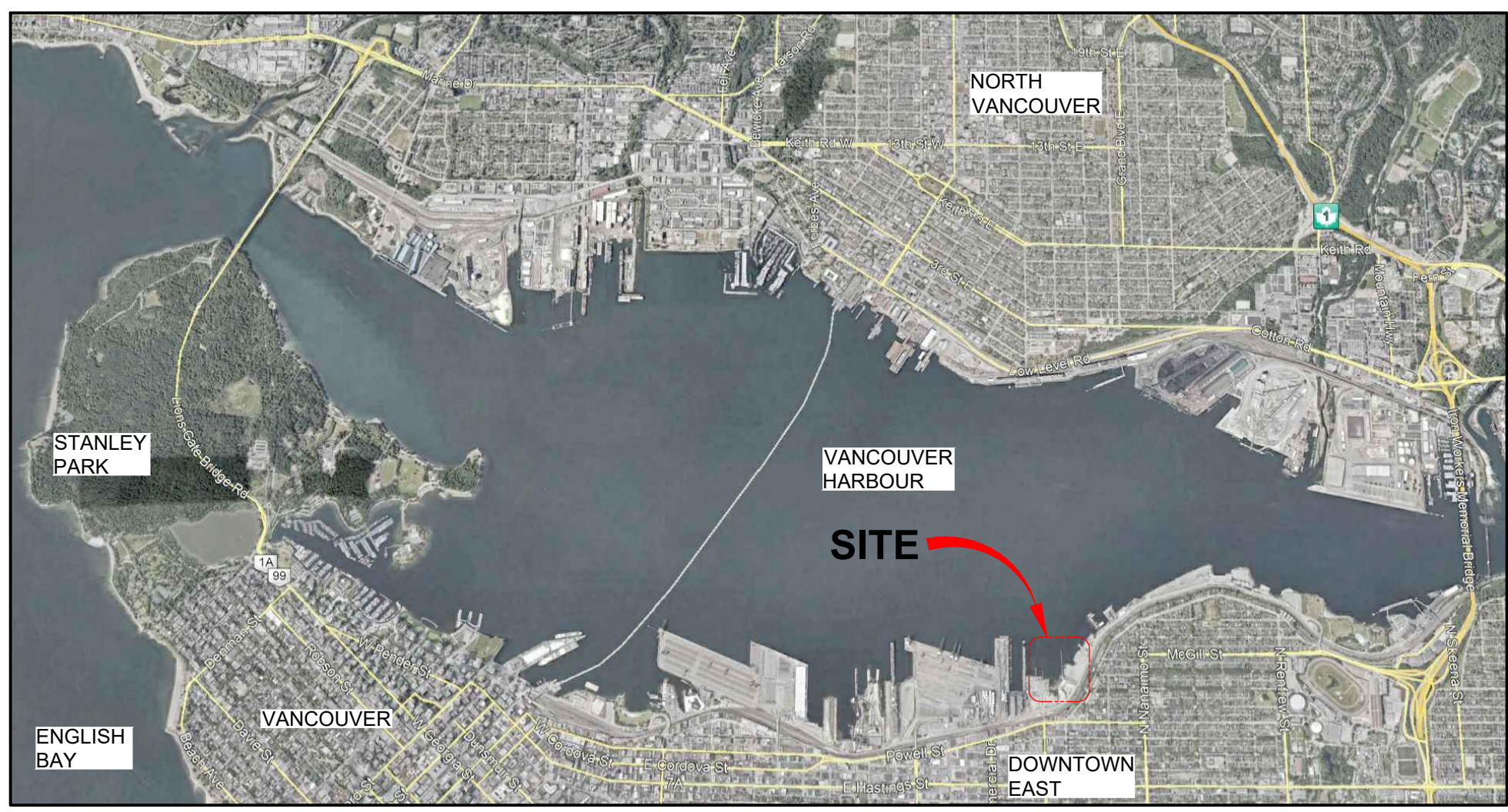


# STERLING SHIPYARD REMEDICATION & INFILL



**SITE LOCATION**  
NTS

DRAWING LIST

070-010-GA-000	COVER SHEET - DRAWING LIST AND SITE LOCATION
070-010-GA-001	DESIGN CRITERIA AND GENERAL NOTES
070-010-GA-002	EXISTING SITE AND DEMOLITION PLAN
070-010-GA-003	CONCEPTUAL CONTRACTOR PLAN LAYOUT
070-010-MA-101	GENERAL ARRANGEMENT
070-010-MA-102	SECTIONS
070-010-MA-103	SECTIONS
070-010-MA-201	REVTMENT PLAN AND SECTIONS
070-010-MA-301	DRAINAGE SYSTEM PLAN AND SECTIONS
070-010-MA-401	HABITAT OFFSETTING

**PRELIMINARY**  
DO NOT USE FOR CONSTRUCTION

Ref. No.	REFERENCE



No.	Date	REVISION	Dr'n	Ch'd
1	22/10/28	REVISED REEF SIZE FOR FAA RESUBMISSION	JG	JK
0	22/05/17	ISSUED FOR CONSTRUCTION RFT #T220411-09	JG	JK



DESIGN BY	A. DIJKERMAN
DRAWN BY	J. GENG
APPROVED	J. KITSON
DATE	2021-MAR-01
SCALE	AS SHOWN
VFPA SITE	VAN 070

**STERLING SHIPYARD REMEDIATION & INFILL  
COVER SHEET  
DRAWING LIST AND SITE LOCATION**

SIZE	DWG.	<b>070-010-GA-000</b>	SHEET	REV.
D			1 of 10	1

## DESIGN CRITERIA

### 1.0 CODE AND STANDARDS

THE STRUCTURE WILL BE DESIGNED TO CONFORM TO THE MOST CURRENT VERSION OF THE FOLLOWING CODES AND STANDARDS AT THE TIME OF DESIGN:

- CAN/CSA S6-14 CANADIAN HIGHWAY BRIDGE DESIGN CODE.
- NATIONAL BUILDING CODE OF CANADA (NBCC)
- BRITISH COLUMBIA BUILDING CODE (BCBC)

