# **Washington State**

# Amtrak *Cascade*s Capital Cost Estimates 2006 Technical Report

**VOLUME 3** 



# **Prepared by the Freight Systems Division Washington State Department of Transportation**

February 2006

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# Amtrak *Cascades*Capital Cost Estimates 2006 Technical Report

**VOLUME 3** 

Prepared for the

Washington State
Department of Transportation

Ву

HDR Engineering, Inc.

in association with

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

February 2006



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# **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 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.

Amtrak Cascades Capital Cost Estimates 2006

Chapter One: Introduction

<sup>&</sup>lt;sup>1</sup>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 SF = square feet TF = track feet LF = linear foot 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. Roadw	'AY		
	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
SF = square feet
TF = track feet
SY = square yar LF = linear foot 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 SF = square feet TF = track feet LF = linear foot 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

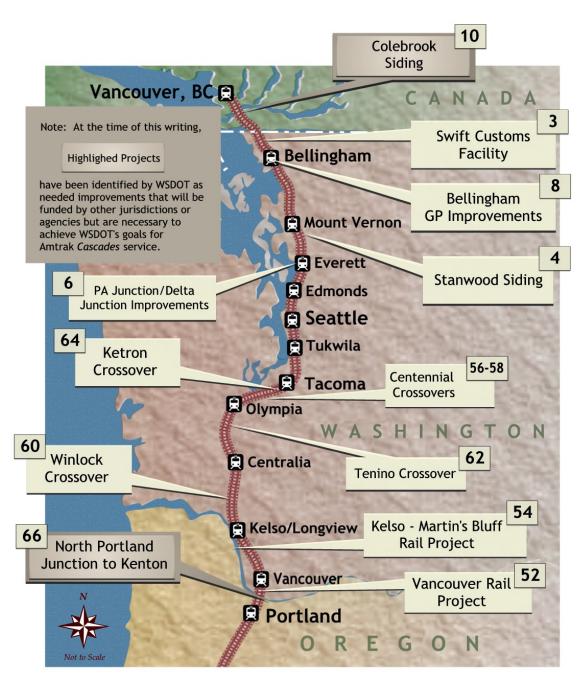


Exhibit 2-5
Timetable C: Location of Project Improvements

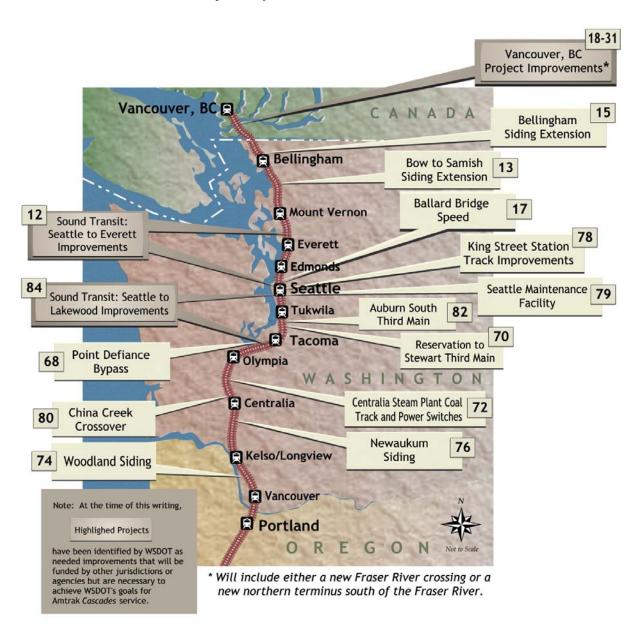


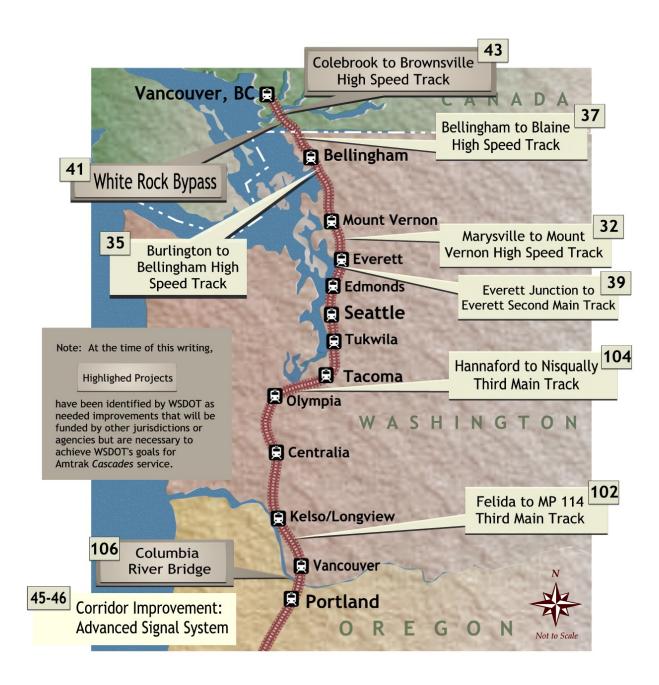
Exhibit 2-6 Timetable D: Location of Project Improvements



Exhibit 2-7
Timetable E: Location of Project Improvements



Exhibit 2-8
Timetable F: Location of Project Improvements





# **Appendices**

Appendix A:	Capital Cost Estimates Worksheets	

	UNITS	UNIT COST	OLIANTITY TO	OTAL	COMMENTS
EARTHWORK	UNITS	UNIT COST	QUANTITY TO	JIAL	COMMENTS
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 General Excavation *	CY	\$20 \$15	\$		Includes close borrow - numerous estimates numerous recent project estimates
Subballast	CY	\$30	\$		numerous recent project estimates
Erosion Controls	LS	ΨΟΟ	\$		numerous recent project estimates
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 EA	\$35,000 \$10,000	\$		
Remove Existing Crossover Relocate Existing Crossover	EA	\$70,000	\$		
Relocate Existing Crossover	LA	\$70,000	\$		
Turnouts		1	ĮΨ		
Split Point Derail	EA	\$45,000	\$	-	
#9	EA	\$110,000	\$	-	
#11	EA	\$120,000	\$	-	
#15	EA	\$142,000	\$	-	
#20	EA	\$168,000	\$	-	
#24	EA EA	\$178,000 \$360,000	\$	-	
#48	EA	\$500,000	\$		
Crossovers		ψ300,000	Ψ		
#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 Bridges	EA	\$1,010,000	\$		
< 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		1	Ψ		
Major Culverts (> 36" Diameter)	LF	\$600	\$	-	
Minor Culverts (< 36" Diameter)	LF	\$100	\$	-	
,			\$	-	
Other Drainage	LS		\$	-	
Retaining Walls					<del>-</del>
C.I.P.	SF	\$75	\$	-	
Soldier Pile < 20'	SF	\$75	\$	-	
Soldier Pile w/ Tie Back > 20' Soil Nail	SF SF	\$100 \$55	\$	-	
Soli Nali	- 31	φυυ	\$		
Station Platform	LS	\$2,500,000	\$	-	
		<del>+-,-30,000</del>	\$	-	
			\$	-	
ROADWAY					
Roadway Construction	SY	\$60	\$	-	
At-Grade Crossing	75	<b>#000</b>	1 4		T
Concrete Crossing Panels Installed Urban Major Crossing Approaches	TF SY	\$800 \$75	\$		
Urban Minor Crossing Approaches	SY	\$75 \$75	\$		
Rural Major Crossing Approaches	SY	\$75	\$	-	
Rural Minor Crossing Approaches	SY	\$75	\$	-	
<u> </u>			\$	-	
				-	
Grade-Separation Crossing			\$	-	
Bridge	SF	\$150			Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving)	SY	\$50	\$	-	Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall	SY SF	\$50 \$40	\$	-	Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Ernbankment (fill)	SY SF CY	\$50 \$40 \$25	\$ \$ \$	-	Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall	SY SF	\$50 \$40	\$ \$ \$	-	Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Embankment (fill) Misc. (non-typical per project)	SY SF CY	\$50 \$40 \$25	\$ \$ \$	- - -	Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Embankment (fill) Misc. (non-typical per project)  Crossing Signals	SY SF CY	\$50 \$40 \$25	\$ \$ \$ \$ \$	- - -	Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Embankment (fill) Misc. (non-typical per project)	SY SF CY LS	\$50 \$40 \$25 \$1	\$ \$ \$	- - -	Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Embankment (fill) Misc. (non-typical per project)  Crossing Signals Upgrade Signal - Barrier Gates New Signal	SY SF CY LS	\$50 \$40 \$25 \$1 \$200,000	\$ \$ \$ \$ \$	- - - -	Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Embankment (fill) Misc. (non-typical per project)  Crossing Signals Upgrade Signal - Barrier Gates New Signal	SY SF CY LS	\$50 \$40 \$25 \$1 \$200,000 \$250,000	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	- - - - -	Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Embankment (fill) Misc. (non-typical per project)  Crossing Signals Upgrade Signal - Barrier Gates New Signal  RR SIGNALS Per P.O. T.O.	SY SF CY LS EA EA	\$50 \$40 \$25 \$1 \$200,000 \$250,000	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Embankment (fill) Misc. (non-typical per project)  Crossing Signals Upgrade Signal - Barrier Gates New Signal  RR SIGNALS Per P.O. T.O. Per Mile	SY SF CY LS EA EA	\$50 \$40 \$25 \$1 \$200,000 \$250,000 \$250,000 \$750,000	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Embankment (fill) Misc. (non-typical per project)  Crossing Signals Upgrade Signal - Barrier Gates New Signal  RR SIGNALS Per P.O. T.O.	SY SF CY LS EA EA	\$50 \$40 \$25 \$1 \$200,000 \$250,000	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Embankment (fill) Misc. (non-typical per project)  Crossing Signals Upgrade Signal - Barrier Gates New Signal  RR SIGNALS Per P.O. T.O. Per Mile Electric Locks	SY SF CY LS EA EA	\$50 \$40 \$25 \$1 \$200,000 \$250,000 \$250,000 \$750,000	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Embankment (fill) Misc. (non-typical per project)  Crossing Signals Upgrade Signal - Barrier Gates New Signal  RR SIGNALS Per P.O. T.O. Per Mile Electric Locks  UTILITY RELOCATION/ADJUSTMENT	SY SF CY LS  EA EA MI EA	\$50 \$40 \$25 \$1 \$200,000 \$250,000 \$250,000 \$750,000 \$25,000	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Embankment (fill) Misc. (non-typical per project)  Crossing Signals Upgrade Signal - Barrier Gates New Signal  RR SIGNALS Per P.O. T.O. Per Mile Electric Locks	SY SF CY LS EA EA	\$50 \$40 \$25 \$1 \$200,000 \$250,000 \$250,000 \$750,000	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		Per Wayne Short, due higher mat'l costs and bridge type uncertainties

Miscellaneous	LS	\$1		\$ -	
				\$ -	
CONTINGENCIES (30%)	LS		30%	\$ -	
'-		CONSTRUC	CTION 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

 $<sup>^{*}</sup>$  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

CHMORY	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
THWORK	1	T 04	1	•	
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		\$ -	
				\$ -	
				\$ -	
K	L.	L	L	· ·	
Track Construction					
	TE	C4.40		•	1
New Track	TF	\$140		\$ -	
Rehab Track	TF	\$100		\$ -	
Yard Track	TF	\$125		\$ -	
Lineover Track	TF	\$25		\$ -	
		7-7		\$ -	
Track/Turnout Removal/Relocation			<u> </u>	Ψ	
	TE	<b>C40</b>	ı	<b>¢</b>	1
Remove Existing Track	TF	\$10	1	-	1
Relocate Existing Track	TF	\$100		\$ -	ļ
Remove Existing Turnout	EA	\$5,000	<u> </u>	\$ -	<u> </u>
Relocate Existing Turnout	EA	\$35,000		\$ -	
Remove Existing Crossover	EA	\$10,000		\$ -	
Relocate Existing Crossover	EA	\$70,000		\$ -	<del>                                     </del>
Nelocate Existing Crossover	EA	φ/υ,υυυ	ļ		+
		1		\$ -	
Turnouts					
Split Point Derail	EA	\$45,000		\$ -	]
#9	EA	\$110,000		\$ -	
#11	EA	\$120,000		\$ -	1
#15	EA	\$142,000		\$ -	
#20	EA	\$168,000		\$ -	
#24	EA	\$178,000		\$ -	
#33	EA	\$360,000		\$ -	
#48	EA	\$500,000		\$ -	
Crossovers		1	1	•	
#9	EA	\$230,000		\$ -	1
#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	LA	ψ1,010,000		-	
	TE	<b>#</b> F 000	1	•	1
< 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		\$ -	<u> </u>
	TF	+ -/	<b> </b>		+
> 160' TRT		\$30,000		\$ -	<del>                                     </del>
Remove Existing Bridge	TF	\$500	ļ	\$ -	
			<u> </u>	\$ -	<u> </u>
				\$ -	
Culvert Crossings	•				
Major Culverts (> 36" Diameter)	LF	\$600		\$ -	
Minor Culverts (< 36" Diameter)	LF				<del> </del>
wind Curverts (< 30 Diameter)	LF.	\$100		\$ -	<del>                                     </del>
		<u> </u>		\$ -	
Other Drainage	LS	\$0	<u> </u>	\$ -	
Retaining Walls		-			
C.I.P.	SF	\$75		\$ -	
Soldier Pile < 20'	SF				+
		\$75		-	<del> </del>
Soldier Pile w/ Tie Back > 20'	SF	\$100		\$ -	
Soil Nail	SF	\$55		\$ -	
				\$ -	
Station Platform	LS	\$2,500,000		\$ -	
		ψ <u>_</u> ,σσσ,σσσ		\$ -	1
					+
				-	<u> </u>
DWAY					
Roadway Construction	SY	\$60		\$ -	]
At-Grade Crossing			•		•
Concrete Crossing Panels Installed	TF	\$800		\$ -	
					<del> </del>
Urban Major Crossing Approaches	SY	\$75		\$ -	
Urban Minor Crossing Approaches	SY	\$75		\$ -	
Rural Major Crossing Approaches	SY	\$75		\$ -	
	SY	\$75		\$ -	
Rural Minor Crossing Approaches					·
Rural Minor Crossing Approaches	0.	* -		\$ -	

### 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%	\$ -	
	•	CONSTRUC	CTION TOTAL	\$ -	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	\$ -	
Wetland Compensation	AC	\$0		\$ -	
	•		SUBTOTAL	\$ -	
ENGINEERING/ADMINISTRATION (7%)	LS		7%	\$ -	
CONSTRUCTION MANAGEMENT (6%)	LS		6%	\$ -	
RIGHT OF WAY				<u>*</u>	
Undeveloped	AC	\$20,000		\$ -	
Residential	AC	\$100,000		\$ -	
Commercial	AC	\$250,000		\$ -	
Industrial	AC	\$350,000		\$ -	
		,,		\$ -	
TAX (8.2%)			8.2%	\$ -	

TOTAL \$

Assumptions: General Layout shown on track charts

(MP 5.62 to MP 10.01)

Track Miles 4.39

\$ / mile

Title

UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS

<sup>\*</sup> 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)

HWORK	UNITS	UNIT COST	QUANTITY		TOTAL	COMMENTS
Clear & Grub	AC	\$4,000		\$	_	
Common Excavation	CY	\$10	<del> </del>	\$	-	
Rock Excavation	CY	\$50	<b>†</b>	\$	-	
Embankment	CY	\$20	<del> </del>	\$	-	
General Excavation *	CY	\$15	31500	\$	472,500	
Subballast	CY	\$30	31300	\$	472,300	
Erosion Controls	LS	\$0		\$	-	
	AC	\$2,500		\$	-	
Seeding Place Topsoil	CY	\$2,500		\$	-	
Tunnel	MI	\$0		\$	-	
					-	
V			<u> </u>	\$	-	
K						
Track Construction		1 0110	1=00	Τ.	202.222	
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			1	1 .		
Remove Existing Track	TF	\$10	ļ	\$	-	
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		\$	-	
<u> </u>				\$	-	
Turnouts		•	•			
Split Point Derail	EA	\$45,000		\$	-	
#9	EA	\$110,000	1	\$	-	
#11	EA	\$120,000	0	\$	-	
#15	EA	\$142,000		\$	-	
#20	EA	\$168,000	1	\$	168,000	
#24	EA	\$178,000	<del>'</del>	\$	100,000	
#33	EA	\$360,000		\$	-	
#48	EA	\$500,000		\$	-	
Crossovers	LA	φ300,000	<u> </u>	Ψ		
	EA	\$220,000	1	\$	_	
#9		\$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	l	\$	-	
Bridges		1	T	Т.		
< 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	
		1		\$	-	
Other Drainage	LS	\$0	1	\$	_	
Retaining Walls		ΨΟ	1	ıΨ		
C.I.P.	SF	\$75		\$	_	
Soldier Pile < 20'	SF	\$75	<u> </u>	\$	-	
Soldier Pile < 20 Soldier Pile w/ Tie Back > 20'	SF	\$100	<del> </del>	\$	-	
Soil Nail	SF		<del> </del>	\$	+	
JUII INdii	) SF	\$55	-		-	
Station Diations	10	<b>#0.500.000</b>	1	\$	-	
Station Platform	LS	\$2,500,000	<del>                                     </del>	\$	-	
		1	-	\$	-	
NA/AN/			L	\$	-	
WAY			1			
Roadway Construction	SY	\$60	<u> </u>	\$	-	
At-Grade Crossing						
Concrete Crossing Panels Installed	TF	\$800	240	\$	192,000	MP 65.60°; MP 66.06°°; MP 67
Urban Major Crossing Approaches	SY	\$75		\$	-	
Urban Minor Crossing Approaches	SY	\$75	1400	\$	105,000	Blackburn & Pacific
	SY	\$75	1	\$	-	
Rural Major Crossing Approaches	31	Ψίο				
Rural Major Crossing Approaches Rural Minor Crossing Approaches	SY	\$75		\$	-	

# 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	° - Upgraded signals
New Signal	EA	\$250,000	1	\$ 250,000	<sup>∞</sup> - 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	
		CONSTRUC	CTION 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

 $<sup>^{\</sup>star}$  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	LS	\$13,800,000 (2006) *	1	\$13,800,000
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.

st 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
HWORK		•			
Clear & Grub	AC	\$4,000		\$ -	
Common Excavation	CY	\$10		\$ -	
Rock Excavation	CY	\$50		\$ -	
Embankment	CY	\$20		\$ -	
General Excavation *	CY	\$15	45004		
			45091	\$ 676,368	1
Subballast	CY	\$30		\$ -	
Erosion Controls	LS	\$0		\$ -	
Seeding	AC	\$2,500		\$ -	
Place Topsoil	CY	\$25		-	
Tunnel	MI	\$0		\$ -	
				\$ -	
				\$ -	
К				Ι Ψ	
Track Construction					
	TE	C4.40	0440	I & 004.00	1
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	1
Relocate Existing Track	TF	\$100	555	\$ 5,500	1
Demove Existing Transmit			+		+
Remove Existing Turnout	EA	\$5,000	1	\$ -	1
					Move south siding switch 0.1 mi r
Relocate Existing Turnout	EA	\$35,000	1	\$ 35,000	(clearance issue at adjacent OHI
Remove Existing Crossover	EA	\$10,000		\$ -	,
Relocate Existing Crossover	EA	\$70,000		\$ -	1
. 15/00010 Exicting 010000V61	LA	Ψ10,000	1	\$ -	1
T				φ -	
Turnouts		<b>*</b> 4 <b>=</b> 0 0 0		La	T
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	1
#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			\$ -	
	EA	\$1,010,000			
Bridges		1 .		Γ	1
< 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	1	\$ -	
> 160' TRT	TF	\$30,000	+	\$ -	+
			1		+
Remove Existing Bridge	TF	\$500	<b>_</b>	-	
		1	1	\$ -	
		<u></u>	<u> </u>	\$ -	
Culvert Crossings		<del></del>	<del></del>	<del></del>	<del></del>
Major Culverts (> 36" Diameter)	LF	\$600		\$ -	
Minor Culverts (< 36" Diameter)	LF	\$100	240	\$ 24,000	1
ioi Caivoito (< 00 Diametei)		Ψιου	270		1
Other Dreiners	1.0	<b>#</b> 0	+		+
Other Drainage	LS	\$0	I .	\$ -	1
Retaining Walls				Τ .	
C.I.P.	SF	\$75		\$ -	
Soldier Pile < 20'	SF	\$75		\$ -	
Soldier Pile w/ Tie Back > 20'	SF	\$100		\$ -	
Soil Nail	SF	\$55	1	\$ -	
Contrain	J1	ΨΟΟ	1		†
		00 55	1	\$ -	+
Station Platform	LS	\$2,500,000	1	\$ -	
			<u> </u>	\$ -	
				\$ -	
DWAY					
Roadway Construction	SY	\$60		-	
riodanay oonstruction	J 31	ψυυ	I .	. · ·	1
At-Grade Crossing		<b>#</b> 000	240	h 100 000	.T
At-Grade Crossing	-		. 240	\$ 192,000	MD 56 02 Lagan Dd (202nd Ct)0
Concrete Crossing Panels Installed	TF	\$800	240		7 MP 36.92 Lodan Rd 1/9/nd 51 %
Concrete Crossing Panels Installed Urban Major Crossing Approaches	SY	\$75		\$ -	57.42 Detting Rd. (300th St.)
Concrete Crossing Panels Installed Urban Major Crossing Approaches Urban Minor Crossing Approaches			1400		57.42 Detting Rd. (300th St.)
Concrete Crossing Panels Installed Urban Major Crossing Approaches	SY	\$75		\$ -	MP 56.92 Logan Rd. (292nd St.) <sup>00</sup> 57.42 Detting Rd. (300th St.) <sup>0</sup>

# **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	00 - 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	
		CONSTRU	CTION TOTAL	\$	6,981,250	
NVIRONMENTAL MITIGATION (20%)	LS		20%	\$	1,396,250	
Wetland Compensation	AC	\$0		\$	-	
		1	SUBTOTAL	•	8,377,500	
NGINEERING/ADMINISTRATION (7%)	LS		7%	\$	488,687	
ONSTRUCTION MANAGEMENT (6%)	LS		6%	\$	418,875	
RIGHT OF WAY			070	Ψ	110,010	
Undeveloped	AC	\$20.000		\$		
Residential	AC	\$100,000		\$	_	
Commercial	AC	\$250,000		\$	-	
Industrial	AC	\$350,000		\$	_	
	,.0	<b>\$000,000</b>		\$	_	
AX (8.2%)			8.2%	\$	572,462	
7.01 (012.70)			0.2 /0	Ψ	312,402	

		_	0.5	7 E2/
TOTA	և Ֆ	9	.85	7.524

Assumptions: Rehab Existing Siding Extend Siding

(MP 55.28 to MP 56.53) (MP 56.53 to MP 57.75) 1.25 1.22 2.47

\$3,990,901 / mile

<sup>\*</sup> 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)

HWORK	UNITS	UNIT COST	QUANTITY		TOTAL	COMMENTS
	1 40	<b>D</b> 4 000		Ι φ		
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		\$	-	
				\$	-	
				\$		
K						
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	Curvo roolianmenta
						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		\$	-	
	<del> </del>	+ - 0,000		\$	-	
Turnouts		i		ΙΨ	-	
	T	<b>045000</b>		Ι¢	1	
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	
	1	1		\$	-	
	+	+ +		\$	_	
Culvert Crossings	_1	_1		Ψ	-	
Culvert Crossings				Φ.	1	
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	ф-7 <i>г</i>		¢	1	
		\$75		\$	-	
Soldier Pile < 20'	SF	\$75		\$	-	
Soldier Pile w/ Tie Back > 20'	SF	\$100		\$	-	
Soil Nail	SF	\$55		\$	-	
	T			\$	-	
	LS	\$2,500,000		\$	-	
Station Platform	LO	Ψ2,300,000				
Station Platform		1		\$	-	
Station Platform		+		\$	-	
				IΨ		
DWAY						
DWAY	SY	\$60		\$	-	
DWAY Roadway Construction	SY	\$60				
DWAY Roadway Construction At-Grade Crossing		•	120	\$	-	
DWAY  Roadway Construction  At-Grade Crossing  Concrete Crossing Panels Installed	TF	\$800	120	\$		MP 7.89 Private Rd. <sup>∞</sup> ; MP 8.08 F
OWAY  Roadway Construction  At-Grade Crossing  Concrete Crossing Panels Installed  Urban Major Crossing Approaches	TF SY	\$800 \$75		\$ \$	96,000	
OWAY  Roadway Construction  At-Grade Crossing  Concrete Crossing Panels Installed  Urban Major Crossing Approaches  Urban Minor Crossing Approaches	TF SY SY	\$800 \$75 \$75	120	\$ \$	-	
POWAY  Roadway Construction  At-Grade Crossing  Concrete Crossing Panels Installed  Urban Major Crossing Approaches  Urban Minor Crossing Approaches  Rural Major Crossing Approaches	TF SY SY SY	\$800 \$75 \$75 \$75		\$   \$   \$   \$	96,000	MP 7.89 Private Rd. <sup>00</sup> ; MP 8.08 P Rd. <sup>00</sup> ; MP 8.16 Railroad Ave.
OWAY  Roadway Construction  At-Grade Crossing  Concrete Crossing Panels Installed  Urban Major Crossing Approaches  Urban Minor Crossing Approaches	TF SY SY	\$800 \$75 \$75		\$ \$	96,000	

### 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	00 - 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	
	•	CONSTRU	CTION 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		1		 .,,	
Undeveloped	AC	\$20,000	4	\$ 80,000	
Residential	AC	\$100,000		\$ -	
Commercial	AC	\$250,000		\$ -	
Industrial	AC	\$350,000		\$ -	
	1	,,,,,,,,		\$ -	
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

