 473,660,349.95	$ 487,870,160.45	$ 502,506,265.26	$ 517,581,453.22	$ 533,108,896.82
Burlington to Bellingham	$ 533,065,527.88	$ 549,057,493.71	$ 565,529,218.52	$ 582,495,095.08	$ 599,969,947.93	$ 617,969,046.37	$ 636,508,117.76	$ 655,603,361.29	$ 675,271,462.13
Bellingham to Blaine	$ 192,779,548.99	$ 198,562,935.46	$ 204,519,823.52	$ 210,655,418.23	$ 216,975,080.78	$ 223,484,333.20	$ 230,188,863.20	$ 237,094,529.09	$ 244,207,364.96
Everett Junction	$ 29,836,686.80	$ 30,731,787.40	$ 31,653,741.02	$ 32,603,353.26	$ 33,581,453.85	$ 34,588,897.47	$ 35,626,564.39	$ 36,695,361.32	$ 37,796,222.16
Advanced Signal (US)	$ 207,458,936.23	$ 213,682,704.32	$ 220,093,185.45	$ 226,695,981.01	$ 233,496,860.44	$ 240,501,766.25	$ 247,716,819.24	$ 255,148,323.82	$ 262,802,773.53
Advanced Signal (BC)	$ 90,029,349.68	$ 92,730,230.17	$ 95,512,137.08	$ 98,377,501.19	$ 101,328,826.23	$ 104,368,691.02	$ 107,499,751.75	$ 110,724,744.30	$ 114,046,486.63
White Rock Bypass	$ 407,978,072.25	$ 420,217,414.42	$ 432,823,936.85	$ 445,808,654.95	$ 459,182,914.60	$ 472,958,402.04	$ 487,147,154.10	$ 501,761,568.72	$ 516,814,415.79
Colebrook to Brownsville	$ 119,822,781.95	$ 123,417,465.41	$ 127,119,989.37	$ 130,933,589.05	$ 134,861,596.72	$ 138,907,444.62	$ 143,074,667.96	$ 147,366,908.00	$ 151,787,915.24

NOTES:
Shaded boxes indicate projects done by other jurisdiction or agency
Some projects did not have a ROW component and therefore was not included in calculations
Improvements were inflated by 3% compounded annually. This is based on WSDOT standard inflation numbers.

