



SNC • LAVALIN

Columbia Containers East Shoreline Protection Rehabilitation

Green (Outright) Use Project

03 August 2017

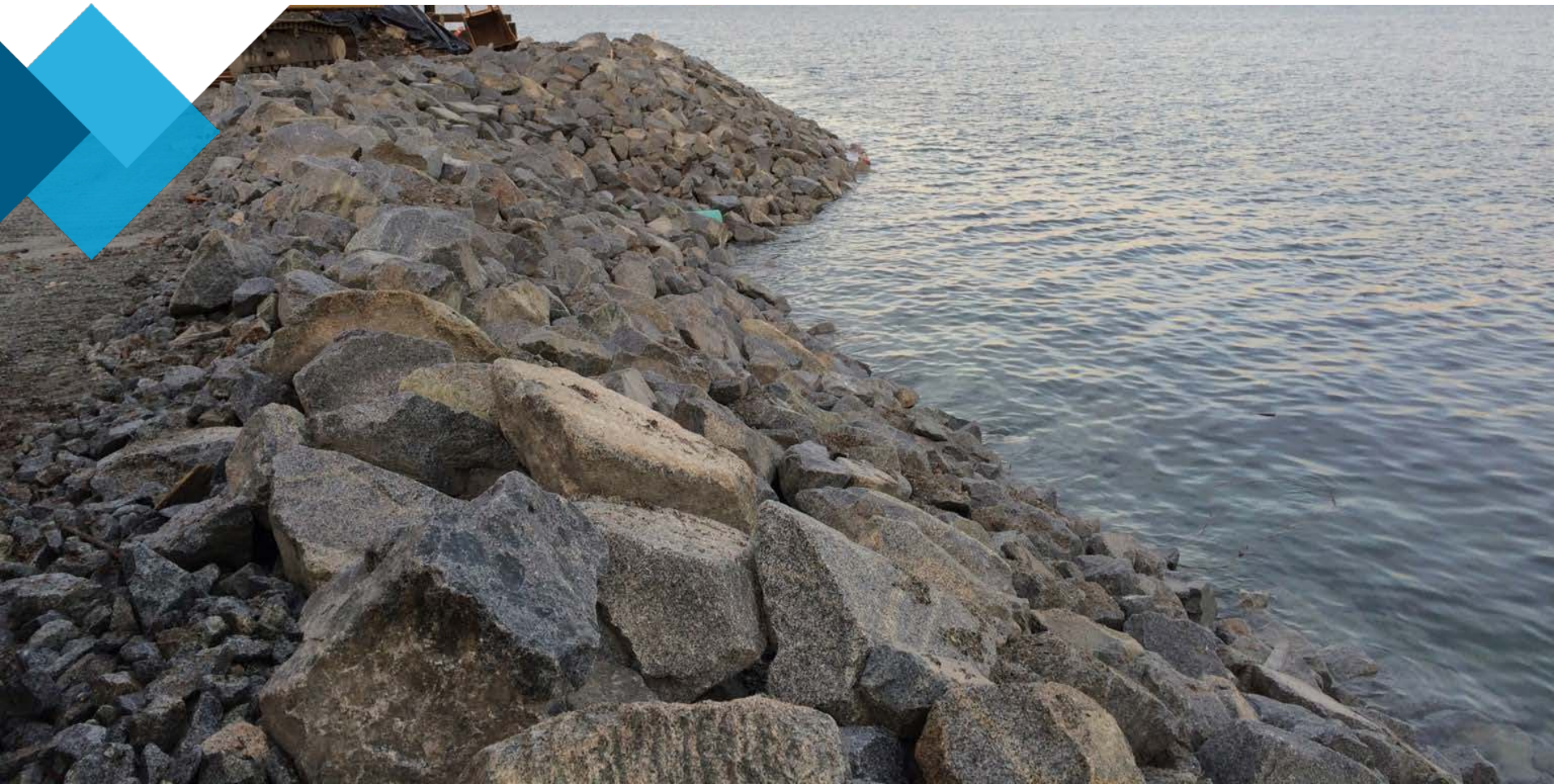


Table of Contents

- › Project Overview
 - › *Background*
 - › *Location*
- › Construction Phase
 - › *Type of Work*
 - › *Logistics*
 - › *Constraints*
 - › *Impacts & Mitigation*
 - › *Timeline*