<sup>\*</sup> 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
THWORK				1.	
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		\$ -	
				\$ -	
				\$ -	
CK	ı			Ι Ψ	
Track Construction					
New Track	TF	\$140	1350	\$ 189,000	
Rehab Track	TF	\$100	1600	\$ 160,000	
Yard Track	TF	\$100	1000	\$ 100,000	
	TF	\$25			
Lineover Track	IF	<b>\$</b> ∠5			
Tuesda/Taumanat Demandal/Delegation				-	
Track/Turnout Removal/Relocation		1 4		T.	
Remove Existing Track	TF	\$10	1	-	
Relocate Existing Track	TF	\$100		\$ -	
Remove Existing Turnout	EA	\$5,000	3	\$ 15,000	
Relocate Existing Turnout	EA	\$35,000	<u> </u>	-	
Remove Existing Crossover	EA	\$10,000	1	\$ -	
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	1	\$ -	
#20	EA	\$336,000		\$ -	
#24	EA	\$355,000		\$ -	
#33	EA	\$730,000	1	\$ -	
#48	EA	\$1,010,000	+	\$ -	
Bridges	LA	μ,,στο,σσο	1		1
< 32' PRCT	TF	\$5,000		-	
32- 45' PRCT	TF		-		
		\$6,500 \$9.000	<del>                                     </del>		
45-80' IB	TF	4 - 7	1	-	
80-160' DPG	TF	\$20,000	1	\$ -	
80-160' TPG	TF	\$20,000	ļ	\$ -	
> 160' TRT	TF	\$30,000	1	-	
Remove Existing Bridge	TF	\$500	ļ	-	
				\$ -	
				\$ -	
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 File < 20'	SF	\$100	1	\$ -	
Soil Nail	SF	\$55		\$ -	
Jon Hull	Ji	ψυυ	1	\$ -	
Station Platform	LS	\$2,500,000	1	\$ -	
MANUAL FIRMANIA	LS	\$2,500,000	1		C D otrications
	LO	φειυ,υυυ			G-P structure
Demolition **				-	
Demolition **					
Demolition ** DWAY		<b>#</b> 22	1	•	
Demolition **  DWAY  Roadway Construction	SY	\$60		\$ -	
Demolition **  DWAY  Roadway Construction  At-Grade Crossing	•	•			
Demolition **  DWAY  Roadway Construction  At-Grade Crossing  Concrete Crossing Panels Installed	TF	\$800		\$ -	
Demolition **  DWAY  Roadway Construction  At-Grade Crossing  Concrete Crossing Panels Installed  Urban Major Crossing Approaches	TF SY	\$800 \$75		\$ -	
Demolition **  DWAY  Roadway Construction  At-Grade Crossing  Concrete Crossing Panels Installed  Urban Major Crossing Approaches  Urban Minor Crossing Approaches	TF SY SY	\$800 \$75 \$75		\$ - \$ - \$ -	
Demolition **  DWAY  Roadway Construction  At-Grade Crossing  Concrete Crossing Panels Installed  Urban Major Crossing Approaches  Urban Minor Crossing Approaches  Rural Major Crossing Approaches	TF SY SY SY	\$800 \$75 \$75 \$75		\$ - \$ - \$ - \$ -	
Demolition **  DWAY  Roadway Construction  At-Grade Crossing  Concrete Crossing Panels Installed  Urban Major Crossing Approaches  Urban Minor Crossing Approaches	TF SY SY	\$800 \$75 \$75		\$ - \$ - \$ -	

### 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	
		CONSTRUC	CTION TOTAL	\$ 1,613,300	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	\$ 322,660	
Wetland Compensation	AC	\$0		\$ -	
<u> </u>			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

<sup>\*</sup> 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

<sup>\*\*</sup> 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
HWORK					
Clear & Grub	AC	\$4,000		\$ -	
Common Excavation	CY	\$10		\$ -	
Rock Excavation	CY	\$50		\$ -	
Embankment	CY	\$20		\$ -	
General Excavation *	CY	\$15	70700	\$ 1,060,50	0
Subballast	CY	\$30		\$ -	
Erosion Controls	LS	\$0		\$ -	
Seeding	AC	\$2,500		\$ -	
Place Topsoil	CY	\$25		\$ -	
Tunnel	MI	\$0		\$ -	+
runner	IVII	ΦU		-	
				-	
K .					
Track Construction				•	T.
New Track	TF	\$140	10100	\$ 1,414,00	0
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		\$ -	<u> </u>
Remove Existing Turnout	EA	\$5,000		\$ -	+
Remove Existing Turnout  Relocate Existing Turnout	_				+
	EA	\$35,000		Ψ	
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	\$ 336,00	0
#24	EA	\$178,000	_	\$ -	<u> </u>
#33	EA	\$360,000		\$ -	
#48	EA	\$500,000		\$ -	
Crossovers	L/\	ψ500,000	<u> </u>	ĮΨ	
	ΓΛ	¢220,000	1	I \$ -	
#9	EA	\$230,000		Ψ	
#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		\$ -	<del> </del>
> 160' TRT	TF	\$30,000		\$ -	
Remove Existing Bridge	TF	\$500		\$ -	
Memore Existing Dridge	IF.	φυυυ	<b> </b>		+
		1		-	+
		1	<u> </u>	-	
Culvert Crossings		1	1	T a	- T
Major Culverts (> 36" Diameter)	LF	\$600	30	\$ 18,00	
Minor Culverts (< 36" Diameter)	LF	\$100	180	\$ 18,00	0
				\$ -	
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		\$ -	
- Con Hun	<del> </del>	ΨΟΟ		\$ -	+
Station Platform	LS	\$2,500,000		\$ -	
Station Flationii	LO	φ∠,500,000			+
		1		-	+
			L	-	
DWAY		1	1	1	
Roadway Construction	SY	\$60		\$ -	
At-Grade Crossing	<u> </u>				
Concrete Crossing Panels Installed	TF	\$800		\$ -	
Urban Major Crossing Approaches	SY	\$75		\$ -	
Urban Minor Crossing Approaches	SY	\$75		\$ -	+
CIDALI MILLOL DIDOSHIY APPIDADIES				\$ -	+
Rural Major Crossing Approaches	QV				
Rural Major Crossing Approaches	SY	\$75 \$75			
Rural Major Crossing Approaches Rural Minor Crossing Approaches	SY	\$75 \$75		\$ -	

# 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	
		CONSTRUC	CTION 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:** New Siding Track Track Miles 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

Estimate and description furnished by BNSF includes the following components:	LS	\$180,000,000 (2003)	1
CTC between Seattle and MP 8	LS	\$207,000,000 (2006) *	1
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

Commuter train platform track at Everett passenger station

and commuter equipment layover tracks

Everett Tunnel.

**UNIT COST** 

QUANTITY

<sup>\*</sup> 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
THWORK						
Clear & Grub	AC	\$4,000		\$	-	
Common Excavation	CY	\$10		\$	-	
Rock Excavation	CY	\$50	90000	\$	4,500,000	Widen rock cut at Windy Pt. MF (20' W x 40' H x 1000' L)
						Embankment along Samish Ba addition to 90,000 CY obtained blasting at Windy Pt.) and Chuc
Embankment	CY	\$20	165000	\$	3,300,000	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		\$	-	
				\$	-	
				\$	-	
CK						
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		\$	-	
	**	<del></del>		\$	_	
Track/Turnout Removal/Relocation	l.	1	I.	ıΨ		L
Remove Existing Track	TF	\$10		\$	-	
Relocate Existing Track	TF	\$100		\$		
	EA		2		10.000	
Remove Existing Turnout		\$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		+,	I	1 7		
#9	EA	\$230,000		\$	_	
#11	EA	\$250,000		\$	-	
#15	EA	\$285,000		\$	-	
#20	EA	\$336,000	1	\$	336,000	
		\$355,000	I		,	
#24	EA			\$	-	
#33	EA	\$730,000		\$	-	
#48	EA	\$1,010,000		\$	-	
Bridges		1 4-	1			
< 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		\$	-	
, , , , , , , , , , , , , , , , , , ,				\$	-	
		İ		\$	_	
Culvert Crossings	1	1		. *		1
Major Culverts (> 36" Diameter)	LF	\$600		\$	-	
Minor Culverts (< 36" Diameter)	LF	\$100	150	\$	15,000	
minor outvoits (< 50 Diameter)	<u> </u>	ψ100	100	\$	15,000	
Other Drainage	LS	\$0		\$		
	L LO	φυ	l .	μ	-	l
Retaining Walls		A-7.5	ı	Ι φ		<u> </u>
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		\$	-	
		İ		\$	-	
DWAY		1		, v		
Roadway Construction	SY	\$60		\$	-	
Roadway Construction Roadway Removal	SY		6500		97,500	MD 92 05 Chiralianus D-
Noadway NeillOVal	٥٢	\$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 80.92°; MP 81.21 S. Blanchard
Urban Major Crossing Approaches	SY	\$75		\$	-	Rd.º; MP 81.41 S. Legg Rd.º; MP 81.8
Urban Minor Crossing Approaches	SY	\$75	1400	\$	105,000	N. Legg Rd.⁰
Rural Major Crossing Approaches	SY	\$75		\$	-	
Rural Minor Crossing Approaches	SY	\$75	175	\$	13,125	Private GX MP 83.1200
				\$	-	
Grade-Separation Crossing						
Bridge	SF	\$150	36000	\$		MP 82.05 Chuckanut Dr Approx 48'
Roadway (earthwork & paving)	SY	\$50	6500	\$	325,000	750' replacement + 0.5mi new roadwa
MSE Wall	SF	\$40		\$	-	
Embankment (fill)	CY	\$25		\$	-	
Misc. (non-typical per project)	LS	\$1		\$	-	
						MP 82.05 Chuckanut Dr Approx 35'
Demo existing bridge	SF	\$30	32375	\$	971,250	925' existing
Crossing Signals						
Upgrade Signal - Barrier Gates	EA	\$200,000	4	\$	800,000	<ul> <li>Upgraded signals</li> </ul>
New Signal	EA	\$250,000	1	\$	250,000	00 - New signals
				\$	-	
IGNALS						
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		\$	-	
				\$	-	
TY RELOCATION/ADJUSTMENT						
Transmission Lines	LS	\$1		\$	-	
Fiber Optic Lines	LF	\$95		\$	-	
Miscellaneous	LS	\$1		\$	-	
				\$	-	
TINGENCIES (30%)	LS		30%	\$	8,262,271	
<u> </u>	•	CONSTRU	CTION TOTAL	\$	35,803,174	
RONMENTAL MITIGATION (20%)	LS		20%	\$	7,160,635	
Wetland Compensation	AC	\$0		\$	-	
			SUBTOTAL		42,963,809	
NEERING/ADMINISTRATION (7%)	LS		7%	\$	2,506,222	
STRUCTION MANAGEMENT (6%)	LS		6%	\$	2,148,190	
T OF WAY			070	ΙΨ	2,110,100	
Undeveloped	AC	\$20,000		\$	-	
Residential	AC	\$100,000		\$	_	
Commercial	AC	\$250,000		\$	-	
Industrial	AC	\$350,000		\$	_	
	7.0	#000,000		\$	_	
(8.2%)			8.2%	\$	2,935,860	

TOTAL \$ 50,554,082

Assumptions: Rehab Existing Siding Extend Siding

(MP 83.53 to MP 82.76) (MP 82.76 to MP 80.88)

7 7 1.88 2.65

\$19,077,012 / mile

<sup>\*</sup> 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
HWORK						
Clear & Grub	AC	\$4,000		\$	-	
Common Excavation	CY	\$10		\$	-	
Back Francisco	0)/	<b>\$50</b>	500000	Φ.	00 400 000	Assume continuous 10' W x10'
Rock Excavation	CY	\$50	528000	\$	26,400,000	section from MP 93.8 - MP 94
Embankment		\$20	101270	\$	- 4 F40 0F6	
General Excavation * Subballast	CY	\$15	101270	\$	1,519,056	
Erosion Controls	LS	\$30 \$0		\$		
Seeding	AC	\$2,500		\$	<u>-</u>	
Place Topsoil	CY	\$2,300		\$		
Tunnel	MI	\$0		\$	<u>-</u>	
Turner	IVII	φυ		\$		
				\$		
K	I			ΙΨ		
Track Construction						
New Track	TF	\$140	14467	\$	2,025,408	
Rehab Track	TF	\$100	10190	\$	1,019,040	
Yard Track	TF	\$125	10130	\$	-	
Lineover Track	TF	\$25		\$	-	
Lilleovel Hack	- 11	φ23		\$		
Track/Turnout Removal/Relocation				Ψ	<u> </u>	
	TF	¢10	I	\$		
Remove Existing Track Relocate Existing Track	TF	\$10 \$100			<del>-</del>	
Renove Existing Track  Remove Existing Turnout		\$100 \$5.000	2	\$		
	EA	+-,	2	\$	10,000	
Relocate Existing Turnout	EA	\$35,000 \$10,000		\$	-	
Remove Existing Crossover	EA			\$	-	
Relocate Existing Crossover	EA	\$70,000		\$	-	
<del>-</del>				\$	-	
Turnouts		<b>A</b> -=	ı	1.0		
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			1			
#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						
						MP 93.57 1902 WPT; MP 98.30
< 32' PRCT	TF	\$5,000	192	\$	960,000	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		\$	-	
<u> </u>				\$	-	
				\$	-	
Culvert Crossings		•				
Major Culverts (> 36" Diameter)	LF	\$600		\$	-	
Minor Culverts (< 36" Diameter)	LF	\$100	180	\$	18,000	
or Garrons (< 60 Diameter)		Ψισσ	100	\$	-	
Other Drainage	LS	\$0	<u> </u>	\$		
Retaining Walls		_ ψυ	1	Ψ		
C.I.P.	SF	\$75		\$	-	
Soldier Pile < 20'	SF	\$75		\$		
Soldier File < 20 Soldier Pile w/ Tie Back > 20'	SF	\$100		\$	-	
Soil Nail	SF	\$55		\$		
Goil Naii	JF.	φυυ	<del> </del>	\$	<u> </u>	
Station Platform	1.0	\$2.500.000				
Station Platform	LS	\$2,500,000		\$	-	
		+		\$	-	
NA/A V			<u> </u>	\$	-	
OWAY		1 405	1	1.0		
Roadway Construction	SY	\$60	<u> </u>	\$	-	
At-Grade Crossing		1 4		1 #		[MD 00 00 D :
Concrete Crossing Panels Installed	TF	\$800	270	\$		MP 93.60 Private Rd.00; MP 96.35
Urban Major Crossing Approaches	SY	\$75		\$	-	Memorial Rd.º; MP 96.65 Laur
Urban Minor Crossing Approaches	SY	\$75	1575	\$	118,125	Georgia PC°; MP 97.02°; MP 97.
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
Roadway (earthwork & paving)	SY	\$50	11400	\$	570,000	Boulevard Park access road, MP 96.24
MSE Wall	SF	\$40		\$	-	Pine St., MP 96.33 Cornwall St.)
Embankment (fill)	CY	\$25	56900	\$	1,422,500	Fine St., WF 90.33 Contiwali St.)
Misc. (non-typical per project)	LS	\$1		\$	-	
				\$	-	
Crossing Signals						
Upgrade Signal - Barrier Gates	EA	\$200,000	3	\$	600,000	<sup>0</sup> - 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	
						3.7 Miles of New Siding & 4.1 Miles of
Per Mile	MI	\$750,000	7.8	\$	5,850,000	CTC on ML
Electric Locks	EA	\$25,000		\$	-	
				\$	<u> </u>	
UTILITY RELOCATION/ADJUSTMENT	1	1 .	1			
Transmission Lines	LS	\$1		\$	-	
Fiber Optic Lines	LF	\$95		\$	-	
Miscellaneous	LS	\$1		\$	-	
			222/	\$	-	
CONTINGENCIES (30%)	LS		30%	\$	16,466,139	
		CONSTRU	CTION TOTAL	_	71,353,268	
ENVIRONMENTAL MITIGATION (20%)	LS		20%	\$	14,270,654	
Wetland Compensation	AC	\$0	L	\$	<u> </u>	
			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	AC	\$100,000	15.5	\$	1,545,455	Residential items
Commercial	AC	\$250,000		\$	-	
Industrial	AC	\$350,000		\$	-	
[=av (a av)				\$		
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

<sup>\*</sup> 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.

<sup>\*</sup> 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 2000. e increase i

# Willingdon Junction (MP 151.8)

HWORK	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
	1 40	¢4.000		l ¢	
Clear & Grub	AC	\$4,000	1	-	<del> </del>
Common Excavation	CY	\$10	1	-	<del> </del>
Rock Excavation	CY	\$50	1	-	<del> </del>
Embankment	CY	\$20	1	-	+
General Excavation *	CY	\$15	-	\$ -	
Subballast	CY	\$30	<u> </u>	-	
Erosion Controls	LS	\$0	<u> </u>	-	
Seeding	AC	\$2,500		\$ -	
Place Topsoil	CY	\$25		\$ -	
Tunnel	MI	\$0		\$ -	
				\$ -	
				\$ -	
К					
Track Construction				1	
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	1	\$ -	
and and a			1	\$ -	
Turnouts	ı	1	•	1 *	ı
Split Point Derail	EA	\$45,000		-	
#9	EA	\$110,000		\$ -	†
#3 #11	EA	\$120,000	<u> </u>	\$ -	
#15	EA	\$120,000	1	\$ -	1
#20	EA	\$142,000	<del> </del>	\$ -	+
#24	EA	\$168,000	+	\$ -	
#33	EA	\$360,000		\$ -	
#48	EA	\$500,000		\$ -	
Crossovers	LA	ψ500,000		Ψ -	
#9	EA	\$230,000		\$ -	
#11	EA	\$250,000		\$ -	
#15	EA	\$285,000		\$ -	
#20	EA	\$336,000		\$ -	
#24	EA	\$355,000		\$ -	
#33	EA	\$730,000		\$ -	
#33 #48	EA	\$1,010,000		\$ -	
Bridges	LA	\$1,010,000		φ -	
< 32' PRCT	TF	\$5,000		-	
32- 45' PRCT	TF	\$6,500		\$ -	
45-80' IB	TF	\$6,500	-		
			+	•	
80-160' DPG	TF	\$20,000	+	-	+
80-160' TPG	TF	\$20,000	+	-	+
> 160' TRT	TF	\$30,000	1	-	1
Remove Existing Bridge	TF	\$500	1	-	<del> </del>
	-		-	-	
			L	-	
Culvert Crossings		1 4			
Major Culverts (> 36" Diameter)	LF	\$600	<b></b>	\$ -	
Minor Culverts (< 36" Diameter)	LF	\$100	1	-	
			ļ	\$ -	
Other Drainage	LS	\$0	1	\$ -	
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		\$ -	
				\$ -	
				\$ -	
DWAY					•
Roadway Construction	SY	\$60		-	
At-Grade Crossing		+ + + + + + + + + + + + + + + + + + + +		ļ <del>T</del>	1
Concrete Crossing Panels Installed	TF	\$800		-	
Urban Major Crossing Approaches	SY	\$75	1	\$ -	1
Urban Minor Crossing Approaches	SY	\$75 \$75	+	\$ -	+
Rural Major Crossing Approaches	SY	\$75 \$75	+	\$ -	+
			-	•	
Pural Minor Crossing Approaches				1 \$ -	Ť.
Rural Minor Crossing Approaches	SY	\$75		\$ -	

### 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	
		CONSTRUC	CTION 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.

<sup>\*</sup> 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

<sup>\*\*</sup> 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)**

HWORK	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Clear & Grub	AC	\$4,000		\$ -	
Common Excavation	CY	\$4,000 \$10		\$ -	
Rock Excavation	CY	\$10		\$ -	<u> </u>
Embankment	CY	\$20		\$ -	<u> </u>
General Excavation *	CY	\$20 \$15	26981	\$ 404,712	<u> </u>
Subballast	CY		20901		
		\$30		-	
Erosion Controls	LS	\$0		\$ -	
Seeding	AC	\$2,500		\$ -	
Place Topsoil	CY	\$25		\$ -	
Tunnel	MI	\$0		\$ -	
				\$ -	
				\$ -	
K .					
Track Construction					T
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		\$ -	
<b>3</b>		, , , , , , , ,		\$ -	
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	LA	ψ500,000		Ψ -	
#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	EA	\$1,010,000		Φ -	
< 32' PRCT	TF	\$5,000		\$ -	I
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		\$ -	
				\$ -	
	1			\$ -	
Culvert Crossings		,			T
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		\$ -	
-	1	1		\$ -	
Station Platform	LS	\$2,500,000		\$ -	
		<del>\$2,000,000</del>		\$ -	
		1		\$ -	
DWAY	1	1		· · · · · · · · · · · · · · · · · · ·	
Roadway Construction	SY	\$60		\$ -	
At-Grade Crossing	31	ψου		Ψ -	!
	TF	\$800		¢	T
Concrete Crossing Panels Installed				\$ -	
Urban Major Crossing Approaches	SY	\$75		-	
Urban Minor Crossing Approaches	SY	\$75		\$ -	
Rural Major Crossing Approaches	SY	\$75		\$ -	
Rural Minor Crossing Approaches	SY	\$75		\$ - \$ -	
				\$ -	•

### CN Junction (MP 154.5 to MP 155.3)

UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
SF	\$150		\$ -	
SY	\$50		\$ -	
SF	\$40		\$ -	
CY	\$25		\$ -	
LS	\$1		\$ -	
			\$ -	
EA	\$200,000		\$ -	
EA	\$250,000		\$ -	
			\$ -	
EA	\$250,000	3	\$ 750,000	
MI	\$750,000	2.0	\$ 1,500,000	
EA	\$25,000		\$ -	
			\$ -	
•				
LS	\$1		\$ -	
LF	\$95		\$ -	
LS	\$1		\$ -	
			\$ -	
LS		30%	\$ 1,030,298	
	CONSTRUC	CTION TOTAL		
LS		20%	. , ,	
AC	\$0			
1	7.	SUBTOTAL	*	
LS			1 -, ,	
		370	Ψ 201,010	
AC	\$20,000		\$ -	
7.0	2000,000			
		8 2%		<del> </del>
	SF SY SF CY LS  EA EA EA LS  LS  LS  LS	SF \$150 SY \$50 SF \$40 CY \$25 LS \$1  EA \$200,000 EA \$250,000 MI \$750,000 EA \$25,000  LS \$1  LF \$95 LS \$1  LS \$1  LF \$95 LS \$1  AC \$0  AC \$20,000  AC \$100,000  AC \$250,000	SF \$150 SY \$50 SF \$440 CY \$25 LS \$1  EA \$200,000 EA \$250,000  EA \$250,000  EA \$25,000  LS \$1  LS \$1  LF \$95 LS \$1  LS \$1	SF \$150 \$ - SY \$50 \$ - SF \$40 \$ - CY \$25 \$ - LS \$1 \$ - EA \$200,000 \$ - EA \$250,000 \$ - EA \$250,000 \$ - EA \$25,000 \$ -  EA \$25,000 \$ -  EA \$25,000 \$ -  EA \$25,000 \$ -  EA \$25,000 \$ -  EA \$25,000 \$ -  EA \$25,000 \$ -  SUBTOTAL \$ 4,464,626 LS \$0 \$0 \$ -  SUBTOTAL \$ 5,357,552 LS \$7% \$ 312,524 LS \$6% \$ 267,878  AC \$20,000 \$ - AC \$250,000 \$ - AC \$350,000 \$ - AC \$250,000 \$ - AC \$250,000 \$ - AC \$250,000 \$ - AC \$250,000 \$ - AC \$350,000 \$

6,304,052 TOTAL

Track Miles

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

<sup>\*</sup> 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)

HWORK	UNITS	UNIT COST	QUANTITY	-	TOTAL	COMMENTS
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	04000	\$	-	
Erosion Controls	LS	\$0		\$	-	
Seeding	AC	\$2,500		\$	_	
Place Topsoil	CY	\$25		\$	-	
Tunnel	MI	\$0		\$	-	
Turrier	IVII	ΨΟ		\$	-	
				\$	_	
K		-1	l	ΙΨ		
Track Construction						
New Track	TF	\$140	4937	\$	691,180	
Rehab Track	TF	\$100	4937	\$	-	
Yard Track	TF	\$125		\$	_	
Lineover Track	TF	\$25		\$	-	
Lineover frack	- ''	ΨΖΟ		\$	-	
Track/Turnout Removal/Relocation		-1	l .	ΙΨ		
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	'	\$	5,000	
Remove Existing Turnout  Remove Existing Crossover	EA	\$10,000		\$		
Relocate Existing Crossover	EA	\$70,000		\$	-	
Notice Existing Clussovel	LA	Ψ10,000		\$	-	
Turnouts	<u> </u>	1	I	Ψ	-	
Split Point Derail	EA	\$45,000		\$	-	
#9	EA	\$110,000		\$		
#11	EA	\$120,000		\$	-	
#15	EA	\$142,000		\$	<u> </u>	
#13	EA	\$168,000	2	\$	336,000	
#24	EA	\$178,000		\$	-	
#33	EA	\$360,000		\$	-	
#48	EA	\$500,000		\$	-	
Crossovers		φοσο,σσσ	I	ĮΨ	ı	
#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		\$	-	
				\$	-	
		1		\$	-	
Culvert Crossings		•			<u> </u>	
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		\$	-	
				\$	-	
				\$	-	
WAY	·					
Roadway Construction	SY	\$60		\$	-	
At-Grade Crossing	•	•	•		•	
Concrete Crossing Panels Installed	TF	\$800	30	\$	24,000	
Urban Major Crossing Approaches	SY	\$75		\$	-	MP 153.94 Grandview S
Urban Minor Crossing Approaches	SY	\$75	175	\$	13,125	
Rural Major Crossing Approaches	SY	\$75		\$	-	
Rural Minor Crossing Approaches	SY	\$75		\$	-	

### 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		\$ -	
				\$ -	
					Changed Contingency amount from
					30% to 40% to account for poor soil
CONTINGENCIES (40%)	LS		40%	\$ 2,606,276	conditions.
		CONSTRU	CTION 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:

One New Track

(MP 153.8 to MP 155.5) 4,937' but only build of new track

Track Miles 0.94 \$13,775,074 / mile

<sup>\*</sup> 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)

HWORK	UNITS	0.1.1 0001	QUANTITY	TOTAL	COMMENTS
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		\$ -	1
Place Topsoil	CY	\$2,300		\$ -	
Tunnel	MI	\$0		\$ -	
Turmer	IVII	Φ0		<u> </u>	
				\$ - \$ -	
K		1		<u> </u>	
Track Construction	TE	C4.40	I	Φ.	T
New Track	TF	\$140		-	
Rehab Track	TF	\$100		\$ -	
Yard Track	TF	\$125		\$ -	
Lineover Track	TF	\$25		\$ -	
				\$ -	
Track/Turnout Removal/Relocation			ı		
Remove Existing Track	TF	\$10		\$ -	1
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		\$ -	<u>†                                      </u>
Crossovers		, 4000,000	1	T	
#9	EA	\$230,000		\$ -	
#11	EA	\$250,000		\$ -	
#15	EA	\$285,000		\$ -	
#10	EA	\$336,000		\$ -	
#24					
	EA	\$355,000		\$ -	
#33	EA	\$730,000		-	<u> </u>
#48	EA	\$1,010,000	l	\$ -	l .
Bridges	TE	<b>¢</b> E 000	I	¢	1
< 32' PRCT	TF	\$5,000		-	<del> </del>
32- 45' PRCT	TF	\$6,500	ļ	\$ -	
45-80' IB	TF	\$9,000	ļ	\$ -	
80-160' DPG	TF	\$20,000		\$ -	1
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 File v/ Tie Back > 20'	SF	\$100		\$ -	
Soil Nail	SF	\$55		\$ -	
JOH I VAII	JI	ψυυ		\$ -	
Station Platform	LS	\$2,500,000		\$ -	1
GIGLIOH FIGUUMI	LO	φ∠,300,000		•	<del> </del>
	+	+			+
DWAY				-	
	0.4	000	I	•	
Roadway Construction	SY	\$60	<u> </u>	-	<u> </u>
At-Grade Crossing		1 6	ı		
Concrete Crossing Panels Installed	TF	\$800		\$ -	1
Urban Major Crossing Approaches	SY	\$75		\$ -	
Urban Minor Crossing Approaches	SY	\$75		\$ -	
Rural Major Crossing Approaches	SY	\$75		\$ -	
	SY	\$75		\$ -	
Rural Minor Crossing Approaches		Ψιο			

# Vancouver Terminal Control System (MP 156.0)

ITS
y amount from
int for poor soil
ns.