### 2.0 REFERENCES

- SNC-LAVALIN GEOTECHNICAL REPORT, DOC 677011-0000-4GER-0001
- SNC-LAVALIN ENVIRONMENTAL REMEDIATION DESIGN REPORT, DOC 677011-0000-4ER-0001
- UNDERHILL GEOMATICS LTD. TOPOGRAPHIC SURVEY, L-263
- CONSTRUCTION AND MATERIAL SPECIFICATIONS 677011-1000-4PEG-0001
- SNC-LAVALIN GEOTECHNICAL INSTRUMENTATION AND MONITORING PLAN, DOC 677011-0000-4GER-0001
- SNC-LAVALIN MARINE DESIGN CRITERIA 677011-0000-4PEC-0002
- SNC-LAVALIN STORMWATER MANAGEMENT DESIGN CRITERIA 677011-0000-41EC-0001

### 3.0 UNITS AND MEASUREMENTS

- 3.1 CONSTRUCTION DRAWINGS AND SPECIFICATIONS WILL BE IN ACCORDANCE WITH THE INTERNATIONAL SYSTEM OF UNITS (SI). ALL ELEVATIONS SHALL BE IN METERS AND ALL DIMENSIONS SHALL BE IN MILLIMETERS UNLESS NOTED OTHERWISE.
- 3.2 VERTICAL DATUM IS CHART DATUM (CD), THE CANADIAN GEODETIC DATUM (CGVD28) IS APPROXIMATELY 3.045 m ABOVE CD (CD=CGVD28+3.045m).
- 3.3 UTM HORIZONTAL DATUM IS DATUM NAD 83, ZONE 10.

### 4.0 DESIGN LIFE

- 4.1 THE COMPONENTS OF THE PROPOSED REVETMENT ARE DESIGNED FOR THE FOLLOWING SERVICE LIFE:
  - EARTHWORK AND ROCK ARMOUR: 50 YEARS

### 5.0 ENVIRONMENTAL LOADS AND EFFECTS DESIGN PARAMETERS ADOPTED FOR THE ROCK-FILL PROTECTION BERM DESIGN:

- TIDAL CURRENT < 1.0 m/s
- SIGNIFICANT WAVE HEIGHT = 0.9 m
- PEAK WAVE PERIOD = 3.2 s

### 6.0 LIVE LOADS

SURCHARGES:

- 18 kPa UDL LIVE LOAD AT A SETBACK DISTANCE OF 4 m OF THE BERM CREST.

### 7.0 SEISMIC LOADS

EVENT	Sa (0.2)	Sa (0.5)	Sa (1.0)	Sa (2.0)	PGA
100 YEARS	0.183	0.151	0.077	0.042	0.078
2475 YEARS	0.809	0.716	0.406	0.247	0.351

- SEISMIC DESIGN CRITERIA BASED ON NBCC 2015
- SITE CLASS C

FOR THIS PROJECT, A PERFORMANCE-BASED APPROACH WAS ADOPTED BY CONSIDERING TWO LEVELS OF SEISMIC PERFORMANCE FOR THE SEISMIC DESIGN: "OPERATING LEVEL EVENT" (OLE) AND "CONTINGENCY LEVEL EVENT" (CLE). OLE REFERS TO SEISMIC PERFORMANCE FOR AN EARTHQUAKE WITH A 40% PROBABILITY OF EXCEEDANCE IN 50 YEARS (I.E., 1/100 EARTHQUAKE RETURN PERIOD), AND CLE REFERS TO SEISMIC PERFORMANCE FOR AN EARTHQUAKE WITH 2% PROBABILITY OF EXCEEDANCE IN 50 YEARS (I.E., 1/2,475-YEAR EARTHQUAKE RETURN PERIOD). THE PERFORMANCE OBJECTIVE FOR THESE TWO EARTHQUAKE SCENARIOS ARE AS FOLLOWS:

- PERFORMANCE OBJECTIVE FOR OLE: MINOR, EASILY REPAIRABLE DAMAGE WITH NO INTERRUPTION TO OPERATIONS; AND
- PERFORMANCE OBJECTIVE FOR CLE: REPAIRABLE DAMAGE WITH SOME INTERRUPTION TO OPERATIONS. HOWEVER, ANY STRUCTURE SHOULD NOT COLLAPSE AFTER A 2,475-YEAR EARTHQUAKE EVENT. THERE MAY BE TEMPORARY LOSS OF OPERATIONS WHICH SHOULD BE RESTORABLE. HOWEVER, LOSS OF LIFE IS TO BE PREVENTED

### 8.0 MARINE DESIGN CRITERIA

DESIGN WATER LEVELS:

TIDE LEVEL	2021 ELEVATION [m, CD]	2071 ELEVATION [m, CD]
HISTORICAL EXTREME HIGH WATER (HEHW)	5.6	6.4
HIGHER HIGH WATER LARGE TIDE (HHWLT)	5.0	5.8
HIGHER HIGH WATER MEAN TIDE (HHWMT)	4.5	5.3
MEAN WATER LEVEL (MWL)	3.1	3.9
LOWER LOW WATER MEAN TIDE (LLWMT)	1.2	2.0
LOWER LOW WATER LARGE TIDE (LLWLT)	0.1	0.9
HISTORICAL EXTREME LOW WATER (ELLW)	-0.3	0.5

INCLUDES SEA LEVEL RISE OF 0.8m FOR DESIGN YEAR 2071 FOR INFRASTRUCTURE DESIGN LIFE.

## GENERAL NOTES

### 1.0 MATERIAL

- 1.1 REFER TO REVETMENT MATERIALS TECHNICAL SPECIFICATIONS IN 677011-1000-4PEG-0001.

- 1.2 REFER TO STRUCTURAL FILL IN GEOTECHNICAL REPORT 677011-0000-4GER-0001.

### 2.0 CONSTRUCTION

- 2.1 REFER TO REVETMENT CONSTRUCTION SPECIFICATIONS IN 677011-1000-4PEG-0001.