Project Overview

Background

Multi-Phase Shoreline Protection Assessment Project

- › *Condition assessment of 21 shoreline assets in Vancouver Harbour*
- › *Rehabilitation of high-priority repair areas*



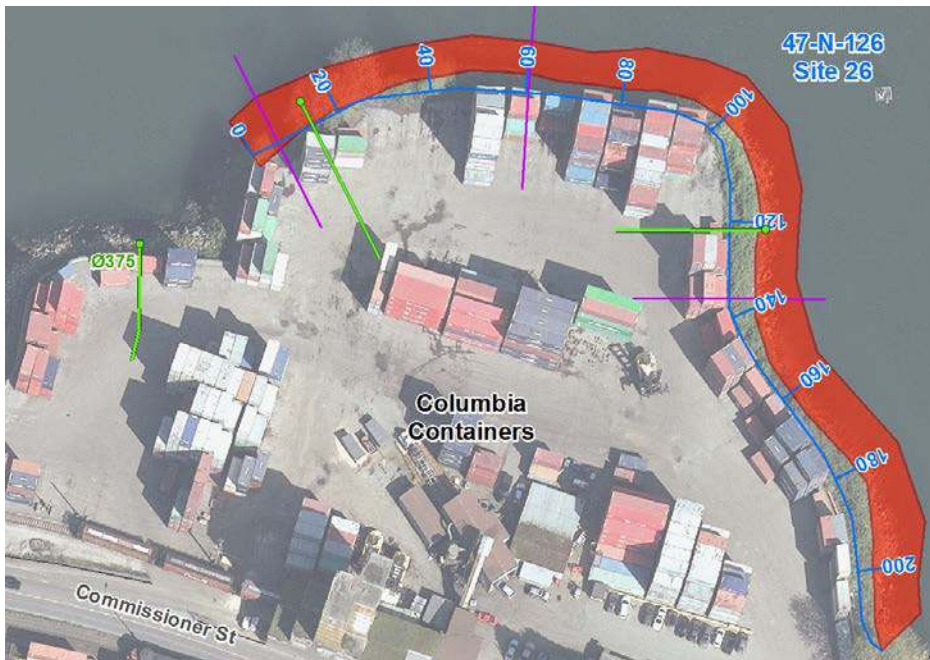
Project Location

2775 Commissioner Street



Project Location

2775 Commissioner Street



Chainage 0+010



Chainage 0+060



SNC • LAVALIN

Columbia Containers East Shoreline Protection Rehabilitation - 03 August 2017



Construction

Type of Work

