

**Sound Transit  
Fare Gates Study - DRAFT**

**SEATTLE, WA**

**COST PLAN  
March 6, 2023**

**Prepared By**



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### *Sound Transit*

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## Basis of Estimate

### General

This Conceptual Study Estimate provides an opinion of probable construction costs for the Fare Gates Study - DRAFT for the Sound Transit, Seattle, WA.

The study consists of 4 sample Sound Transit Stations representing; underground - University Street Station, above/underground - University of Washington Station, arial - Northgate Station, and at grade - Othello Station.

And historical costs data from TransLink's fare gate installation

### Method

This document is based on the measurement and pricing of quantities wherever information is provided and/or a reasonable assumptions for other work not covered in the drawings or specifications, as stated within this

Unit rates have been obtained from historical records. The unit rates reflect current bid costs in the area.

All unit rates relevant to subcontractor work include the subcontractors overhead and profit unless otherwise stated. This overhead and profit covers each subcontractor's cost for labor burden, materials and equipment sales taxes, filed overhead, home office overhead and profit. Depending on the trade, these mark-ups can range from 15% to 20% of the raw cost for that particular item of work. The general contractor's overhead and profit is shown separately on the summary page.

### Documentation

This estimate has been prepared from the following documents and information:

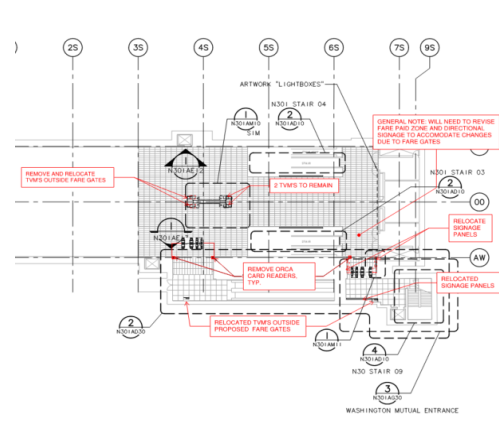
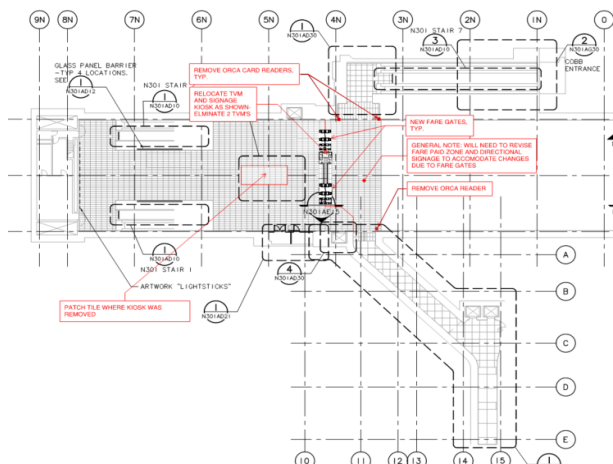
- Review of as built drawings

### Conversations With Subject Level Experts (SMEs)

Fare Collection - Brittany Esdaile, Scott Corbridge and Yvette Lopez  
Fire and Life Safety - Mark Murray and Nathan Casey  
TransLink - Mark Langmead (TransLink) and Brittany Esdaile (Sound Transit)  
Grounding - Kontien Chan  
Structural - Edward Egan  
Facilities - David Patch  
TransLink Cost Adjustment - Stephanie Ball  
SCADA and Transit Systems- Louis DiFazio and Joe Linscheid

### University Street Station

Drawings provided by Jonathan Sirois



## Basis of Estimate

University Street Station - 2 fare gates at each station entrance at the mezzanine level

- Install dry pipe fire sprinkler to unsprinkled building (Fire water to station, valve room) ( Commenters - Nathan Casey & Mark Murray)

- Install fare gates assuming access to nearest electrical room on mezzanine level

- Risks:

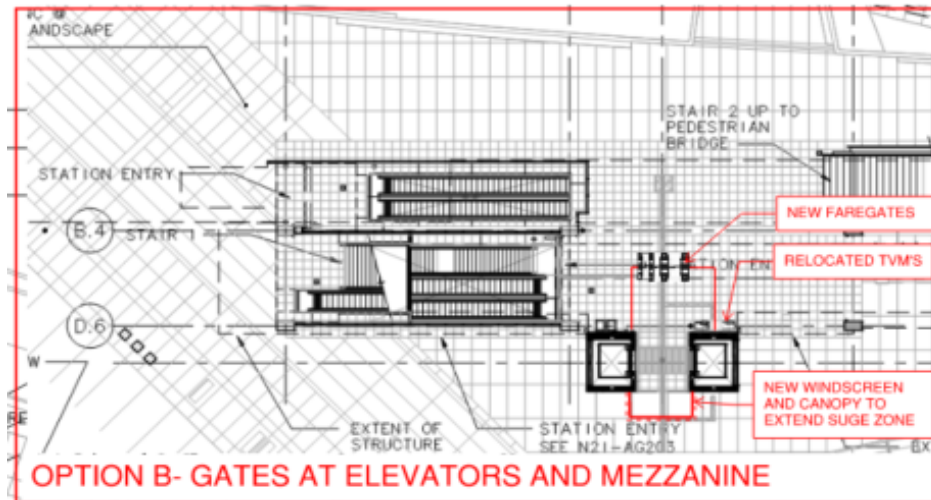
- Mezzanine level electrical room does not have room for additional electrical connection and equipment
- Electrical rooms at platform level will trigger overnight work with power downs
- Location of fire water and availability, number of connection unknown. Assumed 2 in estimate
- Location of valve room causing change in architecture and lost of real estate
- Penetration for sprinkler may cause waterproofing concerns

## University of Washington Station

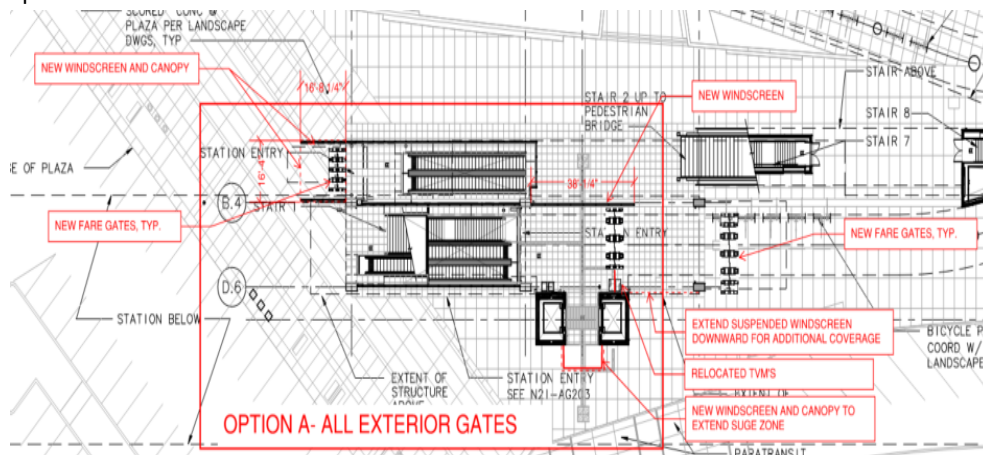
Drawings provided by Jonathan Sirois

Option B Estimated

Surface Level

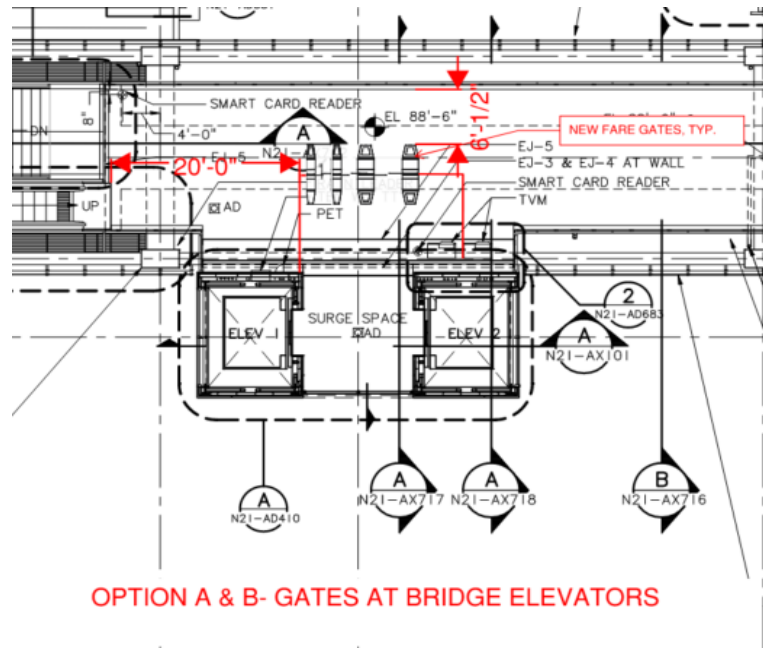


Option B for reference. Not estimated

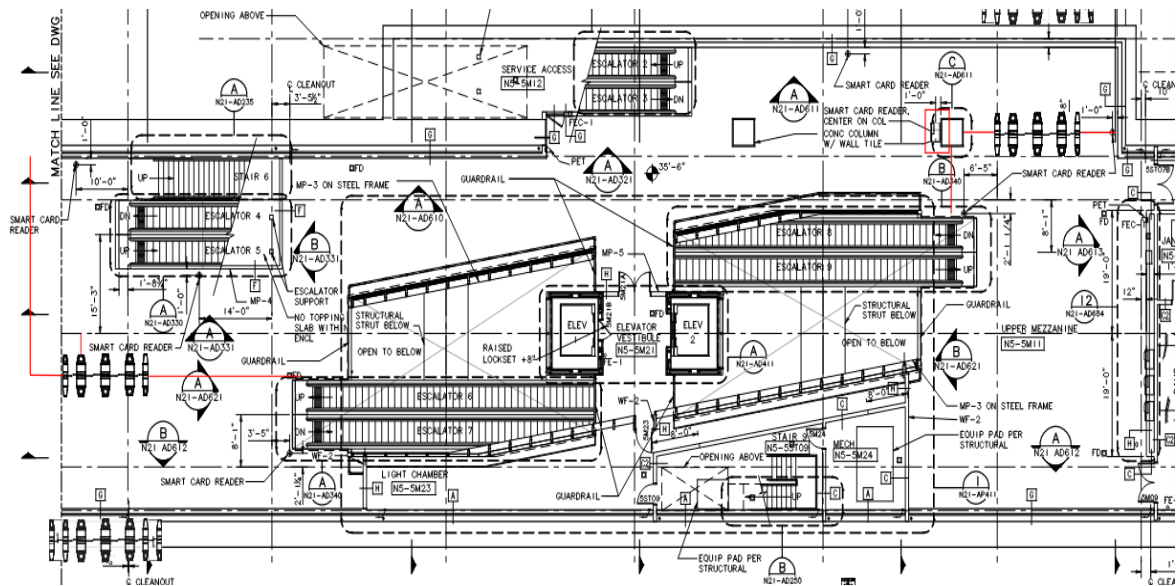


## Basis of Estimate

### Bridge level



### Mezzanine level

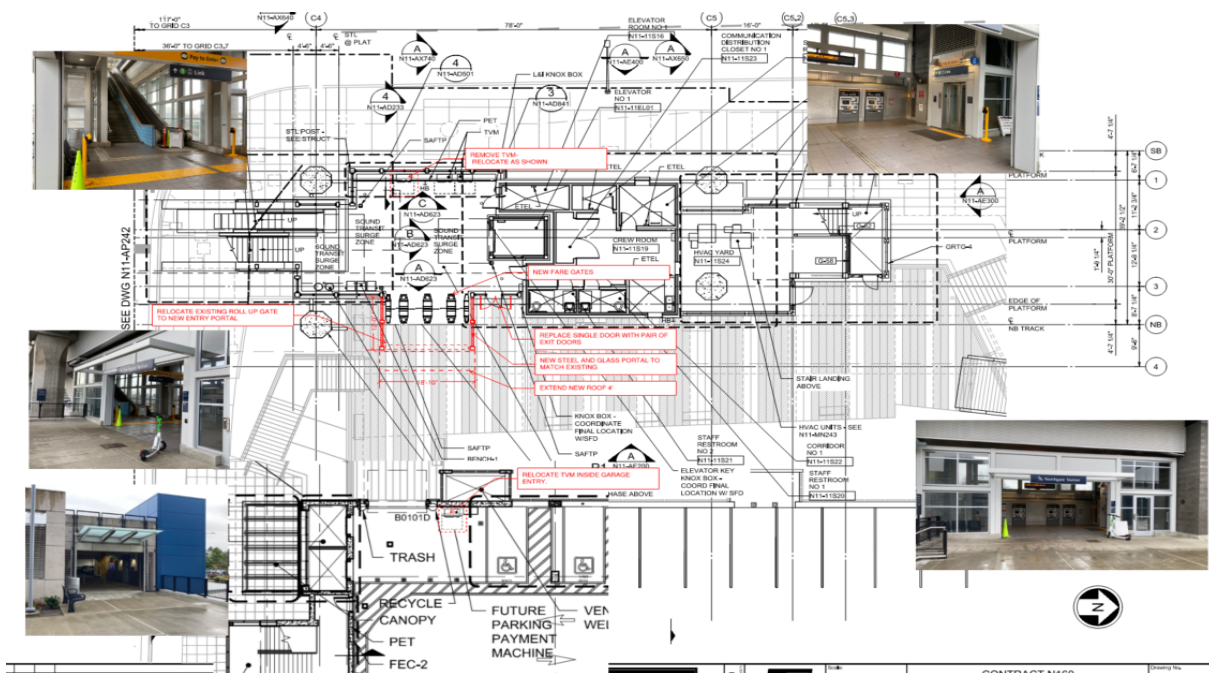


## Basis of Estimate

- University of Washington Station - 3 fare gates each at bridge and surface level at each elevator access point
- 4 fare gates at each mezzanine level access point. 2 access points at mezzanine level
- New canopy and windscreen at surface level protecting elevator lobby
- Install fare gates, assume access to nearest existing conduit to electrical room.
- Risks:
  - Electrical connection from surface and bridge level to electrical room maybe difficult. Possibly connection at mezzanine level.
  - Bridge level connection will include possible penetration of precast bridge, expansion joint, ceiling finishes complications

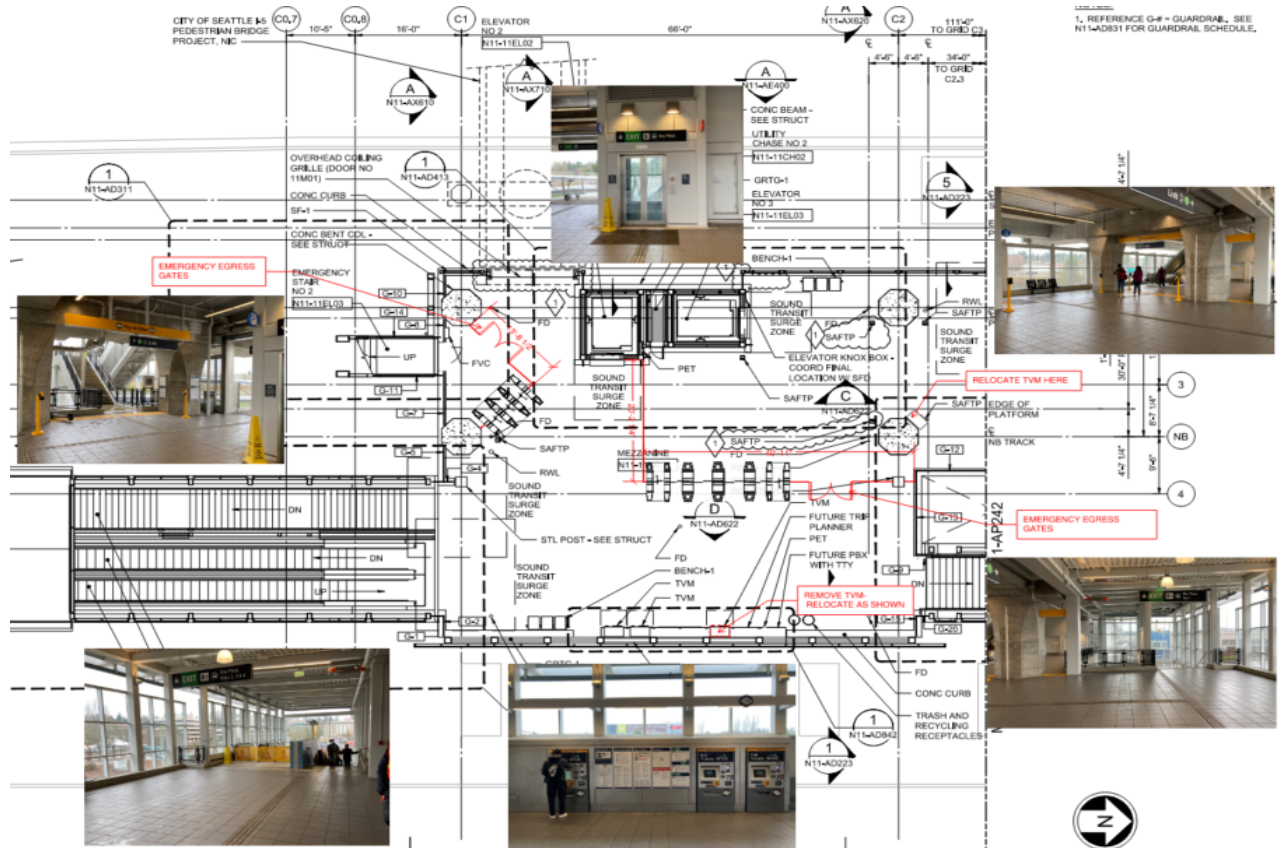
## Northgate Station

Drawings provided by Jonathan Sirois  
Surface Level



## Basis of Estimate

### Mezzanine Level



Northgate Station - 4 fare gates each at surface level

4 and 6 fare gates at each mezzanine level access point. 2 access points at mezzanine level

- New canopy and windscreen at surface level protecting fare gates

- Install fare gates, assume access to nearest existing conduit to electrical room.