### 3.0 REMEDIATION

- 3.1 ALL EXCAVATED (INTERTIDAL AREA) AND DREDGED (SUBTIDAL AREA) MATERIALS, INCLUDING CONTAMINATED SEDIMENTS AND UNDERLYING GEOTECHNICALLY UNSUITABLE SANDS ARE CLASSIFIED AS GREATER THAN BC CONTAMINATED SITES REGULATION (CSR) INDUSTRIAL LAND USE (IL) SOIL STANDARDS BUT LESS THAN BC HAZARDOUS WASTE REGULATION (HWR) STANDARDS FOR OFFSITE DISPOSAL.
- 3.2 THE CONTRACTOR WILL BE RESPONSIBLE FOR MANAGING ALL PROJECT WATER DURING CONSTRUCTION EXECUTION, INCLUDING MANAGEMENT OF GROUNDWATER AND SEEPAGE INTO THE INTERTIDAL EXCAVATION AREA, AND REDUCING DREDGE WATER GENERATION DURING CONSTRUCTION IN THE SUBTIDAL AREA. THE CONTRACTOR SHALL IMPLEMENT CONSTRUCTION METHODS AND SCHEDULE THAT MINIMIZE THE WATER MANAGEMENT REQUIREMENTS. THIS INCLUDES PERFORMING THE INTERTIDAL AREA REMEDIATION DURING SUMMER MONTHS AND/OR AT A TIME OF YEAR WHEN HIGH TIDE CONDITIONS ARE LESS FREQUENT; AND, DEVELOPING AN EFFECTIVE WATER MANAGEMENT PLAN BY INCORPORATING APPROPRIATE REMEDIATION AND BACKFILLING SEQUENCE TO MINIMIZE THE GENERATION OF WATER AND MAINTAIN SAFE AND UNINTERRUPTED PROGRESS OF OPERATIONS. PROJECT WATER THAT CANNOT BE KEPT AWAY FROM ENTERING THE REMEDIATION FOOTPRINT MUST BE COLLECTED BY THE CONTRACTOR FOR ANALYTICAL TESTING. WATER NOT MEETING THE CCME GUIDELINES FOR PROTECTION OF AQUATIC LIFE (WQG/AL) GUIDELINES MUST NOT BE DISCHARGED INTO BURRARD INLET AND MUST UNDERGO ON SITE TREATMENT AND/OR BE DISPOSED OF APPROPRIATELY OFF-SITE TO ENSURE REGULATORY AND PER COMPLIANCE. DISCHARGING OF TREATED WATER MUST BE IMPLEMENTED FOLLOWING THE CEMP REQUIREMENTS. THE WATER MANAGEMENT SCHEME MUST INCLUDE A WATER TREATMENT AND DISCHARGE TRAIN CAPABLE OF HANDLING THE WATER VOLUME AND QUALITY COMMENSURATE WITH CONTRACTOR'S EXECUTION PLAN. THE WATER MANAGEMENT PLAN IS CONSIDERED AS PART OF THE CONTRACTOR'S EXECUTION PLANS TO BE REVIEWED AND APPROVED BY THE PORT AUTHORITY.
- 3.3 POREWATER/GROUNDWATER INFLOW IS EXPECTED WITHIN THE INTERTIDAL AREA FROM EXCAVATIONS, AND FROM THE EAST AND WEST SIDES BORDERING THE LAFARGE PROPERTY AND FORMER MARCO FACILITY, RESPECTIVELY. ESTIMATED THEORETICAL SEEPAGE RATE RANGES AT EACH OF THESE INTERFACES FOR A 1 M THICK CROSS SECTION ARE AS FOLLOWS:

ESTIMATED SEEPAGE RANGE - NORTH PORTION OF INTERTIDAL AREA	
INFLOW SOURCE	SEEPAGE RATE (L/MINUTE)
EAST SIDE	4 TO 24
WEST SIDE	8 TO 44
BOTTOM	0 TO 2
TOTAL	12 TO 70

ESTIMATED SEEPAGE RANGE - SOUTH PORTION OF INTERTIDAL AREA	
INFLOW SOURCE	SEEPAGE RATE (L/MINUTE)
EAST SIDE	1 TO 12
WEST SIDE	6 TO 32
BOTTOM	0 TO 2
TOTAL	7 TO 46

THE FLUX OF WATER FROM ABOVE SOURCES WILL BE HIGHLY DEPENDENT ON EXCAVATION AND BACKFILLING METHOD AND SEQUENCE, AREA AND DEPTH BEING EXCAVATED, TIDAL CONDITION AND SEASONAL VARIATIONS. SEDIMENT REMOVAL IN THE INTERTIDAL AREA SHALL BE IMPLEMENTED DURING LOW TIDE PERIODS TO REDUCE WATER INFLOW TO THE WORK AREA. IF THE REMEDIATED MATERIAL MUST BE IN A DEWATERED CONDITION PRIOR TO TRANSPORT FOR OFF-SITE DISPOSAL, EFFECTIVE ACTIVE OR PASSIVE DEWATERING WILL BE NEEDED, AND THE EXCESS WATER IS CONSIDERED CONTAMINATED WITH HYDROCARBONS, METALS AND PCB, AND WILL REQUIRE TREATMENT PRIOR TO DISCHARGE OR DISPOSAL. WATER WILL BE GENERATED DURING MECHANICAL DREDGING IN THE SUBTIDAL AREA, REQUIRING DEWATERING AND MANAGEMENT OF THE RESULTANT WATER. DREDGE OPERATORS SHALL HOLD FILLED CLAMSHELL OR ENVIRONMENTAL BUCKETS OVER WATER FOR ONE TO TWO MINUTES TO MINIMIZE THE AMOUNT OF WATER BEING LOADED FOR SUBSEQUENT MANAGEMENT AND/OR DIRECT TRANSPORT/DISPOSAL. THE CONTRACTOR SHALL OUTLINE ITS WATER MANAGEMENT AND ANALYTICAL TESTING PLAN FOR ACCEPTANCE BY THE PORT AUTHORITY PRIOR TO ANY DISCHARGE ACTIVITIES.