Removal of debris from existing slope protection

Extension of outfall pipe

Replacement of shoreline protection

Enhancement of slope crest

Habitat bench at toe of slope



Type of Work

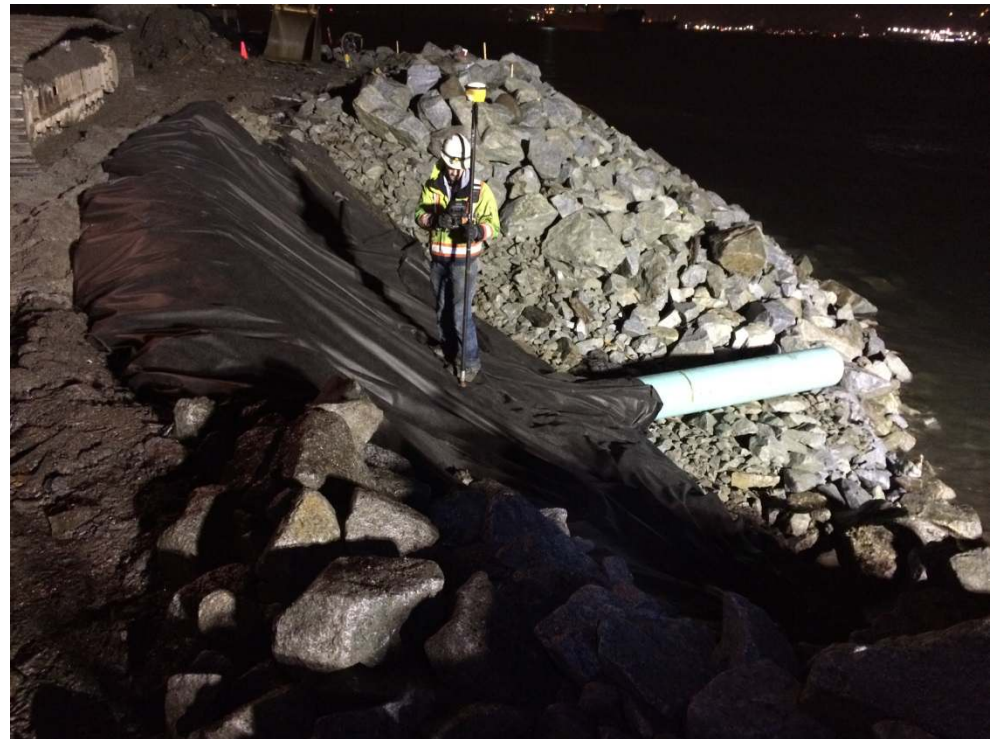
Removal of debris from existing slope protection

Replacement of outfall pipe

Replacement of shoreline protection

Enhancement of slope crest

Habitat bench at toe of slope



Type of Work

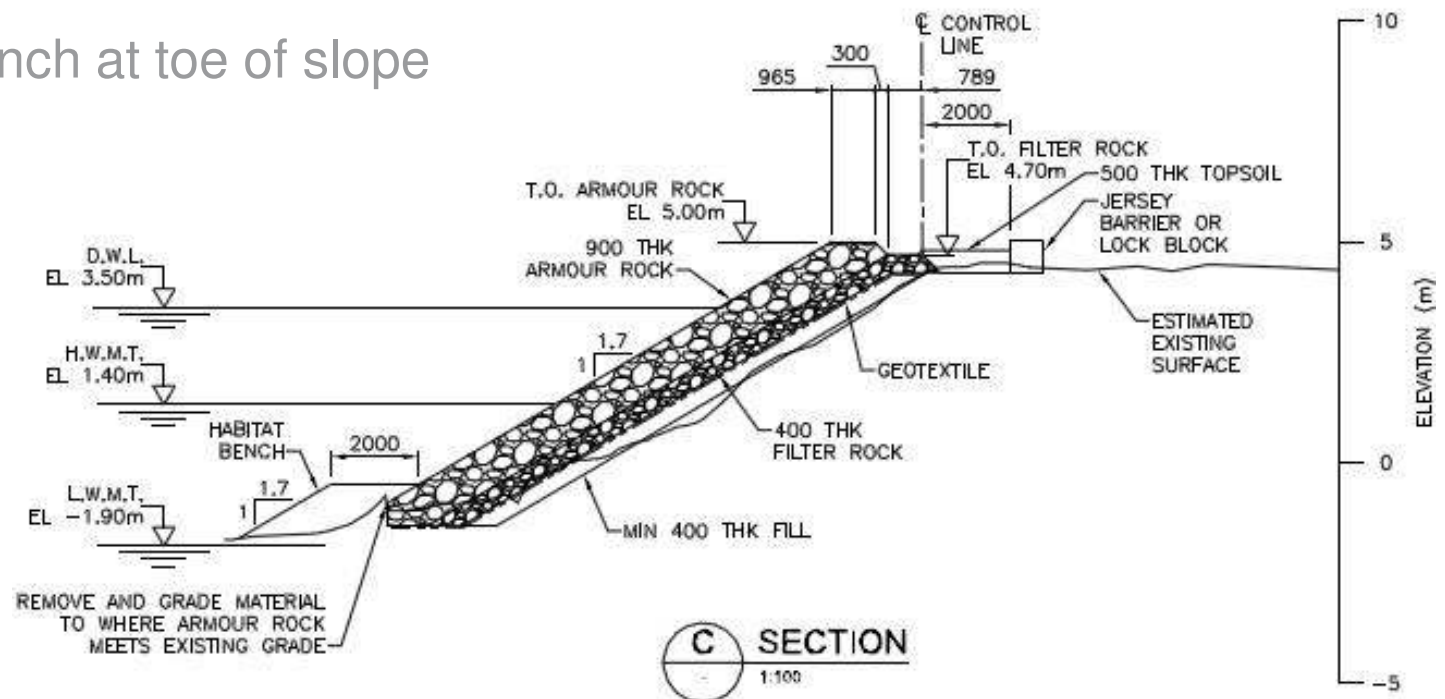
Removal of debris from existing slope protection