- Risks:

-Electrical connection from surface and mezzanine level to electrical room may require removal and reinstall of ceiling.

-Northgate Station looks as if thick set of tile or topping slab was not used

## Basis of Estimate

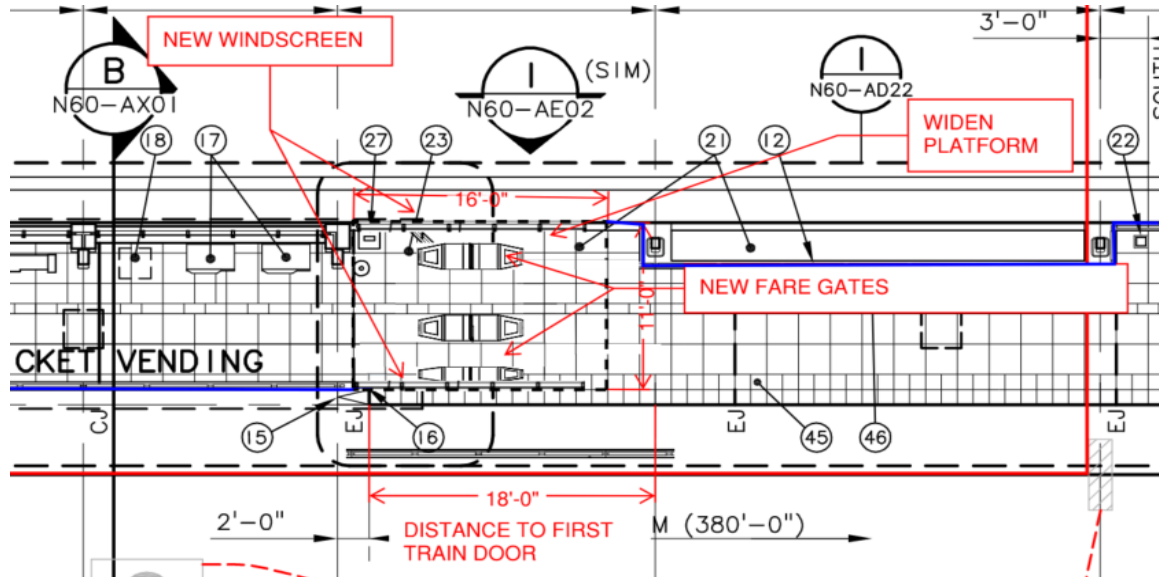
### Othello Station

Drawings provided by Jonathan Sirois

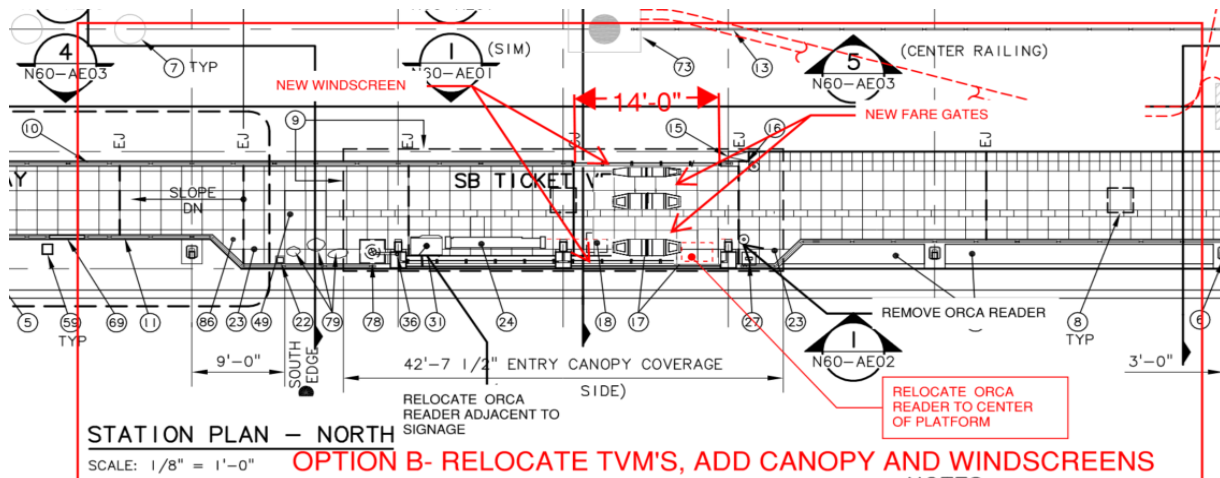
Typical Fare Gate

\*Blue Line represents fence calculation added by Roy as per discussion with Jonathan Sirois

Guardrail to fence replacement to help deter fare evasion



Option B NOT USED



STATION PLAN - NORTH

SCALE: 1/8" = 1'-0"

OPTION B- RELOCATE TVM'S, ADD CANOPY AND WINDSCREENS

NOTES:

## Basis of Estimate

Othello Station - 2 fare gates at each station entrance

- Expansion of platform area into existing planter space

- Replace guardrail for grated fence

- New windscreen at fare gates

- Risks:

  - Limited width of platform may not meet requirements for egress. Feasibility concerns

  - Fencing and fare gates may cause walking on tracks to evade fare gates

  - Fence and proximity to OCS lines causing electrification concerns and construction risk with grounding.

  - Further studies may be warranted

    - Further studies may be warranted in fence and grounding, potential use of nonconductive fence not included in costs

  - Limited construction work space, and phased construction

  - Power down maybe required

## Assumptions and Clarifications

This estimate is based on the following assumptions and clarifications:

- 1 The construction schedule is based on a 2027 start with total construction duration of 4 months per station.
- 2 Our cost estimate is based upon current price levels and have been escalated to the start of construction.
- 7 There will be small business set aside requirements.
- 8 The contractor will be required to pay prevailing wages.
- 9 The general contractor will have full access to the site during normal business hours with the addition of afterhours for disruptive work.
- 10 Assume that the site will have been cleared of any obstructions during the enabling works prior to the construction works reflected in this estimate commence on site.
- 14 Allowances made for IT and AV cabling, data points and AV equipment, roughing in.
- 17 GC liability included Bonds and B&O
- 18 The cost of removing ground obstructions and breaking out 'extra over' to standard excavation rates are assumed to be included within the construction contingency allowance.
- 19 Removal of excavations are priced within the rates, all material assumed to be inert.
- 20 Assume shallow foundations

## Exclusions

This Conceptual Study does not provide for the following:

- 1 Compression of schedule, premium or shift work, and restrictions on the contractor's working hours
- 2 Environmental impact mitigation
- 3 Land and easement acquisition
- 4 Statutory fees, duties or other municipal charges
- 5 Assessments, finance, legal and development charges (impact fees)
- 6 All enabling works are excluded.
- 7 Handling and removal of contaminated excavated materials.

## Allowance for the Design Allowance

An allowance or contingency of 30% for the undeveloped design details has been included in the summary of this estimate. This allowance is intended to cover the cost of such details and will be decreased as those details are incorporated in the body of the estimate

## Allowance for Allocated Contingency

An allowance or contingency of 15% for Construction Contingency has been included within the general contract.

## Escalation Allowance

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## Basis of Estimate

All unit prices are priced to current day and we have included a CCI stipulated per year allowance to stated date per 2022 Fall Inflation Indices provided by Stephanie Ball.

### Opinion of Probable Construction Cost

Pricing reflects probable construction costs obtainable in the project locality on the date of this statement of probable costs. This estimate is an opinion of probable construction cost based on fair market value for the construction of this project. It is not a prediction of low bid. Pricing assumes competitive bidding for every portion of the construction work for all subcontractors and general contractors, with a minimum of 4 bidders for all items of subcontracted work and 4-5 general contractor bids. Experience indicates that a fewer number of bidders may result in higher bids, conversely an increased number of bidders may result in more competitive bids.

Since Sound Transit has no control over the cost of labor, material, equipment, or over the contractor's method of determining prices, or over the competitive bidding or market conditions at the time of bid, the statement of probable construction cost is based on industry practice, professional experience and qualifications, and represents Sound Transit's best judgment as professional construction consultant familiar with the construction industry. Sound Transit cannot and does not guarantee that the proposals, bids, or the construction cost will not vary from opinions of probable cost prepared by them. Sound Transit has prepared this opinion of probable construction cost in accordance with generally accepted cost estimating and practices and standards.

### Contracting Method

Assumed Design Bid Build

**Sound Transit  
Fare Gates Study - DRAFT**

**March 6, 2023**

OVERALL SUMMARY	Gross Floor	Unit Cost	Total
SAMPLE TEST STATIONS	Area	\$/SF	(\$x1,000)
University Street Station	64,212 SF	249.39	16,014
University of Washington Station	151,168 SF	120.18	18,167
Northgate Station	126,378 SF	97.15	12,278
Othello Station	12,410 SF	1,217.04	15,103
<b>Total</b>			<b>61,563</b>

<b>TOTAL Project Cost</b>	<b>61,563</b>
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**Historic Cost Data Point**

TransLink 2010 Fare Gate Project 3,911

ST Central System Modifications **GUESS**

\$7M to \$15M

**TOTAL PROJECT COST SUMMARY**

**Owner's Reoccurring Costs**

On Call Staff

Fare Gate Maintenance

Other agency cost for fare system upgrades: Metro, Community Transit, Pierce County Transit, etc??

**Potential Additional Owner's Costs To Discuss**

Station Agents?

Rest Rooms?

Link shuttle bus if needed during shut down

Loss of fare revenue during construction

Single tracking

Public Outreach

Ambassadors - At the stations to make passengers aware of the upcoming changes and to re-direct passengers to other modes of transportation during station closures and/or single tracking. We typically have ST

Ambassadors, but also contract outside vendors for non-system expansion work that interrupts the commute of passengers

Sound Transit  
Seattle, WA  
TransLink Cost Data

March 6, 2023

Item Description	Quantity	Unit	Rate	Totals
<b>TransLink 2010 Fare Gate Project</b>				
- 2010 ~\$100M Retrofit of ~40 Stations				
- \$100M / 40 Station	1	ST	2,500,000.00	2,500,000
(Mark Langmead TransLink)				
- Location factor - not included				
- Currency factor - roughly 1 to 1 at 2010				
- Escalation, using ST CCI calculator (Stephanie Ball) 2010				
- 2023	0.5644	%	2,500,000.00	1,410,898
- Design Build <b>Maintain</b> Contract				
Markups		%		
Subtotal				<b>3,910,898</b>
<b>TransLink 2010 Fare System Upgrade</b>				
- 2010 ~\$150M	1	LS	150,000,000.00	150,000,000
Central system, TVM, Card readers for buses, misc.				
(Brittany Esdaile)				
- Location factor - not included				
- Currency factor - roughly 1 to 1 at 2010				
- Escalation, using ST CCI calculator (Stephanie Ball) 2010				
- 2023	0.5644	%	150,000,000.00	84,653,893
*These numbers may not be comparable to ST due to existing OCRA system being in place				
Markups		%		
Subtotal				<b>234,653,893</b>

**Sound Transit**  
**Fare Gates Study - DRAFT**  
**Seattle, WA**

**OVERALL SUMMARY - ELEMENTAL**

Item	Description	University Street Station (\$x1,000)	University of Washington Station (\$x1,000)	Northgate Station (\$x1,000)	Othello Station (\$x1,000)
	Gross Floor Area	64,212 SF	151,168 SF	126,378 SF	12,410 SF
A	<u>SUBSTRUCTURE</u>				
A10	Foundations	0	0	0	0
A20	Subgrade Enclosures	0	0	0	0
A40	Slabs-On-Grade	0	0	0	0
A60	Water and Gas Mitigation	0	0	0	0
A90	Substructure Related Activities	0	0	0	0
	Subtotal	0	0	0	0
B	<u>SHELL</u>				
B10	Superstructure	0	0	0	0
B20	Exterior Vertical Enclosure	0	531	247	0
B30	Exterior Horizontal Enclosure	0	0	0	0
	Subtotal	0	531	247	0
C	<u>INTERIORS</u>				
C10	Interior Construction	1,445	1,807	1,262	924
C20	Interior Finishes	846	911	452	584
	Subtotal	2,291	2,718	1,714	1,508
D	<u>SERVICES</u>				
D10	Conveying	0	0	0	0
D20	Plumbing	0	0	0	0
D30	Heating, Ventilation & Air Conditioning	0	0	0	0
D40	Fire Protection	868	0	0	0
D50	Electrical	350	450	356	120
D60	Communications	585	725	641	316
D70	Electronic Safety & Security	220	440	330	112
D80	Integrated Automation	0	0	0	0
	Subtotal	2,023	1,615	1,327	548
E	<u>EQUIPMENT &amp; FURNISHINGS</u>				
E10	Equipment	0	0	0	0
E20	Furnishings	0	0	0	60
	Subtotal	0	0	0	60
F	<u>SPECIAL CONSTRUCTION</u>				
F10	Special Construction	0	0	0	0
F20	Facility Remediation	0	0	0	0
F30	Demolition	0	0	0	0
	Subtotal	0	0	0	0
G	<u>SITWORK</u>				
G10	Site Preparation	0	0	0	0
G20	Site Improvements	0	0	0	1,953
G30	Liquid & Gas Site Utilities	0	0	0	0
G40	Electrical Site Improvements	0	0	0	0
G50	Site Communications	0	0	0	0
G90	Miscellaneous Site Construction	0	0	0	0
	Subtotal	0	0	0	1,953
<b>Total Direct Costs (Building &amp; Site)</b>		<b>4,313</b>	<b>4,864</b>	<b>3,288</b>	<b>4,069</b>

Sound Transit  
Fare Gates Study - DRAFT  
Seattle, WA

**OVERALL SUMMARY - ELEMENTAL**

Z	GENERAL REQUIREMENTS				
	Pre Construction Fees				
	General Conditions	259	292	197	244
	General Requirements	518	619	418	488
	Contractor's Fee including Bonds, Insurance, B&O	356	404	273	336
	<b>Total Construction Costs (incl. General Requirements)</b>	<b>5,447</b>	<b>6,179</b>	<b>4,176</b>	<b>5,137</b>
	Design Allowance (30%)	1,634	1,854	1,253	1,541
	Allocated Contingency (8-15%)	1,062	1,205	814	1,002
	<b>Total Construction Costs (incl. Contingencies)</b>	<b>8,143</b>	<b>9,238</b>	<b>6,243</b>	<b>7,680</b>
	<b>ESTIMATED CONSTRUCTION COST</b>	<b>8,143</b>	<b>9,238</b>	<b>6,243</b>	<b>7,680</b>
	Softcosts				
	Design Costs	2,036	2,309	1,561	1,920
	Construction Management	1,140	1,293	874	1,075
	Project Administration	651	739	499	614
	Permitting	20	23	16	19
	3rd Party	163	185	125	154
	Traffic Control	0	0	0	0
	Safety and Security Certification	81	92	62	77
	Unallocated Contingency	1,629	1,848	1,249	1,536
	<b>ESTIMATED PROJECT COST</b>	<b>13,863</b>	<b>15,727</b>	<b>10,629</b>	<b>13,075</b>
	Escalation				
	2024	339	385	260	320
	2025	564	639	432	532
	2026	603	684	462	568
	2027	645	732	495	609
	<b>ESTIMATED PROJECT COST</b>	<b>16,014</b>	<b>18,167</b>	<b>12,278</b>	<b>15,103</b>

Schedule of Areas	SF	SF
<b>Enclosed Areas "University Street Station"</b>		
Platform Level - Estimate	36,366	
Mezzanine Level	27,846	
Subtotal, Enclosed Area		64,212
<b>Covered Area</b>		
Building overhang		
Subtotal, Covered Area		
Covered Area @ 50%		
<b>TOTAL GROSS FLOOR AREA</b>		64,212