TOTAL \$ 6,918,800

#### Assumptions:

<sup>\*</sup> 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	ТОТ	AL	COMMENTS
HWORK						
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	72112	\$	-	
Erosion Controls	LS	\$0		\$	_	
Seeding	AC	\$2,500		\$	-	
Place Topsoil	CY	\$25		\$	-	
Tunnel	MI	\$0		\$	-	
				\$	-	
				\$	-	
:K						
Track Construction						
New Track	TF	\$140	10349	\$	1,448,832	
Rehab Track	TF	\$100		\$	-	
Yard Track	TF	\$125		\$	-	
Lineover Track	TF	\$25		\$	-	
Lineover frack	<u> </u>	<b>Φ</b> 23				
T 1 /T 1 /D 1 /D 1				\$	-	
Track/Turnout Removal/Relocation			ı	١.	-	
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		\$	-	
TITION DATE OF THE PROPERTY OF		ψ. 5,000		\$	-	
Turnouts		1	I	ĮΨ	-	
		¢45,000	I	ı e	1	
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		\$	- 1	
#11	EA	\$250,000		\$	_	
#15	EA	\$285,000				
				\$		MD 440.0
#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	\$50,000		\$	-	
Montove Existing Dridge	- IF	φυσσ			-	
				\$		
0.1			<u> </u>	\$	-	
Culvert Crossings			T			
Major Culverts (> 36" Diameter)	LF	\$600	60	\$	36,000	
Minor Culverts (< 36" Diameter)	LF	\$100	120	\$	12,000	
				\$	-	
Other Drainage	LS	\$0		\$	-	
Retaining Walls					L.	
C.I.P.	SF	\$75		\$	-	
Soldier Pile < 20'	SF	\$75		\$	-	
Soldier Pile w/ Tie Back > 20'	SF	\$100		\$	-	
Soil Nail	SF	\$55		\$	-	
		1		\$	-	
Station Platform	LS	\$2,500,000		\$	-	
				\$	-	
				\$	-	
DWAY		•				
		<b>#</b> 00		\$	- 1	
Roadway Construction	SY	3000	1	Ψ	-	
Roadway Construction	SY	\$60				
At-Grade Crossing				ı e	-	
At-Grade Crossing  Concrete Crossing Panels Installed	TF	\$800		\$	-	
At-Grade Crossing Concrete Crossing Panels Installed Urban Major Crossing Approaches	TF SY	\$800 \$75		\$	-	
At-Grade Crossing Concrete Crossing Panels Installed Urban Major Crossing Approaches Urban Minor Crossing Approaches	TF SY SY	\$800 \$75 \$75		\$ \$		
At-Grade Crossing Concrete Crossing Panels Installed Urban Major Crossing Approaches	TF SY	\$800 \$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		\$ -	
				\$ -	
R 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		\$ -	
				\$ -	
TILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	\$1		\$ -	
Fiber Optic Lines	LF	\$95		\$ -	
Miscellaneous	LS	\$1		\$ -	
				\$ -	
					Changed Contingency amount from
					30% to 40% to account for poor soil
ONTINGENCIES (40%)	LS		40%	\$ 2,304,182	conditions.
		CONSTRU	CTION TOTAL	\$ 8,064,638	
NVIRONMENTAL MITIGATION (20%)	LS		20%	\$ 1,612,928	
Wetland Compensation	AC	\$0		\$ -	
			SUBTOTAL	\$ 9,677,566	
NGINEERING/ADMINISTRATION (7%)	LS		7%	\$ 564,525	
ONSTRUCTION MANAGEMENT (6%)	LS		6%	\$ 483,878	
IGHT OF WAY					
Undeveloped	AC	\$20,000		\$ -	
Residential	AC	\$100,000		\$ -	
Commercial	AC	\$250,000		\$ -	
Industrial	AC	\$350,000		\$ -	
				\$ -	
AX (8.2%)			8.2%	\$ 661,300	

#### TOTAL \$ 11,387,269

**Assumptions:** One New Track

ne New Track

(MP 149.8 to MP 151.76)

Track Miles 1.96

\$5,809,831 / mile

<sup>\*</sup> 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
HWORK		•		•		
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	00702	\$	-	
Erosion Controls	LS	\$0		\$	-	
Seeding	AC	\$2,500		\$		
Place Topsoil	CY	\$25		\$	-	
Tunnel	MI	\$0		\$	-	
				\$	-	
				\$	-	
:K						
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		\$	_	
Lilleovel Hack	- ''	ΨZ3				
Total/Tourset Demonstration				\$	-	
Track/Turnout Removal/Relocation		<b>.</b>		I &	-	
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	_	\$	-	
. 15.00dto Exicting O10000VEI		Ψ10,000		\$	<u> </u>	
Turnouts	1			ĮΨ	-	
	F.*	<b>045.000</b>		Ε Φ		
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	Ε/ (	φοσο,σσο		Ψ		
	ГΛ	¢220,000		r		
#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		\$	-	
			000			MD 445 00 (007) DDO 1 000)
80-160' DPG	TF	\$20,000	208	\$	4,160,000	MP 145.33 (207' DPG and 209' (
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	
.,		\$100	330	\$	33,000	
	I F				33,000	
Minor Culverts (< 36" Diameter)	LF	\$100	555			
Minor Culverts (< 36" Diameter)				\$	-	
Minor Culverts (< 36" Diameter)  Other Drainage	LF LS	\$100			-	
Minor Culverts (< 36" Diameter)  Other Drainage  Retaining Walls	LS	\$0		\$	-	
Minor Culverts (< 36" Diameter)  Other Drainage  Retaining Walls  C.I.P.	LS SF	\$0 \$75		\$	-	
Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20'	LS SF SF	\$0 \$75 \$75		\$ \$ \$	-	
Minor Culverts (< 36" Diameter)  Other Drainage  Retaining Walls  C.I.P.	LS SF	\$0 \$75		\$	-	
Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20'	LS SF SF SF	\$0 \$75 \$75 \$100		\$ \$ \$ \$	- -	
Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20'	LS SF SF	\$0 \$75 \$75		\$ \$ \$ \$	- - -	
Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail	LS SF SF SF SF SF	\$0 \$75 \$75 \$100 \$55		\$ \$ \$ \$ \$	- - - - -	
Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20'	LS SF SF SF	\$0 \$75 \$75 \$100		\$ \$ \$ \$ \$ \$	- - - - -	
Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail	LS SF SF SF SF SF	\$0 \$75 \$75 \$100 \$55		\$ \$ \$ \$ \$ \$ \$		
Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform	LS SF SF SF SF SF	\$0 \$75 \$75 \$100 \$55		\$ \$ \$ \$ \$ \$	- - - - -	
Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform	SF SF SF SF LS	\$0 \$75 \$75 \$100 \$55 \$2,500,000		\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		
Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform  DWAY Roadway Construction	LS SF SF SF SF SF	\$0 \$75 \$75 \$100 \$55		\$ \$ \$ \$ \$ \$ \$		
Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform  DWAY Roadway Construction At-Grade Crossing	SF SF SF SF LS	\$0 \$75 \$75 \$100 \$55 \$2,500,000		\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		
Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform  DWAY Roadway Construction At-Grade Crossing	SF SF SF SF LS	\$0 \$75 \$75 \$100 \$55 \$2,500,000	30	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		
Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform  DWAY Roadway Construction At-Grade Crossing Concrete Crossing Panels Installed	LS  SF SF SF SF SF TF	\$0 \$75 \$75 \$100 \$55 \$2,500,000 \$60		\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		
Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform  DWAY Roadway Construction At-Grade Crossing Concrete Crossing Panels Installed Urban Major Crossing Approaches	SF SF SF SF SF SF SY	\$0 \$75 \$75 \$100 \$55 \$2,500,000 \$60 \$800 \$75	30	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	- - - - - - - - - - - - - - - - - - -	MP 147 22 Caribou Rd
Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform  DWAY Roadway Construction At-Grade Crossing Concrete Crossing Panels Installed	LS  SF SF SF SF SF TF	\$0 \$75 \$75 \$100 \$55 \$2,500,000 \$60		\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		MP 147.22 Caribou Rd.

# 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		\$ -	
				\$ -	
R 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		\$ -	
				\$ -	
TILITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	\$1		\$ -	
Fiber Optic Lines	LF	\$95		\$ -	
Miscellaneous	LS	\$1		\$ -	
				\$ -	
·					Changed Contingency amount from
					30% to 40% to account for poor soil
ONTINGENCIES (40%)	LS		40%	\$ 5,780,738	conditions.
	•	CONSTRU	CTION TOTAL	\$ 20,232,583	
NVIRONMENTAL MITIGATION (20%)	LS		20%	\$ 4,046,517	
Wetland Compensation	AC	\$0		\$ -	
	•		SUBTOTAL	\$ 24,279,100	
NGINEERING/ADMINISTRATION (7%)	LS		7%	\$ 1,416,281	
ONSTRUCTION MANAGEMENT (6%)	LS		6%	\$ 1,213,955	
GHT OF WAY		•		, ,	
Undeveloped	AC	\$20,000		\$ -	
Residential	AC	\$100,000		\$ -	
Commercial	AC	\$250,000		\$ -	
Industrial	AC	\$350,000		\$ -	
	1	, , ,		\$ -	
AX (8.2%)			8.2%	\$ 1,659,072	

TOTAL \$ 28,568,407

**Assumptions:** One New Track

(MP 145.5 to MP 148.2)

Track Miles 2.70

\$10,580,892 / mile

 $<sup>^{\</sup>star}$  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	LS	\$575,000,000 (2006) *	1	\$575,000,000
Replace swing span of existing bridge with vertical lift span Second main track between north end of				

Fraser River Bridge and current end of

Close or grade separate grade crossings between Fraser River Bridge and Braid

second main track at Spruce

<sup>\*</sup> 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

<sup>\*</sup> Unit cost based upon typical cost of similar projects. Esti dollars was escalated by 15% based upon aggregate average 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
HWORK		*			
Clear & Grub	AC	\$4,000		\$ -	
Common Excavation	CY	\$10		\$ -	
Rock Excavation	CY	\$50		\$ -	
Embankment General Excavation *	CY	\$20	1271794	\$ -	24
General Excavation ** Subballast	CY	\$15 \$30	12/1/94	\$ 19,076,90 \$ -	)4
Erosion Controls	LS	\$0		\$ -	
Seeding	AC	\$2,500		\$ -	
Place Topsoil	CY	\$25		\$ -	
Tunnel .	MI	\$0		\$ -	
				\$ -	
-				\$ -	
K Transla Commention					
Track Construction  New Track	TF	C140	181685	¢ 25.425.0	70
Rehab Track	TF	\$140 \$100	2000	\$ 25,435,87 \$ 200,00	
Yard Track	TF	\$100	2000	\$ 200,00	
Lineover Track	TF	\$25		\$ -	
Zinoorei Traon		<b>V</b> 20		\$ -	
Track/Turnout Removal/Relocation	•		•		
Remove Existing Track	TF	\$10		\$ -	
Relocate Existing Track	TF	\$100		\$ -	
Remove Existing Turnout	EA	\$5,000	3	\$ 15,00	
Relocate Existing Turnout	EA	\$35,000	2	\$ 70,00	00
Remove Existing Crossover	EA	\$10,000		-	
Relocate Existing Crossover	EA	\$70,000		\$ - \$ -	
Turnouts	1	1	l .	-	I .
Split Point Derail	EA	\$45,000		\$ -	
#9	EA	\$110,000		\$ -	
#11	EA	\$120,000	1	\$ 120,00	00
#15	EA	\$142,000		\$ -	
#20	EA	\$168,000		\$ -	
#24	EA	\$178,000	2	\$ 356,00	
#33	EA	\$360,000	3	\$ 1,080,00	
#48	EA	\$500,000	1	\$ 500,00	DO
Crossovers #9	EA	\$230,000	Ι	\$ -	
#9 #11	EA	\$230,000	3	\$ 750,00	00
#15	EA	\$285,000	, , , , , , , , , , , , , , , , , , ,	\$ 750,00	
#20	EA	\$336,000		\$ -	
#24	EA	\$355,000		\$ -	
#33	EA	\$730,000	0	\$ -	
#48	EA	\$1,010,000		\$ -	
Bridges	1	T	1	T	T
. 201 DDOT		<b>\$</b> 5.000	4050	04.000.00	MP 48.35 12' RCB (2 tracks); MP 633' PT; MP 50.51 1472' RCT/P' 50.76 57' PT; MP 51.32 399' BM P 51.57 151' PT; MP 51.76 20: MP 52.83 180' PT; MP 53.30 53 MP 53.50 204' PT; MP 54.10 50: MP 56.32 43' PT; MP 60.04 82' EMP 61.34 119' PT; MP 62.65 10' MP 40.94 6' CA; MP 47.32 8' Ctracks); MP 62.29 3' CA; MP 62.
< 32' PRCT	TF	\$5,000	4256	\$ 21,280,00	00 CA
32- 45' PRCT	TF	\$6,500		\$ -	
45-80' IB 80-160' DPG	TF TF	\$9,000 \$20,000		\$ - \$ -	+
00-100 DFG	IF	φ∠0,000		-	MP 49.52 15 - PRT/TPG 762'
80-160' TPG	TF	\$20,000	1524	\$ 30,480,00	
> 160' TRT	TF	\$30,000	646	\$ 19,380,00	
Remove Existing Bridge	TF	\$500		\$ -	,
Modify existing bridge for increased					MP 37.78 PT/TRT/TPG; MP 38
speed **	LS	\$5,500,000	2	\$ 11,000,00	00 WF/DPG
Outroot Our rain				\$ -	
Culvert Crossings		#ccc	450	Φ 00.00	00
Major Culverts (> 36" Diameter)	LF LF	\$600 \$100	150 1470	\$ 90,00 \$ 147,00	
Minor Culvarte ( > 26" Diameter)			ı 14/U	ເອ 147.UU	ν <u> </u>
Minor Culverts (< 36" Diameter)	LI	φιου		\$ -	

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

	UNITS	UNIT COST	QUANTITY		TOTAL	COMMENTS
Retaining Walls		1				
C.I.P.	SF	\$75		\$	-	
Soldier Pile < 20'	SF	\$75		\$	-	
Soldier Pile w/ Tie Back > 20' Soil Nail	SF SF	\$100 \$55		\$	-	
3011 IVali	- OI	φυυ		\$		
Station Platform	LS	\$2,500,000		\$		
oution rations		Ψ2,000,000		\$	-	
				\$	-	
DWAY						
Roadway Construction At-Grade Crossing	SY	\$60	73200	\$	4,392,000	24' wide frontage roads to eliminat numerous hazardous GXs in the following ranges: MP 39.83 - MP 41. MP 42.45 - MP 43.35; MP 57.42 - N 59.90; MP 61.55 - MP 62.00
Concrete Crossing Panels Installed	TF	\$800	1860	\$	1,488,000	
Urban Major Crossing Approaches	SY	\$75		\$	-	
Libban Minor Crossing Approaches	ev.	¢75	9400	6	620,000	St. N.E.°; MP 40.34°; MP 41.20 104 St. N.E.°; MP 42.04 116th St. N.E.°; 42.45 122nd St. N.E.°; MP 42.55°; 1 43.35 136th St. N.E.°; MP 45.90 172 St. N.E.°; MP 48.37 Sill Rd.°; MP 48 212th St. N.W.°; MP 49.95 14th Av N.E.°; MP 50.17 227th St. N.W.°; M 51.01 28th Ave.°; MP 52.41.°°; MF 53.36 Miller Rd.°; MP 55.40 271st S MP 56.92 Logan Rd. (292nd St. N.W.)°°; MP 67.42 Detting Rd. (300 St.)°; MP 60.28°°; MP 62.50 Spruc St.°; MP 62.56 Fir Island Rd.°; MF 63.58 Johnson Rd.°°; MP 64.58 Sta Pole Rd.°°; MP 65.60 Hickok Rd.°; M
Urban Minor Crossing Approaches	SY	\$75	8400	\$	630,000	67.12 Blackburn & Pacific <sup>o</sup>
Rural Major Crossing Approaches  Rural Minor Crossing Approaches	SY	\$75 \$75	1925	\$	144,375	Private GXs MP 45.50°°, MP 47.99 MP 51.90°°, MP 56.20°°, MP 59.90 MP 60.28°°, MP 61.19°°, MP 61.55 MP 66.06°°
Grade-Separation Crossing				\$	<u> </u>	
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	° - Upgraded signals
New Signal	EA	\$250,000	9	\$	2,250,000	00 - New signals
				\$	-	
GNALS		#050 000	45	Ι φ	0.750.000	ı
Per P.O. T.O.	EA	\$250,000	15	\$	3,750,000	
Per Mile Electric Locks	MI EA	\$750,000 \$25,000	34.41	\$	25,807,500	
LICOTIO LOURS	LA	Ψ20,000		\$	<u> </u>	
TY RELOCATION/ADJUSTMENT				ĮΨ		
Transmission Lines	LS	\$1		\$	-	T T
	LF	\$95		\$	_	
					-	
Fiber Optic Lines				1.5		
	LS	\$1		\$		
Fiber Optic Lines Miscellaneous	LS		30%	\$	-	
Fiber Optic Lines Miscellaneous		\$1	30%	\$	52,692,795	
Fiber Optic Lines Miscellaneous FINGENCIES (30%)	LS	\$1	CTION TOTAL	\$ \$ . <b>\$</b>	52,692,795 <b>228,335,446</b>	
Fiber Optic Lines Miscellaneous	LS	\$1		\$	52,692,795	

### 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 New Tracks)
 4.61

 Two New Tracks
 (MP 43.8 to New Tracks)
 MP 49.9 to New Track

 One New Track
 (MP 49.9 to New Track)
 17.60

 34.41
 \$9,373,428 / mile

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

<sup>\*</sup> 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

<sup>\*\*</sup> 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
HWORK		•		•		
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	\$2,500		\$		
Tunnel	MI	\$0		\$	-	
				\$	-	
				\$	-	
K						
Track Construction						
New Track	TF	\$140	75504	\$	10,570,560	
Rehab Track	TF	\$100		\$	-	
Yard Track	TF	\$125		\$	_	
Lineover Track	TF	\$25		\$	-	
Lilleovel Hack		φ23		\$		
T				Ф	-	
Track/Turnout Removal/Relocation		1		1.		
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		\$	_	
. 15.00dto Exicting O10000VBI	LA	Ψ10,000		\$		
Turnouts		1		Ψ	-	
	Ι ΕΛ	<b>0.45.000</b>		Φ.		T
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	<u> </u>	\$	-	
Crossovers	LA	ψ500,000		ĮΨ		
	Ε.Δ	<b>#</b> 000 000		Φ.		
#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						
DI IUUCO						
	TF	\$5.000		\$	-	
< 32' PRCT	TF	\$5,000		\$		75.38 65' PT; MP 77.00 70' PT; I 78.85 97' PT; MP 82.14 22,440' Sa
< 32' PRCT 32- 45' PRCT	TF	\$6,500	22755	\$	147,907,500	75.38 65' PT; MP 77.00 70' PT; N
< 32' PRCT  32- 45' PRCT  45-80' IB	TF TF	\$6,500 \$9,000	22755	\$ \$		75.38 65' PT; MP 77.00 70' PT; M 78.85 97' PT; MP 82.14 22,440' Sa
32- 45' PRCT 45-80' IB 80-160' DPG	TF TF TF	\$6,500	22755	\$	147,907,500 - -	75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle
< 32' PRCT  32- 45' PRCT  45-80' IB	TF TF TF	\$6,500 \$9,000	22755	\$ \$	147,907,500 - -	75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle
32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG	TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000		\$ \$		75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa
32- 45' PRCT  32- 45' PRCT  45-80' IB  80-160' DPG  80-160' TPG  > 160' TRT	TF TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000		\$ \$ \$ \$	147,907,500 - - - 1,600,000	75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle
32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG	TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000		\$ \$	147,907,500 - -	75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle MP 75.63 80' TPG
< 32' PRCT  32- 45' PRCT  45-80' IB  80-160' DPG  80-160' TPG  > 160' TRT  Remove Existing Bridge	TF TF TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500	80	\$ \$ \$ \$ \$ \$	147,907,500 - - 1,600,000 -	MP 75.63 80' TPG  MP 74.3 (avoid existing sharp curve
32- 45' PRCT  32- 45' PRCT  45-80' IB  80-160' DPG  80-160' TPG  > 160' TRT	TF TF TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000		\$ \$ \$ \$ \$ \$ \$ \$	147,907,500 - - - 1,600,000	75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle MP 75.63 80' TPG
32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge New Flyover	TF TF TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500	80	\$ \$ \$ \$ \$ \$	147,907,500 - - 1,600,000 -	75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle  MP 75.63 80' TPG  MP 74.3 (avoid existing sharp curve
32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge New Flyover Culvert Crossings	TF TF TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$8,700	80 4500	\$ \$ \$ \$ \$	147,907,500 - - 1,600,000 - - 39,150,000	75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle  MP 75.63 80' TPG  MP 74.3 (avoid existing sharp curve
32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge New Flyover Culvert Crossings Major Culverts (> 36" Diameter)	TF TF TF TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500	80	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	147,907,500 - - 1,600,000 -	75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle  MP 75.63 80' TPG  MP 74.3 (avoid existing sharp curve
32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge New Flyover Culvert Crossings	TF TF TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$8,700	80 4500	\$ \$ \$ \$ \$	147,907,500 - - 1,600,000 - - 39,150,000	75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle  MP 75.63 80' TPG  MP 74.3 (avoid existing sharp curve
32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge New Flyover Culvert Crossings Major Culverts (> 36" Diameter)	TF TF TF TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$8,700	4500 30	\$ \$ \$ \$ \$	147,907,500 - - 1,600,000 - - 39,150,000 - 18,000	75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle  MP 75.63 80' TPG  MP 74.3 (avoid existing sharp curve
32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge New Flyover Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)	TF TF TF TF TF TF TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$8,700	4500 30	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	147,907,500 - - 1,600,000 - - 39,150,000 - 18,000 60,000	75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle  MP 75.63 80' TPG  MP 74.3 (avoid existing sharp curve
32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge New Flyover Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage	TF TF TF TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$8,700	4500 30	\$ \$ \$ \$ \$	147,907,500 - 1,600,000 - - 39,150,000 - 18,000 60,000	75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle  MP 75.63 80' TPG  MP 74.3 (avoid existing sharp curve
32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge New Flyover Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls	TF TF TF TF TF TF TF TF TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$8,700 \$600 \$100	4500 30	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	147,907,500 - - 1,600,000 - - 39,150,000 - 18,000 60,000 -	75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle  MP 75.63 80' TPG  MP 74.3 (avoid existing sharp curve
32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TRT Remove Existing Bridge New Flyover Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P.	TF TF TF TF TF LF LS SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$8,700 \$600 \$100 \$0	4500 30	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	147,907,500 - - 1,600,000 - - 39,150,000 - 18,000 60,000 - -	75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle  MP 75.63 80' TPG  MP 74.3 (avoid existing sharp curve
32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge New Flyover Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P. Soldier Pile < 20'	TF TF TF TF TF TF TF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$8,700 \$600 \$100 \$0	4500 30	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	147,907,500	75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle  MP 75.63 80' TPG  MP 74.3 (avoid existing sharp curve
32- 45' PRCT  45-80' IB  80-160' DPG  80-160' TPG > 160' TRT  Remove Existing Bridge  New Flyover  Culvert Crossings  Major Culverts (> 36" Diameter)  Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20'	TF TF TF TF TF TF TF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$8,700 \$600 \$100 \$0 \$75 \$75 \$100	4500 30	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	147,907,500 - - 1,600,000 - - 39,150,000 - 18,000 60,000 - -	75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle  MP 75.63 80' TPG  MP 74.3 (avoid existing sharp curve
32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge New Flyover Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P. Soldier Pile < 20'	TF TF TF TF TF TF TF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$8,700 \$600 \$100 \$0	4500 30	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	147,907,500	75.38 65' PT; MP 77.00 70' PT; I 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle  MP 75.63 80' TPG  MP 74.3 (avoid existing sharp curv
32- 45' PRCT  45-80' IB  80-160' DPG  80-160' TPG > 160' TRT  Remove Existing Bridge  New Flyover  Culvert Crossings  Major Culverts (> 36" Diameter)  Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20'	TF TF TF TF TF TF TF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$8,700 \$600 \$100 \$0 \$75 \$75 \$100	4500 30	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	147,907,500 1,600,000 39,150,000 18,000 60,000	75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle  MP 75.63 80' TPG  MP 74.3 (avoid existing sharp curve
32- 45' PRCT  45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  New Flyover  Culvert Crossings  Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail	TF TF TF TF TF TF TF SF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$8,700 \$600 \$100 \$0 \$75 \$75 \$100 \$55	4500 30	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	147,907,500 1,600,000 39,150,000 - 18,000 60,000	75.38 65' PT; MP 77.00 70' PT; I 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle  MP 75.63 80' TPG  MP 74.3 (avoid existing sharp curv
32- 45' PRCT  45-80' IB  80-160' DPG  80-160' TPG > 160' TRT  Remove Existing Bridge  New Flyover  Culvert Crossings  Major Culverts (> 36" Diameter)  Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20'	TF TF TF TF TF TF TF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$8,700 \$600 \$100 \$0 \$75 \$75 \$100	4500 30	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	147,907,500 1,600,000 39,150,000 - 18,000 60,000	75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle  MP 75.63 80' TPG  MP 74.3 (avoid existing sharp curve
32- 45' PRCT  45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  New Flyover  Culvert Crossings  Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail	TF TF TF TF TF TF TF SF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$8,700 \$600 \$100 \$0 \$75 \$75 \$100 \$55	4500 30	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	147,907,500 1,600,000 39,150,000 - 18,000	75.38 65' PT; MP 77.00 70' PT; I 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle  MP 75.63 80' TPG  MP 74.3 (avoid existing sharp curv
32- 45' PRCT  45-80' IB  80-160' DPG  80-160' TPG  > 160' TRT  Remove Existing Bridge  New Flyover  Culvert Crossings  Major Culverts (> 36" Diameter)  Minor Culverts (< 36" Diameter)  Other Drainage  Retaining Walls  C.I.P.  Soldier Pile < 20'  Soldier Pile w/ Tie Back > 20'  Soil Nail  Station Platform	TF TF TF TF TF TF TF SF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$8,700 \$600 \$100 \$0 \$75 \$75 \$100 \$55	4500 30	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	147,907,500 1,600,000 39,150,000 - 18,000 60,000	75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle  MP 75.63 80' TPG  MP 74.3 (avoid existing sharp curve
32- 45' PRCT  45-80' IB  80-160' DPG  80-160' TPG > 160' TRT  Remove Existing Bridge  New Flyover  Culvert Crossings  Major Culverts (> 36" Diameter)  Minor Culverts (< 36" Diameter)  Other Drainage  Retaining Walls  C.I.P.  Soldier Pile < 20'  Soldier Pile w/ Tie Back > 20'  Soil Nail  Station Platform	TF TF TF TF TF TF TF TF TF LF LS SF SF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$8,700 \$600 \$100 \$75 \$75 \$100 \$55	4500 30	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	147,907,500 1,600,000 39,150,000 18,000 60,000	75.38 65' PT; MP 77.00 70' PT; I 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle  MP 75.63 80' TPG  MP 74.3 (avoid existing sharp curv
32- 45' PRCT  45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  New Flyover  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soil Nail  Station Platform  DWAY Roadway Construction	TF TF TF TF TF TF TF SF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$8,700 \$600 \$100 \$0 \$75 \$75 \$100 \$55	4500 30	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	147,907,500 1,600,000 39,150,000 - 18,000	75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle  MP 75.63 80' TPG  MP 74.3 (avoid existing sharp curve
32- 45' PRCT  45-80' IB  80-160' DPG  80-160' TPG > 160' TRT  Remove Existing Bridge  New Flyover  Culvert Crossings  Major Culverts (> 36" Diameter)  Minor Culverts (< 36" Diameter)  Other Drainage  Retaining Walls  C.I.P.  Soldier Pile < 20'  Soldier Pile w/ Tie Back > 20'  Soil Nail  Station Platform	TF TF TF TF TF TF TF TF TF LF LS SF SF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$8,700 \$600 \$100 \$75 \$75 \$100 \$55	4500 30	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	147,907,500 1,600,000 39,150,000 18,000 60,000	75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle  MP 75.63 80' TPG  MP 74.3 (avoid existing sharp curve
32- 45' PRCT  45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  New Flyover  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soil Nail  Station Platform  DWAY Roadway Construction	TF TF TF TF TF TF TF TF TF LF LS SF SF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$8,700 \$600 \$100 \$75 \$75 \$100 \$55	4500 30	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	147,907,500 1,600,000 39,150,000 18,000 60,000	75.38 65' PT; MP 77.00 70' PT; N 78.85 97' PT; MP 82.14 22,440' Sa Bay trestle  MP 75.63 80' TPG  MP 74.3 (avoid existing sharp curve