**PRELIMINARY**  
DO NOT USE FOR CONSTRUCTION


0 1:1 50

Ref. No.	REFERENCE



**SNC · LAVALIN**  
677011

No.	Date	REVISION	Dr'n	Ch'd
1	22/10/28	REVISED REEF SIZE FOR FAA RESUBMISSION	JG	JK
0	22/05/17	ISSUED FOR CONSTRUCTION RFT #T220411-09	JG	JK

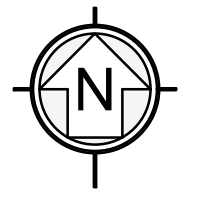


**VANCOUVER FRASER PORT AUTHORITY**  
ENGINEERING DEPARTMENT

DESIGN BY	AD, GMJ, MN, BH
DRAWN BY	J. GENG
APPROVED	J. KITSON
DATE	2021-MAR-01
SCALE	AS SHOWN
VFPA SITE	VAN 070

**STERLING SHIPYARD REMEDIATION & INFILL**  
**DESIGN CRITERIA AND**  
**GENERAL NOTES**

SIZE	DWG.	SHEET	REV.
D	070-010-GA-001	2 of 10	1



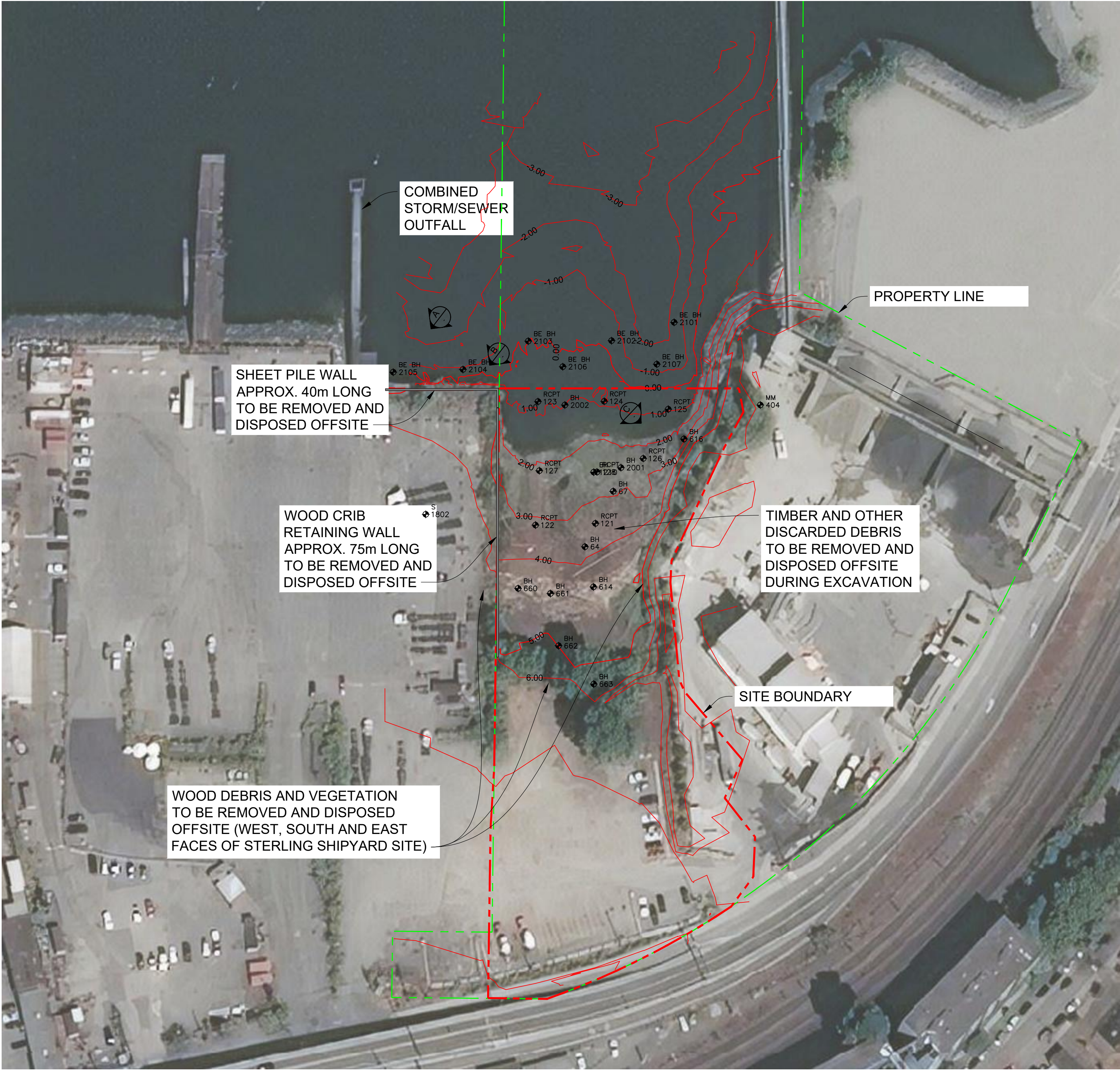
VIEW A



VIEW B



VIEW C

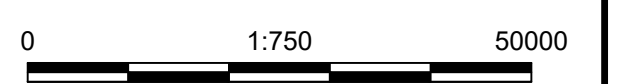


PLAN  
1:750

- LEGEND:**
- - - SITE BOUNDARY
  - - - PROPERTY LINE
  - x - x - FENCE
  - BOREHOLE

- NOTES:**
1. FOR GENERAL NOTES, SEE DWG 070-010-GA-001.