Sound Transit

March 6, 2023

Fare Gates Study - DRAFT, Seattle, WA

University Street Station

Gross Floor Area

64,212 SF

**UNIVERSITY STREET STATION SUMMARY**

Item	Description	Cost \$/SF	Total (\$x1,000)
A	<u>SUBSTRUCTURE</u>		
A10	Foundations	0.00	0
A20	Subgrade Enclosures	0.00	0
A40	Slabs-On-Grade	0.00	0
A60	Water and Gas Mitigation	0.00	0
A90	Substructure Related Activities	0.00	0
	Subtotal	0.00	0
B	<u>SHELL</u>		
B10	Superstructure	0.00	0
B20	Exterior Vertical Enclosure	0.00	0
B30	Exterior Horizontal Enclosure	0.00	0
	Subtotal	0.00	0
C	<u>INTERIORS</u>		
C10	Interior Construction	22.50	1,445
C20	Interior Finishes	13.18	846
	Subtotal	35.67	2,291
D	<u>SERVICES</u>		
D10	Conveying	0.00	0
D20	Plumbing	0.00	0
D30	Heating, Ventilation & Air Conditioning	0.00	0
D40	Fire Protection	13.52	868
D50	Electrical	5.45	350
D60	Communications	9.11	585
D70	Electronic Safety & Security	3.43	220
D80	Integrated Automation	0.00	0
	Subtotal	31.50	2,023
E	<u>EQUIPMENT &amp; FURNISHINGS</u>		
E10	Equipment	0.00	0
E20	Furnishings	0.00	0
	Subtotal	0.00	0
F	<u>SPECIAL CONSTRUCTION</u>		
F10	Special Construction	0.00	0
F20	Facility Remediation	0.00	0
F30	Demolition	0.00	0
	Subtotal	0.00	0
G	<u>SITEWORK</u>		
G10	Site Preparation	0.00	0
G20	Site Improvements	0.00	0
G30	Liquid & Gas Site Utilities	0.00	0
G40	Electrical Site Improvements	0.00	0
G50	Site Communications	0.00	0
	Subtotal	0.00	0
<b>Total Direct Costs (Building &amp; Site)</b>		<b>67.18</b>	<b>4,313</b>
Z	<u>GENERAL REQUIREMENTS</u>		
	Pre Construction Fees	0.00%	0.00 0
	General Conditions	6.00%	4.03 259
	General Requirements	12.00%	8.07 518
	Contractor's Fee including Bonds, Insurance, B&O	7.00%	5.55 356
<b>Total Construction Costs (incl. General Requirements and Fees)</b>		<b>84.83</b>	<b>5,447</b>

Sound Transit

March 6, 2023

Fare Gates Study - DRAFT, Seattle, WA

University Street Station

Gross Floor Area

64,212 SF

**UNIVERSITY STREET STATION SUMMARY**

Design Allowance (30%)	30.00%	25.45	1,634
Allocated Contingency (8-15%)	15.00%	16.54	1,062
<b>Total Construction Costs (incl. Contingencies)</b>		<b>126.81</b>	<b>8,143</b>

<b>ESTIMATED CONSTRUCTION COST</b>	<b>Mar-2023</b>	<b>126.81</b>	<b>8,143</b>
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**Owner's Costs**

Design Costs	25.00%	2,036
Construction Management	14.00%	1,140
Project Administration	8.00%	651
Permitting	0.25%	20
3rd Party	2.00%	163
Traffic Control	0.00%	0
Safety and Security Certification	1.00%	81
Unallocated Contingency	20.00%	1,629

<b>ESTIMATED PROJECT COST</b>	<b>Mar-2023</b>	<b>215.90</b>	<b>13,863</b>
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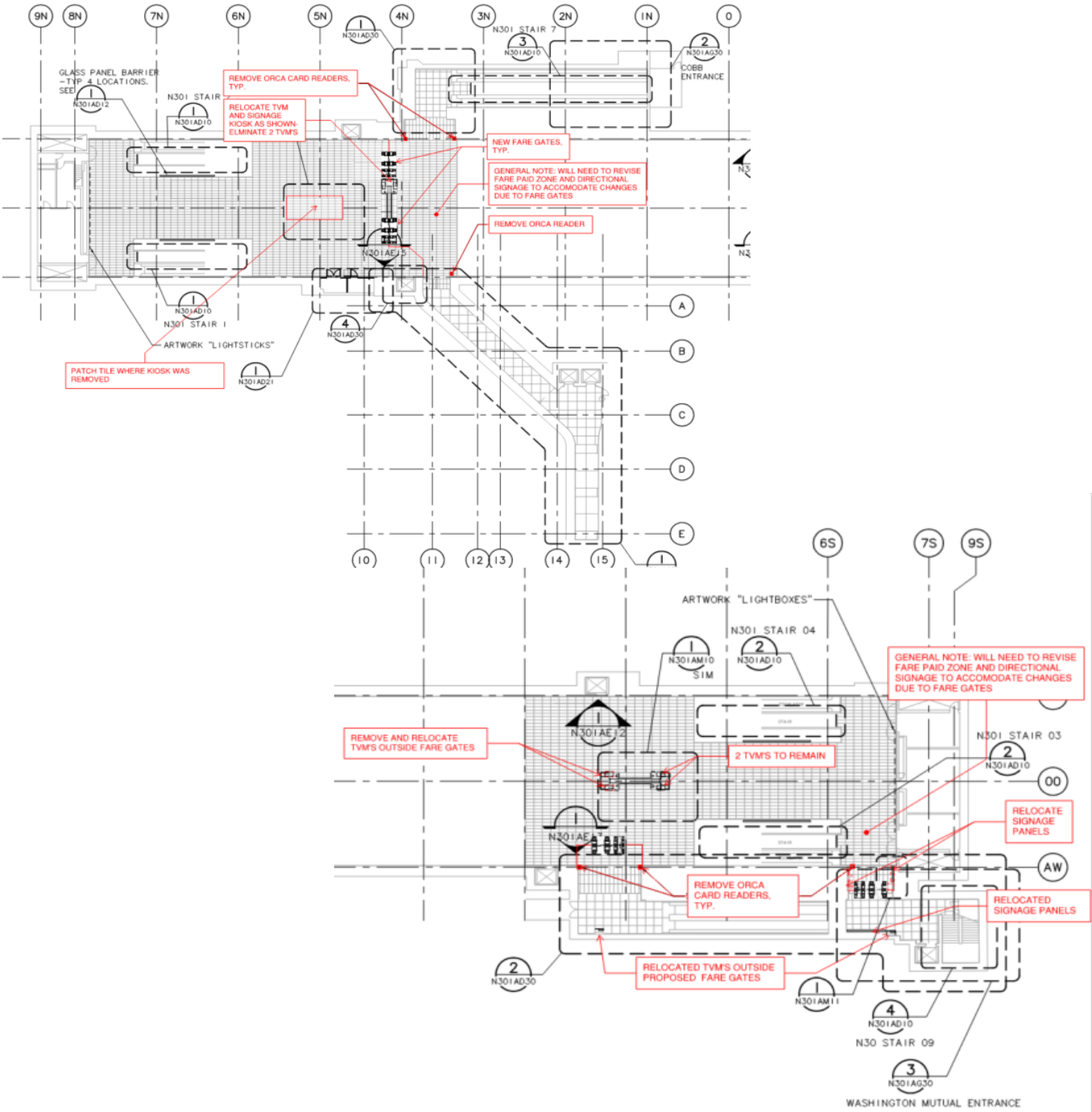
Escalation

2024	2.45%	339
2025	3.97%	564
2026	4.08%	603
2027	4.20%	645

<b>ESTIMATED PROJECT COST</b>	<b>2027</b>	<b>249.39</b>	<b>16,014</b>
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DETAILED ESTIMATE

Item Description	Quantity	Unit	Rate	Totals
A10 FOUNDATIONS				
Subtotal - Foundations				
A20 SUBGRADE ENCLOSURES				
Total - Subgrade Enclosures				
A40 SLABS-ON GRADE				
Subtotal - Slabs-On-Grade				
A60 WATER & GAS MITIGATION				
Subtotal - Water & Gas Mitigation				
A90 SUBSTRUCTURE RELATED ACTIVITIES				
Subtotal - Substructure and Related Activities				
B10 SUPERSTRUCTURE				
Subtotal - Superstructure				
B20 EXTERIOR VERTICAL ENCLOSURE				
Subtotal - Exterior Vertical Enclosure				
B30 EXTERIOR HORIZONTAL ENCLOSURE				
Subtotal - Exterior Horizontal Enclosure				



DETAILED ESTIMATE

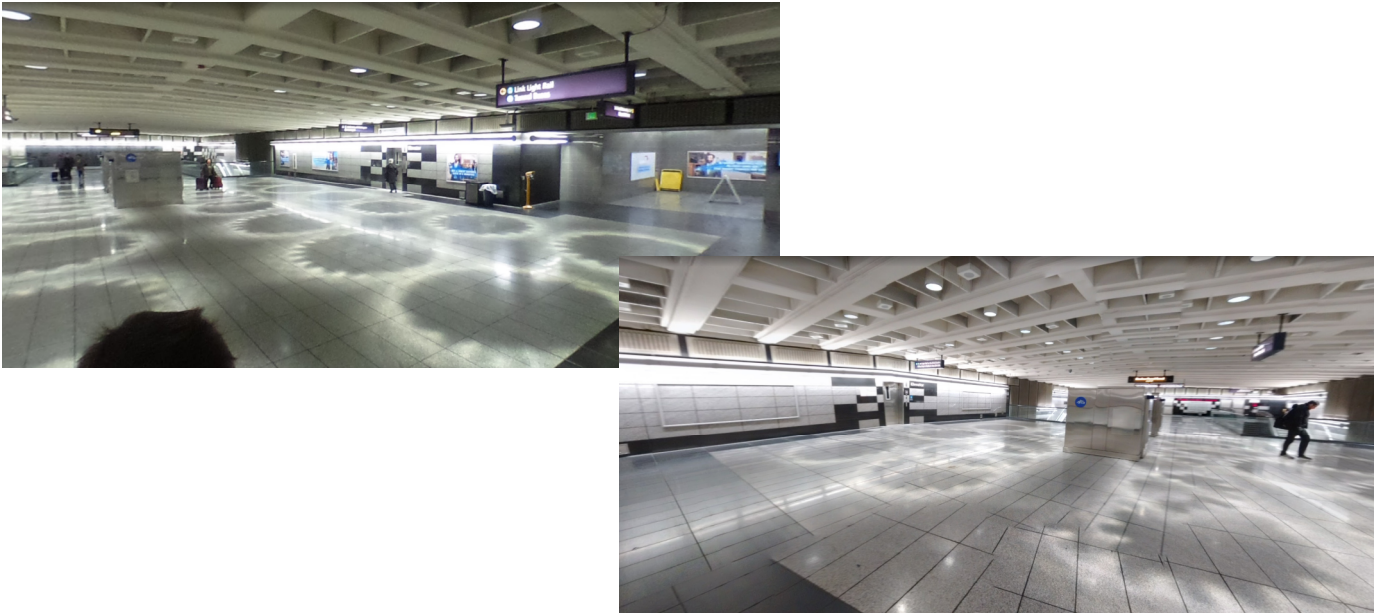
Item Description	Quantity	Unit	Rate	Totals
C10 INTERIOR CONSTRUCTION				
C1090 Interior Specialties				
Remove existing TVM	8	EA	5,000.00	40,000
Remove existing OCRA card readers and patch	6	EA	3,500.00	21,000
Fare gate prep				
Allow for connection to existing structure	12	EA	2,000.00	24,000
Repair finish to surrounding	12	EA	2,000.00	24,000
Fare gates				
Standard	8	EA	65,000.00	520,000
ADA	4	EA	70,000.00	280,000
Fare gate side walls				
Allow for connection to existing structure	84	LF	150.00	12,600
Reinforced concrete curb	84	LF	140.00	11,760
Repair finish to surrounding	168	LF	100.00	16,800
Wall system allowance, allow 8ft tall	84	LF	1,600.00	134,400
Allow for emergency egress gates, including supports, including electrical connection?? Or push bar??	4	EA	30,000.00	120,000
TVM relocation				
Demo at new TVM location	4	EA	2,000.00	8,000
Allow for wall structure to support TVM	4	EA	3,000.00	12,000
Architectural detailing at new TVM location	4	EA	20,000.00	80,000
TVM relocation, allowance	4	EA	10,000.00	40,000
Rework existing TVM kiosk	4	EA	25,000.00	100,000
				1,444,560
Subtotal - Interior Construction				1,444,560

C20 INTERIOR FINISHES

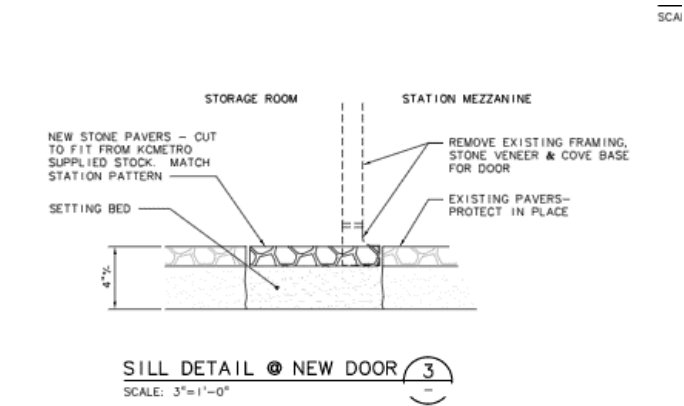
C2010 Wall Finishes

Patch and repair wall	1	LS	30,000.00	30,000
				30,000

University Street Station Photos



Thick set tile provide 4" from structure to finished floor



Potential Curb Wall Detail



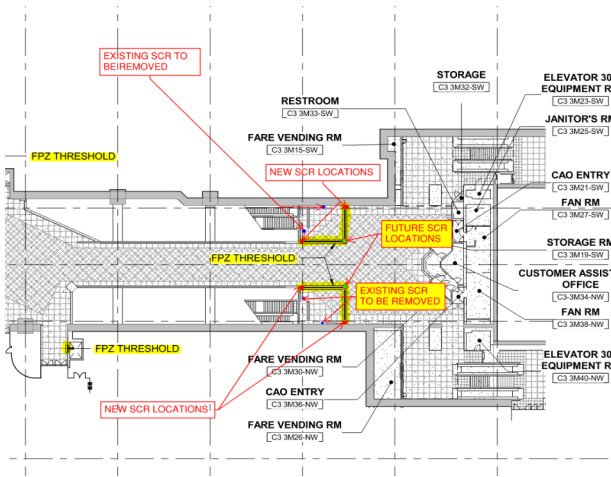
DETAILED ESTIMATE

Item Description	Quantity	Unit	Rate	Totals
C2020 Interior Fabrications				
New and modify existing signage and wayfinding	2	LS	20,000.00	40,000
				40,000
C2030 Flooring				
Patch and repair ceiling at conduit run	1	LS	5,000.00	5,000
Pavement detection, allow	600	LF	130.00	78,000
Undo "Fare Paid" Zone work	1	LS	275,000.00	275,000
Remove tile	1,900	SF	20.00	38,000
Replace tile (thick set)	1,900	SF	200.00	380,000
				776,000
Subtotal - Interior Finishes				846,000
D10 CONVEYING				
Subtotal - Conveying				
D20 PLUMBING				
Subtotal - Plumbing				
D30 HEATING, VENTILATION & AIR CONDITIONING				
Subtotal - Heating, Ventilation & Air Conditioning				
D40 FIRE PROTECTION				
D4010 Fire Suppression				
Fire alarm, interface, keep existing devices	1	LS	25,000.00	25,000
New water connection and into station. Elevation unknown, includes cost for waterproofing	1	LS	200,000.00	200,000
Valve room, heated, location TBD, allowance	1	LS	100,000.00	100,000

TransLink Slab In Tile Detail



Current Fare Paid Zone Work At Westlake Station



Notice no fire sprinklers are present



DETAILED ESTIMATE

Item Description	Quantity	Unit	Rate	Totals
Dry pipe system, doesn't not include interstitial space, no pre-action, no clean agent	64,212	SF	8.00	513,696
Premium for double height space	14,620	SF	2.00	29,240
				867,936

Subtotal - Fire Protection

867,936

D50 ELECTRICAL

D5000 Electrical

TVM				
Rework power at existing TVM location	4	EA	5,000.00	20,000
New TVM location	4	EA	15,000.00	60,000
Fare gates				
Fare gates	12	EA	20,000.00	240,000
New lighting allowance	2	LOC	15,000.00	30,000
Need to be connected to back up power				
				350,000

Subtotal - Electrical

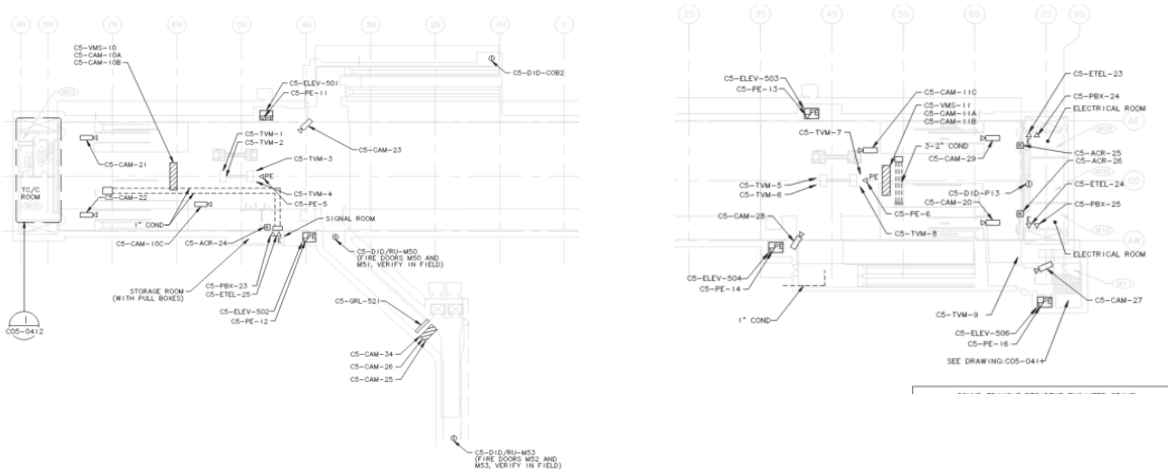
350,000

D60 COMMUNICATIONS

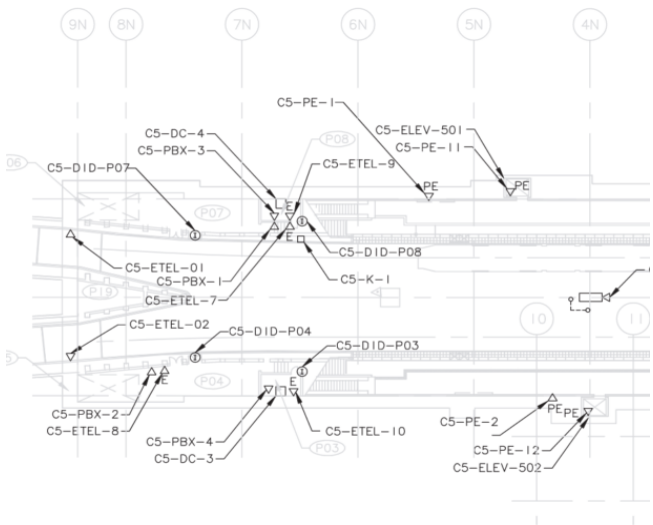
D6010 Data Communications

Data connection				
Rework power at existing TVM location	4	EA	5,000.00	20,000
New TVM location	4	EA	15,000.00	60,000
Fare gates	12	EA	15,000.00	180,000
Fare gates with fire alarm connection	12	EA	15,000.00	180,000
Reprogram fire alarm	1	LS	15,000.00	15,000
Fare gates with BMS connection	1	LS	15,000.00	15,000
Reprogram BMS	1	LS	15,000.00	15,000
Call box	4	EA	25,000.00	100,000
				585,000