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

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
					MP 73.22°; MP 74.33 Cook Rd.°; MP
					77.32 Ershig Rd.º; MP 79.04 Bowhill
	ĺ				Rd.º; MP 80.92 Colony Rd.º; MP 81.21
					S. Blanchard Rd.º; MP 81.83 N. Legg
Urban Minor Crossing Approaches	SY	\$75	2800	\$ 210,000	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 74.8100
				\$ -	
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	
New Signal	EA	\$250,000	1	\$ 250,000	00 - 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	
		CONSTRU	CTION TOTAL	1	
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:

(MP 72.2 to MP 86.5)

Track Miles

14.30

\$28,569,954 / mile

One New Track (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.

<sup>\*</sup> 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)

HWORK	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
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	100201	\$ -	<u> </u>
Erosion Controls	LS	\$0		\$ -	+
Seeding	AC	\$2,500		\$ -	+
Place Topsoil	CY	\$25		\$ -	+
Tunnel	MI	\$0		\$ -	+
rumer	IVII	ΨΟ		\$ -	+
				\$ -	
K		L			
Track Construction					
New Track	TF	\$140	70752	\$ 9,905,280	
Rehab Track	TF	\$100		\$ -	
Yard Track	TF	\$125		\$ -	
Lineover Track	TF	\$25		\$ -	
Elitovoi iraak	- ''	Ψ20		\$ -	
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		\$ -	
Troiseant Emering Greecever		ψ. ο,σσσ		\$ -	
Turnouts	I	1		Ψ	
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		\$ -	<u> </u>
#48	EA	\$500,000		\$ -	
Crossovers		1 4000,000		T	1
#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	_	\$ -	120,220 2 071
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	
Remove Existing Bridge	TF	\$500	.50	\$ -	700.00 100 1111
New Flyover	TF	\$8,700	2500	\$ 21,750,000	~MP 103.0
- ry-re-		Ţ-,· 00		\$ -	
Culvert Crossings		•			•
Major Culverts (> 36" Diameter)	LF	\$600	90	\$ 54,000	
Minor Culverts (< 36" Diameter)	LF	\$100	900	\$ 90,000	
		Ţ.,		\$ -	
Other Drainage	LS	\$0		\$ -	
Retaining Walls		, ψυ		I <del>T</del>	-1
C.I.P.	SF	\$75		\$ -	
Soldier Pile < 20'	SF	\$75		\$ -	
Soldier File < 20 Soldier Pile w/ Tie Back > 20'	SF	\$100		\$ -	1
Soil Nail	SF	\$55		\$ -	1
Con Ivali	JI JI	ψυυ		\$ -	1
Station Platform	LS	\$2,500,000		\$ -	1
Janon Flanonii	LO	φ∠,500,000		\$ -	1

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

	UNITS	UNIT COST	QUANTITY		TOTAL	COMMENTS
ROADWAY						
						Reconstruct Portal Way from MP 108.6 to MP 114.9 demo existing roadway (assume 30' width) and rebuild 28' (12'
Roadway Construction	SY	\$60	103100	\$	6,186,000	travel lane + 2' shoulder) east of exist alignment to make room for passenger main (exclude existing ~3100' roadway
Roadway Removal	SY	\$15	103100	\$	1,546,500	shift at Custer)
At-Grade Crossing	- 31	φισ	103100	Ψ	1,340,300	
Concrete Crossing Panels Installed	TF	\$800	810	\$	648,000	
Urban Major Crossing Approaches	SY	\$75		\$	-	
						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
Urban Minor Crossing Approaches	SY	\$75	4200	\$	315,000	Rd.º
Rural Major Crossing Approaches	SY	\$75		\$	-	
Rural Minor Crossing Approaches	SY	\$75	525	\$	39,375 -	Private GXs MP 109.06 <sup>o0</sup> , MP 110.90 <sup>o</sup> , MP 112.29 <sup>o0</sup>
Grade-Separation Crossing		· II		*		
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	° - Upgraded signals
New Signal	EA	\$250,000	3	\$	750,000	<sup>00</sup> - New signals
RR SIGNALS				\$	<u>-</u>	
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		1 4.		-		
Transmission Lines Fiber Optic Lines	LS	\$1 *05		\$	-	
Miscellaneous	LF LS	\$95 \$1		\$	<u>-</u>	
Miscenarieous	LO	ΨΙ		\$		
CONTINGENCIES (30%)	LS		30%	\$	23,990,435	
. ,		CONSTRUC	CTION 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%) RIGHT OF WAY	LS		6%	\$	6,237,513	
RIGHT OF WAT		1				
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	_	\$	-	o.g olding
Industrial	AC	\$350,000		\$	-	
TAY (0.00()			0.627	\$	-	
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.

<sup>\*</sup> 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)**

Clear & Grant   Clear & Common Excavation   CV   S10   S		UNITS	LINIT COST	QUANTITY	TOTAL	COMMENTS
Clase 4 Grab	THWORK	014113	TOMIT COST	QUANTITI	IOIAL	COMMENTS
Common Exervation		AC	\$4.000		-	
Rock Exervation						
Embankment			·			
Second Executation   CY   \$15   \$9136   \$ 887,040			·			
Subclastat				59136		
Erosino Controlos			·	00100		
Seeding						
Piece Toposol						
Turner						
Track Construction	Turmer	IVII	ΦU			
Track Construction						
Track					-	
New Track						
Rehab Track			1 .	1	T -	1
Yard Track						
Lineover Track			_	5000		
S						
TrackTurnout RemovalRelocation   Remove Existing Track	Lineover Track	TF	\$25			
Remove Existing Track					\$ -	
Relocate Existing Track	Track/Turnout Removal/Relocation					
Remove Existing Turnout	Remove Existing Track	TF	\$10	3168	\$ 31,680	
Remove Existing Turnout		TF	\$100		\$ -	
Relocate Existing Turnout		EA				
Remove Existing Crossover			. ,			
Relocate Existing Crossover			. ,	2		
Spit Point Derail				<u> </u>		
Turnouts			Ţ. 0,000			
Spilt Point Derail	Turnouts		-1	1	1 7	1
#9		FΔ	\$45,000		l \$ -	
#11						
#15						
#20				2		
#24						
#33						
#48				1		
Factor   F						
#9		EA	\$500,000		-	
#11			4000000	ı	1.0	1
#15						
#20						
#24						
#33						
#48		EA	\$355,000	2		
Bridges						
< 32° PRCT	#48	EA	\$1,010,000		-	
32-45   PRCT						
45.80	< 32' PRCT	TF	\$5,000		\$ -	
45.80   B	32- 45' PRCT	TF	\$6,500		\$ -	
B0-160' DPG	45-80' IB	TF	\$9,000		\$ -	
80-160' TPG			\$20,000	48		MP 1784.00 Bond St. 48'
Section   Sect						100 200 10
Remove Existing Bridge						
S			. ,			
S	Tromeve Existing Bridge	''	φοσσ			
Major Culverts (> 36" Diameter)			+			
Major Culverts (> 36" Diameter)	Culvert Crossings		1	I	ΙΨ -	1
Minor Culverts (< 36" Diameter)		10	\$600		I ¢	1
Station Platform	Minor Culverts (> 30 Diameter)			1110		
Concrete Crossing Panels Installed   TF   \$800   \$   \$   \$   \$   \$   \$   \$   \$   \$	ivinioi cuiverts (< 30 Diameter)	LF.	\$100	1140		
Retaining Walls	Other Business		00			+
C.I.P.		LS	\$0	l .		1
Soldier Pile < 20'			<b></b>	Г	T &	
Soldier Pile w/ Tie Back > 20'						1
Soil Nail						
Retaining walls						
Station Platform						
Station Platform	Retaining walls	SF	\$45	14400	\$ 648,000	
Station Platform						Platform & grade-separated p
S	Station Platform	LS	\$2,500,000	1	\$ 2,500,000	
S			,			
DWAY         Roadway Construction         SY         \$60         \$ -           At-Grade Crossing						
Roadway Construction         SY         \$60         \$ -           At-Grade Crossing	DWAY		•		•	
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°0           Rural Major Crossing Approaches         SY         \$75         \$ -         -           Rural Minor Crossing Approaches         SY         \$75         \$ -         -		SY	\$60		\$ -	1
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°0           Rural Major Crossing Approaches         SY         \$75         \$ -         -           Rural Minor Crossing Approaches         SY         \$75         \$ -			. +		1 .	
Urban Major Crossing Approaches     SY     \$75     -       Urban Minor Crossing Approaches     SY     \$75     350     \$ 26,250     Public GX MP 1782.68°°       Rural Major Crossing Approaches     SY     \$75     \$ -     -       Rural Minor Crossing Approaches     SY     \$75     \$ -		TF	\$800	60	\$ 48,000	
Urban Minor Crossing Approaches         SY         \$75         350         \$ 26,250         Public GX MP 1782.68°°           Rural Major Crossing Approaches         SY         \$75         \$ -         -           Rural Minor Crossing Approaches         SY         \$75         \$ -         -				00		1
Rural Major Crossing Approaches SY \$75 \$ -  Rural Minor Crossing Approaches SY \$75 \$ -				350		Public GV MD 1702 6000
Rural Minor Crossing Approaches SY \$75 \$ -				300		FUDIO GA IVIP 1/82.0800
	Kurai iviinor Crossing Approaches	SY	\$/5	ļ		1

#### **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	00 - 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	
		CONSTRU	CTION 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
IOIAL	Ψ	££,001,000

 Assumptions:
 Track Miles

 One New Track
 (MP 1783.6 to MP 1784.6)
 1.00

 Rehab Everett Jct. Siding Rebuild Bayside Track
 5280 1.00
 1.00

 3168 0.60
 2.60
 \$8,795,129 / mile

<sup>\*</sup> 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
IWORK		1 01000				
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
				\$	-	
				\$	-	
ζ						
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	<del></del>
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)
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	TF	72,. 30		\$	-	(=)
Culvert Crossings		•			ı	
Major Culverts (> 36" Diameter)	LF	\$600		\$	-	
Minor Culverts (< 36" Diameter)	LF	\$100		\$	-	
		<b>\$</b> 700		\$	-	
Other Drainage	LS	\$0		\$	-	
Retaining Walls		ΨΟ	I	ĮΨ	-	
C.I.P.	SF	\$75		\$	-	
Soldier Pile < 20'	SF	\$75 \$75		\$		
Soldier Pile < 20' Soldier Pile w/ Tie Back > 20'	SF SF	\$75 \$100		\$		
Soil Nail	SF SF	\$100 \$55				
JUII INAII	<b>3</b> F	фээ		\$	-	
Station Distance	1.0	\$0.500.000		\$	-	
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		\$	-	
				\$	<u> </u>	
UTILITY RELOCATION/ADJUSTMENT						
Transmission Lines	LS	\$1		\$	-	
Fiber Optic Lines	LF	\$95		\$	-	
Miscellaneous	LS	\$1		\$	-	
				\$	-	
CONTINGENCIES (30%)	LS		30%	\$	50,621,369	
		CONSTRU	CTION 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		•	1	,		
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

 $<sup>^{\</sup>star}$  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

<sup>\*\*</sup> 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)

HWORK	UNITS	0411 0031	QUANTITY		TOTAL	COMMENTS
Clear & Grub	AC	\$4,000	l	\$	-	
Common Excavation	CY	\$10	141251	\$	1,412,506	
Rock Excavation	CY	\$50	171201	\$	1,412,500	
Embankment	CY	\$20	104450	\$	2,089,002	
General Excavation *	CY	\$15	650496	\$	9,757,440	
Subballast	CY	\$30	030430	\$	9,737,440	
Erosion Controls	LS	\$0		\$	-	
Seeding	AC	\$2,500		\$		
Place Topsoil	CY	\$25		\$	-	
Tunnel	MI	\$0		\$	-	
Turner	IVII	ΨΟ		\$	-	
				\$	-	
K			l	ĮΨ		
Track Construction						
New Track	TF	\$140	92928	\$	13,009,920	
Rehab Track	TF	\$100	02020	\$	-	
Yard Track	TF	\$125		\$	-	
Lineover Track	TF	\$25		\$	_	
Elifovoi Traok	- '	ΨΣΟ		\$	_	
Track/Turnout Removal/Relocation		•			l	
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		1			111	
#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			ı			
OCL BROT		0-05-		_		MP 135.10 48' RCT; MP 135
< 32' PRCT	TF	\$5,000	114	\$	570,000	RCT; MP 137.41 42' P
32- 45' PRCT	TF	\$6,500		\$	-	
45-80' IB	TF	\$9,000		\$	-	MD 462 22 22 57
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		\$	-	
				\$	-	
Out out Our asians				\$	-	
Culvert Crossings		<b>A</b> CCC	4-0	1 0	22.22-	
Major Culverts (> 36" Diameter)	LF	\$600	150	\$	90,000	
Minor Culverts (< 36" Diameter)	LF	\$100	1920	\$	192,000	
Other: Desires.	, ,	100		\$	-	
Other Drainage	LS	\$0		\$	-	
Retaining Walls			ı	Ι φ	ı	
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.°; MP 138.94°
Rural Major Crossing Approaches	SY	\$75		\$	-	
Rural Minor Crossing Approaches	SY	\$75	525	\$	39,375	Private GXs MP 130.92°°, MP 131.36°°, MP 134.95°
Kurar Willion Crossing Approaches	31	φισ	323	\$	39,313	131.30°, IMF 134.93°
Grade-Separation Crossing	l .		l .	Ψ		
Bridge	SF	\$150	18000	\$	2,700,000	T 01155 145 (20 1 (1) 10)
Roadway (earthwork & paving)	SY	\$50	667	\$	33,350	Two new OHBR MP 132.4 (Hwy 10)
MSE Wall	SF	\$40		\$	-	
Embankment (fill)	CY	\$25		\$	-	
Misc. (non-typical per project)	LS	\$1		\$	-	
imasi (nen typicai pei project)		Ψ.		\$	_	
Crossing Signals			I	Ψ		
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
		4-00,000	_	\$	-	
RR SIGNALS		_	I.	· ·		
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	
		CONSTRUC	CTION 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				· ·	2,00 ,,00	
Undeveloped	AC	\$20,000		\$	-	
Residential	AC	\$100,000	14	\$	1,400,000	3.0 MI @ 75' wide - developed area
Commercial	AC	\$250,000	14	\$	3,500,000	and golf course
Industrial	AC	\$350,000		\$	-	5
		,		\$	-	
TAX (8.2%)		i e	8.2%	\$	5,048,586	

#### TOTAL \$ 91,834,185

 Assumptions:
 Track Miles

 Two New Tracks
 (MP 130.75 to One New Track)
 (MP 139. to MP 140.1)
 16.50

 One New Track
 (MP 139. to MP 140.1)
 1.10
 17.60
 \$5,217,851/mile

 $^{\star}$  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	1.5	\$138,000,000 (2003)	1	\$138,000,000
	LS	\$159,000,000 (2006) *	1	\$159,000,000

<sup>\*</sup> 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	1 \	\$60,000,000 (2003)	1
	LS	\$69,000,000 (2006) *	1

<sup>\*</sup> Unit cost based upon typical cost of similar projects. Esti dollars was escalated by 15% based upon aggregate average 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 it eady for

	UNITS	UNIT COST	OLIANTITY TO	OTAL	COMMENTS
EARTHWORK	UNITS	UNIT COST	QUANTITY TO	JIAL	COMMENTS
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 General Excavation *	CY	\$20 \$15	\$		Includes close borrow - numerous estimates numerous recent project estimates
Subballast	CY	\$30	\$		numerous recent project estimates
Erosion Controls	LS	ψου	\$		numerous recent project estimates
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 EA	\$35,000 \$10,000	\$		
Remove Existing Crossover Relocate Existing Crossover	EA	\$70,000	\$		
Relocate Existing Crossover	LA	\$70,000	\$		
Turnouts		1	ĮΨ		
Split Point Derail	EA	\$45,000	\$	-	
#9	EA	\$110,000	\$	-	
#11	EA	\$120,000	\$	-	
#15	EA	\$142,000	\$	-	
#20	EA	\$168,000	\$	-	
#24	EA EA	\$178,000 \$360,000	\$	-	
#48	EA	\$500,000	\$		
Crossovers		ψ300,000	Ψ		
#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 Bridges	EA	\$1,010,000	\$		
< 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		1	Ψ		
Major Culverts (> 36" Diameter)	LF	\$600	\$	-	
Minor Culverts (< 36" Diameter)	LF	\$100	\$	-	
,			\$	-	
Other Drainage	LS		\$	-	
Retaining Walls					<del>-</del>
C.I.P.	SF	\$75	\$	-	
Soldier Pile < 20'	SF	\$75	\$	-	
Soldier Pile w/ Tie Back > 20' Soil Nail	SF SF	\$100 \$55	\$	-	
Soli Nali	- 31	φυυ	\$		
Station Platform	LS	\$2,500,000	\$	-	
		<del>+-,-30,000</del>	\$	-	
			\$	-	
ROADWAY					
Roadway Construction	SY	\$60	\$	-	
At-Grade Crossing	75	<b>#000</b>	1 4		T
Concrete Crossing Panels Installed Urban Major Crossing Approaches	TF SY	\$800 \$75	\$		
Urban Minor Crossing Approaches	SY	\$75 \$75	\$		
Rural Major Crossing Approaches	SY	\$75	\$	-	
Rural Minor Crossing Approaches	SY	\$75	\$	-	
<u> </u>			\$	-	
				-	
Grade-Separation Crossing			\$	-	
Bridge	SF	\$150			Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving)	SY	\$50	\$	-	Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall	SY SF	\$50 \$40	\$	-	Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Ernbankment (fill)	SY SF CY	\$50 \$40 \$25	\$ \$ \$	-	Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall	SY SF	\$50 \$40	\$ \$ \$	-	Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Embankment (fill) Misc. (non-typical per project)	SY SF CY	\$50 \$40 \$25	\$ \$ \$	- - -	Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Embankment (fill) Misc. (non-typical per project)  Crossing Signals	SY SF CY	\$50 \$40 \$25	\$ \$ \$ \$ \$	- - -	Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Embankment (fill) Misc. (non-typical per project)	SY SF CY LS	\$50 \$40 \$25 \$1	\$ \$ \$	- - -	Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Embankment (fill) Misc. (non-typical per project)  Crossing Signals Upgrade Signal - Barrier Gates New Signal	SY SF CY LS	\$50 \$40 \$25 \$1 \$200,000	\$ \$ \$ \$ \$	- - - -	Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Embankment (fill) Misc. (non-typical per project)  Crossing Signals Upgrade Signal - Barrier Gates New Signal	SY SF CY LS	\$50 \$40 \$25 \$1 \$200,000 \$250,000	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	- - - - -	Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Embankment (fill) Misc. (non-typical per project)  Crossing Signals Upgrade Signal - Barrier Gates New Signal  RR SIGNALS Per P.O. T.O.	SY SF CY LS EA EA	\$50 \$40 \$25 \$1 \$200,000 \$250,000	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Embankment (fill) Misc. (non-typical per project)  Crossing Signals Upgrade Signal - Barrier Gates New Signal  RR SIGNALS Per P.O. T.O. Per Mile	SY SF CY LS EA EA	\$50 \$40 \$25 \$1 \$200,000 \$250,000 \$250,000 \$750,000	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Embankment (fill) Misc. (non-typical per project)  Crossing Signals Upgrade Signal - Barrier Gates New Signal  RR SIGNALS Per P.O. T.O.	SY SF CY LS EA EA	\$50 \$40 \$25 \$1 \$200,000 \$250,000	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Embankment (fill) Misc. (non-typical per project)  Crossing Signals Upgrade Signal - Barrier Gates New Signal  RR SIGNALS Per P.O. T.O. Per Mile Electric Locks	SY SF CY LS EA EA	\$50 \$40 \$25 \$1 \$200,000 \$250,000 \$250,000 \$750,000	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Embankment (fill) Misc. (non-typical per project)  Crossing Signals Upgrade Signal - Barrier Gates New Signal  RR SIGNALS Per P.O. T.O. Per Mile Electric Locks  UTILITY RELOCATION/ADJUSTMENT	SY SF CY LS  EA EA MI EA	\$50 \$40 \$25 \$1 \$200,000 \$250,000 \$250,000 \$750,000 \$25,000	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		Per Wayne Short, due higher mat'l costs and bridge type uncertainties
Bridge Roadway (earthwork & paving) MSE Wall Embankment (fill) Misc. (non-typical per project)  Crossing Signals Upgrade Signal - Barrier Gates New Signal  RR SIGNALS Per P.O. T.O. Per Mile Electric Locks	SY SF CY LS EA EA	\$50 \$40 \$25 \$1 \$200,000 \$250,000 \$250,000 \$750,000	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		Per Wayne Short, due higher mat'l costs and bridge type uncertainties

Miscellaneous	LS	\$1		\$ -	
				\$ -	
CONTINGENCIES (30%)	LS		30%	\$ -	
		CONSTRUC	CTION 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
Demo existing passenger platform
Demo existing roadway
Demo existing overhead bridge
Crash wall Unit LS SY SF LF Cost \$50,000 \$15 \$30 \$300