**PRELIMINARY**  
DO NOT USE FOR CONSTRUCTION



Ref. No.	REFERENCE



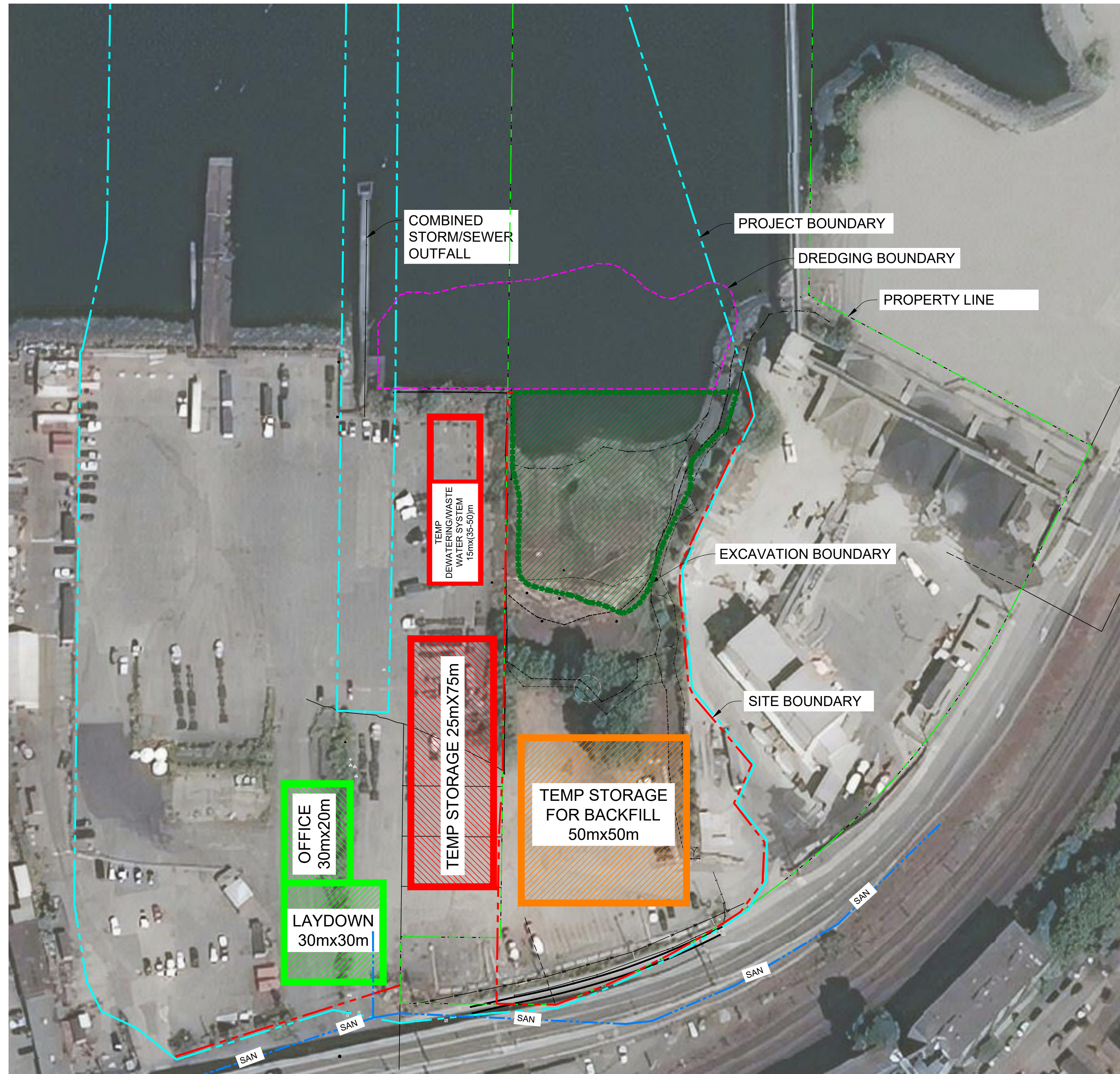
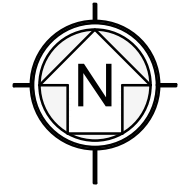
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1	22/10/28	REVISED REEF SIZE FOR FAA RESUBMISSION	JG	JK
0	22/05/17	ISSUED FOR CONSTRUCTION RFT #T220411-09	JG	JK



DESIGN BY	AD, BL
DRAWN BY	J. GENG
APPROVED	J. KITSON
DATE	2021-FEB-26
SCALE	AS SHOWN
VFPA SITE	VAN 070

<b>STERLING SHIPYARD REMEDIATION &amp; INFILL EXISTING SITE AND DEMOLITION PLAN</b>	
SIZE	DWG. <b>070-1-010-GA-002</b>
SHEET	REV.
3 of 10	1

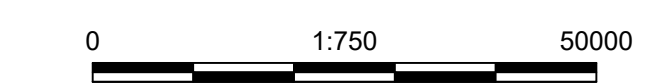
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- LEGEND:**
- PROJECT BOUNDARY
  - SITE BOUNDARY
  - PROPERTY LINE
  - PROPOSED EXCAVATION LIMITS
  - SAN
  - METRO VANCOUVER SANITARY SEWER LINE
- PRIORITY 1 AREAS
  - PRIORITY 2 AREAS
  - PRIORITY 3 AREAS