Electrical Room Locations



Electrical room at platform level provides additional electrical rooms. However, with difficulty of access



DETAILED ESTIMATE

Item Description	Quantity	Unit	Rate	Totals
Subtotal - Communications				585,000
D70 ELECTRONIC SAFETY & SECURITY				
D7010 Access Control and Intrusion Detection				
CCTV - allowance - assume 6 cameras per location	2	LOC	50,000.00	100,000
Audio prompt system	2	LOC	30,000.00	60,000
Fire alarm, allowance devices etc.	2	LOC	30,000.00	60,000
				220,000
Subtotal - Electronic Safety & Security				220,000
D80 INTEGRATED AUTOMATION				
Subtotal - Integrated Automation				
E10 EQUIPMENT				
Subtotal - Equipment				
E20 FURNISHINGS				
Subtotal - Furnishings				
F10 SPECIAL CONSTRUCTION				
Subtotal - Special Construction				

Notice the CCTV Cameras used for monitoring and trouble shooting





Sound Transit  
Fare Gates Study - DRAFT, Seattle, WA  
University Street Station

Conceptual Study

March 6, 2023

Gross Floor Area      64,212 SF

DETAILED ESTIMATE

Item Description	Quantity	Unit	Rate	Totals
F20 FACILITY REMEDIATION				
F2010 Hazardous Materials Remediation				
				0
Subtotal - Facility Remediation				
F30 DEMOLITION				
Subtotal - Demolition				
G10 SITE PREPARATION				
Subtotal - Site Preparation				
G20 SITE IMPROVEMENT				
Subtotal - Site Improvement				

Schedule of Areas	SF	SF
Enclosed Areas "University of Washington Station"		
Station	151,168	
Subtotal, Enclosed Area		151,168
TOTAL GROSS FLOOR AREA		151,168

Sound Transit  
Fare Gates Study - DRAFT Seattle, WA  
University of Washington Station

March 6, 2023

Gross Floor Area 151,168 SF

## UNIVERSITY OF WASHINGTON STATION SUMMARY

Item	Description	Cost \$/SF	Total (\$x1,000)
A	<u>SUBSTRUCTURE</u>		
A10	Foundations	0.00	0
A20	Subgrade Enclosures	0.00	0
A40	Slabs-On-Grade	0.00	0
A60	Water and Gas Mitigation	0.00	0
A90	Substructure Related Activities	0.00	0
	Subtotal	0.00	0
B	<u>SHELL</u>		
B10	Superstructure	0.00	0
B20	Exterior Vertical Enclosure	3.51	531
B30	Exterior Horizontal Enclosure	0.00	0
	Subtotal	3.51	531
C	<u>INTERIORS</u>		
C10	Interior Construction	11.95	1,807
C20	Interior Finishes	6.03	911
	Subtotal	17.98	2,718
D	<u>SERVICES</u>		
D10	Conveying	0.00	0
D20	Plumbing	0.00	0
D30	Heating, Ventilation & Air Conditioning	0.00	0
D40	Fire Protection	0.00	0
D50	Electrical	2.98	450
D60	Communications	4.80	725
D70	Electronic Safety & Security	2.91	440
D80	Integrated Automation	0.00	0
	Subtotal	10.68	1,615
E	<u>EQUIPMENT &amp; FURNISHINGS</u>		
E10	Equipment	0.00	0
E20	Furnishings	0.00	0
	Subtotal	0.00	0
F	<u>SPECIAL CONSTRUCTION</u>		
F10	Special Construction	0.00	0
F20	Facility Remediation	0.00	0
F30	Demolition	0.00	0
	Subtotal	0.00	0
G	<u>SITEWORK</u>		
G10	Site Preparation	0.00	0
G20	Site Improvements	0.00	0
G30	Liquid & Gas Site Utilities	0.00	0
G40	Electrical Site Improvements	0.00	0
G50	Site Communications	0.00	0
G90	Miscellaneous Site Construction	0.00	0
	Subtotal	0.00	0
<b>Total Direct Costs (Building &amp; Site)</b>		<b>32.17</b>	<b>4,864</b>
	Pre Construction Fees	0.00%	0
	General Conditions	6.00%	292
	General Requirements	12.00%	619
	Contractor's Fee including Bonds, Insurance, B&O	7.00%	404
<b>Total Construction Costs (incl. Contingencies)</b>		<b>Mar-2023 40.87</b>	<b>6,179</b>

**UNIVERSITY OF WASHINGTON STATION SUMMARY**

Design Allowance	30.00%	12.26	1,854
Allocated Contingency (8-15%)	15.00%	7.97	1,205
<b>Total Construction Costs (incl. Contingencies &amp; Escalation)</b>	<b>Mar-2023</b>	<b>61.11</b>	<b>9,238</b>
<b>ESTIMATED CONSTRUCTION COST</b>	<b>Mar-2023</b>	<b>61.11</b>	<b>9,238</b>

**Owner's Costs**

Design Costs	25.00%	2,309
Construction Management	14.00%	1,293
Project Administration	8.00%	739
Permitting	0.25%	23
3rd Party	2.00%	185
Traffic Control	0.00%	0
Safety and Security Certification	1.00%	92
Unallocated Contingency	20.00%	1,848

<b>ESTIMATED PROJECT COST</b>	<b>Mar-2023</b>	<b>104.04</b>	<b>15,727</b>
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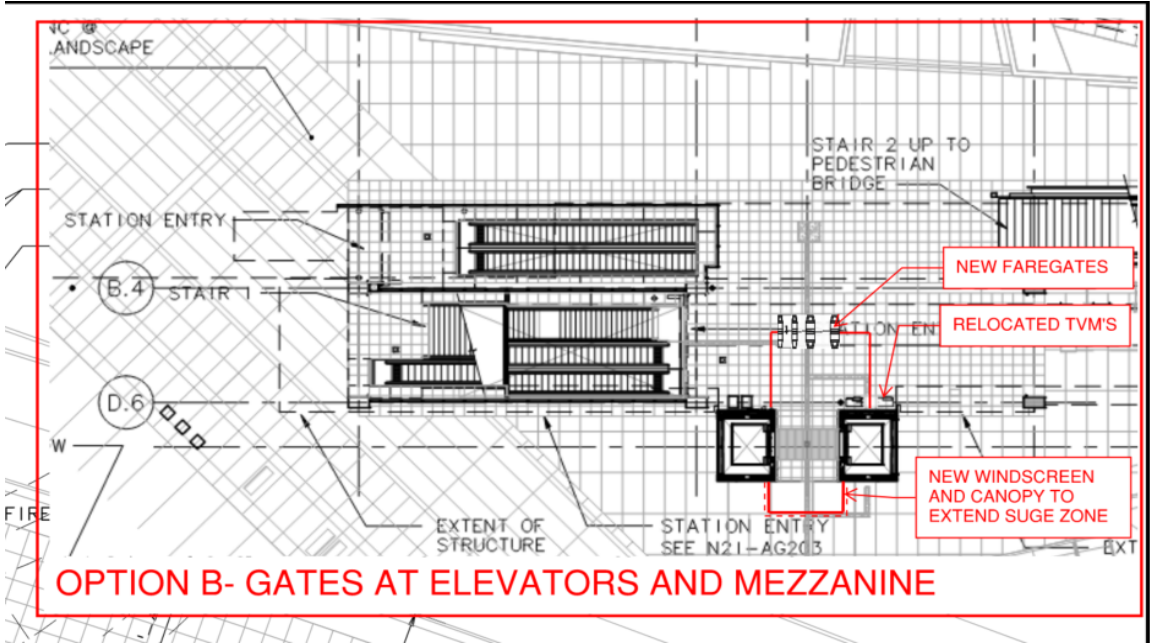
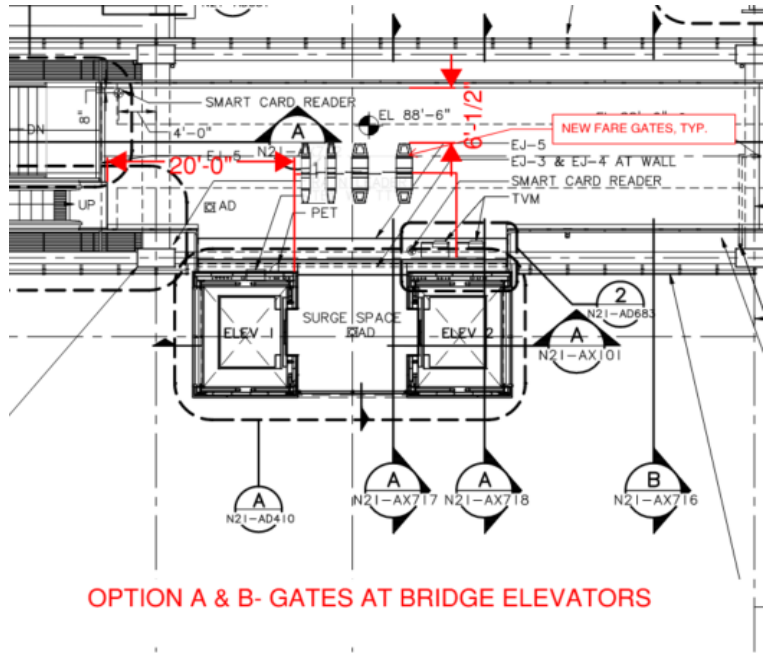
Escalation

2024	2.45%	385
2025	3.97%	639
2026	4.08%	684
2027	4.20%	732

<b>ESTIMATED PROJECT COST</b>	<b>Mar-2023</b>	<b>120.18</b>	<b>18,167</b>
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Item Description	Quantity	Unit	Rate	Totals
A10 FOUNDATIONS				
Subtotal - Foundations				
A20 SUBGRADE ENCLOSURES				
Total - Subgrade Enclosures				
A40 SLABS-ON GRADE				
Subtotal - Slabs-On-Grade				
A60 WATER & GAS MITIGATION				
Subtotal - Water & Gas Mitigation				
A90 SUBSTRUCTURE RELATED ACTIVITIES				
Subtotal - Substructure and Related Activities				
B10 SUPERSTRUCTURE				
Subtotal - Superstructure				
B20 EXTERIOR VERTICAL ENCLOSURE				
B2010 Exterior Walls				
Elevator surge area, 67"-6" exterior				
Demo and remove SOG	260	SF	8.00	2,080
Wind screen, 10ft, Elevator Surge Area				
New footing and stem wall, assume very low quality soils	30	LF	1,500.00	45,000
Aluminum windscreen with steel support, assume 10ft tall	300	SF	250.00	75,000

Drawings provided by Jonathan Sirois



Item Description	Quantity	Unit	Rate	Totals
Canopy				
Footings, allowance assume weak soils	2	EA	20,000.00	40,000
Structure and cladding	2	EA	15,000.00	30,000
Glass and steel canopy	260	SF	275.00	71,500
Connection to existing cladding system	24	LF	1,000.00	24,000
New SOG	260	SF	18.00	4,680
Re work tactile pavers	1	LS	4,000.00	4,000
Elevator surge area, 67'-6", interior				
Demo and remove SOG	960	SF	8.00	7,680
Wind screen, 10ft, Elevator Surge Area				
New footing and stem wall, allow for footings or connecting to existing structure	50	LF	2,000.00	100,000
Repair to existing waterproofing	50	LF	50.00	2,500
Screen wall with steel support, assume 10ft tall	500	SF	200.00	100,000
Allow for connection to existing ceiling	50	LF	150.00	7,500
New SOG	960	SF	18.00	17,280
				531,220

Subtotal - Exterior Vertical Enclosure 531,220

B30 EXTERIOR HORIZONTAL ENCLOSURE

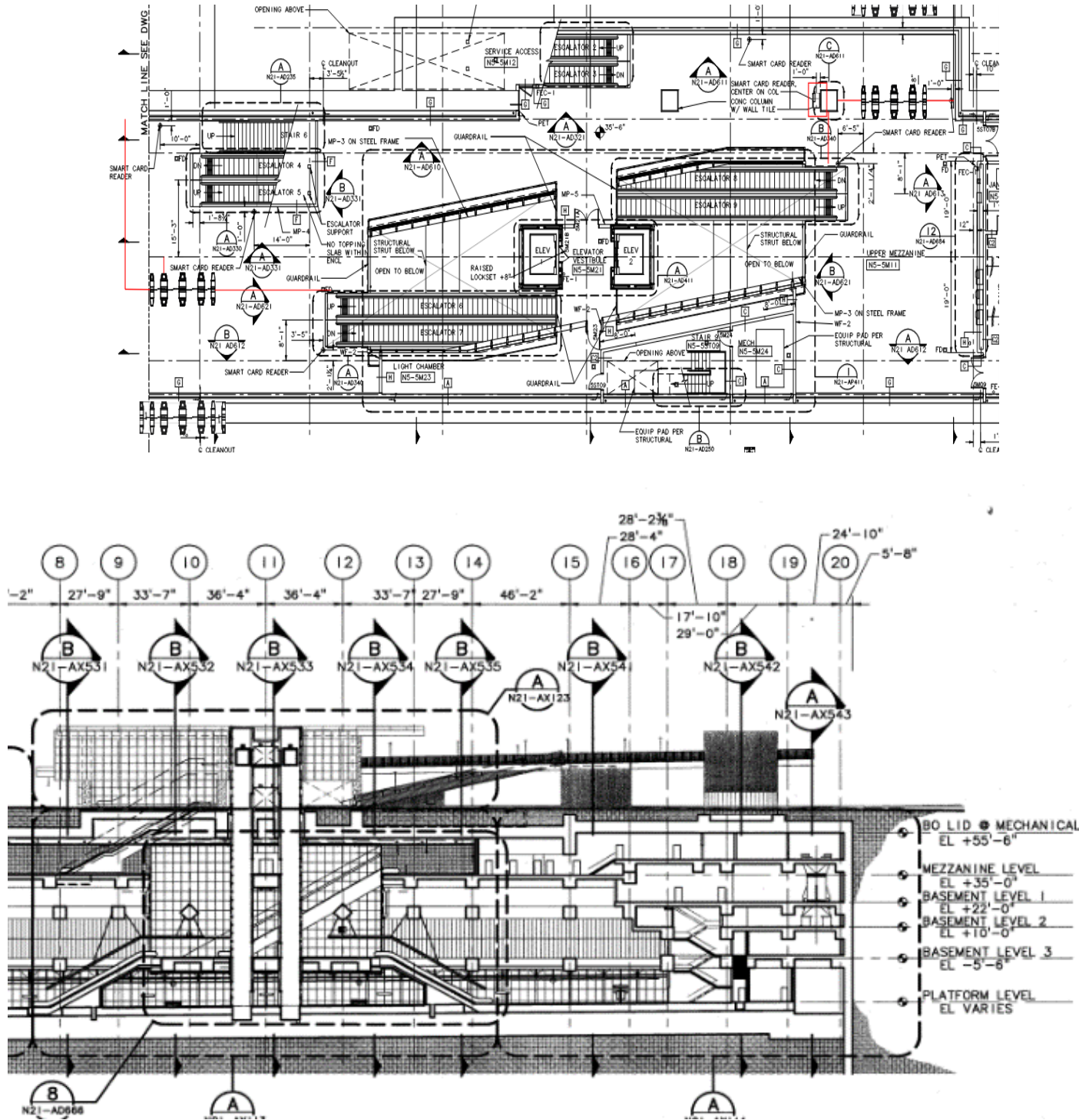
Subtotal - Exterior Horizontal Enclosure