 $<sup>^{*}</sup>$  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

	Г	LIMITS	LINIT COST	OHANTITY	TOTAL	COMMENTS
EARTHWORK		UNITS	UNII COST	QUANTITY	TOTAL	COMMENTS
Clear & Grub		AC	\$4,000		\$ -	
Common Excava	tion	CY	\$10		\$ -	
Rock Excavation		CY	\$50		\$ -	
Embankment		CY	\$20		\$ -	
General Excavati	ion *	CY	\$15		\$ -	
Subballast		CY	\$30		\$ -	
<b>Erosion Controls</b>		LS	\$0		\$ -	
Seeding		AC	\$2,500		\$ -	
Place Topsoil		CY	\$25		\$ -	
Tunnel		MI	\$0		\$ -	
					\$ -	
					\$ -	
TRACK						
Track Constructi	on					
New Track		<u>TF</u>	\$140		\$ -	
Rehab Track		TF	\$100		\$ -	
Yard Track		TF	\$125		\$ -	
Lineover Track		TF	\$25		\$ -	
- 17	1/2 / //				\$ -	
	emoval/Relocation		040	1	•	1
Remove Existing		TF	\$10		\$ -	
Relocate Existin		TF	\$100		\$ - \$ -	
Remove Existing		EA EA	\$5,000		Ψ	
Relocate Existin		EA EA	\$35,000 \$10,000	<b></b>	\$ - \$ -	-
Relocate Existin	y Crossover	EA	\$70,000		\$ - \$ -	-
Turnoute			<u> </u>		\$ -	i
Turnouts Split Point Derai	ı	EA	\$45,000	ı	\$ -	
#9	1	EA EA	\$110,000		\$ -	<del> </del>
#11		EA EA	\$110,000		\$ -	+
#11		EA EA	\$120,000		\$ -	+
#20		EA EA	\$142,000		\$ -	+
#24		EA	\$178,000		\$ -	
#33		EA	\$360,000		\$ -	
#48		EA	\$500,000		\$ -	
Crossovers		LA	φ500,000	l l	Ψ -	l
#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			ψ1,010,000		Ψ	1
< 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	g Bridge	TF	\$500		\$ -	
	· ·				\$ -	
					\$ -	
Culvert Crossing	ıs					
Major Culverts (:	> 36" Diameter)	LF	\$600		\$ -	
Minor Culverts (-	< 36" Diameter)	LF	\$100		\$ -	
					\$ -	
Other Drainage		LS	\$0		\$ -	
Retaining Walls				·		
C.I.P.		SF	\$75		\$ -	ļ
Soldier Pile < 20		SF	\$75		\$ -	
Soldier Pile w/ T	ie Back > 20'	SF	\$100		\$ -	ļ
Soil Nail		SF	\$55		\$ -	ļ
					\$ -	ļ
Station Platform		LS	\$2,500,000		\$ -	
			1		\$ -	ļ
			1		\$ -	
ROADWAY						,
Roadway Constr		SY	\$60		\$ -	<u> </u>
At-Grade Crossir			1			1
	ng Panels Installed	TF	\$800		\$ -	ļ
	ossing Approaches	SY	\$75		\$ -	
	ossing Approaches	SY	\$75		\$ -	
	ssing Approaches	SY	\$75		\$ -	
Rural Minor Cros	ssing Approaches	SY	\$75		\$ -	
					\$ -	<u> </u>
Grade-Separation	n Crossing		1 6:=:	,	^	T
Bridge	words 0 marsh 1	SF	\$150		<u> </u>	1
Roadway (earth	work & paving)	SY	\$50		\$ -	-
MSE Wall		SF	\$40		\$ -	
Embankment (fil		CY	\$25		\$ -	
Misc. (non-typica	al per project)	LS	\$1		\$ -	
<u> </u>					\$ -	İ
Crossing Signals			#000 CTT		•	T
Upgrade Signal	- barrier Gates	EA	\$200,000		\$ -	1
New Signal		EA	\$250,000		\$ -	1
DD SICNAL S					\$ -	L
RR SIGNALS		Гл	\$250,000	1	¢	
Per P.O. T.O. Per Mile		EA	\$250,000		\$ -	-
		MI	\$750,000		\$ -	1

#### Title

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Electric Locks	EA	\$25,000		\$ -	
				\$ -	
TILITY RELOCATION/ADJUSTMENT	•			•	
Transmission Lines	LS	\$1		\$ -	
Fiber Optic Lines	LF	\$95		\$ -	
Miscellaneous	LS	\$1		\$ -	
				\$ -	
ONTINGENCIES (30%)	LS		30%	\$ -	
		CONSTRU	CTION TOTAL	\$ -	
NVIRONMENTAL MITIGATION (20%)	LS		20%	\$ -	
Wetland Compensation	AC	\$0		\$ -	
	•		SUBTOTAL	\$ -	
NGINEERING/ADMINISTRATION (7%)	LS		7%	\$ -	
ONSTRUCTION MANAGEMENT (6%)	LS		6%	\$ -	
IGHT OF WAY					
Undeveloped	AC	\$20,000		\$ -	
Residential	AC	\$100,000		\$ -	
Commercial	AC	\$250,000		\$ -	
Industrial	AC	\$350,000		\$ -	
				\$ -	
AX (8.2%)			8.2%	\$ -	

#### TOTAL

Assumptions: General Layout shown on track charts

Track Miles 4.39

(MP 5.62 to MP 10.01)

\$/mile

<sup>\*</sup> 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

<sup>\*</sup> 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

<sup>\*</sup> 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

# Estimate and description furnished by BNSF includes the following components:

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

UNITS	UNIT COST	QUANTITY	TOTAL
LS	\$264,000,000 (2003)	1	\$264,000,000
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

HWORK	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Clear & Grub	AC	\$4,000		-	
Common Excavation	CY	\$10	786000	\$ 7,860,000	
			1 00000		
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		\$ -	<u> </u>
Tunnel	MI	\$0		1	-
runner	IVII	\$0			
				\$ -	
				\$ -	
K					
Track Construction					
New Track	TF	\$140	41420	\$ 5,798,800	
Rehab Track	TF	\$100	6375	\$ 637,500	
Yard Track	TF	\$125	2465	\$ 308,125	
			2403		
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	
			1		
Remove Existing Crossover	EA	\$10,000		\$ -	
Relocate Existing Crossover	EA	\$70,000		\$ -	
		<u></u>		\$ -	
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		\$ -	
<u> </u>				\$ -	
		İ		\$ -	
Culvert Crossings			i	j *	1
Major Culverts (> 36" Diameter)	LF	\$600		-	
Minor Culverts (< 36" Diameter)					
iviiiioi Cuiverts (< 36° Diameter)	LF	\$100		\$ -	-
		ļ		\$ -	
Other Drainage	LS	\$0		\$ -	
Retaining Walls					
C.I.P.	SF	\$75		-	
Soldier Pile < 20'	SF	\$75		\$ -	
Soldier Pile < 20 Soldier Pile w/ Tie Back > 20'	SF	\$100		\$ -	<u> </u>
Soil Nail	SF	\$55		\$ -	-
Retaining Walls **	SF	\$50	81145	\$ 4,057,250	
Station Platform	LS	\$2,500,000		\$ -	
				\$ -	
				\$ -	
DWAY		•			
Roadway Construction	ev	\$60		-	
	SY	\$60		Ψ -	ļ
At-Grade Crossing		T		T.a.	
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		\$ -	<u> </u>
marai minor orossing approacties	υı	ψισ		\$ -	

### 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	
		CONSTRUC	CTION 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

<sup>\*</sup> 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

<sup>\*\*</sup> 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)

IIWODI	UNITS	UNIT COST	QUANTITY		TOTAL	COMMENTS
HWORK	1	1 01000		T	242.000	
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	
				\$	-	
K						
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	
LINOVOI TIGOR		Ψ20	07000	\$	-	
Track/Turnout Removal/Relocation			I	ĮΨ	1	
Remove Existing Track	TF	\$10	4312	\$	43,120	
Relocate Existing Track	TF	\$100	7012	\$	73,120	
Remove Existing Track  Remove Existing Turnout	EA	\$5,000	37	\$	185,000	
Remove Existing Turnout  Relocate Existing Turnout	EA	\$5,000	31	\$		
			<b> </b>		-	
Remove Existing Crossover	EA	\$10,000		\$		
Relocate Existing Crossover	EA	\$70,000		\$	-	
<del>-</del>				\$	-	
Turnouts		1 0:	ı	1.4		
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		ψ1,010,000	I	ĮΨ	1	
< 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	20.070	\$	,000,000	
Soldier Pile v/ Tie Back > 20'	SF	\$100	127450	\$	12,745,000	
Soil Nail	SF	\$55	121700	\$	12,745,000	
CON INCII	JF.	φυυ		\$	-	
Station Diatform	1.0	¢2 500 000	<b> </b>			
Station Platform	LS	\$2,500,000		\$	-	
	+	+		\$	-	
NA/AN/				\$	-	
DWAY			1			
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		\$	-	
			225	\$	16,875	
Urban Minor Crossing Approaches	SY	\$75	225	Ψ	10,0731	
Urban Minor Crossing Approaches Rural Major Crossing Approaches	SY	\$75 \$75	225	\$	-	

### 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		\$ -	
				\$ -	
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	
LITY RELOCATION/ADJUSTMENT					
Transmission Lines	LS	\$1		\$ -	
Fiber Optic Lines	LF	\$95		\$ -	
Miscellaneous **	LS	\$11,900,000	1	\$ 11,900,000	Misc. Relocations
				\$ -	
ITINGENCIES (30%)	LS		30%	\$ 70,921,991	
		CONSTRU	CTION TOTAL	\$ 307,328,626	
IRONMENTAL MITIGATION (20%)	LS		20%	\$ 61,465,725	
Wetland Compensation **	AC	\$60,000	317	\$ 19,020,000	
			SUBTOTAL	\$ 387,814,351	
INEERING/ADMINISTRATION (7%)	LS		7%	\$ 21,513,004	
ISTRUCTION MANAGEMENT (6%)	LS		6%	\$ 18,439,718	
HT 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	
(8.2%)		1 1	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

<sup>\*</sup> 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

<sup>\*\*</sup> 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)

HWORK	UNITS	0.411 0031	QUANTITY	TOTAL	COMMENTS
Clear & Grub	AC	\$4,000		-	
Common Excavation	CY	\$10	2600	\$ 26,000	
Rock Excavation	CY	\$50	2000	\$ -	
	CY	\$20	2600	•	
Embankment			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		\$ -	
		* -		\$ -	
				\$ -	
K				ΙΨ	I.
Track Construction					
		04.40			T
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					<del> </del>
	EA	\$35,000		Ψ	<del> </del>
Remove Existing Crossover	EA	\$10,000		-	
Relocate Existing Crossover	EA	\$70,000		-	
				-	<u> </u>
Turnouts				·	
Split Point Derail	EA	\$45,000		\$ -	
#9	EA	\$110,000		\$ -	
#11	EA	\$120,000		\$ -	
#15	EA	\$120,000		\$ -	<u> </u>
				•	
#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	LA	ψ1,010,000			
		<b>#</b> F 000			T
< 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		\$ -	
Little Lindy	<del></del>	#000		\$ -	
	+	+			<u> </u>
Culvent Cuassis		1		-	L
Culvert Crossings		0000		Φ.	T
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 File < 20 Soldier Pile w/ Tie Back > 20'	SF	\$100		\$ -	1
Soil Nail	SF	\$55		-	<del> </del>
		<b>_</b>		-	
Station Platform	LS	\$2,500,000		\$ -	
		<u> </u>		\$ -	
				\$ -	
DWAY					
Roadway Construction	SY	\$60		\$ -	
At-Grade Crossing		Ψου	<u> </u>	<u> </u>	
	T	<b>#000</b>		¢	T
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 11				-	

### 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	
	•	CONSTRU	CTION 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:

<sup>\*</sup> 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
HWORK					
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		\$ -	
Turmer	IVII	φυ			
			-	\$ -	
				-	
CK					
Track Construction					1
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	1	\$ -	
Remove Existing Turnout	EA	\$5,000		\$ -	
Relocate Existing Turnout	EA	\$35,000	<del> </del>	\$ -	
Remove Existing Turnout  Remove Existing Crossover	EA	\$35,000	1	\$ -	
			<del>                                     </del>		<del> </del>
Relocate Existing Crossover	EA	\$70,000	1	\$ -	
		1	<u> </u>	-	
Turnouts			1	1.	
Split Point Derail	EA	\$45,000	ļ	\$ -	
#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	1	\$ -	
#20	EA	\$336,000		\$ -	
#24	EA	\$355,000	1	\$ 355,000	
#33	EA	\$730,000	<del>  '</del>	\$ 355,000	
#48	EA	\$1,010,000		\$ -	
Bridges	LA	\$1,010,000	1		
< 32' PRCT	TF	\$5,000	1	-	
32- 45' PRCT					
	TF	\$6,500	-	\$ -	
45-80' IB	TF	\$9,000		-	
80-160' DPG	TF	\$20,000		-	
80-160' TPG	TF	\$20,000	ļ	\$ -	
> 160' TRT	TF	\$30,000	ļ	\$ -	
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	1	\$ -	
Soldier Pile < 20 Soldier Pile w/ Tie Back > 20'	SF	\$100		\$ -	
Soil Nail	SF	\$55	1	\$ -	
Joil Ivali	35	φυυ	1		
Station Platform	10	¢2 500 000	1		
Station Platform	LS	\$2,500,000	<del>                                     </del>	-	
	+	1	1	\$ -	
			L	-	
DWAY			1	1 .	
Roadway Construction	SY	\$60	<u> </u>	\$ -	
At-Grade Crossing					
Concrete Crossing Panels Installed	TF	\$800		\$ -	
Urban Major Crossing Approaches	SY	\$75		\$ -	
Urban Minor Crossing Approaches	SY	\$75		\$ -	
			<b> </b>	\$ -	
Rural Major Crossing Approaches	SY	3/5			
Rural Major Crossing Approaches	SY SY	\$75 \$75			
Rural Major Crossing Approaches Rural Minor Crossing Approaches	SY SY	\$75 \$75		1	

### 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	
		CONSTRUC	CTION 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:

<sup>\*</sup> 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)

HWORK	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
	1 40	\$4,000	I		
Clear & Grub Common Excavation	AC CY	\$4,000 \$10	5200	\$ - \$ 52,000	
			5200	· · · · · · · · · · · · · · · · · · ·	
Rock Excavation	CY	\$50 \$20	F000	\$ -	<del> </del>
Embankment General Excavation *			5200	\$ 104,000	
	CY	\$15		\$ -	
Subballast	CY	\$30		-	
Erosion Controls	LS	\$0		-	
Seeding	AC	\$2,500		-	
Place Topsoil	CY	\$25		\$ -	
Tunnel	MI	\$0		\$ -	
				\$ -	
				-	
K					
Track Construction		1 .	1	Ι.	
New Track	TF	\$140		\$ -	
Rehab Track	TF	\$100		\$ -	
Yard Track	TF	\$125		\$ -	
Lineover Track	TF	\$25		\$ -	
				\$ -	
Track/Turnout Removal/Relocation			1		
Remove Existing Track	TF	\$10	ļ	\$ -	
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		1 + 1,0 10,000		1.7	1
< 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	<del> </del>	\$ -	1
Remove Existing Bridge	TF	\$500	<del> </del>	\$ -	1
Nomove Existing bridge	15	φυσσ	1	\$ -	<del> </del>
	+	+	1	\$ -	-
Culvert Crossings		1	l	- Ψ	l .
	LF	<b>\$600</b>	1	¢	1
Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)	LF LF	\$600 \$100	1	\$ -	
IVIIIIOI Cuiverts (< 30 Diameter)		\$100	1	-	
Other Dustrees	1	00	<del>                                     </del>	-	<del> </del>
Other Drainage	LS	\$0	<u> </u>	-	1
Retaining Walls	1 0-	A	1		1
C.I.P.	SF	\$75	<del>                                     </del>	-	
Soldier Pile < 20'	SF	\$75	<b> </b>	-	-
Soldier Pile w/ Tie Back > 20'	SF	\$100	<b> </b>	-	
Soil Nail	SF	\$55	ļ	\$ -	1
			<b></b>	\$ -	
Station Platform	LS	\$2,500,000		\$ -	
			ļ	\$ -	
				\$ -	
WAY					
Roadway Construction	SY	\$60		\$ -	
At-Grade Crossing	•	-		•	-
	TF	\$800		\$ -	
Concrete Crossing Panels Installed		\$75		\$ -	
Concrete Crossing Panels Installed Urban Major Crossing Approaches	SY	9/3			
Urban Major Crossing Approaches					
Urban Major Crossing Approaches Urban Minor Crossing Approaches	SY	\$75		\$ -	
Urban Major Crossing Approaches				\$ -	

### 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	
		CONSTRUC	CTION 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:

<sup>\*</sup> 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
THWORK		·	•	•	
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		\$ -	
Turner	1411	ΨΟ		\$ -	
				\$ -	
K			1		
Track Construction					
	TE	£4.40	1	I m	T
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	1	\$ -	
	-/-	ψ. ο,οοο		\$ -	
Turnouts		1	1		1
Split Point Derail	EA	\$45,000	1	-	I
#9	EA	\$110,000	1	\$ -	
#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		\$ -	
	_		1	· · · · · · · · · · · · · · · · · · ·	
80-160' TPG	TF TF	\$20,000	<del>                                     </del>	\$ -	
> 160' TRT		\$30,000	<del>                                     </del>	-	<del> </del>
Remove Existing Bridge	TF	\$500	<del>                                     </del>	\$ -	
		1	1	\$ -	
		1	<u> </u>	-	
Culvert Crossings		1	1	T.a.	
Major Culverts (> 36" Diameter)	LF	\$600	ļ	-	
Minor Culverts (< 36" Diameter)	LF	\$100		\$ -	
			ļ	\$ -	
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	İ	\$ -	
		ψ=,000,000	†	\$ -	
		+	1	\$ -	
L DWAY		1	1		
	61/	000	I	l ¢	T
Roadway Construction	SY	\$60	<u> </u>	\$ -	<u> </u>
At-Grade Crossing		***	T	Ι φ	T
Concrete Crossing Panels Installed	TF	\$800	<b></b>	\$ -	
Urban Major Crossing Approaches	SY	\$75		-	
	SY	\$75		\$ -	
Urban Minor Crossing Approaches					
Urban Minor Crossing Approaches Rural Major Crossing Approaches	SY	\$75		\$ -	
Urban Minor Crossing Approaches		\$75 \$75		\$ - \$ - \$ -	

### 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	
		CONSTRUC	CTION 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:

<sup>\*</sup> 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)**

HWORK	UNITS	ONIT COST	QUANTITY	TOTAL	COMMENTS
Clear & Grub	۸٥	\$4,000		-	
Common Excavation	AC		F200		
	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		\$ -	
	CY			\$ -	
Place Topsoil		\$25	ļ		<u> </u>
Tunnel	MI	\$0		\$ -	
				\$ -	
				\$ -	
K					
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	<u> </u>	\$ -	
		<u> </u>		\$ -	
Turnouts					
Split Point Derail	EA	\$45,000		\$ -	
#9	EA	\$110,000		\$ -	
#11	EA	\$120,000		\$ -	
			1		
#15	EA	\$142,000	<b> </b>	-	
#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		
#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	ļ	-	<u> </u>
80-160' DPG	TF	\$20,000	ļ	\$ -	
80-160' TPG	TF	\$20,000		\$ -	
> 160' TRT	TF	\$30,000		\$ -	
Remove Existing Bridge	TF	\$500		\$ -	
<u> </u>		1	Ì	\$ -	
	_	1		\$ -	
Culvert Crossings		1	I .	ΙΨ -	I
		<b>#</b> 000	l	I e	
Major Culverts (> 36" Diameter)	LF	\$600	1	\$ -	
Minor Culverts (< 36" Diameter)	LF	\$100	ļ	\$ -	
				\$ -	
Other Drainage	LS	\$0	<u> </u>	\$ -	
Retaining Walls					
C.I.P.	SF	\$75		\$ -	
Soldier Pile < 20'	SF	\$75		\$ -	
Coldier Dile w/ Tie Beek : 001					
Soldier Pile w/ Tie Back > 20'	SF	\$100	ļ	-	<u> </u>
Soil Nail	SF	\$55		-	
				\$ -	
Station Platform	LS	\$2,500,000	<u> </u>	\$ -	
				\$ -	
	1	1	Ì	\$ -	
DWAY		-	l	L ¥	
	0)/	<b>#</b> 00	ı	I e	
Roadway Construction	SY	\$60	ļ	\$ -	<u> </u>
At-Grade Crossing			T	1 .	
Concrete Crossing Panels Installed	TF	\$800		\$ -	
Urban Major Crossing Approaches	SY	\$75	<u> </u>	\$ -	
Urban Minor Crossing Approaches	SY	\$75		\$ -	
Rural Major Crossing Approaches	SY	\$75		\$ -	
L			<b> </b>	\$ -	
	Ć.				
Rural Minor Crossing Approaches	SY	\$75		\$ -	

### 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	
		CONSTRUC	CTION 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:

<sup>\*</sup> 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)

HWORK	UNITS	UNIT COST	QUANTITY		TOTAL	COMMENTS
HWORK	1 40	£4.000	1	Τ¢		T
Clear & Grub Common Excavation	AC CY	\$4,000 \$10		\$	-	
Rock Excavation	CY	\$50		\$	-	
Embankment	CY	\$20	100000	\$	2,000,000	
General Excavation *	CY	\$15	100000	\$	2,000,000	
Subballast	CY	\$30		\$	<u>-</u>	
Erosion Controls	LS	\$0		\$	-	
Seeding	AC	\$2,500		\$	-	
Place Topsoil	CY	\$25		\$		
Tunnel	MI	\$0		\$	_	
Turrici	1711	ΨΟ		\$	-	
	+			\$	_	
K				IΨ		
Track Construction						
						2nd UP MT between N.P. Jct. & K
New Track	TF	\$140	21000	\$	2,940,000	
						Rehab UP MT between N.P. Jct &
						Jct., and industry lead & siding be
Rehab Track	TF	\$100	9000	\$	900,000	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	
				1		UP Kenton Line MP 7.26 Industry
32- 45' PRCT	TF	\$6,500	60	\$	390,000	60'
45-80' IB	TF	\$9,000	ļ	\$	=	
80-160' DPG	TF	\$20,000	ļ	\$	=	
				1.		UP Kenton Line MP 7.42 N. Colu
80-160' TPG	TF	\$20,000	200	\$	4,000,000	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						
	SF	\$75		\$	-	
C.I.P.	C.E.	\$75		\$	-	
Soldier Pile < 20'	SF		1	\$	-	
	SF	\$100	<u> </u>			
Soldier Pile < 20'		\$100 \$55		\$	-	
Soldier Pile < 20' Soldier Pile w/ Tie Back > 20'	SF				-	
Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail	SF SF	\$55		\$ \$		
Soldier Pile < 20' Soldier Pile w/ Tie Back > 20'	SF			\$ \$ \$	-	
Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail	SF SF	\$55		\$ \$	-	
Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform	SF SF	\$55		\$ \$ \$	- - -	
Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform	SF SF LS	\$55 \$2,500,000		\$ \$ \$ \$	- - -	
Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform	SF SF	\$55		\$ \$ \$	- - - -	

### 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)00, N Chautauqua Blvd. (60' 1tk)0, N
Urban Minor Crossing Approaches	SY	\$75	2800	\$ 210,000	Peninsular Ave. (60')°, N Tyndall Ave.
Rural Major Crossing Approaches	SY	\$75		\$ -	(60' 1tk)°, two private GXs ~MP 7.0 (30'
Rural Minor Crossing Approaches	SY	\$75		\$ -	1tk each)00, private GX ~MP 7.1 (60'
				\$ -	tk)00, NE Lombard Pl. (120' 1tk)0
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	00 - 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	
		CONSTRUC	CTION 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

<sup>\*</sup> 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)

HWORK	UNITS	UNIT COST	QUANTITY		TOTAL	COMMENTS
Clear & Grub	AC	\$4,000	ı	\$		T
Common Excavation	CY	\$4,000	311190	\$	3,111,900	
Rock Excavation	CY	\$50	511130	\$	3,111,900	
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		\$	-	
				\$	-	
				\$	-	
K						
Track Construction		_	T			
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		\$	-	
T. 1/T. 1/D. 1/D.1		1		\$	-	
Track/Turnout Removal/Relocation		<b>M40</b>	40000	•	400.000	T
Remove Existing Track	TF	\$10 \$100	18809	\$	188,090	
Relocate Existing Track Remove Existing Turnout	TF	\$100	4708	\$	470,800	
Remove Existing Turnout  Relocate Existing Turnout	EA EA	\$5,000	13 6	\$	65,000 210,000	
Remove Existing Turnout  Remove Existing Crossover	EA	\$35,000 \$10,000	3	\$	30,000	
Remove Existing Crossover  Relocate Existing Crossover	EA	\$70,000	2	\$	140,000	
Molocate Existing C10550VEI	LA	ψ10,000		\$	140,000	
Turnouts	1	1	1	Ψ		1
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	1					
#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	l .	\$	-	l .
Bridges < 32' PRCT	TF	¢5,000	<u> </u>	\$		T
32- 45' PRCT	TF	\$5,000 \$6,500		\$		
45-80' IB	TF	\$6,500		\$	-	
80-160' DPG	TF	\$9,000		\$	-	
80-160 DPG 80-160' TPG	TF	\$20,000		\$		
> 160' TRT	TF	\$20,000		\$	<u>-</u>	
> 100 11X1	111'	ψου,υυυ		Ψ		Sta 53+00 (Frt House Square, si
Remove Existing Bridge	TF	\$500	1700	\$	850,000	track, timber trestle)
Construct New Bridge at Sta 18+00 **	TF	\$5,500	120	\$	660,000	Utility crossing, single track, 12
Construct New Bridge at Sta 35+00 **	TF	\$8,700	150	\$	1,305,000	Portland Ave, single track, 15
		÷5,. 50	.55	T	.,550,550	Freight House Square, double to
Construct New Bridge at Sta 53+00 **	TF	\$5,500	3400	\$	18,700,000	
Construct New Bridge at Sta 382+00 **	TF	\$8,700	50	\$	435,000	over county road, single trac
Construct New Bridge at Sta 535+00 **	TF	\$11,000	4800	\$	52,800,000	High speed flyover, single track,
Construct New Bridge at Sta 583+00 **	TF	\$8,700	2200	\$	19,140,000	Freight RR Bridge, single track, 2
Rebuild Old Pacific Highway Overpass **  Culvert Crossings	LS	\$5,500,000	1	\$	5,500,000	MP 24.29
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		\$	-	
	LF	\$1,100	10250	\$	11,275,000	
Retaining Walls		1	l	1		25x800' platform and grade sepa
•				_		
Station Platform	LS	\$2,500,000	3	\$	7,500,000	pedestrian crossing
•	LS MI	\$2,500,000 \$55,000	3 8.5	\$ \$ \$	7,500,000 467,500	pedestrian crossing

