

DATE: June 05, 2024
TO: Vicki Grover
FROM: Dan Harris & Jo Johnson
SUBJECT: Cost Estimate Methodology
CC: Vicki Grover, Gunnar Fridriksson
PROJECT NUMBER: 5541896192
PROJECT NAME: City of Bremerton Transportation Element Update

Introduction

This memorandum documents assumptions for the development of planning-level cost estimates based on preliminary design concepts and engineering assumptions from, similar projects. This cost-estimating effort will be applied to new capital transportation projects identified through transportation analysis for Inclusion in the six-year and 20-year project list. Small-scale improvements and maintenance projects that are part of broader capital programs such as regular roadway or sidewalk maintenance and sidewalk completion programs will not be included in conceptual design and costs estimates.

Conceptual Design:

Conceptual design will be developed using pdf level layouts that will not include survey data, topographic details, or field measurements. Based on design understanding from other project work, the team will outline our assumptions that support a cost for the alternatives.

- Develop simple pdf level sketches of suggested improvements that come from the transportation evaluation, so intersections meet City concurrency
- Identify major design elements for the proposed project based on the sketch level layout and develop a list of design assumptions that support a cost estimate
- Determine if there are potential right of way needs using Kitsap County Parcel Search data and available aerial imagery.

Engineering Opinion of Probable Cost

The engineering team will develop a planning level estimate of probable cost from high-level conceptual design for potential transportation capital projects (described in the previous section). Opinions of probable cost will rely on the following assumptions.

- Opinions of probably cost will use available data from a pdf layout (if needed for roadway improvement alternatives) and estimate quantities for key design elements of the desired improvements.
- Itemize the key design elements and quantities in the Planning Level Cost Estimate (PLCE) spreadsheet. Add new cost items to the PLCE based on alternatives identified.
- The latest costs in the PLCE spreadsheet will be based on updated unit bid tabs from recently constructed projects completed by the City of Bremerton.



- Revenue projections will be based on funds for transportation included in the 2024 – 2029 six-year Capital Improvement Plan. Projects will be matched to current funding, therefore, conceptual cost estimates will not include escalation to a future construction year.
- Total estimated construction costs will be tabulated based on available information.
- A percentage of total construction cost provided by City staff was used to estimate design, right of way services, and construction engineering costs.
- The design, right of way services, and construction engineering cost will be added to the overall construction cost to represent the base PLCE for year of construction for the alternative.
- State taxes will not be included in the estimates
- A contingency will be assigned based on perceived risk

The cost estimate template and unit cost sheet is included in the attached PLCE spreadsheet. Program costs will be developed based on assumptions of cost per unit or linear foot, but would not be part of project level cost estimates.

UNIT COST WORKBOOK

Input values in BOLD BLUE

ITEM DESCRIPTION	UNIT	QUANT	UNIT COST	ITEM TOTAL	
DRAINAGE, STORMWATER DETENTION, AND TREATMENT				\$ 384,600	
CATCH BASIN TYPE 1	LF	1	\$ 2,500	\$ 2,500	
CATCH BASIN TYPE 2 48 IN DIAM	EACH	1	\$ 7,000	\$ 7,000	
12" STORM PIPE	LF	1	\$ 75	\$ 75	
UNDERGROUND DETENTION VAULT	CF	1	\$ 21	\$ 21	
WATER QUALITY TREATMENT VAULT (SMALL)	EACH	1	\$ 70,000	\$ 70,000	
WATER QUALITY TREATMENT VAULT (LARGE)	EACH	1	\$ 305,000	\$ 305,000	
GRADING / PREPARATION				\$ 90,200	
ROADWAY EXCAVATION INCL HAUL	CY	1	\$ 155	\$ 155	
GRAVEL BORROW / EMBANKMENT COMPACTION	TON	1	\$ 50	\$ 50	
CLEARING AND GRUBBING	ACRE	1.00	\$ 90,000	\$ 90,000	
PAVEMENT REMOVAL	SY	1	\$ 30	\$ 30	
STRUCTURES AND WALLS				\$ 100	
MODULAR BLOCK WALL	SF	1	\$ 68	\$ 68.00	
CURBS, SIDEWALKS, PAVING				\$ 5,000	
TRAFFIC CURB AND GUTTER	LF	1	\$ 61	\$ 61.00	
SIDEWALK	SY	1	\$ 110	\$ 110.00	
HOT MIX ASPHALT	TON	1	\$ 600	\$ 600.00	
CRUSHED SURFACING TOP COURSE	TON	1	\$ 72	\$ 72.00	
CRUSHED SURFACING BASE COURSE	TON	1	\$ 175	\$ 175.00	
CURB RAMP (ALL TYPES)	EACH	1	\$ 4,000	\$ 4,000.00	
TRAFFIC SERVICES AND SAFETY				\$ 685,200	
BEAM GUARDRAIL TYPE 1 + END TERMINALS	LF	1	\$ 200	\$ 200	
TRAFFIC SIGNAL SYSTEM (4-WAY INTERSECTION ON ARTERIAL)	EACH	1	\$ 650,000	\$ 650,000	
ILLUMINATION SYSTEM PER LUMINAIRE	EACH	1	\$ 35,000	\$ 35,000	
CHANNELIZATION (PLASTIC LINE)	LF	1	\$ 6	\$ 6	
RRFB SYSTEM (PER POLE)	EACH	1	\$ 16,000	\$ 16,000	
ENVIRONMENTAL / ROADSIDE RESTORATION				\$ 800	
PLANTER STRIP	SF	1	\$ 10	\$ 10	
LANDSCAPE TREES	EACH	1	\$ 750	\$ 750	
LANDSCAPE / LAWN RESTORATION	SF	1	\$ 1.50	\$ 2	
CONSTRUCTION SUB-TOTAL				\$ 1,166,000	
OTHER CONSTRUCTION COSTS				\$ 303,000	
MOBILIZATION		10%	LS 1	\$ 116,600	\$ 116,600
TEMPORARY TRAFFIC CONTROL		10%	LS 1	\$ 116,600	\$ 116,600
TEMP EROSION AND SEDIMENT CONTROL		3%	LS 1	\$ 34,980	\$ 34,980
PERMANENT SIGNING		2%	LS 1	\$ 23,320	\$ 23,320
UTILITY RELOCATION		1%	LS 1	\$ 11,660	\$ 11,660
CONSTRUCTION TOTAL				\$ 1,469,000	