C10 INTERIOR CONSTRUCTION

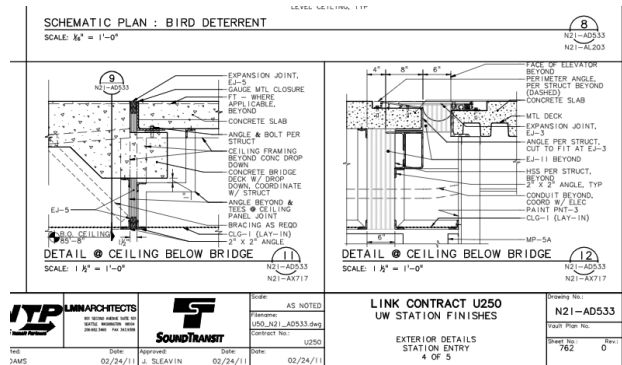
C1090 Interior Specialties

Remove existing TVM	6	EA	5,000.00	30,000
Remove existing OCRA card readers and patch	10	EA	3,500.00	35,000
Screen 10ft, Elevator Surge Area 88'-6" Bridge level, no topping slab looks to exist				
X ray precast bridge	1	LS	1,500.00	1,500
Connection to existing slab	27	LF	150.00	4,050
Reinforced concrete curb	27	LF	200.00	5,400
Aluminum windscreen with steel support, assume 10ft tall	270	SF	200.00	54,000
Replace guardrail to remove risk of climbing	150	SF	200.00	30,000

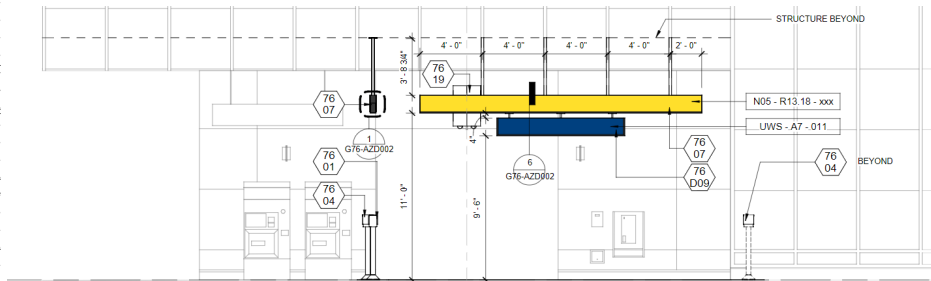
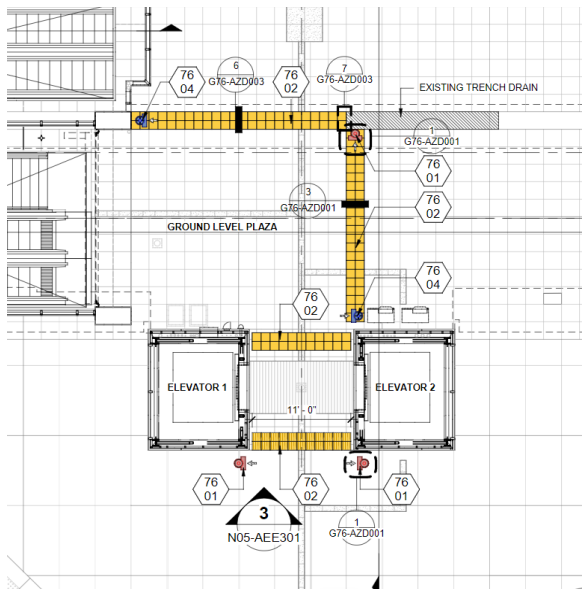
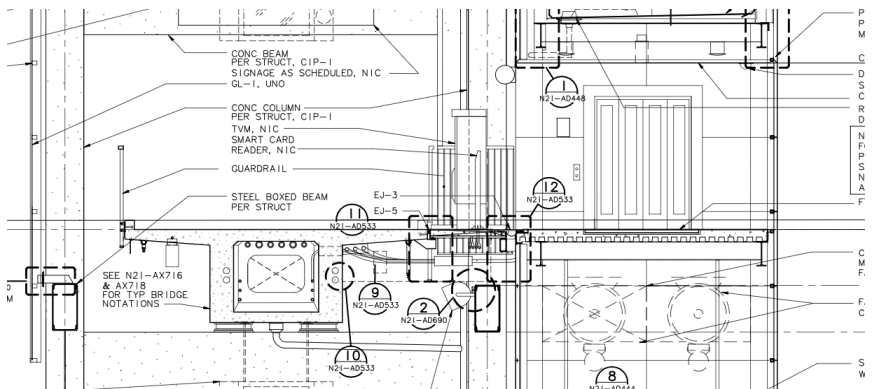
As built for reference



Item Description	Quantity	Unit	Rate	Totals
Expansion joint detail at screen	20	LF	300.00	6,000
Allow for connection to existing ceiling	27	LF	150.00	4,050
Fare gate prep				
Allow for connection to existing structure, precast, assume epoxy anchor detail	12	EA	500.00	6,000
Allow for connection to existing structure, concrete pad to finished elevation	4	EA	2,000.00	8,000
Repair finish to surrounding	16	EA	2,000.00	32,000
Fare gates				
Standard	8	EA	65,000.00	520,000
ADA	8	EA	70,000.00	560,000
Premium for bridge level to mezz - core, firestop, waterproof, architectural detailing	4	EA	10,000.00	40,000
Premium for entrance level to mezz - core, firestop, waterproof, architectural detailing	4	EA	8,000.00	32,000
Fare gate side walls, Mezz				
Connection to existing slab	115	LF	150.00	17,250
Reinforced concrete curb	115	LF	140.00	16,100
Aluminum screen with steel support, assume 10ft tall	270	SF	200.00	54,000
Allow for connection to existing ceiling	115	LF	150.00	17,250
Re work tactile pavers	1	LS	4,000.00	4,000
Allow for emergency egress gates, including supports, including electrical connection?? Or push bar?? Included after subsequent conversation with Jonathan Sirois	4	EA	30,000.00	120,000
TVM relocation				
Demo at new TVM location	6	EA	2,000.00	12,000
Allow for wall structure to support TVM	6	EA	3,000.00	18,000
Architectural detailing at new TVM location	6	EA	20,000.00	120,000
TVM relocation, allowance	6	EA	10,000.00	60,000
				1,806,600
<b>Subtotal - Interior Construction</b>				<b>1,806,600</b>



### Fare paid zone drawings for reference



2 UW STATION - WEST ELEVATION  
1/4" = 1'-0"

Item Description	Quantity	Unit	Rate	Totals
<b>C2010 Wall Finishes</b>				
Patch and repair wall	1	LS	40,000.00	40,000
				<b>40,000</b>
<b>C2020 Interior Fabrications</b>				
New and modify existing signage and wayfinding	4	LS	20,000.00	80,000
				<b>80,000</b>
<b>C2030 Flooring</b>				
Patch and repair ceiling at conduit run	1	LS	5,000.00	5,000
Pavement detection, allow	1,200	LF	130.00	156,000
Undo "Fare Paid" Zone work	1	LS	300,000.00	300,000
Remove tile, mezz level	1,500	SF	20.00	30,000
Replace tile (thick set) mezz level	1,500	SF	200.00	300,000
				<b>791,000</b>
<b>Subtotal - Interior Finishes</b>				<b>911,000</b>
<b>D10 CONVEYING</b>				
<b>Subtotal - Conveying</b>				
<b>D20 PLUMBING</b>				
<b>Subtotal - Plumbing</b>				
<b>D30 HEATING, VENTILATION &amp; AIR CONDITIONING</b>				
<b>Subtotal - Heating, Ventilation &amp; Air Conditioning</b>				
<b>D40 FIRE PROTECTION</b>				
<b>Subtotal - Fire Protection</b>				

## Potential Risk at Bridge

can it be prestressed?

Egan, Edward 10:20 AM

The boxed section of the bridge were likely prestressed at the factory and shipped to the site in a completed form. I would not recommend core drilling as an exploratory exercise though. ST should be able to figure out where some obvious anchorage locations are from the drawings.

10:41 AM

What are your thoughts on anchoring into the prestressed bridge? Can we at least do that?

Egan, Edward 10:49 AM

The prestressed strands should be in the lower boxed section. The flat upper walking deck should be mild reinforcing, like #5 at 10" Each way. A contractor should be able to scan and avoid the the reinforcement and get proper embedment of the anchors.

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Item Description	Quantity	Unit	Rate	Totals
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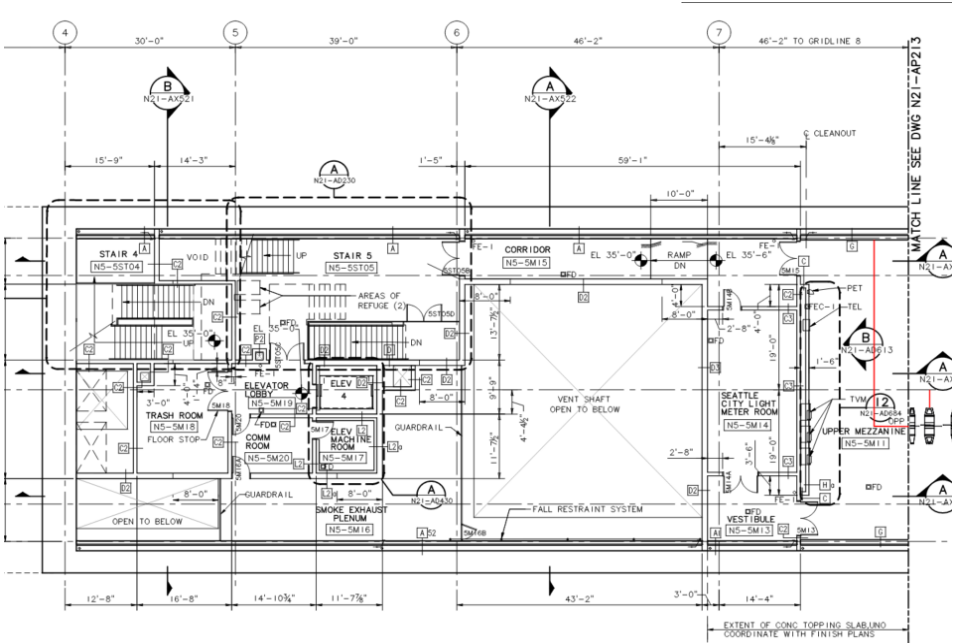
D50 ELECTRICAL

D5000 Electrical

TVM				
Rework power at existing TVM location		EA	5,000.00	
New TVM location	6	EA	15,000.00	90,000
Fare gates				
Fare gates	12	EA	25,000.00	300,000
New lighting allowance	4	LOC	15,000.00	60,000
Need to be connected to back up power				
				450,000

Subtotal - Electrical 450,000

Note the location of the electrical rooms at end of station

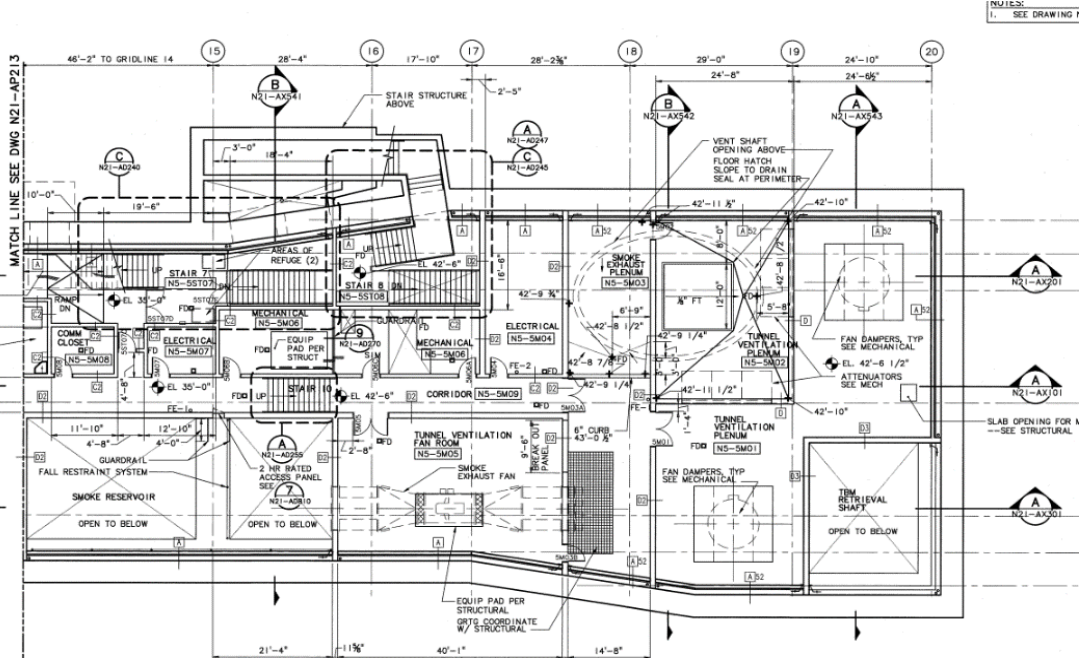


D60 COMMUNICATIONS

D6010 Data Communications

Data connection				
Rework power at existing TVM location	6	EA	5,000.00	30,000
New TVM location	6	EA	15,000.00	90,000
Fare gates	12	EA	15,000.00	180,000
Fare gates with fire alarm connection	12	EA	15,000.00	180,000
Reprogram fire alarm	1	LS	15,000.00	15,000
Fare gates with BMS connection	1	LS	15,000.00	15,000
Reprogram BMS	1	LS	15,000.00	15,000
Call box	8	EA	25,000.00	200,000
				725,000

Subtotal - Communications 725,000



Item Description	Quantity	Unit	Rate	Totals	
D70 ELECTRONIC SAFETY & SECURITY					
D7010 Access Control and Intrusion Detection					
CCTV - allowance - assume 6 cameras per location	4	LOC	50,000.00	200,000	
Audio prompt system	4	LOC	30,000.00	120,000	
Fire alarm, allowance devices etc.	4	LOC	30,000.00	120,000	
				440,000	
Subtotal - Electronic Safety & Security				440,000	
D80 INTEGRATED AUTOMATION					
Subtotal - Integrated Automation					
E10 EQUIPMENT					
Subtotal - Equipment					
E20 FURNISHINGS					
Subtotal - Furnishings					
F10 SPECIAL CONSTRUCTION					
Subtotal - Special Construction					
F20 FACILITY REMEDIATION					

Item Description	Quantity	Unit	Rate	Totals	
Subtotal - Facility Remediation					
F30 DEMOLITION					
Subtotal - Demolition					
G10 SITE PREPARATION					
Subtotal - Site Preparation					
G20 SITE IMPROVEMENT					
Subtotal - Site Improvement					
G30 LIQUID & GAS SITE UTILITIES					
Subtotal - Liquid & Gas Site Utilities					
G40 ELECTRICAL SITE IMPROVEMENTS					
Subtotal - Electrical Site Improvement					
G50 SITE COMMUNICATIONS					
Subtotal - Site Communication					
G90 MISCELLANEOUS SITE CONSTRUCTION					
Subtotal - Miscellaneous Site Construction					

Schedule of Areas	SF	SF
<b>Enclosed Areas "Northgate Station"</b>		
GFA	126,378	
Subtotal, Enclosed Area		126,378
<b>Covered Area</b>		
Building overhang		
Subtotal, Covered Area		
Covered Area @ 50%		
<b>TOTAL GROSS FLOOR AREA</b>		126,378

**Sound Transit**  
**Fare Gates Study - DRAFT Seattle, WA**  
**Northgate Station**

**March 6, 2023**

**Gross Floor Area 126,378 SF**

**NORTHGATE STATION SUMMARY**

Item	Description	Cost \$/SF	Total (\$x1,000)
A	<u>SUBSTRUCTURE</u>		
A10	Foundations	0.00	0
A20	Subgrade Enclosures	0.00	0
A40	Slabs-On-Grade	0.00	0
A60	Water and Gas Mitigation	0.00	0
A90	Substructure Related Activities	0.00	0
	Subtotal	0.00	0
B	<u>SHELL</u>		
B10	Superstructure	0.00	0
B20	Exterior Vertical Enclosure	1.95	247
B30	Exterior Horizontal Enclosure	0.00	0
	Subtotal	1.95	247
C	<u>INTERIORS</u>		
C10	Interior Construction	9.99	1,262
C20	Interior Finishes	3.57	452
	Subtotal	13.56	1,714
D	<u>SERVICES</u>		
D10	Conveying	0.00	0
D20	Plumbing	0.00	0
D30	Heating, Ventilation & Air Conditioning	0.00	0
D40	Fire Protection	0.00	0
D50	Electrical	2.82	356
D60	Communications	5.07	641
D70	Electronic Safety & Security	2.61	330
D80	Integrated Automation	0.00	0
	Subtotal	10.50	1,327
E	<u>EQUIPMENT &amp; FURNISHINGS</u>		
E10	Equipment	0.00	0
E20	Furnishings	0.00	0
	Subtotal	0.00	0
F	<u>SPECIAL CONSTRUCTION</u>		
F10	Special Construction	0.00	0
F20	Facility Remediation	0.00	0
F30	Demolition	0.00	0
	Subtotal	0.00	0
G	<u>SITEWORK</u>		
G10	Site Preparation	0.00	0
G20	Site Improvements	0.00	0
G30	Liquid & Gas Site Utilities	0.00	0
G40	Electrical Site Improvements	0.00	0
G50	Site Communications	0.00	0
G90	Miscellaneous Site Construction	0.00	0
	Subtotal	0.00	0
<b>Total Direct Costs (Building &amp; Site)</b>		<b>26.01</b>	<b>3,288</b>
	Pre Construction Fees	0.00%	0.00
	General Conditions	6.00%	1.56
	General Requirements	12.00%	3.31
	Contractor's Fee including Bonds, Insurance, B&O	7.00%	2.16
<b>Total Construction Costs (incl. Contingencies)</b>		<b>Mar-2023 33.05</b>	<b>4,176</b>