### 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 S
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. SV
Rural Major Crossing Approaches	SY	\$75		\$	-	North Thorne Lane SW; Berkeley St
Rural Minor Crossing Approaches	SY	\$75		\$	-	SW; 41st Division Dr.; Barksdale Ave
<u> </u>				\$	-	Old Pacific Highway
Grade-Separation Crossing			•			
Bridge	SF	\$150	6200	\$	930,000	MP 9.87 Mounts Rd. replacement
Roadway (earthwork & paving)	SY	\$50		\$	-	1
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		7-7-		*		
Upgrade Signal - Barrier Gates	EA	\$200,000	9	\$	1,800,000	
New Signal	EA	\$250,000	3	\$	750,000	
Tion eigna.		Ψ200,000	- U	\$	-	
SIGNALS				Ψ		
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	
Electric Econo		Ψ20,000		\$	120,000	
ITY RELOCATION/ADJUSTMENT				Ψ		
Transmission Lines	LS	\$1,100,000	1	\$	1,100,000	
Fiber Optic Lines	LF	\$95		\$	1,100,000	
Miscellaneous	LS	\$1,100,000	1	\$	1,100,000	
miscenaricous		ψ1,100,000		\$	1,100,000	
TINGENCIES (30%)	LS		30%	\$	57,473,660	
THICEHOLES (0070)		CONSTRU	CTION TOTAL		249,052,525	
IRONMENTAL MITIGATION (20%)	LS	CONSTRU	20%	\$	49,810,505	
Wetland Compensation	AC	\$0	20%	\$	49,610,303	
Wettaria Compensation	AC	Φ0	SUBTOTAL	•	298,863,029	
INCEDING (A DIMINICED A TION (TO))	1.0			•		
INEERING/ADMINISTRATION (7%)	LS		7%	\$	17,433,677	
STRUCTION MANAGEMENT (6%)	LS		6%	\$	14,943,151	
IT OF WAY		400.000	1 40			
Undeveloped	AC	\$20,000	16	\$	320,000	
Residential	AC	\$100,000		\$	-	
Commercial	AC	\$250,000		\$	-	
Industrial	AC	\$350,000		\$	-	
			8.2%	\$	20,422,307	
(8.2%)				\$		

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

<sup>\*</sup> 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

<sup>\*\*</sup> 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)

HWORK	UNITS	0 0001	QUANTITY		TOTAL	COMMENTS
Clear & Grub	AC	\$4,000		\$	-	
Common Excavation	CY	\$10		\$	_	
Rock Excavation	CY	\$50		\$	_	
Embankment	CY	\$20	101001	\$		
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		\$	_	
Turrier	IVII	ΨΟ		\$		
				\$		
K				ĮΨ	<u> </u>	
Track Construction						
New Track	TF	\$140	19272	\$	2,698,080	
Rehab Track	TF	\$100	4856	\$		
			4600		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				<del> </del>
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		\$		
			4		440.000	
#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		\$	<u>-</u>	
#48	EA	\$1,010,000		\$	-	
Bridges		<b>+</b> ., <b>-</b>				
						MP 34.12X 2 - 31' IB, RCT; MP 3
- 201 DDCT		¢E 000	60	•	240.000	
< 32' PRCT	TF	\$5,000	68	\$	340,000	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		\$	-	<del> </del>
Remove Existing Bridge	TF	\$500		\$	-	
				\$	-	
				\$	-	
Culvert Crossings				1		T
				1		Assume 30' Extensions for Single
Major Culverts (> 36" Diameter)	LF	\$600	60	\$	36,000	and 60' Extension for Double T
						Assume 30' Extensions for Single
Minor Culverts (< 36" Diameter)	LF	\$100	270	\$	27,000	and 60' Extension for Double Ti
, , , , , , , , , , , , , , , , , , , ,	<u> </u>		-	\$		
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	*	\$	-	11
		, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		\$	_	
	+	+		\$		
NW A V		1		ΙΦ	-	
WAY	0)/	000		1 6		T
Roadway Construction	SY	\$60		\$	-	<u> </u>
At-Grade Crossing						
	TF	\$800	210	\$	168,000	per below
Concrete Crossing Panels Installed Urban Major Crossing Approaches	SY	\$75	210	\$		

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

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
					MP 34.08X Stewart Ave. E.º; MP 35.21X
Urban Minor Crossing Approaches	SY	\$75	700	\$ 52,500	52nd Ave.º
Rural Major Crossing Approaches	SY	\$75		\$ -	
					Private GXs MP 34.87X <sup>00</sup> , MP 35.50X <sup>00</sup> ,
Rural Minor Crossing Approaches	SY	\$75	525	\$ 39,375	MP 36.08X <sup>00</sup> , MP 38.27X <sup>00</sup>
<u> </u>				\$ =	·
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	<sup>0</sup> - Upgraded signals
New Signal	EA	\$250,000	4	\$ 1,000,000	00 - 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	
		CONSTRU	CTION 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					
					Assumes 50' ROW take on all curves
Undeveloped	AC	\$20,000	9.2	\$ 184,000	greater than 1°40' 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

Track Miles

**Assumptions:** 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

<sup>\*</sup> 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)

HWORK	UNITS	UNII COST	QUANTITY	TOTAL	COMMENTS
	100	£4.000		1 ¢	Г
Clear & Grub	AC	\$4,000			
Common Excavation	CY	\$10 \$50	<del> </del>		<del> </del>
Rock Excavation	CY	\$50 \$30	1	-	
Embankment	CY	\$20	_		<del> </del>
General Excavation *	CY	\$15 \$20	0		<del> </del>
Subballast	CY	\$30		-	
Erosion Controls	LS	\$0	1	-	
Seeding	AC	\$2,500		-	
Place Topsoil	CY	\$25		-	
Tunnel	MI	\$0		\$ -	
				\$ -	
				-	
CK .					
Track Construction		1 .	T	Ι.	I
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		\$ -	
g		, ,		\$ -	
Turnouts				i ·	
Split Point Derail	EA	\$45,000		-	
#9	EA	\$110,000		\$ -	
#11	EA	\$120,000	0	\$ -	
#15	EA	\$142,000	U	\$ -	
#20	EA	\$168,000	1	\$ 168,000	
#24	EA	\$178,000	0	\$ 100,000	
	EA		U		
#33 #48	EA	\$360,000 \$500,000	-	\$ - \$ -	
	LA	\$500,000			
Crossovers	Γ.	#000 000	I	L &	T
#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			1	T .	T
< 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	
		1		\$ -	
Other Drainage	LS	\$0		\$ -	
Retaining Walls		_ ψυ	L	I Y	L
C.I.P.	SF	\$75		-	
Soldier Pile < 20'	SF	\$75	<u> </u>	\$ -	
Soldier File < 20 Soldier Pile w/ Tie Back > 20'	SF	\$100	<u> </u>	\$ -	
Soil Nail	SF	\$55		\$ -	
Coil Ivali	JF.	φυυ		\$ -	
Station Platform	10	¢2 500 000		\$ -	
Station Platform	LS	\$2,500,000	-		
		+	1	-	
NA V		1	<u> </u>	-	L
DWAY	011	400	T	1 6	I
Roadway Construction	SY	\$60	ļ	\$ -	<u> </u>
At-Grade Crossing		1 -	ı	T.	
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		\$ -	
Rulai Millor Crossing Approaches					

# 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	
		CONSTRU	CTION 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

<sup>\*</sup> 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)

						00111171170
THWORK	UNITS	UNIT COST	QUANTITY		TOTAL	COMMENTS
Clear & Grub	AC	\$4,000	I	\$	- 1	
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		\$	-	
		1 1		\$	-	
				\$	_	
CK		_		ĮΨ	-	
Track Construction				T .		
New Track	TF	\$140	8712	\$	1,219,680	
Rehab Track	TF	\$100		\$	-	
Yard Track	TF	\$125		\$	-	
Lineover Track	TF	\$25		\$	-	
				\$	-	
Track/Turnout Removal/Relocation	1		1	. *	I	
Remove Existing Track	TF	\$10	1000	\$	10.000	
			1000		10,000	
Relocate Existing Track	TF	\$100	ļ	\$	-	
Remove Existing Turnout	EA	\$5,000		\$		
Relocate Existing Turnout	EA	\$35,000	2	\$	70,000	
Remove Existing Crossover	EA	\$10,000	<u></u>	\$	-	
Relocate Existing Crossover	EA	\$70,000		\$	-	
-				\$	-	
Turnouts	•	•	•		I	
Split Point Derail	EA	\$45,000	2	\$	90,000	
	EA	\$110,000		\$		
#9					-	
#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		\$	_	
		\$285,000				
#15	EA			\$	-	
#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	1	\$	-	
80-160' TPG		\$20,000	0	-	-	
	TF		0	\$		
> 160' TRT	TF	\$30,000	ļ	\$	-	
Remove Existing Bridge	TF	\$500	ļ	\$	-	
		1		\$	-	
				\$	-	
Culvert Crossings						
Major Culverts (> 36" Diameter)	LF	\$600		\$	-	
Minor Culverts (< 36" Diameter)	LF	\$100		\$	-	
	<del>-</del>	7	1	\$	_	
Other Drainage	LS	\$0		\$	-	
Retaining Walls	LO	φυ	1	Ψ	-	
	0.5	<b>Ф</b> 7Г	1	6		
C.I.P.	SF	\$75	ļ	\$	-	
Soldier Pile < 20'	SF	\$75		\$	-	
Soldier Pile w/ Tie Back > 20'	SF	\$100		\$	-	
Soil Nail	SF	\$55		\$	-	
				\$	-	
Station Platform	LS	\$2,500,000		\$	-	<u> </u>
		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		\$	-	
		1	1	\$	-	
DWAY		<u> </u>	l	ĮΨ	- 1	
	01/	<b>#00</b>	I	1 6		
Roadway Construction	SY	\$60	<u> </u>	\$	-	
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	1	\$	-	
Rural Minor Crossing Approaches	SY	\$75		\$	-	
Rarai willor Orossing Approaches	31	φισ		Ψ	-	

#### Woodland Siding (MP 115.5 - MP 117.0)

	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
				\$ -	
Grade-Separation Crossing					
Bridge	SF	\$150	11800	\$ 1,770,000	
Roadway (earthwork & paving)	SY	\$50	14200	\$ 710,000	MP 116.63 Davidson Ave. (four-lane)
MSE Wall	SF	\$40		\$ -	INF 116.63 DavidSoft Ave. (Iour-latte)
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	
		CONSTRU	CTION 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:

Woodland Siding (Leaving room for 2nd

Mainline) Grade Separation at MP 116.63 (MP 117.1 to MP 115.45)

1.65

Track Miles

\$9,297,803 / mile

 $<sup>^{\</sup>star}$  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

<sup>\*\*</sup> 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
THWORK		·	•	•	
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		\$ -	
Turner	1411	ΨΟ		\$ -	
				\$ -	
K			1		
Track Construction					
	TE	£4.40	1	I m	T
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	1	\$ -	
	-/-	ψ. ο,οοο		\$ -	
Turnouts		1	1		1
Split Point Derail	EA	\$45,000	1	-	I
#9	EA	\$110,000	1	\$ -	
#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		\$ -	
	_		1	·	
80-160' TPG	TF TF	\$20,000	<del>                                     </del>	\$ -	
> 160' TRT		\$30,000	<del>                                     </del>	-	<del> </del>
Remove Existing Bridge	TF	\$500	<del>                                     </del>	\$ -	
		1	1	\$ -	
		1	<u> </u>	-	
Culvert Crossings		T	1	T.a.	
Major Culverts (> 36" Diameter)	LF	\$600	ļ	-	
Minor Culverts (< 36" Diameter)	LF	\$100		\$ -	
			ļ	\$ -	
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	İ	\$ -	
		ψ=,000,000	†	\$ -	
		+	1	\$ -	
L DWAY		1	1		
	61/	000	I	l ¢	T
Roadway Construction	SY	\$60	<u> </u>	\$ -	<u> </u>
At-Grade Crossing		***	T	Ι φ	T
Concrete Crossing Panels Installed	TF	\$800	<b></b>	\$ -	
Urban Major Crossing Approaches	SY	\$75		-	
	SY	\$75		\$ -	
Urban Minor Crossing Approaches					
Urban Minor Crossing Approaches Rural Major Crossing Approaches	SY	\$75		\$ -	
Urban Minor Crossing Approaches		\$75 \$75		\$ - \$ - \$ -	

# 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	
		CONSTRUC	CTION 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:

<sup>\*</sup> 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

<sup>\*</sup> 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

<sup>\*</sup> 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)**

HWORK	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Clear & Grub	AC	\$4,000	I	-	
Clear & Grub Common Excavation	CY	\$4,000	2600	\$ 26,000	
			2000	· ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '	
Rock Excavation	CY	\$50 \$20	2000	\$ -	<del> </del>
Embankment			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		\$ -	
				\$ -	
				-	
K					
Track Construction		1 .	1	Ι.	I
New Track	TF	\$140		\$ -	
Rehab Track	TF	\$100		\$ -	
Yard Track	TF	\$125		\$ -	
Lineover Track	TF	\$25		\$ -	
				\$ -	
Track/Turnout Removal/Relocation		_		_	<u></u>
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	1	\$ -	
#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		1 + 1,0 10,000		1.7	
< 32' PRCT	TF	\$5,000		\$ -	
32- 45' PRCT	TF	\$6,500		\$ -	
45-80' IB	TF	\$9.000	1	\$ -	
80-160' DPG	TF	\$20,000		\$ -	
80-160' TPG	TF	\$20,000		\$ -	
> 160' TRT	TF	\$30,000		\$ -	
Remove Existing Bridge	TF	\$500	1	\$ -	
Monovo Existing Dridge	+ ''	ψουυ	<del> </del>	\$ -	
	+	+	1	\$ -	
Culvert Crossings		1	ı	ΙΨ -	L
Major Culverts (> 36" Diameter)	LF	\$600	1	-	T
Minor Culverts (< 36" Diameter)	LF LF	\$100	-		
ivilior Curverts (< 30 Diameter)		\$100	1	7	
Other Dustrans	+	00	<del>                                     </del>	-	
Other Drainage	LS	\$0	<u> </u>	-	<u>l</u>
Retaining Walls		A	1	I 🌣	I
C.I.P.	SF	\$75	<b> </b>	\$ -	
Soldier Pile < 20'	SF	\$75	<b> </b>	\$ -	
Soldier Pile w/ Tie Back > 20'	SF	\$100	ļ	\$ -	
Soil Nail	SF	\$55	ļ	\$ -	
	$\bot$		<b></b>	\$ -	
Station Platform	LS	\$2,500,000		\$ -	
			ļ	\$ -	
				\$ -	
WAY					
Roadway Construction	SY	\$60		\$ -	
At-Grade Crossing	-	-		-	
At Grade Grossing	TF	\$800		\$ -	
Concrete Crossing Panels Installed					1
Concrete Crossing Panels Installed	SY	\$75		-	
Concrete Crossing Panels Installed Urban Major Crossing Approaches	SY	\$75 \$75		τ	
Concrete Crossing Panels Installed Urban Major Crossing Approaches Urban Minor Crossing Approaches	SY SY	\$75		\$ -	
Concrete Crossing Panels Installed Urban Major Crossing Approaches	SY			\$ -	

# 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	
	•	CONSTRU	CTION 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:

<sup>\*</sup> 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)

HWORK	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
Clear & Grub	AC	\$4,000	1	-	
Common Excavation	CY	\$10		\$ -	
Rock Excavation	CY	\$50		\$ -	
Embankment	CY	\$20		\$ -	
General Excavation *			440070		
	CY	\$15	118272	\$ 1,774,080	
Subballast	CY	\$30		\$ -	
Erosion Controls	LS	\$0		\$ -	
Seeding	AC	\$2,500		\$ -	
Place Topsoil	CY	\$25		\$ -	
Tunnel	MI	\$0		\$ -	
				\$ -	
				\$ -	
K					
Track Construction					
New Track	TF	\$140	16896	\$ 2,365,440	
Rehab Track	TF	\$100		\$ -	
Yard Track	TF	\$125		\$ -	
Lineover Track	TF	\$25		\$ -	
Lilleovei Track	117	<b>Φ2</b> 5		\$ -	
Track/Turnout Removal/Relocation					
		<b>640</b>	4000	10,000	I to altreate a service
Remove Existing Track	TF	\$10	1000	\$ 10,000	Industry spur
Relocate Existing Track	TF	\$100	<b>!</b>	\$ -	
Remove Existing Turnout	EA	\$5,000	1	\$ 5,000	
Relocate Existing Turnout	EA	\$35,000	1	\$ 35,000	
Remove Existing Crossover	EA	\$10,000	1	\$ 10,000	Reconfigure Thomas w/ #33
Relocate Existing Crossover	EA	\$70,000	1	\$ -	
-				\$ -	
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		1 .		Τ.	<b>T</b>
#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		1 7 //			•
< 32' PRCT	TF	\$5,000	39	\$ 195,000	MP 23.8X 2 - 39' WF
32- 45' PRCT	TF	\$6,500	- 00	\$ -	WII 20.5/(2 00 W)
45-80' IB	TF	\$9,000		\$ -	
				<u> </u>	
80-160' DPG	TF	\$20,000		\$ -	
80-160' TPG	TF	\$20,000	<b>_</b>	\$ -	1
> 160' TRT	TF	\$30,000	1	\$ -	1
Remove Existing Bridge	TF	\$500	1	\$ -	
				\$ -	
				\$ -	
Culvert Crossings					
Major Culverts (> 36" Diameter)	LF	\$600		\$ -	
Minor Culverts (< 36" Diameter)	LF	\$100	1	\$ -	
				\$ -	
Other Drainage	LS	\$0		\$ -	
Retaining Walls		. 7-	•	•	•
C.I.P.	SF	\$75		\$ -	1
Soldier Pile < 20'	SF	\$75	1	\$ -	†
Soldier Pile < 20 Soldier Pile w/ Tie Back > 20'	SF		1		+
		\$100	<del> </del>	Ψ	+
Soil Nail	SF	\$55	1	\$ -	+
		00	1	\$ -	1
Station Platform	LS	\$2,500,000	1	\$ -	1
			1	\$ -	
				\$ -	
DWAY					
Roadway Construction	SY	\$60		\$ -	
At-Grade Crossing	<del></del>	+ +	•	+ *	+
Concrete Crossing Panels Installed	TF	\$800	120	\$ 96,000	
Urban Major Crossing Approaches	SY	\$75	120	\$ 90,000	Public GXs MP 21.22°, MP 21.
Urban Minor Crossing Approaches			700		
	SY	\$75	700	\$ 52,500	+
Rural Major Crossing Approaches	SY	\$75	1	\$ -	+
			1	I W	1
Rural Minor Crossing Approaches	SY	\$75		\$ - \$ -	

## 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	\$ =	<sup>₀₀</sup> - 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	
	•	CONSTRUC	CTION 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

<sup>\*</sup> 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.	LS	\$160,000,000 (2006) *	1	\$160,000,000
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.				

 $<sup>^{\</sup>ast}$  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)

HWORK	UNITS	01111 0001	QUANTITY		TOTAL	COMMENTS
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		\$	_	
		Ψ.		\$	-	
				\$	_	
K		-		ĮΨ		
Track Construction						
New Track	TF	\$140	66053	\$	9,247,392	
Rehab Track	TF	\$100	00000	\$	5,247,552	
Yard Track	TF	\$125		\$	-	
Lineover Track	TF	\$25		\$		
Lineover frack	IF	\$25		\$	<u>-</u>	
Track/Turnout Removal/Relocation	I	ı		Φ	-	
Remove Existing Track	TF	\$10	I	\$		
	TF	\$10 \$100				
Relocate Existing Track			-	\$	<u> </u>	
Remove Existing Turnout	EA	\$5,000				
Relocate Existing Turnout	EA	\$35,000		\$	-	
Remove Existing Crossover	EA	\$10,000		\$	-	
Relocate Existing Crossover	EA	\$70,000		\$	-	
<del>-</del>		1	l	\$	-	
Turnouts		1	1			
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		ψ.,σ.σ,σσσ	I	Ι Ψ		
						MP 68.19 3 - 19' PT; MP 66.73
< 32' PRCT	TF	\$5,000	74	\$	370,000	MP 66.19 7' CA; MP 62.46 6
32- 45' PRCT	TF	\$6,500	45	\$	292,500	Rogers Rd. overpass
45-80' IB	TF					MP 70.45 3 - 61' DPG
		\$9,000	183	\$	1,647,000	IVIP 70.45 3 - 6T DPG
80-160' DPG	TF	\$20,000	000	\$	4 400 000	MD 50 40 0 400 TD0
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		\$	-	
				1		New flyovers MP 59.5 (Newar
				1.		River & BNSF, 2000') and MP
Flyovers **	TF	\$8,700	4000	\$	34,800,000	(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		\$		
	SF			\$		
Soldier Pile w/ Tie Back > 20'		\$100			-	
Soil Nail	SF	\$55		\$	-	
		00.55	ļ	\$	-	
Station Platform	LS	\$2,500,000		\$	-	
Otation i lationii						
otation i lacionii				\$	-	
WAY				\$	-	

## 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		\$	_	Dublic OV- ND 74 44 Websit Ot 0: ND
		Ψίσ				Public GXs MP 71.44 Walnut St.°; MF 71.29 Fir St.°; MP 70.72°°; MP 69.74
Urban Minor Crossing Approaches	SY	\$75	1400	\$	105,000	Hawkins Rd.º
Rural Major Crossing Approaches	SY	\$75		\$	-	Tidwidii Sirta.
Rural Minor Crossing Approaches	SY	\$75	175	\$	13,125	Private GX MP 68.8000
Close Crossing **	LS	\$5,500	1	\$	5,500	MP 69.24 Private Road Crossing
Grade-Separation Crossing	•	•	•			
Deidas	SF	<b>C150</b>	24000	\$	4.650.000	Grade-separate new alignment
Bridge	- SF	\$150	31000	Þ	4,650,000	crossings of Summerville Rd., SR 603
Roadway (earthwork & paving)	SY	\$50	48800	\$	2,440,000	
MOTIVI	05	<b>#</b> 40		•		Rd. (assume 2-lane bridges w/ 1000
MSE Wall	SF	\$40		\$	-	approaches); Rogers Rd. realignmer
Embankment (fill)	CY	\$25	111100	\$	2,777,500	(Roadway only)
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
				\$	-	
IGNALS						
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		\$	-	
TV DEL COATION/AD INCTMENT				\$	-	
ITY RELOCATION/ADJUSTMENT	1.0		ı			I
Transmission Lines Fiber Optic Lines	LS LF	\$1 \$95		\$	<u>-</u>	
Miscellaneous		\$95 \$1		\$		
Miscenaneous	LS	φı		\$	=	
I TINGENCIES (30%)	LS		30%	\$	24,336,018	
TINGENCIES (30 %)	LO	CONSTRU	CTION TOTAL		105,456,079	
RONMENTAL MITIGATION (20%)	LS	CONSTRU	20%	\$	21,091,216	
Wetland Compensation	AC	\$0	2070	\$	21,031,210	
Wettand Compensation	AC	ΨΟ	SUBTOTAL	•	126,547,295	
NEERING/ADMINISTRATION (7%)	LS		7%	\$	7,381,926	
STRUCTION MANAGEMENT (6%)	LS		6%	\$	6,327,365	
IT OF WAY	LO		070	Ψ	0,021,000	l
Undeveloped	AC	\$20,000	51.12	\$	1,022,400	
Residential	AC	\$100,000	*****	\$	-	
Commercial	AC	\$250,000		\$	-	
Industrial	AC	\$350,000		\$	-	
				\$	-	
(8.2%)			8.2%	\$	8,647,399	

#### TOTAL \$ 149,926,384

**Assumptions:** One New Track

(MP 59.49 to MP 72.)