Source: Kitsap County

2020 10 bids & engineer's estimate

<i>Storm:</i>	UNIT	RANGE	USE
12" plastic pipe	LF	\$35 - \$80	\$75
CB Type 1	EA	\$1,000 - \$2,000	\$1,800
WQ Bioretention soil media (small)	CY	\$65 - \$ 130	\$100
<i>Roadway:</i>	UNIT	RANGE	USE
Roadway Ex. Include haul	CY	\$26 - \$50	\$48
CSTC	TON	\$29 - \$58	\$55
CSBC	TON	\$28 - \$50	\$45
HMA	TON	\$131 - \$185	\$180
Removal of HMA	SY	\$4 - \$24	\$24
Clearing & Grubbing	Acre	\$8700 - \$90000	\$90,000
Traffic Curb & Gutter	LF	\$18 - \$50	\$50
Sidewalk	SY	\$37 - \$64	\$55
Curb ramps (all types)	EA	\$1100 - \$2000	\$1,900
Gravity block wall	SF	\$40 - \$72	\$68
Permanent Signing	LS	0.54% - 1.82%	1.82%
TESC	LS	0.48% - 2.52%	2.52%

Source: **COB 11th & Perry**

2022 4 bids & engineer's estimate

<i>Storm:</i>	UNIT	RANGE	USE
CB Type 1	EA	\$1800 - \$2500	\$2,500
SDMH 48"	EA	\$4600 - \$6895	\$7,000
SDMH 84" Flow Splitter	EA	\$17,000 - \$21,125	\$22,000
Contech Vault (large)	EA	\$285,000 - \$303,000	\$305,000
<i>Roadway:</i>	UNIT	RANGE	USE
Roadway Ex. Include haul	CY	\$50 - \$85	\$85
CSTC	TON	\$41 - \$72	\$72
CSBC	TON	\$41 - \$62	\$62
HMA	TON	\$118 - \$181	\$185
Sidewalk	SY	\$62 - \$85	\$85
Traffic Curb & Gutter	LF	\$41 - \$60	\$60
Curb ramps (all types)	EA	\$2600 - \$3900	\$4,000
Plastic Line	LF	\$3.40 - \$5.95	\$6.00
Permanent Signing	LS	0.56 - 1.59	1.60%
TESC	LS	0.58 - 2.24	2.24%

Source: **COB 11th & WA**

2023 5 bids & engineer's estimate

<i>Storm:</i>	UNIT	RANGE	USE
CB Type 1	EA	\$1800 - \$2500	\$2,500
SDMH 48"	EA	\$4000 - \$5600	\$5,600
SDMH 84"	EA	\$13,000 - \$19,000	\$19,000
Storm Filter (medium)	ES	\$45,000 - \$70,000	\$70,000
<i>Roadway:</i>	UNIT	RANGE	USE
Roadway Ex. Include haul	CY	\$36 - \$153	\$155
CSBC	TON	\$37 - \$90	\$90
Gravel Borrow include haul	TON	\$38 - \$50	\$50
Pavement Removal	SY	\$15 - \$30	\$30
Traffic Curb & Gutter	LF	\$38 - \$60	\$60
HMA	TON	\$134 - \$190	\$190
Sidewalk	SY	\$60 - \$85	\$85
Modular Block Wall	SF	\$47 - \$65	\$65
Plastic Line	LF	\$4.24 - \$5.00	\$5.00

Source: **COB Kitsap Way** 2021 2 bids & engineer's estimate

<i>Roadway:</i>	UNIT	RANGE	USE
Roadway Ex. Include haul	CY	\$30 - \$90	\$90
CSTC	TON	\$40 - \$61	\$65
HMA	TON	\$120 - \$315	\$325
Curb ramps (all types)	EA	\$2100 - \$3000	\$3,000
Traffic Curb & Gutter	LF	\$30 - \$61	\$61
Sidewalk	SY	\$75 - \$105	\$110
Plastic Line	LF	\$1 - \$2.60	\$3.00
Traffic Signal System	EA	\$10,000 - \$225,000	\$230,000

Source: Pine Road Basin 2024 5 bids & engineer's estimate

<i>Roadway:</i>			USE
CSBC	TON	\$40 - \$173	\$175
Removal of HMA	SY	\$17 - \$36	\$36
HMA	TON	\$265 - \$590	\$600