Appendix C
Capital Costs Based on Proposed Year of Construction

Seattle to Portland, OR

Project/Land	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
2005 (Timetable A)											
Felida Crossover	**$2,200,000**	2266000	$ 2,333,980.00								
Woodland Crossover	**$2,800,000**	2884000	$ 2,970,520.00								
Titlow Crossover	**$4,000,000**	4120000	$ 4,243,600.00								
Ruston Crossover	**$3,600,000**	3708000	$ 3,819,240.00								
Sound Transit	**$304,000,000**	313120000	$ 322,513,600.00								
2007 (Timetable B)											
Vancouver Rail Project	**$86,631,575**	$ 89,230,522.25	$ 91,907,437.92	$ 94,664,661.06	$ 97,504,600.89						
Kelso-Martin's Bluff Rail Project	**$469,348,019**	$ 483,428,459.57	$ 497,931,313.36	$ 512,869,252.76	$ 528,255,330.34						
Centennial Crossovers	**$3,425,230**	$ 3,527,986.90	$ 3,633,826.51	$ 3,742,841.30	$ 3,855,126.54						
Winlock Crossover	**$3,425,230**	$ 3,527,986.90	$ 3,633,826.51	$ 3,742,841.30	$ 3,855,126.54						
Ketron Crossover	**$3,425,230**	$ 3,527,986.90	$ 3,633,826.51	$ 3,742,841.30	$ 3,855,126.54						
Tenino Crossover	**$3,425,230**	$ 3,527,986.90	$ 3,633,826.51	$ 3,742,841.30	$ 3,855,126.54						
North Portland Junction to Kenton	**$58,704,368**	$ 60,465,499.04	$ 62,279,464.01	$ 64,147,847.93	$ 66,072,283.37						
2009 (Timetable C)											
Pt. Defiance Bypass	**$411,982,165**	$ 424,341,629.95	$ 437,071,878.85	$ 450,184,035.21	$ 463,689,556.27	$ 477,600,242.96	$ 491,928,250.25				
Reservation Third Main	**$48,309,054**	$ 49,758,325.62	$ 51,251,075.39	$ 52,788,607.65	$ 54,372,265.88	$ 56,003,433.86	$ 57,683,536.87				
Centralia Steam Plant	**$6,140,541**	$ 6,324,757.23	$ 6,514,499.95	$ 6,709,934.95	$ 6,911,232.99	$ 7,118,569.98	$ 7,332,127.08				
Woodland Siding	**$15,341,376**	$ 15,801,617.28	$ 16,275,665.80	$ 16,763,935.77	$ 17,266,853.85	$ 17,784,859.46	$ 18,318,405.24				
Newaukum Crossover	**$3,425,230**	$ 3,527,986.90	$ 3,633,826.51	$ 3,742,841.30	$ 3,855,126.54	$ 3,970,780.34	$ 4,089,903.75				
Seattle Maintenance Facility	**$109,000,000**	$ 112,270,000.00	$ 115,638,100.00	$ 119,107,243.00	$ 122,680,460.29	$ 126,360,874.10	$ 130,151,700.32				
Chehalis Jct. Crossover	**$3,461,942**	$ 3,565,800.26	$ 3,672,774.27	$ 3,782,957.50	$ 3,896,446.22	$ 4,013,339.61	$ 4,133,739.80				
China Creek Crossover	**$1,712,615**	$ 1,763,993.45	$ 1,816,913.25	$ 1,871,420.65	$ 1,927,563.27	$ 1,985,390.17	$ 2,044,951.87				
King Street Station	**$92,000,000**	$ 94,760,000.00	$ 97,602,800.00	$ 100,530,884.00	$ 103,546,810.52	$ 106,653,214.84	$ 109,852,811.28				
Sound Transit	**$160,000,000**	$ 164,800,000.00	$ 169,744,000.00	$ 174,836,320.00	$ 180,081,409.60	$ 185,483,851.89	$ 191,048,367.44				
Auburn South Third Main	**$23,928,918**	$ 24,646,785.54	$ 25,386,189.11	$ 26,147,774.78	$ 26,932,208.02	$ 27,740,174.26	$ 28,572,379.49				
2015 (Timetable D)											
Winlock to Chehalis Third Main	**$149,926,384**	$ 154,424,175.52	$ 159,056,900.79	$ 163,828,607.81	$ 168,743,466.04	$ 173,805,770.02	$ 179,019,943.13	$ 184,390,541.42	$ 189,922,257.66	$ 195,619,925.39	$ 201,488,523.15
Chehalis Siding	**$11,324,367**	$ 11,664,098.01	$ 12,014,020.95	$ 12,374,441.58	$ 12,745,674.83	$ 13,128,045.07	$ 13,521,886.42	$ 13,927,543.02	$ 14,345,369.31	$ 14,775,730.39	$ 15,219,002.30
East St. Johns Siding/Main Track	**$40,419,817**	$ 41,632,411.51	$ 42,881,383.86	$ 44,167,825.37	$ 45,492,860.13	$ 46,857,645.94	$ 48,263,375.31	$ 49,711,276.57	$ 51,202,614.87	$ 52,738,693.32	$ 54,320,854.12
Lake Yard North Leads	**$26,037,545**	$ 26,818,671.35	$ 27,623,231.49	$ 28,451,928.44	$ 29,305,486.29	$ 30,184,650.88	$ 31,090,190.40	$ 32,022,896.12	$ 32,983,583.00	$ 33,973,090.49	$ 34,992,283.20
Portland Union Station	**$7,565,141**	$ 7,792,095.23	$ 8,025,858.09	$ 8,266,633.83	$ 8,514,632.84	$ 8,770,071.83	$ 9,033,173.98	$ 9,304,169.20	$ 9,583,294.28	$ 9,870,793.11	$ 10,166,916.90
Advanced Signal System	**$308,000,000**	$ 317,240,000.00	$ 326,757,200.00	$ 336,559,916.00	$ 346,656,713.48	$ 357,056,414.88	$ 367,768,107.33	$ 378,801,150.55	$ 390,165,185.07	$ 401,870,140.62	$ 413,926,244.84
2017 (Timetable E)											
Chehalis to Hannaford Third Main	**$66,648,124**	$ 68,647,567.72	$ 70,706,994.75	$ 72,828,204.59	$ 75,013,050.73	$ 77,263,442.25	$ 79,581,345.52	$ 81,968,785.89	$ 84,427,849.46	$ 86,960,684.95	$ 89,569,505.50
Ostrander to Winlock 3rd/4th Main	**$283,129,135**	$ 291,623,009.05	$ 300,371,699.32	$ 309,382,850.30	$ 318,664,335.81	$ 328,224,265.88	$ 338,070,993.86	$ 348,213,123.68	$ 358,659,517.39	$ 369,419,302.91	$ 380,501,882.00
2023 (Timetable F)											
Felida to MP 114 Third Main	**$173,066,737**	$ 178,258,739.11	$ 183,606,501.28	$ 189,114,696.32	$ 194,788,137.21	$ 200,631,781.33	$ 206,650,734.77	$ 212,850,256.81	$ 219,235,764.51	$ 225,812,837.45	$ 232,587,222.57
Hannaford to Nisqually Third Main	**$512,462,905**	$ 527,836,792.15	$ 543,671,895.91	$ 559,982,052.79	$ 576,781,514.38	$ 594,084,959.81	$ 611,907,508.60	$ 630,264,733.86	$ 649,172,675.87	$ 668,647,856.15	$ 688,707,291.84
Columbia River Bridge	**$575,000,000**	$ 592,250,000.00	$ 610,017,500.00	$ 628,318,025.00	$ 647,167,565.75	$ 666,582,592.72	$ 686,580,070.50	$ 707,177,472.62	$ 728,392,796.80	$ 750,244,580.70	$ 772,751,918.12