Track Miles 12.51

\$11,984,523 / mile

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

<sup>\*</sup> 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

<sup>\*\*</sup> 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	LINIT COST	QUANTITY	TOTAL	COMMENTS
HWORK	UNITS	UNIT COST	QUANTITY	IUIAL	COMMENTS
Clear & Grub	AC	\$4,000		-	
Common Excavation	CY	\$10		\$ -	
Rock Excavation	CY	\$50		\$ -	
Embankment	CY	\$20		\$ -	
General Excavation *	CY	\$15	55440	\$ 831,600	
			55440		
Subballast	CY	\$30		\$ -	
Erosion Controls	LS	\$0		\$ -	
Seeding	AC	\$2,500		-	
Place Topsoil	CY	\$25		\$ -	
Tunnel	MI	\$0		\$ -	
				\$ -	
				\$ -	
K					
Track Construction					
New Track	TF	\$140	7920	\$ 1,108,800	
Rehab Track	TF	\$100	.020	\$ -	
Yard Track	TF	\$125		\$ -	
Lineover Track	TF				
Lineover Track	IF.	\$25		-	
T 1 (T 1 (D 1/D 1/D 1/D				\$ -	
Track/Turnout Removal/Relocation			1	T	<u> </u>
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		\$ -	
relocate Existing 010330ver		Ψ10,000		\$ -	
Turmouto				-	
Turnouts	_		ı	Г	
					#11 POTO at south end doubles a
Split Point Derail	EA	\$45,000	1	\$ 45,000	second derail
#9	EA	\$110,000		\$ -	
					Include with south end CP to double
#11	EA	\$120,000	1	\$ 120,000	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		\$ -	
	LA	\$500,000		-	
Crossovers	Ε.	<b>#</b> 000 000	I	ф.	T
#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		1 7 7 - 7 - 7	L		
< 32' PRCT	TF	\$5,000		\$ -	
32- 45' PRCT	TF	\$6,500		\$ -	
	TF	\$9,000	<b> </b>		
45-80' IB				-	
80-160' DPG	TF	\$20,000		-	
80-160' TPG	TF	\$20,000		-	
> 160' TRT	TF	\$30,000		\$ -	
Remove Existing Bridge	TF	\$500	L	\$ -	
			l	\$ -	
				\$ -	
Culvert Crossings	•	•	•		•
Major Culverts (> 36" Diameter)	LF	\$600		\$ -	
Minor Culverts (< 36" Diameter)	LF	\$100	60	\$ 6,000	
winter Outverte (< 50 Diameter)	LI	ψ100	00		
Other Dreimens	1.0	<b>*</b>	<b> </b>		
Other Drainage	LS	\$0		\$ -	
Retaining Walls			T	T .	
C.I.P.	SF	\$75		\$ -	
Soldier Pile < 20'	SF	\$75		\$ -	
Soldier Pile w/ Tie Back > 20'	SF	\$100		\$ -	
Soil Nail	SF	\$55		\$ -	
	- 0,	ΨΟΟ		\$ -	
Station Platform	LS	¢2 500 000			
SIGUUII FIGUUIIII	LS	\$2,500,000		-	
<u> </u>		+	1	\$ -	
		<u> </u>	<u> </u>	\$ -	l
DWAY					
Roadway Construction	SY	\$60	<u></u>	\$ -	

# 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.°; MP 57.88 Prindle St.°;
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	<ul> <li>Upgraded signals</li> </ul>
New Signal	EA	\$250,000	0	\$	-	00 - 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	
		CONSTRU	CTION 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: Extend Chehalis Siding

(MP 56.8 to MP 58.3)

Track Miles 1.50

\$7,549,578 / mile

<sup>\*</sup> 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
HWORK		•		•	
Clear & Grub	AC	\$4,000		-	
Common Excavation	CY	\$10	5200	\$ 52,000	
Rock Excavation	CY	\$50	0200	\$ -	
			5000		
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		\$ -	
				-	
				\$ -	
K .		_		1 4	
Track Construction		1 .			
New Track	TF	\$140		\$ -	
Rehab Track	TF	\$100		-	
Yard Track	TF	\$125		\$ -	
Lineover Track	TF	\$25		\$ -	
Lineover Hack	I I F	φ <b>2</b> 5			
				\$ -	
Track/Turnout Removal/Relocation					
Remove Existing Track	TF	\$10		\$ -	
Relocate Existing Track	TF	\$100		\$ -	
		\$5.000	4		
Remove Existing Turnout	EA	4 - 7	4	* '/	
Relocate Existing Turnout	EA	\$35,000		\$ -	
Remove Existing Crossover	EA	\$10,000		\$ -	
Relocate Existing Crossover	EA	\$70,000		\$ -	
TOOOGIO EXISTING OTOSSOVET	LA	ψ10,000			
				\$ -	
Turnouts					
Split Point Derail	EA	\$45,000		-	
#9	EA	\$110,000		\$ -	
	EA				
#11		\$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		\$285,000			
	EA			\$ -	
#20	EA	\$336,000		\$ -	
#24	EA	\$355,000	2	\$ 710,000	
#33	EA	\$730,000		\$ -	
#48	EA	\$1,010,000		\$ -	
	LA	ψ1,010,000		Ψ -	
Bridges	1	1		T.	
< 32' PRCT	TF	\$5,000		\$ -	
< 32' PRCT					
< 32' PRCT 32- 45' PRCT	TF	\$6,500		\$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB	TF TF	\$6,500 \$9,000		\$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG	TF TF TF	\$6,500 \$9,000 \$20,000		\$ - \$ - \$	
< 32' PRCT 32- 45' PRCT 45-80' IB	TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000		\$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG	TF TF TF	\$6,500 \$9,000 \$20,000		\$ - \$ - \$	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT	TF TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000		\$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG	TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000		\$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT	TF TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000		\$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge	TF TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000		\$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge Culvert Crossings	TF TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000		\$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge Culvert Crossings	TF TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
<ul> <li>&lt; 32' PRCT</li> <li>32- 45' PRCT</li> <li>45-80' IB</li> <li>80-160' DPG</li> <li>80-160' TPG</li> <li>&gt; 160' TRT</li> <li>Remove Existing Bridge</li> </ul> Culvert Crossings <ul> <li>Major Culverts (&gt; 36" Diameter)</li> </ul>	TF TF TF TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge Culvert Crossings	TF TF TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)	TF TF TF TF TF LF LF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$600 \$100		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage	TF TF TF TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage	TF TF TF TF TF LF LF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$600 \$100		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls	TF TF TF TF TF TF TF TF TF TF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$600 \$100		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P.	TF TF TF TF TF TF TF TF TF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$600 \$100 \$0		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P. Soldier Pile < 20'	TF TF TF TF TF TF TF TF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$600 \$100 \$0		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TRT Remove Existing Bridge Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20'	TF TF TF TF TF TF TF SF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$600 \$100 \$0 \$75 \$75 \$100		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P. Soldier Pile < 20'	TF TF TF TF TF TF TF TF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$600 \$100 \$0 \$75 \$75 \$100		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TRT Remove Existing Bridge Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20'	TF TF TF TF TF TF TF SF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$600 \$100 \$0		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Sold Pile W/ Tie Back > 20' Soil Nail	TF TF TF TF TF TF SF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$600 \$100 \$0 \$75 \$75 \$100 \$55		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TRT Remove Existing Bridge Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20'	TF TF TF TF TF TF TF SF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$600 \$100 \$0 \$75 \$75 \$100		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Sold Pile W/ Tie Back > 20' Soil Nail	TF TF TF TF TF TF SF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$600 \$100 \$0 \$75 \$75 \$100 \$55		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail Station Platform	TF TF TF TF TF TF SF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$600 \$100 \$0 \$75 \$75 \$100 \$55		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail Station Platform	TF TF TF TF TF TF SF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$600 \$100 \$0 \$75 \$75 \$100 \$55		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail Station Platform OWAY	TF TF TF TF TF TF TF TF TF TF TF LS	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$600 \$100 \$75 \$75 \$100 \$55		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail Station Platform SWAY Roadway Construction	TF TF TF TF TF TF SF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$600 \$100 \$0 \$75 \$75 \$100 \$55		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail Station Platform OWAY Roadway Construction At-Grade Crossing	TF TF TF TF TF TF TF TF TF TF TF LS	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$600 \$100 \$75 \$75 \$100 \$55		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail Station Platform OWAY Roadway Construction At-Grade Crossing	TF TF TF TF TF TF TF TF TF TF TF LS	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$600 \$100 \$75 \$75 \$75 \$100 \$55 \$2,500,000		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail Station Platform DWAY Roadway Construction At-Grade Crossing Concrete Crossing Panels Installed	TF TF TF TF TF TF TF TF TF TF TF TF TF T	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$600 \$100 \$75 \$75 \$100 \$55 \$2,500,000		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail Station Platform DWAY Roadway Construction At-Grade Crossing Concrete Crossing Panels Installed Urban Major Crossing Approaches	TF TF TF TF TF TF TF TF TF TF TF TF TF T	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$600 \$100 \$75 \$75 \$100 \$55 \$2,500,000 \$60 \$2,500,000		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail Station Platform OWAY Readway Construction At-Grade Crossing Concrete Crossing Approaches Urban Major Crossing Approaches Urban Minor Crossing Approaches	TF TF TF TF TF TF TF TF TF TF TF TF SF SF SF SF SF SF SF SF SF SF SF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$600 \$100 \$75 \$75 \$100 \$55 \$2,500,000 \$60 \$800 \$75 \$75		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail Station Platform OWAY Roadway Construction At-Grade Crossing Concrete Crossing Panels Installed Urban Major Crossing Approaches Rural Major Crossing Approaches Rural Major Crossing Approaches	TF TF TF TF TF TF TF TF TF TF TF TF TF T	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$100 \$100 \$75 \$75 \$100 \$55 \$2,500,000 \$800 \$800 \$75 \$75 \$75		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail Station Platform OWAY Readway Construction At-Grade Crossing Concrete Crossing Approaches Urban Major Crossing Approaches Urban Minor Crossing Approaches	TF TF TF TF TF TF TF TF TF TF TF TF SF SF SF SF SF SF SF SF SF SF SF SF SF	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$100 \$100 \$75 \$75 \$100 \$55 \$2,500,000 \$800 \$800 \$75 \$75 \$75		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
< 32' PRCT 32- 45' PRCT 45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter) Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail Station Platform OWAY Roadway Construction At-Grade Crossing Concrete Crossing Panels Installed Urban Major Crossing Approaches Rural Major Crossing Approaches Rural Major Crossing Approaches	TF TF TF TF TF TF TF TF TF TF TF TF TF T	\$6,500 \$9,000 \$20,000 \$20,000 \$30,000 \$500 \$600 \$100 \$75 \$75 \$100 \$55 \$2,500,000 \$60 \$800 \$75 \$75		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	

# 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	
		CONSTRUC	CTION 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:

<sup>\*</sup> 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)

HWORK	UNITS	0.41 0031	QUANTITY	10	TAL	COMMENTS
Clear & Grub	AC	\$4,000		\$	- 1	
Common Excavation	CY	\$10		\$	-	
Rock Excavation	CY	\$50		\$	-	
						Fill under 3rd main between UP
Embankment	CY	\$20	56000	\$	1,120,000	UGBR and N. Portland Jct.
General Excavation *	CY	\$15	90468	\$	1,357,020	
Subballast	CY	\$30		\$	-	<u> </u>
Erosion Controls	LS	\$0		\$	-	
Seeding	AC	\$2,500		\$	-	
Place Topsoil	CY	\$25		\$	-	<u> </u>
Tunnel	MI	\$0		\$	-	<u> </u>
				\$	-	<b> </b>
				\$	-	
K Track Construction						
Track Construction New Track	TF	¢140	12024	¢	1 900 360	
Rehab Track	TF	\$140 \$100	12924 4240	\$	1,809,360 424,000	
Yard Track	TF	\$100	5620	\$	702,500	
Lineover Track	TF	\$25	3020	\$	702,300	
Lilleovel Hack	- ''	φ23		\$	-	
Track/Turnout Removal/Relocation			<u>l</u>	Ψ		
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	Ĭ	\$	-	
Remove Existing Crossover	EA	\$10,000	6	\$	60,000	
Relocate Existing Crossover	EA	\$70,000		\$	-	
	1	,		\$	-	ĺ
Turnouts	•	•			1	
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		T 4-	ı	T -		
#9	EA	\$230,000		\$	-	<u> </u>
#11	EA	\$250,000	2	\$	500,000	<del> </del>
#15	EA	\$285,000		\$	-	<u> </u>
#20	EA	\$336,000	1	\$	336,000	
#24	EA	\$355,000	2	\$	710,000	
#33	EA	\$730,000		\$	-	<del></del>
#48 Bridges	EA	\$1,010,000	l .	\$	-	
< 32' PRCT	TF	\$5,000		¢	- 1	
32- 45' PRCT	TF	\$5,000		\$	-	
45-80' IB	TF	\$9,000		\$	-	<u> </u>
80-160' DPG	TF	\$9,000	0	\$	-	<u> </u>
80-160 DPG 80-160' TPG	TF	\$20,000	U	\$		
> 160' TRT	TF	\$30,000	306	\$	9,180,000	MP 7.43 306' TPCT
Remove Existing Bridge	TF	\$30,000	300	\$	ə, 10U,UUU	IVIF 1.43 300 IPCI
Moniove Existing Driuge	15	φουυ		\$	-	
		+		\$	-	
Culvert Crossings	1	1	<u> </u>	ĮΨ		
Major Culverts (> 36" Diameter)	LF	\$600		\$	- 1	
Minor Culverts (< 36" Diameter)	LF	\$100		\$	-	
Millor Odiverto (< 00 Diameter)		Ψ100		\$		
Other Drainage	LS	\$0		\$	-	
Retaining Walls		Ψ.	1	. *		
C.I.P.	SF	\$75		\$	-	ĺ
Soldier Pile < 20'	SF	\$75		\$	-	
Soldier Pile w/ Tie Back > 20'	SF	\$100		\$	-	
Soil Nail	SF	\$55		\$	-	
				\$	-	
Station Platform	LS	\$2,500,000		\$	-	
				\$	-	
				\$	-	1
WAY						
Roadway Construction	SY	\$60		\$	-	<u> </u>
At-Grade Crossing						
Concrete Crossing Panels Installed	TF	\$800		\$	-	
Urban Major Crossing Approaches	SY	\$75		\$	-	
		\$75		\$	-	
Urban Minor Crossing Approaches	SY					
Rural Major 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	
		CONSTRUC	CTION 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

 $<sup>^{\</sup>star}$  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)

Clear & Grade   Common Executation		UNITS	LINIT COST	QUANTITY	TOTAL	COMMENTS
Clear & Grab	THWORK	ONITS	ONIT COST	QUANTITI	TOTAL	COMMENTS
Common Escavation		AC	\$4,000		-	
Rock Exeration						
Embankment						
General Exeration *   CY				7300		Widen Doane Lake causeway
Subalasis						machi Beane Lane eadeemay
Froston Controls				10000		
Seeding						
Place Toposol						
Turner						
S						
S	rumer	IVII	ΦU			
Track Construction						
Track					-	
New Track						
Rehab Tack			1 4440		T	T
Variable   TF   \$125						
Lineover Track				8448	· · · · · · · · · · · · · · · · · · ·	
Remove Existing Track						
Tack/Turnout Renoval/Relocation   Renove Existing Track	Lineover Track	TF	\$25			
Remove Existing Track					-	
Relocate Existing Tranck						
Remove Existing Turnout			\$10			
Relicote Existing Turnout		TF			\$ -	
Remove Existing Crossover		EA	\$5,000	5	\$ 25,000	
Remove Existing Crossover	Relocate Existing Turnout	EA	\$35,000		\$ -	
Relocate Existing Crossover	Remove Existing Crossover	EA	\$10,000	5	\$ 50,000	
Spit Point Derail	Relocate Existing Crossover					
Turnouts	<u> </u>		,			
Spit Point Derail	Turnouts				<u>, ·                                     </u>	•
#9		EA	\$45,000		\$ -	
#11						
#15				1		
#20				· ·		
#24				1		
#33						
##8						
B						
#9		LA	\$500,000		-	
#11			<b>#</b> 000 000	ı	I o	
#15				_		
#20				5		
#24						
#33				2		
#48						
Bridges						
S2   PRCT		EA	\$1,010,000		-	
32-45   PRCT					1	
45-80' IB						
80-160' DPG	32- 45' PRCT	TF	\$6,500		\$ -	
80-160' TPG	45-80' IB		\$9,000		\$ -	
Section Platform   Section Pla	80-160' DPG	TF	\$20,000		\$ -	
Section Platform   Section Pla	80-160' TPG	TF	\$20,000		\$ -	
Remove Existing Bridge						
S						
\$ -	j j					
Culvert Crossings         Major Culverts (> 36" Diameter)         LF         \$600         \$ -           Minor Culverts (< 36" Diameter)						
Major Culverts (> 36" Diameter)	Culvert Crossinas		•		1 .	•
Minor Culverts (< 36" Diameter)		IF	\$600		-	
Station Platform   Station Pla	Minor Culverts (< 36" Diameter)					<u>†                                      </u>
College	ioi ouivoito (< oo Diametei)		Ψ100			1
Retaining Walls	Other Drainage	10	60			
C.I.P. SF \$75 26400 \$ 1,980,000 0.25 mi long and 20' high Soldier Pile < 20' SF \$75 \$ - Soldier Pile w/ Tie Back > 20' SF \$100 \$ - Soil Nail SF \$55 \$ - SS S S S S S S S S S S S S S S S S		l LO	υφυ	1	- Ψ	1
C.I.P.   SF   \$75   26400   \$ 1,980,000   0.25 mi long and 20' high	netaning wans		1	I		Widon Doors Lake assessment
Soldier Pile < 20'	CLD	0.5	ф <b>э</b> г	00400	¢ 4.000.000	
Soldier Pile w/ Tie Back > 20'   SF   \$100   \$   -				∠6400		u.∠ə mi iong and 20' nigh
Soil Nail						<u> </u>
Station Platform						
Station Platform	Soil Nail	SF	\$55	ļ		
S			1			1
S	Station Platform	LS	\$2,500,000			
Roadway Construction						
Roadway Construction         SY         \$60         \$ -           At-Grade Crossing					-	
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         \$         -						
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         \$         -		SY	\$60		\$ -	
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         \$         -		•	•			
Urban Major Crossing Approaches         SY         \$75         \$         -           Urban Minor Crossing Approaches         SY         \$75         \$         -           Rural Major Crossing Approaches         SY         \$75         \$         -           Rural Minor Crossing Approaches         SY         \$75         \$         -		TF	\$800		\$ -	
Urban Minor Crossing Approaches         SY         \$75         \$         -           Rural Major Crossing Approaches         SY         \$75         \$         -           Rural Minor Crossing Approaches         SY         \$75         \$         -						
Rural Major Crossing Approaches         SY         \$75         \$         -           Rural Minor Crossing Approaches         SY         \$75         \$         -						<u>†                                      </u>
Rural Minor Crossing Approaches SY \$75 \$ -						
						<u> </u>
	Aurai willior Grossing Approaches	31	φισ	<b> </b>	\$ -	<del> </del>

## 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						
						Highway department will replace GX
Upgrade Signal - Barrier Gates	EA	\$200,000	0	\$	-	with OHBR
New Signal	EA	\$250,000		\$	-	
				\$	-	
R SIGNALS						
						New TO as listed above plus power
Per P.O. T.O.	EA	\$250,000	20	\$	5,000,000	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	
				\$	-	
TILITY RELOCATION/ADJUSTMENT						
Transmission Lines	LS	\$1		\$	-	
Fiber Optic Lines	LF	\$95		\$	-	
Miscellaneous	LS	\$1		\$	-	
				\$	-	
ONTINGENCIES (30%)	LS		30%	\$	4,255,428	
<u> </u>	•	CONSTRU	CTION TOTAL	\$	18,440,188	
IVIRONMENTAL MITIGATION (20%)	LS		20%	\$	3,688,038	
Wetland Compensation	AC	\$0		\$	-	
			SUBTOTAL	. \$	22,128,226	
IGINEERING/ADMINISTRATION (7%)	LS		7%	\$	1,290,813	
ONSTRUCTION MANAGEMENT (6%)	LS		6%	\$	1,106,411	
GHT OF WAY		1	270		.,,	
Undeveloped	AC	\$20,000		\$	-	
Residential	AC	\$100,000		\$	-	
Commercial	AC	\$250,000		\$	-	
Industrial	AC	\$350,000		\$	-	
	7.0	7223,000		\$	-	
AX (8.2%)			8.2%	\$	1,512,095	

TOTAL	26.037.5	

Assumptions: Lake Yard to Willbridge: 1.1 miles of new

main track

Rehab 1.6 miles of existing yard lead

Track Miles

1.10

2.70 \$9,643,535 / mile

<sup>\*</sup> 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)

HWORK	UNITS	UNIT COST	QUANTITY	TOTAL	COMMENTS
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		-	
				\$ -	
				\$ -	
				-	
К					
Track Construction					
New Track	TF	\$140	2781	\$ 389,340	
Rehab Track	TF	\$100	2.0.	\$ -	
Yard Track	TF	\$125		\$ -	
Lineover Track	TF	\$25		-	
				\$ -	
Track/Turnout Removal/Relocation		Į.		ΙΨ	
				T.	
Remove Existing Track	TF	\$10		\$ -	
Relocate Existing Track	TF	\$100		\$ -	
Remove Existing Turnout	EA	\$5,000		\$ -	
	_	<u> </u>			
Relocate Existing Turnout	EA	\$35,000		\$ -	
Remove Existing Crossover	EA	\$10,000		\$ -	
Relocate Existing Crossover	EA	\$70,000		\$ -	
2. 9	†	, .,		\$ -	
Turnouts	1	1		ΙΨ -	
		1 4			
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		\$ -	
	ı ⊏A	φυυυ,υυυ			
Crossovers				1	
#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		\$ -	
#33 #48	EA	\$1,010,000		\$ -	
	EA	\$1,010,000		-	
Bridges					
< 32' PRCT	TF	\$5,000		-	
	TF	\$6,500		\$ -	
32- 45' PRCT		\$9,000		-	
45-80' IB	TF	1 4-1		_	
	TF TF	\$20,000		\$ -	
45-80' IB		\$20,000 \$20,000		\$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG	TF TF	\$20,000		\$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT	TF TF TF	\$20,000 \$30,000		\$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG	TF TF	\$20,000		\$ - \$ - \$	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT	TF TF TF	\$20,000 \$30,000		\$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT	TF TF TF	\$20,000 \$30,000		\$ - \$ - \$	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge	TF TF TF	\$20,000 \$30,000		\$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge	TF TF TF	\$20,000 \$30,000 \$500		\$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter)	TF TF TF TF TF	\$20,000 \$30,000 \$500 \$600		\$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge	TF TF TF	\$20,000 \$30,000 \$500		\$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter)	TF TF TF TF TF	\$20,000 \$30,000 \$500 \$600		\$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)	TF TF TF TF LF LF	\$20,000 \$30,000 \$500 \$600 \$100		\$ - \$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage	TF TF TF TF TF	\$20,000 \$30,000 \$500 \$600		\$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls	TF TF TF TF LF LS	\$20,000 \$30,000 \$500 \$600 \$100		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P.	TF TF TF TF LF LS	\$20,000 \$30,000 \$500 \$600 \$100		\$ - \$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P.	TF TF TF TF LF LS	\$20,000 \$30,000 \$500 \$600 \$100 \$0		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20'	TF TF TF TF LF LS SF SF	\$20,000 \$30,000 \$500 \$600 \$100 \$0 \$75 \$75		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20'	TF TF TF TF LF LS SF SF SF	\$20,000 \$30,000 \$500 \$600 \$100 \$0 \$75 \$75 \$100		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20'	TF TF TF TF LF LS SF SF	\$20,000 \$30,000 \$500 \$600 \$100 \$0 \$75 \$75		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20'	TF TF TF TF LF LS SF SF SF	\$20,000 \$30,000 \$500 \$600 \$100 \$0 \$75 \$75 \$100		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail	TF TF TF TF LF LS SF SF SF	\$20,000 \$30,000 \$500 \$600 \$100 \$0 \$75 \$75 \$100 \$55		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20'	TF TF TF TF LF LS SF SF SF	\$20,000 \$30,000 \$500 \$600 \$100 \$0 \$75 \$75 \$100		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail	TF TF TF TF LF LS SF SF SF	\$20,000 \$30,000 \$500 \$600 \$100 \$0 \$75 \$75 \$100 \$55		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform	TF TF TF TF LF LS SF SF SF	\$20,000 \$30,000 \$500 \$600 \$100 \$0 \$75 \$75 \$100 \$55		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform	TF TF TF TF LF LS SF SF SF	\$20,000 \$30,000 \$500 \$600 \$100 \$0 \$75 \$75 \$100 \$55		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform	TF TF TF TF LF LS SF SF SF SF SF	\$20,000 \$30,000 \$500 \$500 \$100 \$0 \$75 \$75 \$100 \$55		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform	TF TF TF TF LF LS SF SF SF	\$20,000 \$30,000 \$500 \$600 \$100 \$0 \$75 \$75 \$100 \$55		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform  DWAY Roadway Construction At-Grade Crossing	TF TF TF TF LF LS SF SF SF SF SF SF SF SF	\$20,000 \$30,000 \$500 \$600 \$100 \$75 \$75 \$100 \$55 \$2,500,000		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform	TF TF TF TF LF LS SF SF SF SF SF	\$20,000 \$30,000 \$500 \$500 \$100 \$0 \$75 \$75 \$100 \$55		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform  DWAY Roadway Construction At-Grade Crossing Concrete Crossing Panels Installed	TF TF TF TF TF LS LS SF SF SF SF SF SF TF	\$20,000 \$30,000 \$500 \$500 \$100 \$0 \$75 \$75 \$100 \$55 \$2,500,000 \$60		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform  DWAY Roadway Construction At-Grade Crossing Concrete Crossing Panels Installed Urban Major Crossing Approaches	TF TF TF TF TF LF LS SF SF SF SF SF SF SF SY	\$20,000 \$30,000 \$500 \$500 \$100 \$0 \$75 \$75 \$100 \$55 \$2,500,000 \$60 \$800 \$75		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform  DWAY Roadway Construction At-Grade Crossing Concrete Crossing Panels Installed Urban Major Crossing Approaches Urban Minor Crossing Approaches	TF TF TF TF TF LF LS SF SF SF SF SF SF SF SY	\$20,000 \$30,000 \$500 \$500 \$600 \$100 \$75 \$75 \$100 \$55 \$2,500,000 \$60 \$800 \$75 \$75		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform  DWAY Roadway Construction At-Grade Crossing Concrete Crossing Panels Installed Urban Major Crossing Approaches Rural Major Crossing Approaches	TF TF TF TF TF LF LS SF SF SF SF SF SF SF SF SF SY SY	\$20,000 \$30,000 \$500 \$500 \$600 \$100 \$75 \$75 \$100 \$55 \$2,500,000 \$60 \$800 \$75 \$75 \$75		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform  DWAY Roadway Construction At-Grade Crossing Concrete Crossing Panels Installed Urban Major Crossing Approaches Urban Minor Crossing Approaches	TF TF TF TF TF LF LS SF SF SF SF SF SF SF SY	\$20,000 \$30,000 \$500 \$500 \$600 \$100 \$75 \$75 \$100 \$55 \$2,500,000 \$60 \$800 \$75 \$75 \$75		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	
45-80' IB 80-160' DPG 80-160' TPG > 160' TRT Remove Existing Bridge  Culvert Crossings Major Culverts (> 36" Diameter) Minor Culverts (< 36" Diameter)  Other Drainage Retaining Walls C.I.P. Soldier Pile < 20' Soldier Pile w/ Tie Back > 20' Soil Nail  Station Platform  DWAY Roadway Construction At-Grade Crossing Concrete Crossing Panels Installed Urban Major Crossing Approaches Rural Major Crossing Approaches	TF TF TF TF TF LF LS SF SF SF SF SF SF SF SF SF SY SY	\$20,000 \$30,000 \$500 \$500 \$600 \$100 \$75 \$75 \$100 \$55 \$2,500,000 \$60 \$800 \$75 \$75		\$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ - \$ -	

# 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		\$	, , , , <sub>-</sub>	
		, ,		\$	-	
UTILITY RELOCATION/ADJUSTMENT	•				•	
Transmission Lines	LS	\$1		\$	-	
Fiber Optic Lines	LF	\$95		\$	-	
Miscellaneous	LS	\$1		\$	-	
				\$	-	
CONTINGENCIES (30%)	LS		30%	\$	1,236,404	
		CONSTRUC	CTION 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:

<sup>\*</sup> 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	LS	\$268,000,000 (2003)	1	\$268,000,000
between Portland and Seattle	LS	\$308,000,000 (2006) *	1	\$308,000,000