Extension of outfall pipe

Replacement of shoreline protection

Enhancement of slope crest

Habitat bench at toe of slope



Type of Work

Removal of debris from existing slope protection

Extension of outfall pipe

Replacement of shoreline protection

Enhancement of slope crest

Habitat bench at toe of slope



Type of Work

Removal of debris from existing slope protection

Extension of outfall pipe

Replacement of shoreline protection

Enhancement of slope crest

Habitat bench at toe of slope



Logistics

Land-based Construction

- › Construction materials – brought in by trucks
- › Slope preparation and placement of materials – excavator, front-end loader



Water-based Construction

- › Construction materials – brought in by tug boats and barges
- › Slope preparation and placement of materials – spud barge with derrick crane with clamshell, or long reach excavator, front-end loader

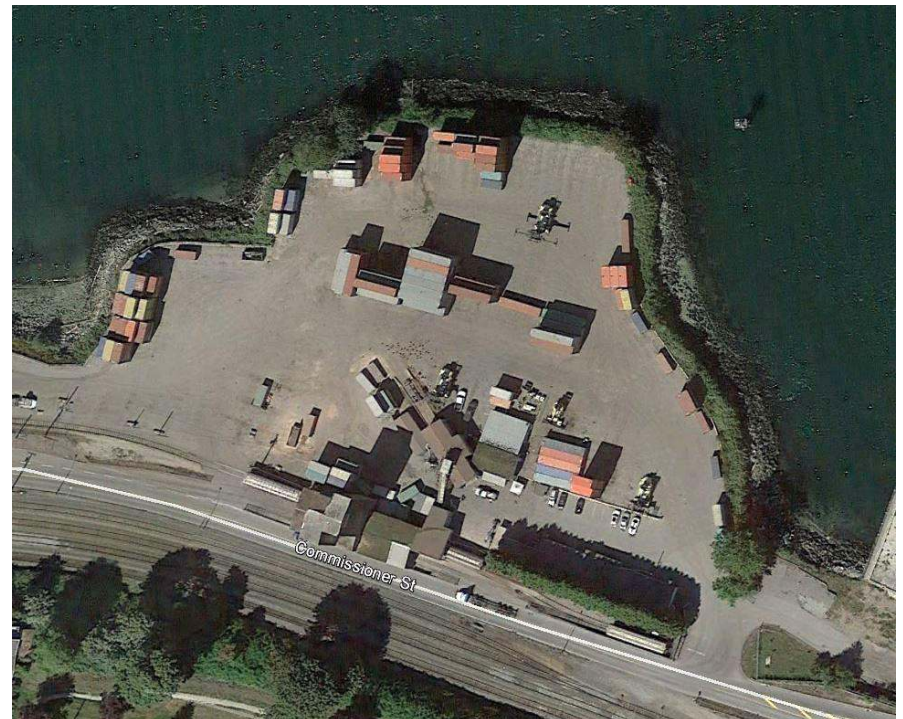


Ref. <http://www.archirodon.net/category/solutions/marine-offshore/breakwaters-shore-protection>