Sound Transit

March 6, 2023

Fare Gates Study - DRAFT Seattle, WA

Northgate Station

Gross Floor Area 126,378 SF

## NORTHGATE STATION SUMMARY

Design Allowance	30.00%	9.91	1,253
Allocated Contingency (8-15%)	15.00%	6.44	814

<b>ESTIMATED CONSTRUCTION COST</b>	<b>Mar-2023</b>	<b>49.40</b>	<b>6,243</b>
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## Owner's Costs

Design Costs	25.00%	1,561
Construction Management	14.00%	874
Project Administration	8.00%	499
Permitting	0.25%	16
3rd Party	2.00%	125
Traffic Control	0.00%	0
Safety and Security Certification	1.00%	62
Unallocated Contingency	20.00%	1,249

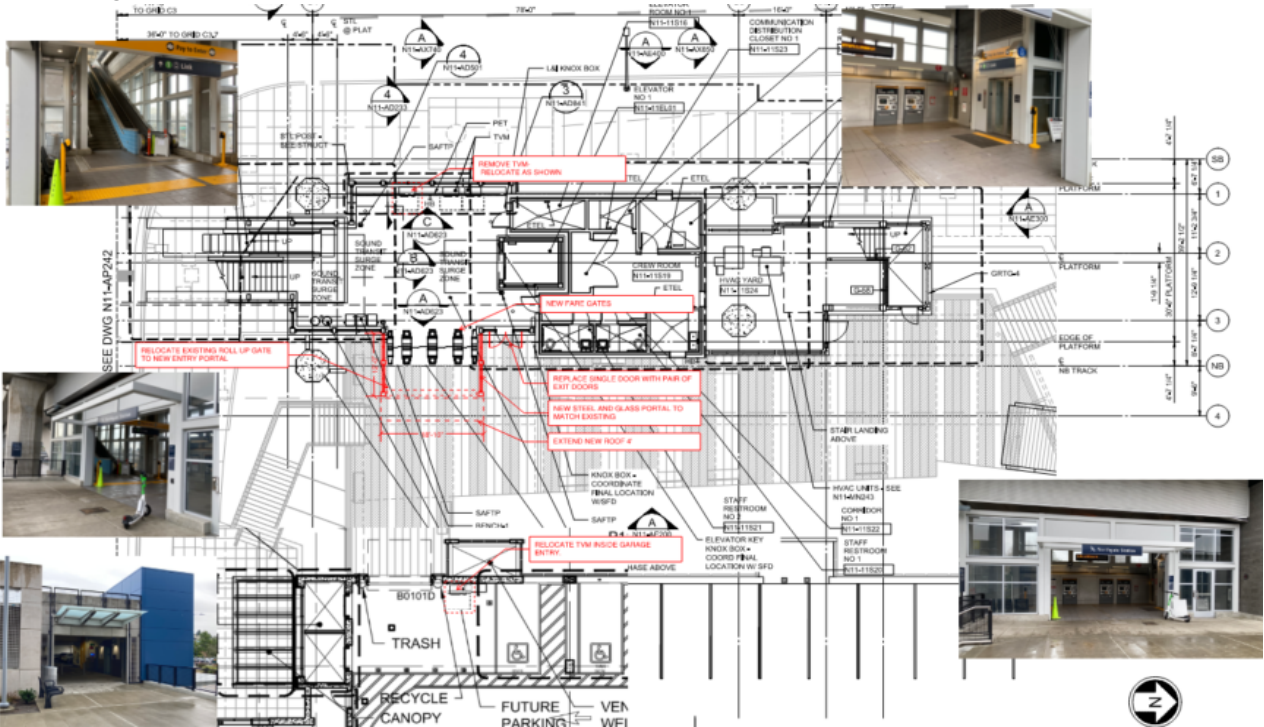
<b>ESTIMATED PROJECT COST</b>	<b>Mar-2023</b>	<b>84.11</b>	<b>10,629</b>
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Escalation		
2024	2.45%	260
2025	3.97%	432
2026	4.08%	462
2027	4.20%	495

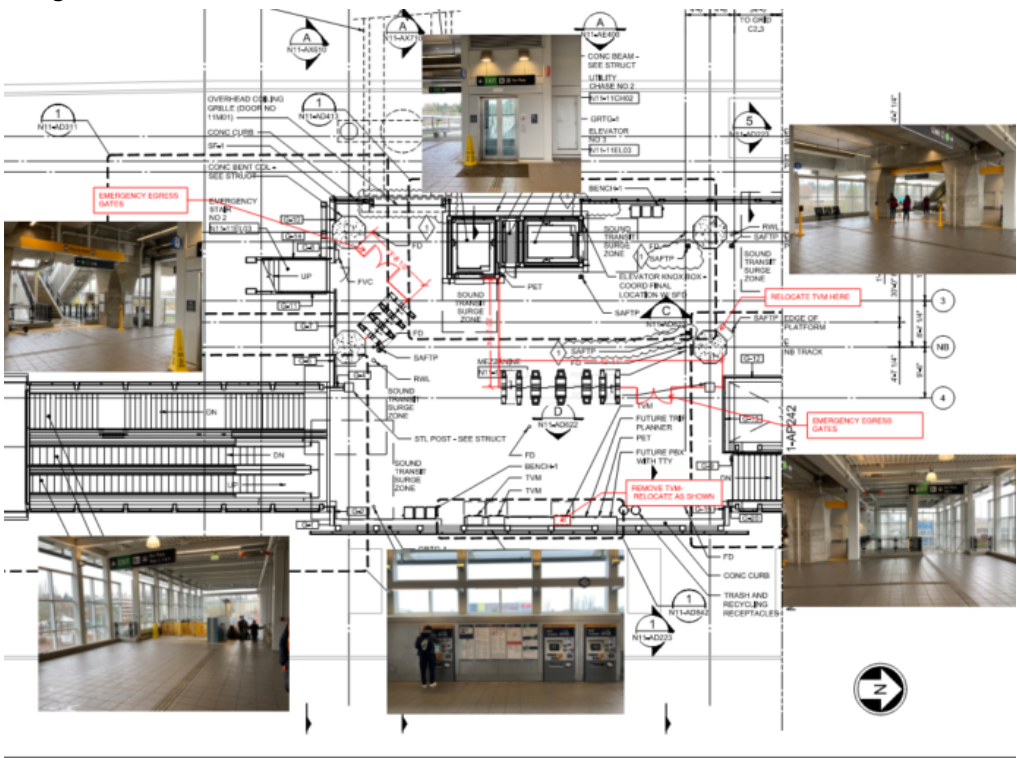
<b>ESTIMATED PROJECT COST</b>	<b>Mar-2023</b>	<b>97.15</b>	<b>12,278</b>
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Item Description	Quantity	Unit	Rate	Totals
A10 FOUNDATIONS				
Total - Subgrade Enclosures				
A40 SLABS-ON GRADE				
Subtotal - Slabs-On-Grade				
A60 WATER & GAS MITIGATION				
Subtotal - Water & Gas Mitigation				
A90 SUBSTRUCTURE RELATED ACTIVITIES				
Subtotal - Substructure and Related Activities				
B10 SUPERSTRUCTURE				
Subtotal - Superstructure				

Surface Level Drawings From Jonathan Sirois



Mezzanine Level Drawings From Jonathan Sirois



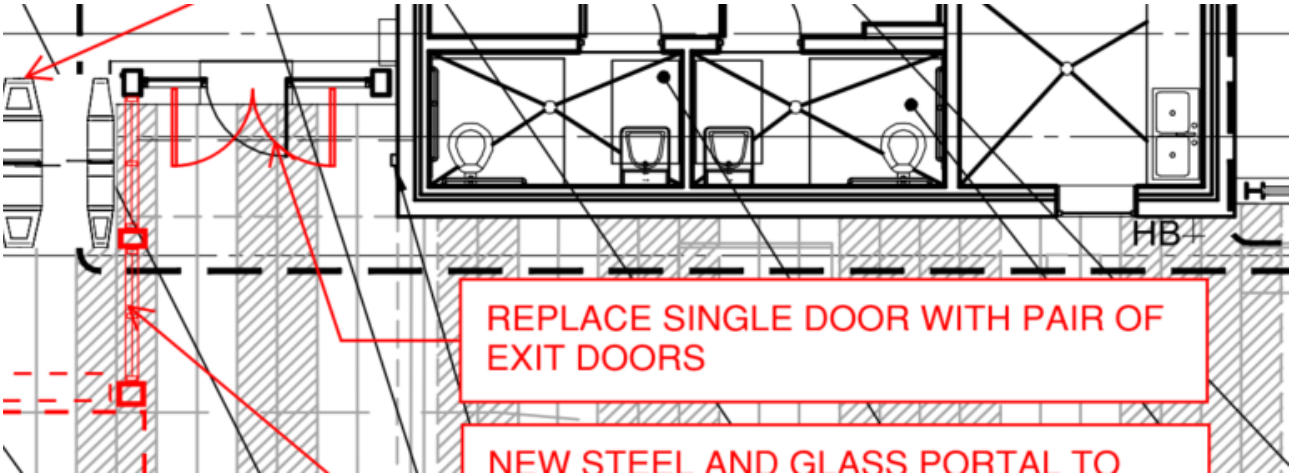
Item Description	Quantity	Unit	Rate	Totals
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B20 EXTERIOR VERTICAL ENCLOSURE

B2020 Exterior Windows

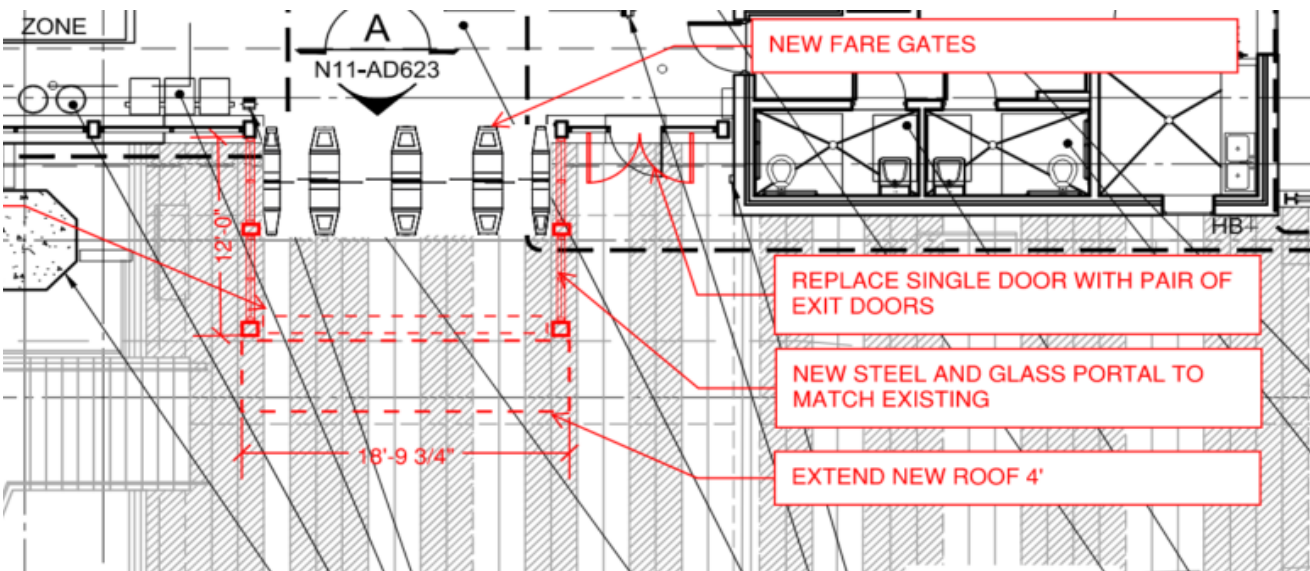
Storefront replacement				
Demo and remove storefront	63	SF	30.00	1,890
New storefront	63	SF	150.00	9,450
Glazed double door	1	EA	8,000.00	8,000

Storefront replacement



New steel and glass portal				
Roof	320	SF		
Cut and demo and remove colored concrete and pavers, chip around rebar	400	SF	20.00	8,000
Repair rebar as needed, allow	400	SF	4.00	1,600
Footing, 14'x5'				
Structural excavation				
Formwork	56	SF	16.00	896
Allow for connection to existing	2	EA	500.00	1,000
Reinforcing steel, allow 150#/CY	778	LB	3.00	2,333
Concrete	5	CY	1,000.00	5,185
Stem wall				
Formwork	56	SF	16.00	896
Allow for connection to existing	2	EA	500.00	1,000
Reinforcing steel, allow 150#/CY	207	LB	3.00	622
Concrete	1	CY	1,000.00	1,037
Replace slab	400	SF	20.00	8,000
Anchor bolt, sets	4	EA	500.00	2,000
Steel canopy	320	SF	500.00	160,000
Glass portal, assume storefront	192	SF	150.00	28,800
Relocated rollup door	1	EA	4,000.00	4,000
Patch previous rollup door location	1	EA	2,000.00	2,000

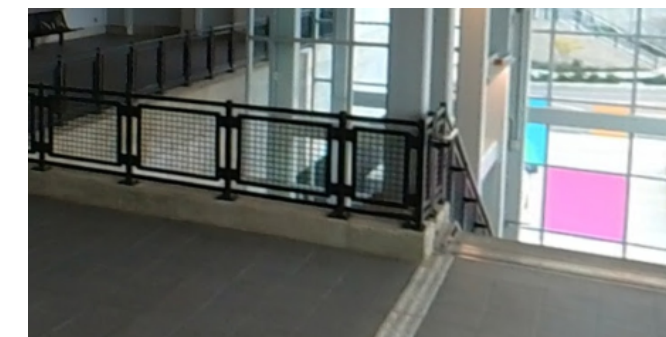
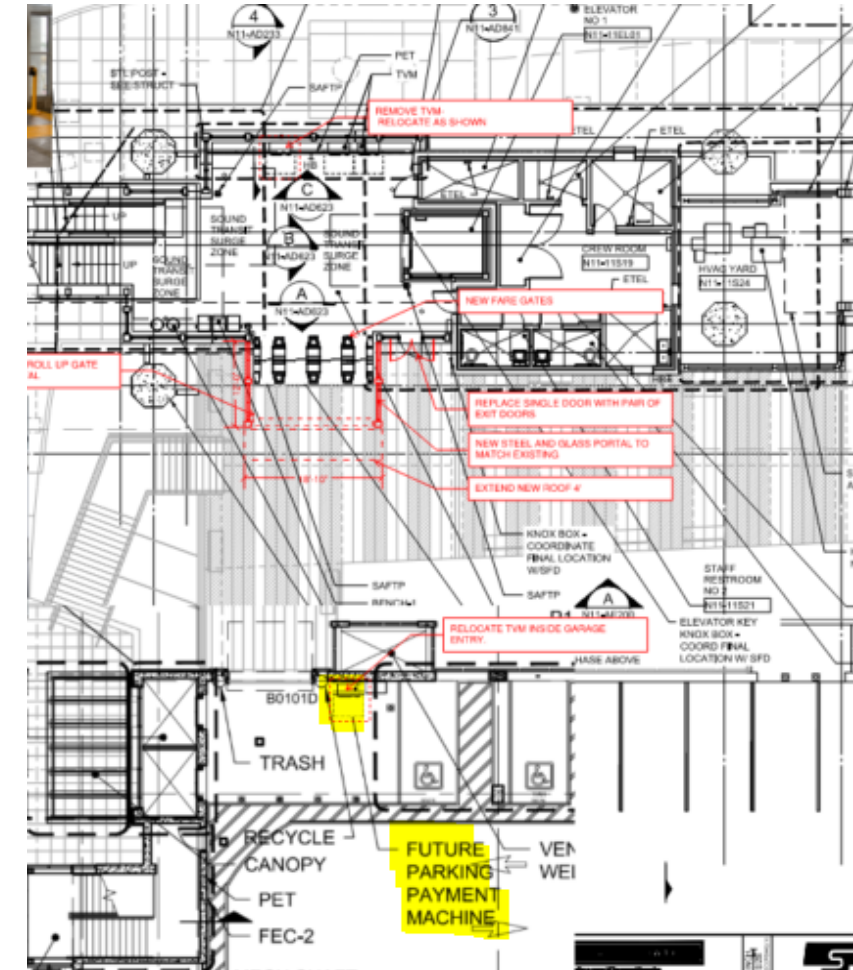
New steel and glass portal



246,710

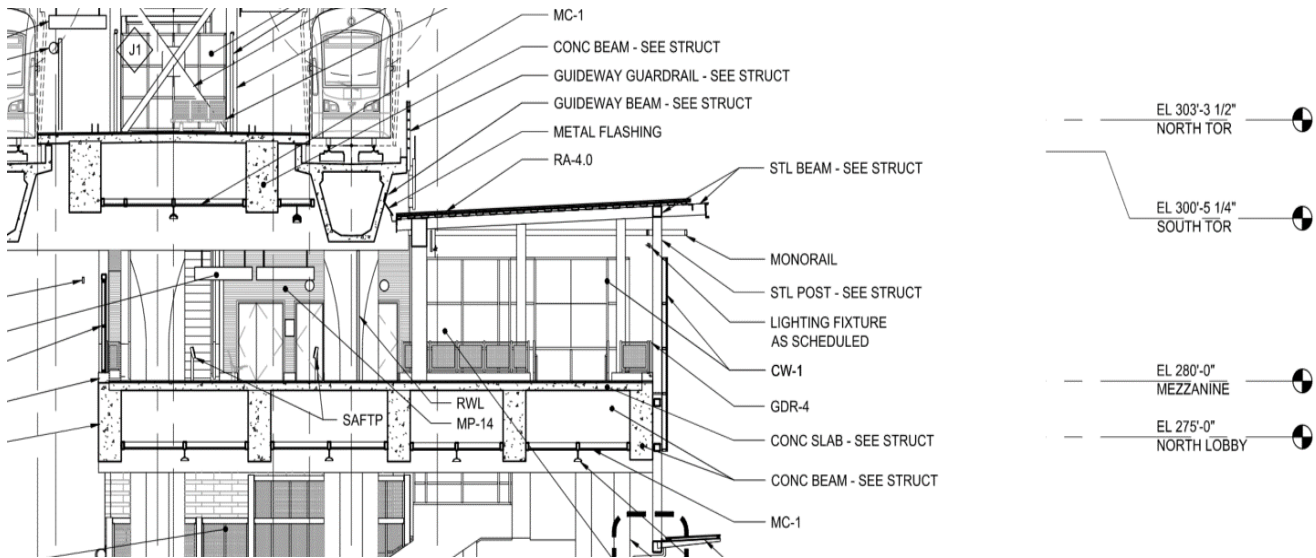
Subtotal - Exterior Vertical Enclosure 246,710