NOTES:

Shaded boxes indicate projects done by other jurisdiction or agency

Some projects did not have a ROW component and therefore was not included in calculations

Improvements were inflated by 3% compounded annually. This is based on WSDOT standard inflation numbers.

Appendix C
Capital Costs Based on Proposed Year of Construction

Seattle to Portland, OR

Project/Land	2017	2018	2019	2020	2021	2022	2023	2023
2005 (Timetable A)								
Felida Crossover								
Woodland Crossover								
Titlow Crossover								
Ruston Crossover								
Sound Transit								
2007 (Timetable B)								
Vancouver Rail Project								
Kelso-Martin's Bluff Rail Project								
Centennial Crossovers								
Winlock Crossover								
Ketron Crossover								
Tenino Crossover								
North Portland Junction to Kenton								
2009 (Timetable C)								
Pt. Defiance Bypass								
Reservation Third Main								
Centralia Steam Plant								
Woodland Siding								
Newaukum Crossover								
Seattle Maintenance Facility								
Chehalis Jct. Crossover								
China Creek Crossover								
King Street Station								
Sound Transit								
Auburn South Third Main								
2015 (Timetable D)								
Winlock to Chehalis Third Main	$ 207,533,178.85	$ 213,759,174.21						
Chehalis Siding	$ 15,675,572.37	$ 16,145,839.54						
East St. Johns Siding/Main Track	$ 55,950,479.74	$ 57,628,994.13						
Lake Yard North Leads	$ 36,042,051.70	$ 37,123,313.25						
Portland Union Station	$ 10,471,924.41	$ 10,786,082.14						
Advanced Signal System	$ 426,344,032.18	$ 439,134,353.15						
2017 (Timetable E)								
Chehalis to Hannaford Third Main	$ 92,256,590.66	$ 95,024,288.38	$ 97,875,017.03	$ 100,811,267.54				
Ostrander to Winlock 3rd/4th Main	$ 391,916,938.46	$ 403,674,446.61	$ 415,784,680.01	$ 428,258,220.41				
2023 (Timetable F)								
Felida to MP 114 Third Main	$ 239,564,839.25	$ 246,751,784.43	$ 254,154,337.96	$ 261,778,968.10	$ 269,632,337.14	$ 277,721,307.26	$ 286,052,946.48	$ 294,634,534.87
Hannaford to Nisqually Third Main	$ 709,368,510.59	$ 730,649,565.91	$ 752,569,052.89	$ 775,146,124.47	$ 798,400,508.21	$ 822,352,523.45	$ 847,023,099.16	$ 872,433,792.13
Columbia River Bridge	$ 795,934,475.67	$ 819,812,509.94	$ 844,406,885.23	$ 869,739,091.79	$ 895,831,264.55	$ 922,706,202.48	$ 950,387,388.56	$ 978,899,010.21

NOTES:

Shaded boxes indicate projects done by other jurisdiction or agency

Some projects did not have a ROW component and therefore was not included in calculations

Improvements were inflated by 3% compounded annually. This is based on WSDOT standard inflation numbers.