Constraints

- › Space
 - › Columbia Containers (tenant) operations
- › Works to be conducted in the dry
 - › Construction methodology
 - › Visibility
- › Low tide requirement
 - › Tide levels shift throughout the day
 - › Day/night works



Constraints

- › Space
 - › Columbia Containers (tenant) operations
- › Works to be conducted in the dry
 - › Construction methodology
 - › Visibility
- › Low tide requirement
 - › Tide levels shift throughout the day
(Ref.: CHS 2017 Tide Tables)
 - › Day/night works

October-octobre

Day	Time	Metres	Feet	jour	heure	mètres	pieds
1	0109	3.4	11.2	16	0239	3.7	12.1
	0809	1.7	5.6		0851	1.7	5.6
SU	1523	4.2	13.8	MO	1529	4.5	14.8
DI	2130	2.7	8.9	LU	2153	2.0	6.6
2	0223	3.6	11.8	17	0343	3.9	12.8
	0902	1.6	5.2		0945	1.8	5.9
MO	1556	4.3	14.1	TU	1605	4.5	14.8
LU	2203	2.5	8.2	MA	2233	1.8	5.9
3	0322	3.8	12.5	18	0437	4.0	13.1
	0949	1.6	5.2		1032	2.0	6.6
TU	1627	4.3	14.1	WE	1638	4.4	14.4
MA	2236	2.3	7.5	ME	2310	1.5	4.9
4	0414	4.0	13.1	19	0526	4.2	13.8
	1032	1.6	5.2		1115	2.2	7.2
WE	1655	4.3	14.1	TH	1708	4.4	14.4
ME	2311	2.0	6.6	JE	2347	1.3	4.3
5	0502	4.1	13.5	20	0612	4.3	14.1
	1113	1.7	5.6		1155	2.4	7.9
TH	1724	4.4	14.4	FR	1736	4.3	14.1
JE	2348	1.7	5.6	VE			
6	0551	4.3	14.1	21	0022	1.2	3.9
	1153	1.9	6.2		0657	4.3	14.1
FR	1753	4.4	14.4	SA	1234	2.6	8.5
VE				SA	1802	4.2	13.8
7	0027	1.4	4.6	22	0056	1.2	3.9
	0641	4.3	14.1		0742	4.3	14.1
SA	1234	2.2	7.2	SU	1313	2.8	9.2
SA	1824	4.4	14.4	DI	1828	4.1	13.5
8	0109	1.2	3.9	23	0130	1.2	3.9
	0735	4.4	14.4		0829	4.4	14.4
SU	1318	2.4	7.9	MO	1356	3.0	9.8
DI	1858	4.4	14.4	LU	1854	3.9	12.8
9	0153	1.0	3.3	24	0204	1.2	3.9
	0834	4.4	14.4		0918	4.3	14.1
MO	1407	2.7	8.9	TU	1445	3.2	10.5
LU	1934	4.3	14.1	MA	1921	3.8	12.5



Erosion



2014



2016



SNC • LAVALIN

Columbia Containers East Shoreline Protection Rehabilitation - 03 August 2017

Erosion



2014



December 2016



May 2017



SNC • LAVALIN

Columbia Containers East Shoreline Protection Rehabilitation - 03 August 2017

Safety



Impacts & Mitigation

Noise

- › Plan truck routes
- › Modern equipment
- › Quieter alternate equipment

Light

- › Use minimum required lighting level to ensure safety and security
- › Cast lights away from upland residents and marine user



Tentative Timeline

Tender Close: August 18

Contract Award: September 15

Construction Start: October 16

Construction End: November 24

Estimated construction duration: 6 weeks



Questions?