Item Description	Quantity	Unit	Rate	Totals
<b>B30 EXTERIOR HORIZONTAL ENCLOSURE</b>				
<b>Subtotal - Exterior Horizontal Enclosure</b>				
<b>C10 INTERIOR CONSTRUCTION</b>				
<b>C1090 Interior Specialties</b>				
Remove existing TVM	3	EA	5,000.00	15,000
Remove existing OCRA card readers and patch	6	EA	3,500.00	21,000
Fare gate prep				
Allow for connection to existing structure	13	EA	1,000.00	13,000
Repair finish to surrounding	13	EA	1,000.00	13,000
Fare gates				
Standard	9	EA	65,000.00	585,000
ADA	4	EA	70,000.00	280,000
Fare gate side walls				
Allow for connection to existing structure	60	LF	150.00	9,000
Reinforced concrete curb	60	LF	140.00	8,400
Repair finish to surrounding	120	LF	100.00	12,000
Wall system allowance, allow 8ft tall	60	LF	1,600.00	96,000
TVM relocation				
Demo at new TVM location	3	EA	2,000.00	6,000
Allow for wall structure to support TVM	3	EA	3,000.00	9,000
Architectural detailing at new TVM location	3	EA	30,000.00	90,000
TVM relocation, allowance	3	EA	10,000.00	30,000
Rework existing TVM kiosk	3	EA	25,000.00	75,000
				<b>1,262,400</b>
<b>Subtotal - Interior Construction</b>				<b>1,262,400</b>



Item Description	Quantity	Unit	Rate	Totals	
<b>C20 INTERIOR FINISHES</b>					
<b>C2010 Wall Finishes</b>					
Patch and repair wall, allow	1	LS	30,000.00	30,000	
				<b>30,000</b>	
<b>C2020 Interior Fabrications</b>					
New and modify existing signage and wayfinding	3	LOC	20,000.00	60,000	
				<b>60,000</b>	
<b>C2030 Flooring</b>					
Pavement detection, allow	600	LF	130.00	78,000	
Undo "Fare Paid" Zone work	1	LS	200,000.00	200,000	
Remove tile	1,070	SF	10.00	10,700	
Replace tile (thin set)	1,070	SF	40.00	42,800	
				<b>331,500</b>	
<b>C2050 Ceiling Finishes</b>					
Patch and repair ceiling at conduit run	1	LS	30,000.00	30,000	
				<b>30,000</b>	
<b>Subtotal - Interior Finishes</b>				<b>451,500</b>	
<b>D10 CONVEYING</b>					
<b>Subtotal - Conveying</b>					
<b>D20 PLUMBING</b>					
<b>Subtotal - Plumbing</b>					

Remove and rework MC ceiling



Sound Transit

March 6, 2023

Fare Gates Study - DRAFT Seattle, WA

Northgate Station

Gross Floor Area

126,378 SF

Item Description	Quantity	Unit	Rate	Totals	
D30 HEATING, VENTILATION & AIR CONDITIONING					
Subtotal - Heating, Ventilation & Air Conditioning					
D40 FIRE PROTECTION					
D4010 Fire Suppression				0	
Subtotal - Fire Protection					
D50 ELECTRICAL					
D5000 Electrical					
TVM					
Rework power at existing TVM location	3	EA	2,000.00	6,000	
New TVM location	3	EA	15,000.00	45,000	
Fare gates					
Fare gates	13	EA	20,000.00	260,000	
New lighting allowance	3	LOC	15,000.00	45,000	
Need to be connected to back up power					
				356,000	
Subtotal - Electrical				356,000	
D60 COMMUNICATIONS					
D6010 Data Communications					
Data connection					
Rework power at existing TVM location	3	EA	2,000.00	6,000	
New TVM location	3	EA	15,000.00	45,000	
Premium for TVM in garage	1	EA	5,000.00	5,000	
Fare gates	13	EA	15,000.00	195,000	
Fare gates with fire alarm connection	13	EA	15,000.00	195,000	
Reprogram fire alarm	1	LS	15,000.00	15,000	
Fare gates with BMS connection	1	LS	15,000.00	15,000	
Reprogram BMS	1	LS	15,000.00	15,000	
Call box	6	EA	25,000.00	150,000	
				641,000	

Sound Transit

March 6, 2023

Fare Gates Study - DRAFT Seattle, WA

Northgate Station

Gross Floor Area

126,378 SF

Item Description	Quantity	Unit	Rate	Totals	
Subtotal - Communications				641,000	
D70 ELECTRONIC SAFETY & SECURITY					
D7010 Access Control and Intrusion Detection					
CCTV - allowance - assume 6 cameras per location	3	LOC	50,000.00	150,000	
Audio prompt system	3	LOC	30,000.00	90,000	
Fire alarm, allowance devices etc.	3	LOC	30,000.00	90,000	
				330,000	
Subtotal - Electronic Safety & Security				330,000	
D80 INTEGRATED AUTOMATION					
Subtotal - Integrated Automation					
E10 EQUIPMENT					
Subtotal - Equipment					
E20 FURNISHINGS					
Subtotal - Furnishings					
F10 SPECIAL CONSTRUCTION					
Subtotal - Special Construction					

Sound Transit

March 6, 2023

Fare Gates Study - DRAFT Seattle, WA

Northgate Station

Gross Floor Area

126,378 SF

Item Description	Quantity	Unit	Rate	Totals	
F20 FACILITY REMEDIATION					
Subtotal - Facility Remediation					
F30 DEMOLITION					
Subtotal - Demolition					
G10 SITE PREPARATION					
Subtotal - Site Preparation					
G20 SITE IMPROVEMENT					
Subtotal - Site Improvement					
G30 LIQUID & GAS SITE UTILITIES					
Subtotal - Liquid & Gas Site Utilities					
G40 ELECTRICAL SITE IMPROVEMENTS					
Subtotal - Electrical Site Improvement					
G50 SITE COMMUNICATIONS					
Subtotal - Miscellaneous Site Construction					

Schedule of Areas	SF	SF
<b>Enclosed Areas "Othello Station"</b>		
East Platform	6,104	
West Platform	6,306	
Subtotal, Enclosed Area		12,410
<b>Covered Area</b>		
Building overhang		
Subtotal, Covered Area		
Covered Area @ 50%		
<b>TOTAL GROSS FLOOR AREA</b>		12,410

Sound Transit  
Fare Gates Study - DRAFT, Seattle, WA  
Othello Station

March 6, 2023

Gross Floor Area 12,410 SF

## OTHELLO STATION SUMMARY

Item	Description	Cost \$/SF	Total (\$x1,000)
A	<u>SUBSTRUCTURE</u>		
A10	Foundations	0.00	0
A20	Subgrade Enclosures	0.00	0
A40	Slabs-On-Grade	0.00	0
A60	Water and Gas Mitigation	0.00	0
A90	Substructure Related Activities	0.00	0
	Subtotal	0.00	0
B	<u>SHELL</u>		
B10	Superstructure	0.00	0
B20	Exterior Vertical Enclosure	0.00	0
B30	Exterior Horizontal Enclosure	0.00	0
	Subtotal	0.00	0
C	<u>INTERIORS</u>		
C10	Interior Construction	74.46	924
C20	Interior Finishes	47.04	584
	Subtotal	121.50	1,508
D	<u>SERVICES</u>		
D10	Conveying	0.00	0
D20	Plumbing	0.00	0
D30	Heating, Ventilation & Air Conditioning	0.00	0
D40	Fire Protection	0.00	0
D50	Electrical	9.67	120
D60	Communications	25.46	316
D70	Electronic Safety & Security	9.02	112
D80	Integrated Automation	0.00	0
	Subtotal	44.16	548
E	<u>EQUIPMENT &amp; FURNISHINGS</u>		
E10	Equipment	0.00	0
E20	Furnishings	4.83	60
	Subtotal	4.83	60
F	<u>SPECIAL CONSTRUCTION</u>		
F10	Special Construction	0.00	0
F20	Facility Remediation	0.00	0
F30	Demolition	0.00	0
	Subtotal	0.00	0
G	<u>SITEWORK</u>		
G10	Site Preparation	0.00	0
G20	Site Improvements	157.40	1,953
G30	Liquid & Gas Site Utilities	0.00	0
G40	Electrical Site Improvements	0.00	0
G50	Site Communications	0.00	0
G90	Miscellaneous Site Construction	0.00	0
	Subtotal	157.40	1,953
<b>Total Direct Costs (Building &amp; Site)</b>		<b>327.89</b>	<b>4,069</b>
Z	<u>GENERAL REQUIREMENTS</u>		
	Pre Construction Fees	0.00%	0
	General Conditions	6.00%	244
	General Requirements	12.00%	488
	Contractor's Fee including Bonds, Insurance, B&O	7.00%	336
<b>Total Construction Costs (incl. General Requirements and Fees)</b>		<b>413.96</b>	<b>5,137</b>

**OTHELLO STATION SUMMARY**

Design Allowance	30.00%	124.17	1,541
Allocated Contingency (8-15%)	15.00%	80.72	1,002

<b>Total Construction Costs (incl. Contingencies)</b>		<b>618.85</b>	<b>7,680</b>
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<b>ESTIMATED CONSTRUCTION COST</b>	<b>Mar-2023</b>	<b>618.85</b>	<b>7,680</b>
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**Owner's Costs**

Design Costs	25.00%	1,920
Construction Management	14.00%	1,075
Project Administration	8.00%	614
Permitting	0.25%	19
3rd Party	2.00%	154
Traffic Control	0.00%	0
Safety and Security Certification	1.00%	77
Unallocated Contingency	20.00%	1,536

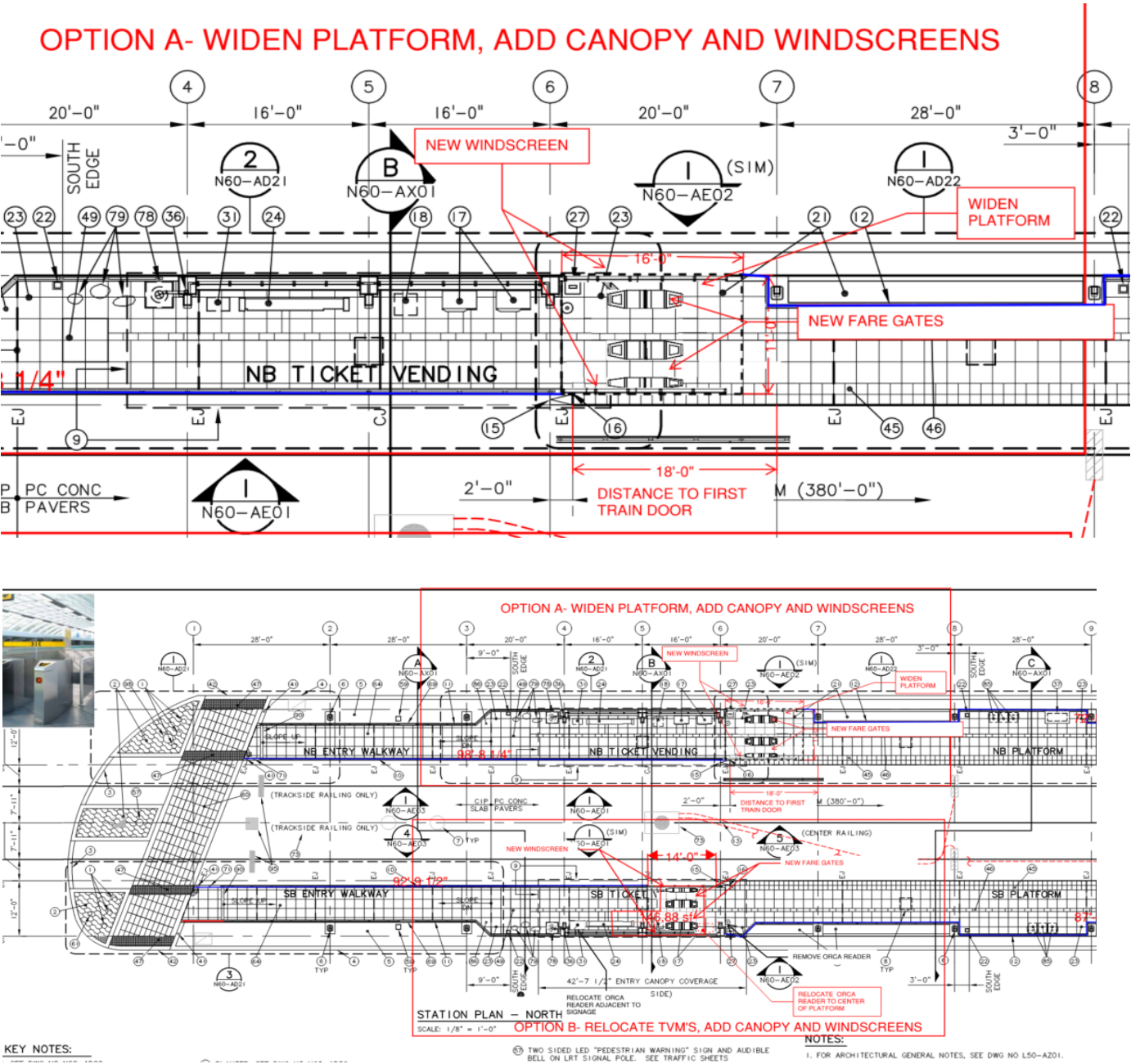
<b>ESTIMATED PROJECT COST</b>	<b>Mar-2023</b>	<b>1,053.59</b>	<b>13,075</b>
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Escalation

2024	2.45%	320
2025	3.97%	532
2026	4.08%	568
2027	4.20%	609

<b>ESTIMATED PROJECT COST</b>	<b>2027</b>	<b>1,217.04</b>	<b>15,103</b>
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Item Description	Quantity	Unit	Rate	Totals	
A10 FOUNDATIONS					Platform Drawings From Jonathan Sirois
Subtotal - Foundations					
A20 SUBGRADE ENCLOSURES					
Total - Subgrade Enclosures					
A40 SLABS-ON GRADE					
Subtotal - Slabs-On-Grade					
A60 WATER & GAS MITIGATION					
Subtotal - Water & Gas Mitigation					
A90 SUBSTRUCTURE RELATED ACTIVITIES					
Subtotal - Substructure and Related Activities					
B10 SUPERSTRUCTURE					
Subtotal - Superstructure					
B20 EXTERIOR VERTICAL ENCLOSURE					
Subtotal - Exterior Vertical Enclosure					



Item Description	Quantity	Unit	Rate	Totals	
B30 EXTERIOR HORIZONTAL ENCLOSURE					
Subtotal - Exterior Horizontal Enclosure					
C10 INTERIOR CONSTRUCTION					
C1090 Interior Specialties					
Remove existing TVM	8	EA	5,000.00	40,000	Street View of Existing TVM and Orca Readers
Remove existing OCRA card readers and patch	8	EA	3,500.00	28,000	
Fare gate prep					
Allow for connection to existing structure, concrete pad to finish elevation	8	EA	4,000.00	32,000	
Repair finish to surrounding	8	EA	2,000.00	16,000	
Fare gates					
Standard	4	EA	65,000.00	260,000	
ADA	4	EA	70,000.00	280,000	
TVM relocation					
Demo at new TVM location	4	EA	2,000.00	8,000	
Allow for wall structure to support TVM, may need to concrete pad	4	EA	10,000.00	40,000	
Architectural detailing at new TVM location	4	EA	20,000.00	80,000	
TVM relocation, allowance	4	EA	10,000.00	40,000	
Rework existing TVM kiosk	4	EA	25,000.00	100,000	
				924,000	
Subtotal - Interior Construction					924,000
C20 INTERIOR FINISHES					
C2010 Wall Finishes					
Patch and repair existing	1	LS	10,000.00	10,000	
				10,000	

Item Description	Quantity	Unit	Rate	Totals
C2020 Interior Fabrications				
New and modify existing signage and wayfinding	4	LOC	10,000.00	40,000
				40,000
C2030 Flooring				
Pavement detection, allow length of station	800	LF	130.00	104,000
Undo "Fare Paid" Zone work	1	LS	275,000.00	275,000
Remove tile at new fare gates				
Remove tile	600	SF	20.00	12,000
Saw cut concrete	240	LF	20.00	4,800
Chip and remove concrete, protect existing rebar	600	SF	30.00	18,000
Replace tile (thick set)	600	SF	200.00	120,000
				533,800
C2040 Stair Finishes				
				0
C2050 Ceiling Finishes				
				0
Subtotal - Interior Finishes				583,800
D10 CONVEYING				
Subtotal - Conveying				
D20 PLUMBING				
Subtotal - Plumbing				
D30 HEATING, VENTILATION & AIR CONDITIONING				