<sup>\*</sup> 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
HWORK					
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		\$ -	
		1 72		\$ -	
				\$ -	
K	<u> </u>			Ι Ψ	
Track Construction					
New Track	TF	\$140	32208	\$ 4,509,120	1
	TF	\$140			
Rehab Track			6864	\$ 686,400	
Yard Track	TF	\$125		\$ -	
Lineover Track	TF	\$25		\$ -	
				\$ -	
Track/Turnout Removal/Relocation		1 4	T	T _	1
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	<del> </del>
#33	EA	\$360,000	1	\$ 360,000	
#48	EA	\$500,000	'	\$ -	
Crossovers	LA	ψ500,000	l		
#9	EA	\$230,000	I	-	
#11	EA	\$250,000	0	-	
#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			1		1
< 32' PRCT	TF	\$5,000	120	\$ 600,000	MP 55.86 4 - 30' WF
32- 45' PRCT	TF	\$6,500		\$ -	
					MP 58.65 224' CTG; MP 51.87 2
45-80' IB	TF	\$9,000	326	\$ 2,934,000	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	<del> </del>
wind duverts (< 50 Diameter)	LI	Ψ100	270	\$ 24,000	<del> </del>
Other Prainage	LS	\$0			
Other Drainage Retaining Walls	l ro	Ψ	l	-	1
	0.5	<b>Ф7</b> Г	I	•	1
C.I.P.	SF	\$75		-	
Soldier Pile < 20'	SF	\$75		\$ -	
Soldier Pile w/ Tie Back > 20'	SF	\$100		\$ -	
Soil Nail	SF	\$55		-	
				\$ -	
					25x1000', grade separate pedes
Station Platform	LS	\$2,500,000	1	\$ 2,500,000	crossing
				\$ -	
				\$ -	
WAY		•			
WAI					

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

UNITS	UNIT COST	QUANTITY		TOTAL	COMMENTS
					Public GXs MP 58.01 Main St.º; MP
TF	\$800	650	\$	520,000	57.93 Center St.º; MP 57.88 Prindle St.
CV	¢75		Φ.		MP 57.65 West St.0; MP 55.18 Floral
31	\$/5		Ф	-	Ave.º; MP 54.82 W. Summa St.º; MP
SY	\$75	3500	\$	262 500	54.60 (pedestrian xing only)00; MP 54.4
	Ψίο	0000	Ψ	202,000	(pedestrian xing only)00; MP 54.17
SY	\$75		\$	-	Locust St.º; MP 54.10 Main St.º; MF
					53.90 Maple St.°; MP 51.39°; Private 0 MP 50.78°°
SY	\$75	175	\$	13,125	WF 30.78**
			\$	-	
		,			
			_	-	
				-	
			_		
LS	\$1				
	<u> </u>		\$	<u> </u>	
Π ΓΛ	\$200 000	40	¢.	2 600 000	0 Uparadad signala
					° - Upgraded signals °° - New signals
EA	\$250,000	3	_		- New Signals
_	1		Φ		
FA	\$250,000	18.5	\$	4 625 000	
		00		-	
	, ,,,,,,,,		\$	-	
LS	\$1		\$	-	
			•	-	
LS	\$1		_	-	
				-	
LS			_		
	CONSTRU		•		
		20%		9,438,516	
AC	\$0		•	-	
				, ,	
			_		
LS		6%	\$	2,831,555	
1.0				10.000	T
		0.61		12,200	
				-	
AC	\$250,000 \$350,000		\$	<u>-</u>	
					•
AC	\$350,000		\$		
	SY SY SY SY SY SF CY LS  EA EA MI EA	TF \$800  SY \$75  SY \$75  SY \$75  SY \$75  SY \$75  SY \$75  SY \$75  SY \$75  SF \$150  SF \$150  SF \$40  CY \$25  LS \$1  EA \$200,000  EA \$250,000  MI \$750,000  EA \$25,000  LS \$1  LS \$1  LF \$95  LS \$1  LS \$	TF \$800 650  SY \$75  SY \$75  SY \$75 3500  SY \$75  SY \$75  SY \$75  SY \$75  SY \$75  SY \$75  SY \$75  SY \$75  SY \$75  SY \$75  SY \$50  SF \$40  CY \$25  LS \$1  EA \$200,000 18  EA \$250,000 3  EA \$25,000  EA \$25,000  LS \$1  LF \$95  LS \$1  LF \$95  LS \$1  LS \$1  LF \$95  LS \$1  LS \$1  LF \$95  LS \$1  LS \$1  LS \$1  LF \$95  LS \$1  LS \$1  LS \$1  LS \$1  LF \$96  CONSTRUCTION TOTAL  LS \$20%  AC \$0  SUBTOTAL  LS 7%  LS 6%  AC \$20,000 0.61  AC \$20,000 0.61	TF \$800 650 \$  SY \$75 \$  SY \$75 \$  SY \$75 \$  SY \$75 \$  SY \$75 \$  SY \$75 \$  SY \$75 \$  SY \$75 \$  SY \$75 \$  SY \$75 \$  SY \$75 \$  SY \$75 \$  SY \$75 \$  SY \$50 \$  SF \$40 \$  CY \$25 \$  LS \$1 \$  EA \$250,000 \$  SH \$5 \$  MI \$750,000 \$  EA \$25,000 \$  SH \$5 \$  LS \$1 \$	TF \$800 650 \$ 520,000  SY \$75 \$ -  SY \$75 3500 \$ 262,500  SY \$75 175 \$ -  SY \$75 175 \$ 13,125  SF \$150 \$ -  SF \$40 \$ -  CY \$25 \$ -  LS \$1 \$ -  EA \$200,000 18 \$ 3,600,000  EA \$250,000 3 \$ 750,000  EA \$25,000 \$ -  EA \$250,000 18.5 \$ 4,625,000  MI \$750,000 8.70 \$ 6,525,000  EA \$25,000 \$ -  LS \$1 \$ -  SUBTOTAL \$ 56,631,097 \$  LS \$10,000 \$ -  AC \$100,000 \$ -  AC \$100,000 \$ -

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

<sup>\*</sup> 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
HWORK		•	•	•		
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	1272000	\$	-	
Erosion Controls	LS	\$0		\$	-	
Seeding	AC	\$2,500		\$		
Place Topsoil	CY	\$25		\$	-	
Tunnel	MI	\$0		\$	-	
				\$	-	
				\$	-	
K						
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	l .	· ·				
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	Treight mains in Castle NOCK Cut
			4			
Relocate Existing Turnout	EA	\$35,000	<del>                                     </del>	\$	-	
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	L/\	ψ500,000		Ψ	300,000	
#9	EA	\$230,000	1	\$	-	
	EA					
#11		\$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						MP 93.24 5 - 14' BDPT (2 tracks); I
< 32' PRCT	TF	\$5,000	620	\$ 6	3,100,000	93.05 3 - 14' BDPT (2 tracks); MP 9: 3 - 14' WF (2 tracks); MP 89.08 56' (2 tracks); MP 86.35 3 - 22' WF (2 tracks); MP 93.98 4' CA; MP 90.27 CA (2 tracks); MP 89.06 10' CA (tracks); MP 88.42 10' CA (2 tracks); 88.06 10' CA (2 tracks); MP 86.64 7' (2 tracks); MP 83.48 7' CA (2 track MP 83.04 7' CA (2 tracks); MP 80.7 CA; MP 78.78 6' CA; MP 76.70 7' (MP 73.92 8' CA
32- 45' PRCT	TF	\$6,500	ļ	\$	-	
45-80' IB	TF	\$9,000	237	\$	2,133,000	MP 78.39 3 - 79' DPG
						MP 93.49 CBG ~85' (2 tracks); M
80-160' DPG	TF	\$20,000	420	\$	8,400,000	93.62 ~250'
80-160' TPG	TF	\$20,000		\$	-	
	_					MP 84.88 2 - 173' TPG (2 tracks); I
> 160' TRT	TF	\$30,000	1356	\$	40,680,000	81.50 4 - 166' DPG
Remove Existing Bridge	TF	\$500	ļ	\$	-	
				\$	-	
				\$	-	
Culvert Crossings						
Major Culverts (> 36" Diameter)	LF	\$600	360	\$	216,000	
Minor Culverts (< 36" Diameter)	LF	\$100	2490	\$	249,000	
Surrotto ( 2 00 Diameter)		Ψ100	2 100	\$	249,000	
Other Drainage	LS	\$0	<del>                                     </del>	\$	-	
Retaining Walls	LO	ψυ	ı	Ψ	-	l
C.I.P.	SF	¢75	1	l ¢		T
Soldier Pile < 20'	SF	\$75	1	\$	-	
Soldier Pile < 20' Soldier Pile w/ Tie Back > 20'	SF	\$75	100000	\$	10 000 000	Widon Coatla Dook and
		\$100	108000		10,800,000	Widen Castle Rock cut
Soil Nail	SF	\$55	1	\$	-	
		1	<u> </u>	\$	-	I

# 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	407	\$	-	
				\$	-	
				\$	-	
ROADWAY						
Roadway Construction	SY	\$60		\$	=	
At-Grade Crossing						
Concrete Crossing Panels Installed	TF	\$800	790	\$	632,000	
Urban Major Crossing Approaches	SY	\$75		\$	-	MD 07 40 0 12 A 0 MD 00 45
Urban Minor Crossing Approaches	SY	\$75	2150	\$	161,250	MP 87.43 Cowlitz Ave. <sup>9</sup> ; MP 80.45 Agren Rd. <sup>00</sup> ; MP 77.83 7th St./SR 506 <sup>0</sup> ; MP 74.66 Ferrier St. <sup>0</sup> ; MP 72.10 Campbell St. <sup>0</sup>
Rural Major Crossing Approaches	SY	\$75		\$	-	D: OV MD 00 0000 MD 00 0000
Rural Minor Crossing Approaches	SY	\$75	1925	\$	144,375	Private GXs MP 92.29°, MP 92.22°, MP 90.23°, MP 83.80°, MP 82.85°, MP 82.72°, MP 81.29°, MP 76.95°, MP 74.01°, MP 73.48°
Grade-Separation Crossing				\$	-	
Grade-Separation Crossing						MP 87.91 Huntington Rd. overpass
Bridge	SF	\$150	17800	\$	2,670,000	replacement (280' long, four lanes)
Roadway (earthwork & paving)	SY	\$50	17000	\$	2,070,000	replacement (200 long, four lanes)
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	° - Upgraded signals
New Signal	EA	\$250,000	11	\$	2,750,000	<sup>00</sup> - 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		\$		
moconarioud		Ψ		\$	-	
CONTINGENCIES (30%)	LS		30%	\$	46,180,312	
	•	CONSTRU	CTION 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	
TAX (0.270)			0.2 /0	Ψ	10,403,404	

#### 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.

<sup>\*</sup> 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
HWORK						
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 overpa
General Excavation *	CY	\$15	674520	\$	10,117,800	
Subballast	CY	\$30		\$	-	
Erosion Controls	LS	\$0		\$	-	
Seedina	AC	\$2,500		\$	-	
Place Topsoil	CY	\$25		\$	_	
Tunnel	MI	\$0		\$	_	
Tumoi		Ψ		\$	-	
				\$		
K				ĮΦ	-	
Track Construction		1				
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	0200	\$	-	
Remove Existing Turnout	EA	\$5,000	3	\$	15,000	
Relocate Existing Turnout	EA	\$35,000	<u> </u>	\$	15,000	
			4			
Remove Existing Crossover	EA	\$10,000	1	\$	10,000	
Relocate Existing Crossover	EA	\$70,000	<b></b>	\$	-	
		1	<u> </u>	\$	-	
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	'	\$	-	
	LA	\$500,000	1	Φ	-	
Crossovers			1	Ι	1	
#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		1 + //				
						MP 125.88 48' RCT; MP 128.38
						CA; MP 127.09 8' CA; MP 121.6
201 DDCT		ФE 000	00	Φ.	400.000	
< 32' PRCT	TF	\$5,000	86	\$	430,000	CA; MP 114.71 8' CA
32- 45' PRCT	TF	\$6,500	<b>.</b>	\$	-	MD 444 00 F01 DDC 145 ( ) : -
	_			_		MP 114.90 52' DPG; MP 114.87
45-80' IB	TF	\$9,000	103	\$	927,000	DPG
		1	1	Ì		MP 128.6 135' DPG; MP 124.46
80-160' DPG	TF	\$20,000	259	\$	5,180,000	DPG
80-160' TPG	TF	\$20,000		\$	-	
> 160' TRT	TF	\$30,000	808	\$	24,240,000	MP 119.17 808' TRT (swing spi
Remove Existing Bridge	TF	\$500		\$		9 06
<u></u>	<del>''</del>	+	1	\$	-	
		1	<b>+</b>	\$		
Culvert Crossings		1	1	Ψ	-	
	LF	<b>CCCC</b>	20	Φ.	18.000	
Major Culverts (> 36" Diameter)		\$600	30	\$	-,	
Minor Culverts (< 36" Diameter)	LF	\$100	3030	\$	303,000	
			ļ	\$	-	
Other Drainage	LS	\$0	l	\$	-	
Retaining Walls						
C.I.P.	SF	\$75		\$	-	
Soldier Pile < 20'	SF	\$75		\$	-	
Soldier Pile w/ Tie Back > 20'	SF	\$100		\$	_	
Soil Nail	SF	\$55		\$	-	
Con Hun	JI JI	ψυυ	<del>                                     </del>	\$		
Station Platfor-	1.0	\$2.500.000	+			
Station Platform	LS	\$2,500,000	<del>                                     </del>	\$	-	
			1	\$	-	
				\$	-	
WAY			_		-	
WAY Roadway Construction	SY	\$60			-	

## 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	
Linhan Major Crossing Approaches	SY	\$75		\$	_	MP 123.32 Wildlife Refuge Rd.º; MP
Urban Major Crossing Approaches	31	\$/5		Ф	-	122.53 Mill St.º; MP 122.39 Division
Urban Minor Crossing Approaches	SY	\$75	2100	\$	157,500	St.°; MP 117.50 Whalen St.°; MP
Cibair Willion Crossing Approaches	01	Ψίσ	2100	Ψ	107,000	116.63 Davidson St.º; MP 115.76 Sco
Rural Major Crossing Approaches	SY	\$75		\$	-	Ave.º
						Private GXs MP 129.70 <sup>oo</sup> , MP
						128.18 <sup>oo</sup> , MP 125.50 <sup>oo</sup> , MP 121.47 <sup>oo</sup> ,
Rural Minor Crossing Approaches	SY	\$75	875	\$	65,625	MP 119.38 <sup>00</sup>
Crada Sanaration Craasing				\$	-	
Grade-Separation Crossing				l		I-5 Southbound at MP 114.9 (approx
Bridge	SF	\$150	66600	\$	9,990,000	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	20000	\$	1,020,000	Approx 0.5 III of new pavement
Embankment (fill)	CY	\$25		\$	-	
Misc. (non-typical per project)	LS	\$1		\$	-	
		·				I-5 Southbound at MP 114.9 (approx
Demo existing bridge **	SF	\$30	43500	\$	1,305,000	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	<sup>00</sup> - New signals
				\$	-	
SIGNALS		T				
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		\$	<u> </u>	
ITY RELOCATION/ADJUSTMENT				Φ	-	
Transmission Lines	LS	\$1		\$	<u> </u>	
Fiber Optic Lines	LF	\$95		\$	-	
Miscellaneous	LS	\$1		\$	-	
		ψ.		\$	_	
TINGENCIES (30%)	LS		30%	\$	28,236,338	
		CONSTRU	CTION TOTAL		122,357,463	
RONMENTAL MITIGATION (20%)	LS		20%	\$	24,471,493	
Wetland Compensation	AC	\$0		\$	-	
•			SUBTOTAL	\$	146,828,955	
INEERING/ADMINISTRATION (7%)	LS		7%	\$	8,565,022	
STRUCTION MANAGEMENT (6%)	LS		6%	\$	7,341,448	
IT OF WAY						
Undeveloped	AC	\$20,000	14.9	\$	298,000	
Residential	AC	\$100,000		\$	-	
Commercial	AC	\$250,000		\$	-	
Industrial	AC	\$350,000		\$	-	
(2.20)				\$	-	
(8.2%)			8.2%	\$	10,033,312	

#### TOTAL \$ 173,066,737

**Assumptions:** One New Track

Track Miles

(MP 112.2 to MP 130.45)

18.25

\$9,483,109 / mile

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

<sup>\*</sup> 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

<sup>\*\*</sup> 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
HWORK		*	*			
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		\$	-	
				\$	-	
				\$	<u> </u>	
K						
Track Construction		1	1	1.		
New Track	TF	\$140	225496	\$	31,569,440	
Rehab Track	TF	\$100		\$	-	
Yard Track	TF	\$125		\$	-	
Lineover Track	TF	\$25		\$	=	
				\$	-	
Track/Turnout Removal/Relocation						
						Bucoda & Tenino sidings and Nisc
Remove Existing Track	TF	\$10	20700	\$	207,000	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	
Troiceate Externing Creecever		ψ. ο,οοο	·	\$		
Turnouts		1	ı	Ι Ψ		
Split Point Derail	EA	\$45,000		\$	-	
#9	EA	\$110,000		\$	-	
#11	EA	\$120,000		\$	-	
#15	EA	\$142,000		\$		
#20	EA	\$168,000		\$	<u> </u>	
#24	EA	\$168,000	2			
			3	\$	534,000	
#33 #48	EA EA	\$360,000 \$500,000	1	\$	360,000 500,000	
	EA	\$500,000	ļ ļ	Ф	500,000	
Crossovers	Ε.	#000 000	1	Ι.φ.		T
#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		•	1			
< 32' PRCT	TF	\$5,000	671	\$	3,355,000	MP 45.63 3 - 16' RCT (2 tracks); 40.17 105' PT (2 tracks); MP 39.1 RCT (2 tracks); MP 33.56 5 - 15' E (1 track); MP 31.60 4 - 28' CBG track); MP 26.13 20' CA; MP 42.6 CA (2 tracks) and MP 40.27 8' C 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) 42.77 2 - 65' DPG (2 tracks); MP 2 - 110' DPG, DRT (1 track); MP 2 - 124' WF (1 track); MP 25.38 Nisqually River 3-track bridge
80-160' TPG	TF	\$20,000	288	\$	5,760,000	MP 47.38 144' TRT (2 tracks)
00-100 IFG	IF.	φ∠0,000	200	Ψ	5,760,000	MP 47.38 144 1R1 (2 tracks) MP 25.38 300' Nisqually River 3-1
> 160' TDT	TF	\$30,000	900	\$	27 000 000	
> 160' TRT  Remove Existing Bridge	TF	\$30,000	900	\$	27,000,000	bridge
Memore Existing Dridge	I F	φουυ	1	Φ	-	MP 25.38 Existing Nisqually Riv
Remove Existing Bridge **	TF	\$3,300	1314	\$	4,336,200	Bridge (2 tracks)
Culvert Crossings						
Major Culverts (> 36" Diameter)	LF	\$600	30	\$	18,000	
Minor Culverts (< 36" Diameter)	LF	\$100	1500	\$	150,000	
,	-		1	\$	-	
Other Drainage	LS	\$0	1	\$	_	
Retaining Walls		, ψυ	1	ĮΨ		<u> </u>
C.I.P.	SF	\$75		\$	-	
Soldier Pile < 20'	SF	\$75	1	\$		
Soldier Pile < 20 Soldier Pile w/ Tie Back > 20'	SF	\$100	1	\$	<u> </u>	
Soil Nail	SF	\$100	<del>                                     </del>	\$		
					-	i

## 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 McDuf				
Urban Minor Crossing Approaches	SY	\$75	2800	\$	210,000	Rd.º; MP 36.55 S. Rich Rd.º; MP 34.84 N. Rich Rd.º; MP 31.42 Atchison Rd.º;				
Rural Major Crossing Approaches	SY	\$75		\$	-	MP 29.94 Marvin Rd.º				
Rural Minor Crossing Approaches	SY	\$75	1925	\$	144,375	Private GXs MP 50.78°°, MP 48.47°°, MP 42.43°°, MP 37.02°°, MP 36.01°°, MP 27.65°°, MP 26.39°°, MP 24.68°°				
Crada Sanaratian Craasins				\$	-					
Grade-Separation Crossing		¢450	ı	ı,		T				
Bridge	SF SY	\$150		\$	<u> </u>					
Roadway (earthwork & paving)  MSE Wall	SF	\$50		\$						
Embankment (fill)	CY	\$40 \$25		\$	<u>-</u>					
Misc. (non-typical per project)	LS	\$1		\$	-					
Crash wall **	LF	\$300	40	\$	12,000	MP 26.84 Reservation Rd.				
Crossing Signals		ψουσ	40	Ψ	12,000	Wii 20.04 Neservalion Nd.				
Upgrade Signal - Barrier Gates	EA	\$200,000	12	\$	2,400,000	° - Upgraded signals				
New Signal	EA	\$250,000	8	\$	2,000,000	oo - New signals				
Trow eighar		Ψ200,000		\$	-	110W digitals				
RR SIGNALS				ĮΨ						
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					
		CONSTRU	CTION 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.

<sup>\*</sup> 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

<sup>\*\*</sup> 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
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
New single track bridge including vertical lift span, approximately 2,800 feet	LS	\$575,000,000 (2006) *	1
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			

<sup>\*</sup> 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.

TOTAL

\$500,000,000

\$575,000,000

# **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 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

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

#### 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	. , ,		36,477,900.73										
Stanwood Siding	\$9,857,524			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		\$	14,640,420.00										
Colebrook Siding	\$11,268,748	\$ 11,606,810.44	\$	11,955,014.75										
2000 /Timetable C. D. and E\														
2009 (Timetable C, D, and E)	****	<b>A</b> 040 040 000 00	•	040 000 000 00	•	000 404 400 00	•	000 000 000 07	•	000 000 700 00	Φ.	0.47.400.005.00		
Sound Transit	\$207,000,000			219,606,300.00		-, - ,	\$	232,980,323.67		239,969,733.38		247,168,825.38		
Bow to Samish Siding Extension	\$50,554,082			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			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:														
	*45.000.700	<b>A.</b> 40.440.044.00	•	10 0 10 075 05	•	47 450 544 00	•	47.074.000.55	•	10 510 000 07	•	40,000,000,04		
Willingdon Junction CN Junction	\$15,969,720			16,942,275.95	\$	17,450,544.23		17,974,060.55		18,513,282.37		19,068,680.84		
Still Creek to CN Junction	\$6,304,052			6,687,968.77		6,888,607.83		7,095,266.06		7,308,124.05		7,527,367.77		
Vancouver Terminal Control	\$12,880,216 \$6,918,800			13,664,621.15		14,074,559.79		14,496,796.58		14,931,700.48		15,379,651.49		
				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			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			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	ф	610,017,500.00	Ф	628,318,025.00	Ф	647,167,565.75	ф	666,582,592.72	Ф	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		
	<b>.</b>	,,	Ť	, ,	_	,	Ť	.,,,,	Ť		Ť			
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

 $\label{thm:component} \textbf{Some projects did not have a ROW component and therefore was not included in calculations}$ 

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

#### 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:

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

#### 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		\$ 3,855,126.54						
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		3,633,826.51		\$ 3,855,126.54						
Tenino Crossover	\$3,425,230		3,633,826.51		\$ 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		437,071,878.85				\$ 491,928,250.25				
Reservation Third Main	\$48,309,054		51,251,075.39				\$ 57,683,536.87				
Centralia Steam Plant	\$6,140,541		6,514,499.95				\$ 7,332,127.08				
Woodland Siding	\$15,341,376		16,275,665.80				\$ 18,318,405.24				
Newaukum Crossover	\$3,425,230		3,633,826.51				\$ 4,089,903.75				
Seattle Maintenance Facility	1 ' ' '	\$ 112,270,000.00 \$	115,638,100.00				\$ 130,151,700.32				
Chehalis Jct. Crossover	\$3,461,942		3,672,774.27				\$ 4,133,739.80				
China Creek Crossover	\$1,712,615		1,816,913.25				\$ 2,044,951.87				
King Street Station	\$92,000,000		97,602,800.00				\$ 109,852,811.28				
Sound Transit		\$ 164,800,000.00 \$		\$ 174,836,320.00			\$ 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				
2045 (Timetable D)											
2015 (Timetable D)	£4.40.00C.004	Ф 454 404 475 50 Ф	450 050 000 70	¢ 400 000 00 <del>7</del> 04	¢ 400 740 400 04	¢ 472.005.770.00	£ 470.040.040.40	104 200 E44 42	189,922,257.66 \$	40E 040 02E 20	204 400 522 45
Winlock to Chehalis Third Main Chehalis Siding	\$149,926,384 \$11,324,367		159,056,900.79 12,014,020.95				\$ 179,019,943.13 \$ \$ 13,521,886.42 \$		189,922,257.66 \$ 14,345,369.31 \$	195,619,925.39 \$ 14,775,730.39 \$	
East St. Johns Siding/Main Track	\$40,419,817		42,881,383.86						51,202,614.87 \$	52,738,693.32 \$	
Lake Yard North Leads	\$26,037,545		27,623,231.49						32,983,583.00 \$	33,973,090.49 \$	
Portland Union Station	\$7,565,141		8,025,858.09						9,583,294.28 \$	9,870,793.11 \$	
Advanced Signal System		\$ 317,240,000.00 \$								401,870,140.62 \$	
Autoriosa Signai System	<b>\$000,000,000</b>	ψ 011,210,000.00 ψ	020,101,200.00	ψ 000,000,010.00	ψ 0.10,000,1.10.10	ψ	ψ 001,100,101.00 C	φ στο,σστητοσίου φ	000,100,100.01	101,010,110.02 ψ	110,020,211101
2017 (Timetable E)	1										
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	. , ,	\$ 291,623,009.05 \$								369,419,302.91 \$	
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2023 (Timetable F)	1										
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			\$ 559,982,052.79		\$ 594,084,959.81		\$ 630,264,733.86 \$	649,172,675.87 \$		
Columbia River Bridge	1 ' ' '	\$ 592,250,000.00 \$									
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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.

Amtrak Cascades Capital Cost Estimates 2006

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

#### 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 \$ 2	213,759,174.21						
Chehalis Siding		16,145,839.54						
East St. Johns Siding/Main Track		57,628,994.13						
Lake Yard North Leads		37,123,313.25						
Portland Union Station	\$ 10,471,924.41 \$	10,786,082.14						
Advanced Signal System	\$ 426,344,032.18 \$ 4	139,134,353.15						
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 \$ 4			428,258,220.41				
			<u>'</u>					
2023 (Timetable F)								
Felida to MP 114 Third Main	\$ 239,564,839.25 \$ 2	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 \$ 7	30,649,565.91 \$	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 \$ 8	319,812,509.94 \$	844,406,885.23 \$	869,739,091.79	\$ 895,831,264.55	\$ 922,706,202.48	\$ 950,387,388.56 \$	978,899,010.21
	NOTI	ES:			•			

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Amtrak Cascades Capital Cost Estimates 2006

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