**NOTES:**  
 1. FOR GENERAL NOTES, SEE DWG 070-010-GA-001.

**PRELIMINARY**  
 DO NOT USE FOR CONSTRUCTION



**PLAN**  
 1:750

Ref. No.	REFERENCE



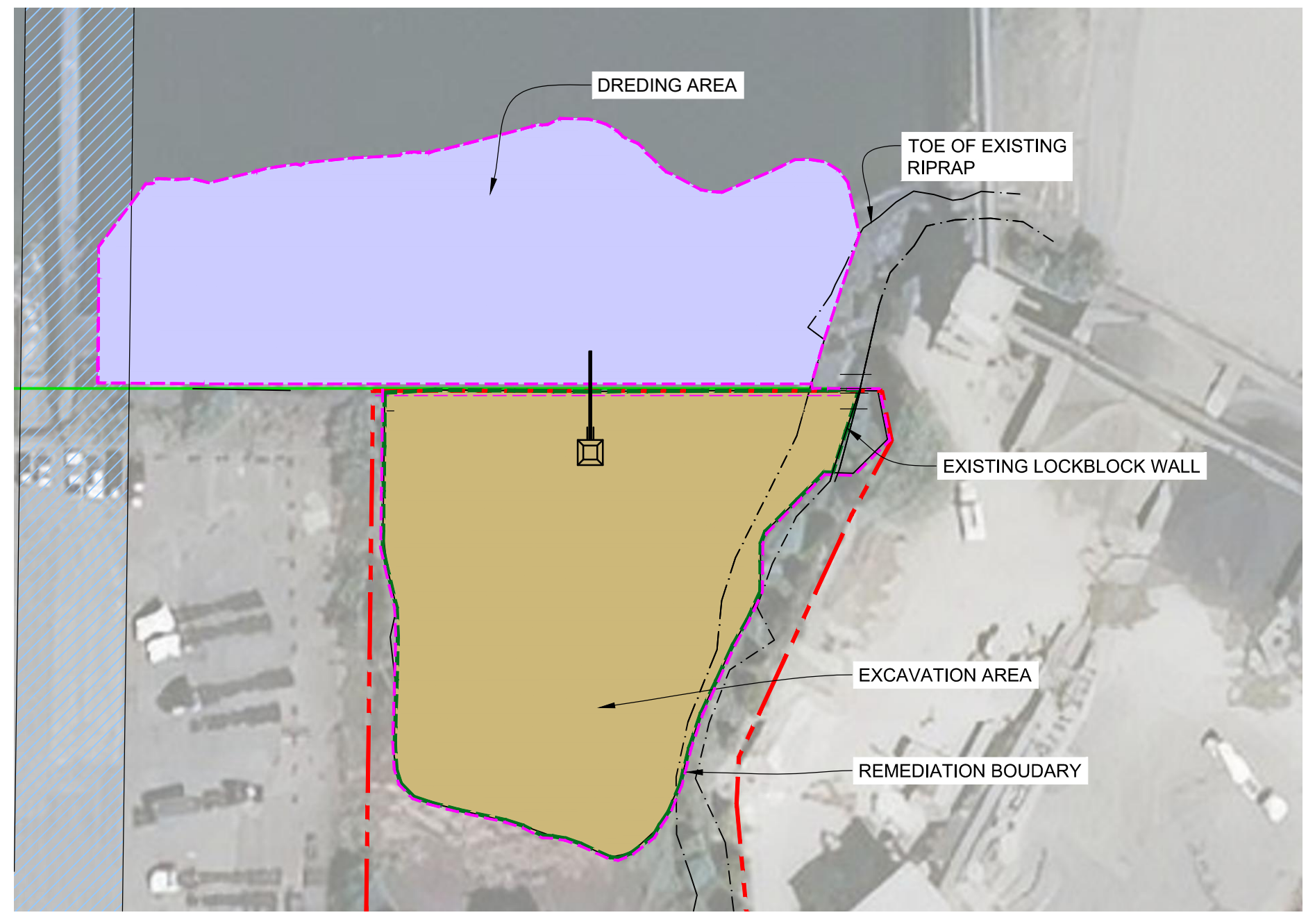
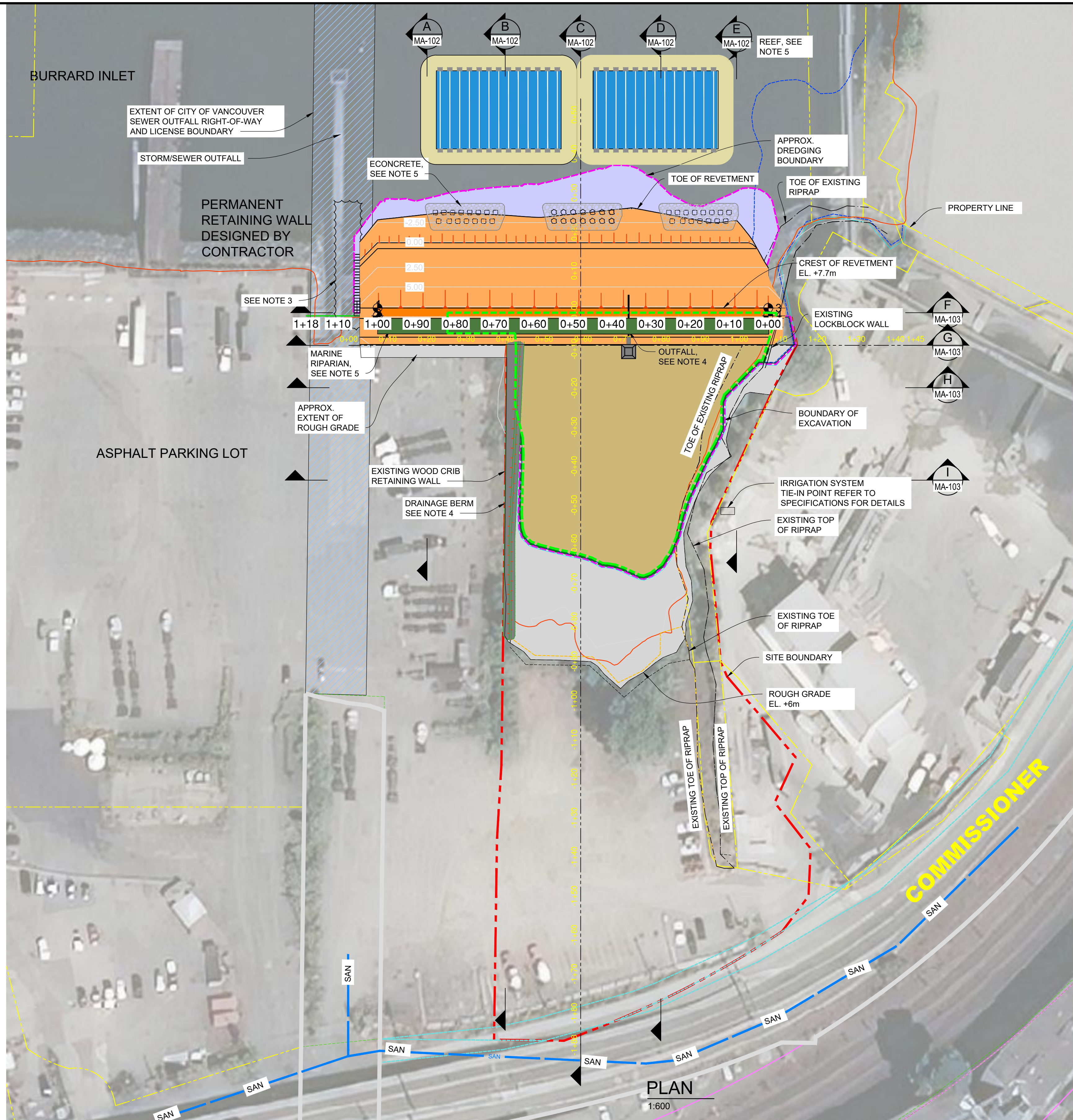
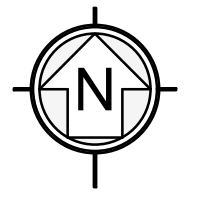
No.	Date	REVISION	Dr'n	Ch'd
1	22/10/28	REVISED REEF SIZE FOR FAA RESUBMISSION	JG	JK
0	22/05/17	ISSUED FOR CONSTRUCTION RFT #T220411-09	JG	JK