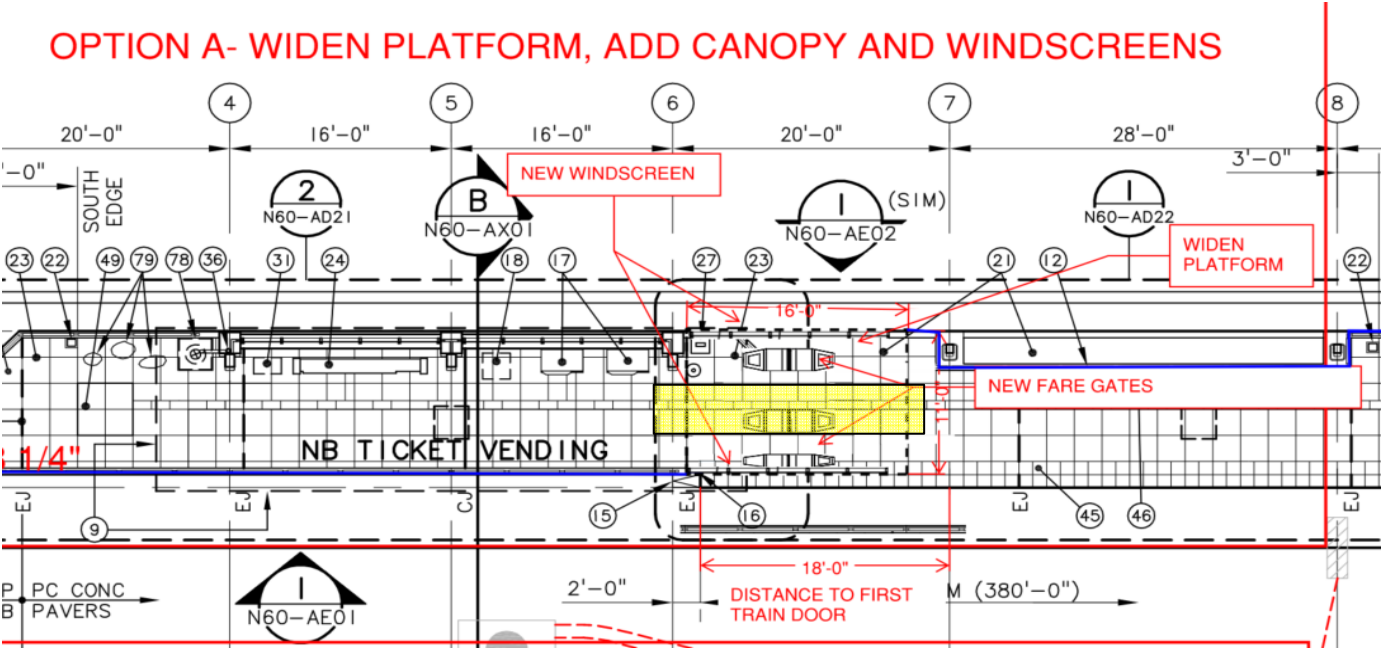
Item Description		Quantity	Unit	Rate	Totals
Subtotal - Heating, Ventilation & Air Conditioning					
D40 FIRE PROTECTION					
Subtotal - Fire Protection					
D50 ELECTRICAL					
D5010 Facility Power Generation					
TVM					
Rework power at existing TVM location		4	EA	5,000.00	20,000
New TVM location, run power to box and use existing 2" conduit to electrical cabinet		4	EA	3,000.00	12,000
Fare gates					
Fare gates, run power to box and use existing 2" conduit to electrical cabinet and conduit to fare gates		8	EA	8,000.00	64,000
New lighting allowance		4	LOC	6,000.00	24,000
Need to be connected to back up power					
					120,000
Subtotal - Electrical					120,000
D60 COMMUNICATIONS					
D6010 Data Communications					
Data connection					
Rework power at existing TVM location		4	EA	5,000.00	20,000
New TVM location, run cable to box and use existing 1" conduit cabinet		4	EA	8,000.00	32,000
Fare gates, run cable to box and use existing 1" conduit cabinet		8	EA	8,000.00	64,000
No fire alarm at grade stations					
Call box		8	EA	25,000.00	200,000
					316,000
Subtotal - Communications					316,000

Item Description		Quantity	Unit	Rate	Totals
D70 ELECTRONIC SAFETY & SECURITY					
D7010 Access Control and Intrusion Detection					
CCTV - allowance - assume 2 cameras per location		4	LOC	18,000.00	72,000
Audio prompt system		4	LOC	10,000.00	40,000
Fire alarm, allowance devices etc. No fire alarm and fire sprinkler at this station					
					112,000
Subtotal - Electronic Safety & Security					112,000
D80 INTEGRATED AUTOMATION					
Subtotal - Integrated Automation					
E10 EQUIPMENT					
Subtotal - Equipment					
E20 FURNISHINGS					
E2010 Fixed Furnishings					
Allow for rework of existing bench and site furnishing		4	LOC	15,000.00	60,000
					60,000
Subtotal - Furnishings					60,000
F10 SPECIAL CONSTRUCTION					
Subtotal - Special Construction					



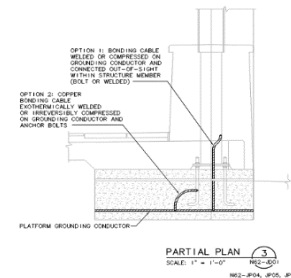
Item Description	Quantity	Unit	Rate	Totals
<b>F20 FACILITY REMEDIATION</b>				
<b>F2010 Hazardous Materials Remediation</b>				
Assume none required				
				0
<b>Subtotal - Facility Remediation</b>				
<b>F30 DEMOLITION</b>				
<b>Subtotal - Demolition</b>				
<b>G10 SITE PREPARATION</b>				
<b>Subtotal - Site Preparation</b>				
<b>G20 SITE IMPROVEMENT</b>				
<b>G2030 Pedestrian Plazas and Walkways</b>				
Reinforced concrete structural slab	55	SF		
Structural fill	6	CY	300.00	1,833
Cut and remove planter walls	50	LF	100.00	5,000
Remove guardrail	25	LF	75.00	1,875
Rework guardrail	1	LS	2,000.00	2,000
Connection existing slab, assume epoxy dowel system	25	LF	100.00	2,500
Edgeforms	25	LF	20.00	500
Reinforcing steel	147	LB	4.00	587
Concrete	2	CY	1,700.00	3,463
Finish protect and cure	55	SF	4.00	220
Tile over structural slab	55	SF	120.00	6,600
Planter wall at street, allowance including footings and stem wall to support screen wall, existing is 6" wall with 12" footing	25	LF	2,000.00	50,000
				74,578

OPTION A- WIDEN PLATFORM, ADD CANOPY AND WINDSCREENS

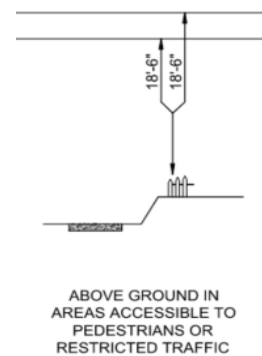


Item Description	Quantity	Unit	Rate	Totals		
<b>G2060 Site Development</b>						
Guardrail replacement	945	LF				
Demo and remove guardrail	945	LF	50.00	47,250		
Assume not required due to side mount fence system	945	LF				
Demo and remove existing wall and footing	945	LF				
Demo and remove tile and structural slab	945	LF				
New stem wall to support 8' tall fence, allowance	945	LF				
Footings						
Structural excavation	105	CY				
Formwork	1,890	SF				
Reinforcing steel, allow 150#/cy	10,500	LB				
Concrete	70	CY				
Wall						
Formwork	5,670	SF				
Reinforcing steel	10,500	LB				
Concrete	70	CY				
Allow for removal and replacement of landscaping	945	LF	50.00	47,250		
Fence with side mount - grate system, 8ft tall	945	LF	600.00	567,000		
*Non conductive fence excluded						
Grounding, ALLOWANCE	945	LF	100.00	94,500		
Wind screen	144	LF				
Demo and remove guardrail	72	LF	50.00	3,600		
Remove existing landscaping, cap irrigation	72	LF	50.00	3,600		
Demo and remove existing wall and footing	144	LF	150.00	21,600		
Demo and remove tile and structural slab, chip around existing rebar	144	LF	40.00	5,760		
New stem wall to support 8' tall windscreen, allowance	72	LF				
Footings						
Structural excavation	8	CY	300.00	2,400		
Formwork	144	SF	20.00	2,880		
Reinforcing steel, allow 150#/cy	800	LB	4.50	3,600		
Concrete	5	CY	750.00	4,000		
Repair grounding wire, allowance	1	LS	5,000.00	5,000		
Wall						
Formwork	432	SF	20.00	8,640		
Reinforcing steel	1,600	LB	4.50	7,200		
Concrete	11	CY	750.00	8,000		
Wind screen - repair existing slab around stem wall	720	SF	250.00	180,000		
Replace rebar include splice	72	LF	100.00	7,200		
Concrete	5	CY	40.00	213		
Finish protect and cure	144	SF	5.00	720		
Thick set tile	144	SF	150.00	21,600		
Wind screen, assume steel with aluminum system	720	SF	250.00	180,000		
Grounding, ALLOWANCE	144	LF	100.00	14,400		
Allow for drill and epoxy anchor wind screen on thickened slab section	72	LF	50.00	3,600		
Demo and remove tile and tactile edge detail	72	LF	50.00	3,600		
Repair and replace tile and tactile edge detail	72	LF	250.00	18,000		

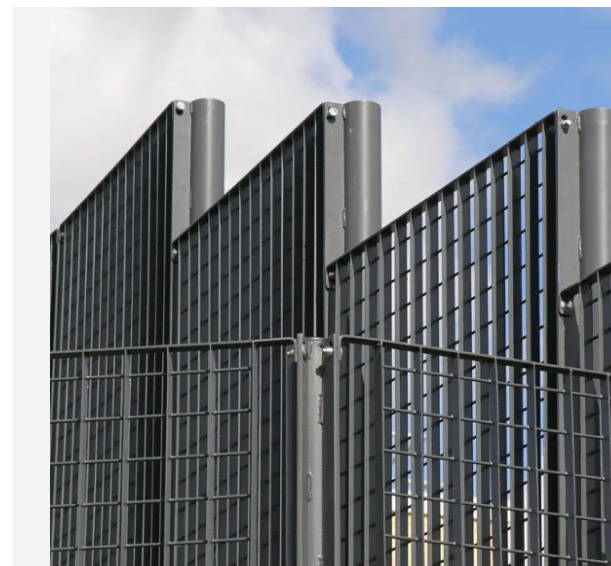
As Built Grounding Detail



Clearance Requirements



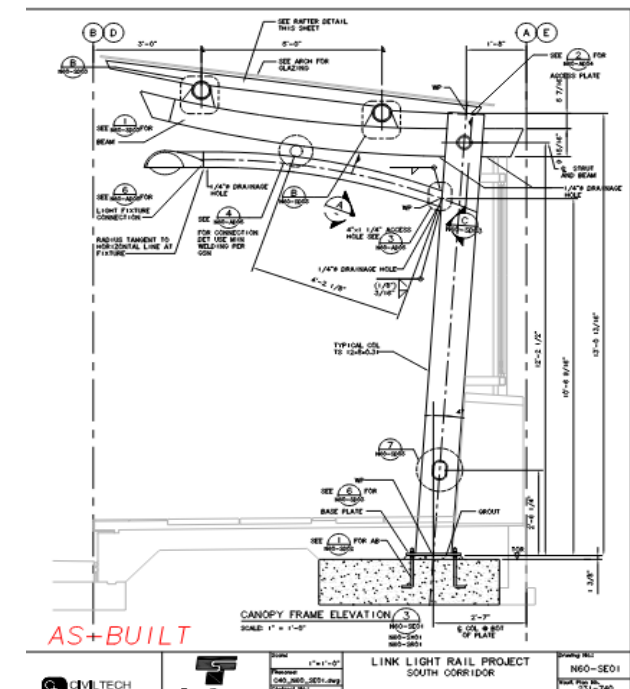
Grated Fence Idea



Guardrail Replacement



Existing Canopy Detail



Item Description	Quantity	Unit	Rate	Totals
Canopy				
Footings 5'x5' x1.5'	4	EA		
Saw cut tile	56	LF	10.00	560
Demo and remove tile	196	SF	4.00	784
Demo and remove slab	196	SF	10.00	1,960
Structural excavation	15	CY	100.00	1,452
Formwork	160	SF	10.00	1,600
Reinforcing steel, allow 150#/cy	160	LF	50.00	8,000
Concrete	6	CY	1,000.00	5,556
Slab replacement, including rebar and splice	196	SF	20.00	3,920
Replace thick set tile	196	SF	200.00	39,200
Canopy structure, AESS	704	SF	750.00	528,000
Grounding, ALLOWANCE	1	LF	5,000.00	5,000
				1,857,645

G2080 Landscaping

Repair to existing landscaping	1	LS	20,000.00	20,000
Demo existing landscape	55	SF	20.00	1,100
				21,100

Subtotal - Site Improvement

1,953,323

G30 LIQUID & GAS SITE UTILITIES

Subtotal - Liquid & Gas Site Utilities

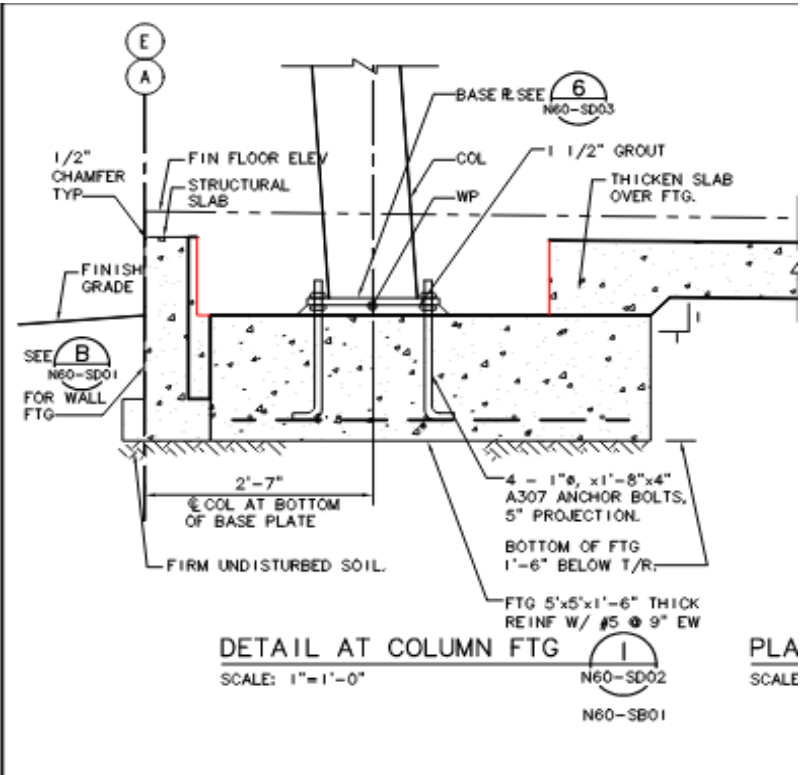
G40 ELECTRICAL SITE IMPROVEMENTS

Subtotal - Electrical Site Improvement

G50 SITE COMMUNICATIONS

Subtotal - Site Communication

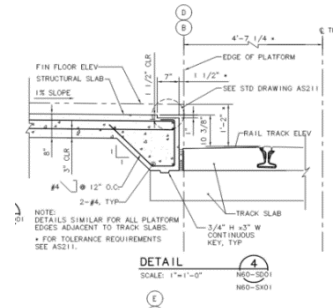
Canopy Footing Drawings



Existing Site Furnishings



Slab to Track Detail



4. FOUNDATIONS:  
FOOTING ELEVATIONS AND SUBSTRUCTURE DETAILS ARE SUBJECT TO CHANGE DEPENDING UPON THE FOUNDATION MATERIAL ENCOUNTERED. REINFORCING STEEL FOR FOOTINGS, ABUTMENT WALLS AND COLUMNS SHALL NOT BE CUT UNTIL FINAL FOOTING ELEVATIONS HAVE BEEN DETERMINED AND SUBSTRUCTURE DETAILS HAVE BEEN NOTIFIED AS REQUIRED. ALLOWABLE BEARING CAPACITY IS 2500 PSF. BALLAST RETAINING WALLS ARE BASED ON AN ALLOWABLE BEARING CAPACITY OF 2000 PSF.

soils capacity is weak  
2000 to 2500 psf  
Or would wind be a concern as well?  
Othello station BTW

Egan, Edward 2/12/24 8 PM  
Short answer is yes. Trick is the anchorage into the concrete. A top mounted anchorage will be tough to get the math to work due to how skinny the stem wall in. But a side mount (on the face of the stem wall) will be easier to work out. Not worried about wind loading globally on the foundation, just the anchorage.

Sound Transit

March 6, 2023

Fare Gates Study - DRAFT, Seattle, WA

Othello Station

Gross Floor Area 12,410 SF

Item Description	Quantity	Unit	Rate	Totals	
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G90 MISCELLANEOUS SITE CONSTRUCTION

Subtotal - Miscellaneous Site Construction