DESIGN BY	AD, BH
DRAWN BY	J. GENG
APPROVED	J. KITSON
DATE	2021-MAY-12
SCALE	AS SHOWN
VFPA SITE	VAN 070

**STERLING SHIPYARD REMEDIATION & INFILL  
 CONCEPTUAL CONTRACTOR PLANT LAYOUT**

SIZE	DWG.	<b>070-010-GA-003</b>	SHEET	REV.
<b>D</b>			<b>4 of 10</b>	<b>1</b>



**PLAN - REMEDIATION EXTENT**  
1:1000

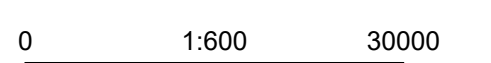
**LEGEND:**

- DREDGING AREA
- REVETMENT
- EXCAVATION AREA
- +6.0m ROUGH GRADE AREA
- REEF & EDGE
- MARINE RIPARIAN
- SITE BOUNDARY
- LOT BOUNDARY
- FENCE
- BOUNDARY OF ANTICIPATED EXTENT OF SEDIMENT REMEDIATION
- PROPOSED EXCAVATION LIMITS
- GROUND IMPROVEMENT LIMITS
- INTERTIDAL AREA
- METRO VANCOUVER SANITARY SEWER PIPE

**NOTES:**

1. FOR GENERAL NOTES, SEE DWG 070-010-GA-001. ELEVATIONS ARE IN METRES, TO CHART DATUM CITY OF VANCOUVER MONUMENT V-2901 LOCATED AT THE INTERSECTION OF VICTORIA DRIVE AND COMMISSIONER STREET. ELEVATION = +8.318m (CHART DATUM), +5.271m (GEODETIC DATUM).
2. CHART DATUM = CGVD28 GEODETIC DATUM + 3.045m.
3. BATHYMETRY AND SURVEY IN THIS AREA OF THE RIGHT OF WAY IS NOT CONFIRMED AND PRESUMED TO BE SIMILAR TO ADJACENT AREA TO EAST WHICH WAS CONFIRMED BY 2021 FIELD SURVEY. CONTRACTOR TO FIELD CONFIRM BATHYMETRY AND PROVIDE 2 WEEKS IN ADVANCE OF PROCEEDING WITH WORK TO ALLOW ENGINEER TO CONFIRM DESIGN DIMENSIONS.
4. DRAINAGE SYSTEM REFER TO DWG. 070-010-MA-301.
5. HABITAT COMPENSATION REFER TO DWG. 070-010-MA-401.

**PRELIMINARY**  
DO NOT USE FOR CONSTRUCTION



Ref. No.	REFERENCE



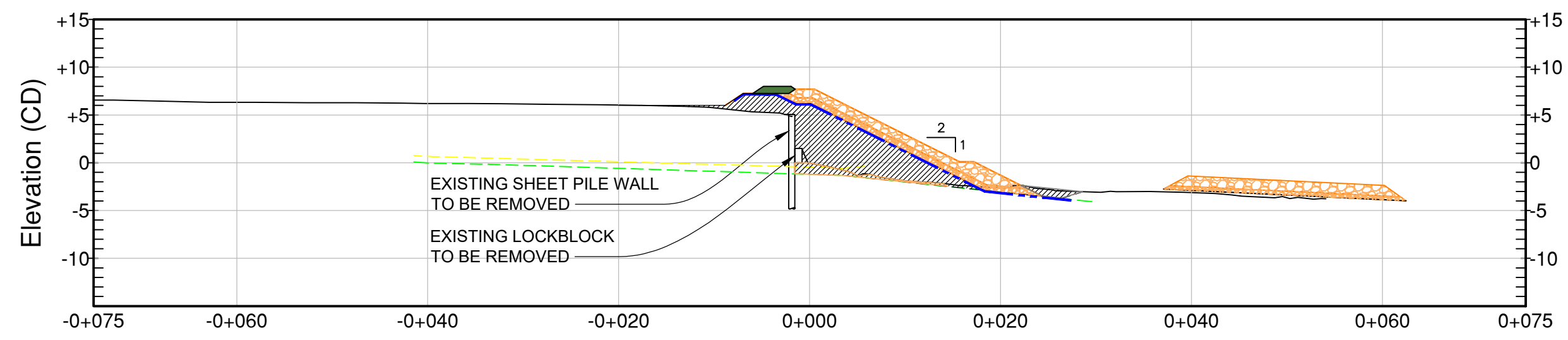
No.	Date	REVISION	Dr'n	Ch'd
1	22/10/28	REVISED REEF SIZE FOR FAA RESUBMISSION	JG	JK
0	22/05/17	ISSUED FOR CONSTRUCTION RFT #T220411-09	JG	JK



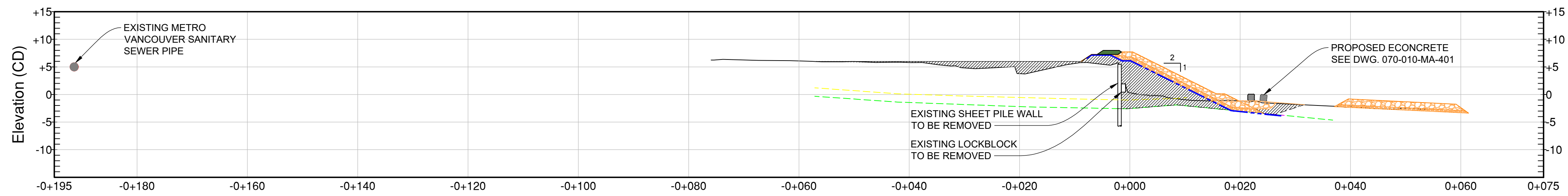
DESIGN BY	AD, MN, MH, BH, AB
DRAWN BY	J. GENG
APPROVED	J. KITSON
DATE	2021-FEB-26
SCALE	AS SHOWN
VFPA SITE	VAN 070

<b>STERLING SHIPYARD REMEDIATION &amp; INFILL GENERAL ARRANGEMENT</b>		SIZE	DWG.	<b>070-010-MA-101</b>	SHEET	REV
		<b>D</b>			<b>5 of 10</b>	<b>1</b>

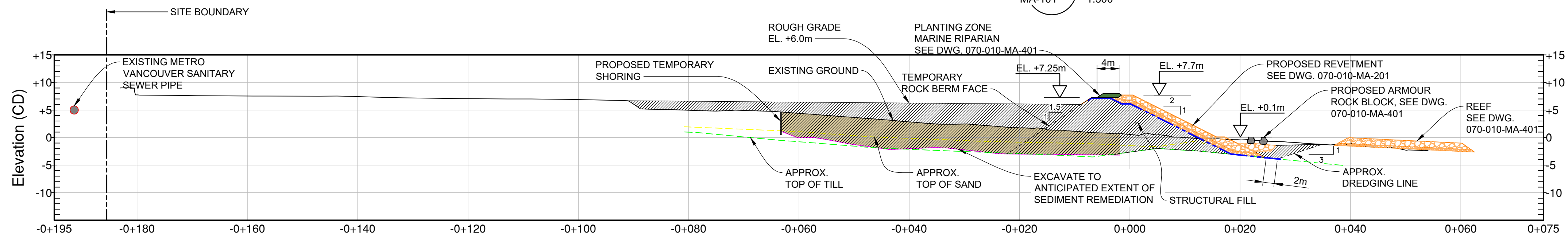
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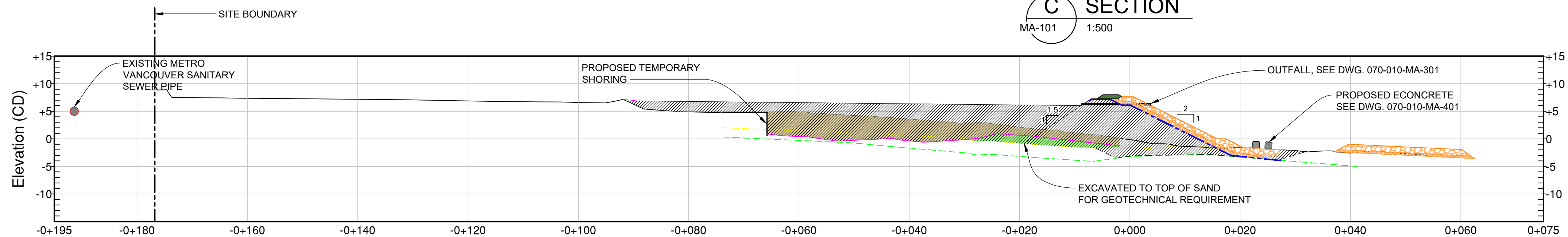
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 MA-101 1:500  
 NOTE: FOR DETAILS NOT SHOWN, SEE SECTION C



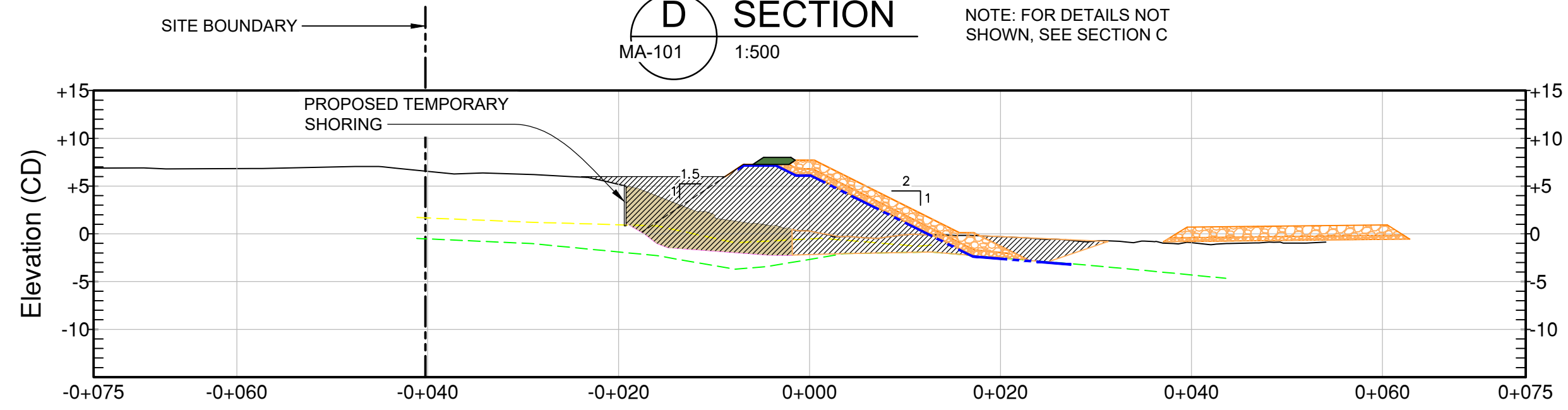
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 MA-101 1:500  
 NOTE: FOR DETAILS NOT SHOWN, SEE SECTION C



**C SECTION**  
 MA-101 1:500  
 NOTE: FOR DETAILS NOT SHOWN, SEE SECTION C



**D SECTION**  
 MA-101 1:500  
 NOTE: FOR DETAILS NOT SHOWN, SEE SECTION C



**E SECTION**  
 MA-101 1:500  
 NOTE: FOR DETAILS NOT SHOWN, SEE SECTION C

**NOTES:**  
 1. FOR GENERAL NOTES, SEE DWG 070-010-GA-001.

**PRELIMINARY**  
 DO NOT USE FOR CONSTRUCTION

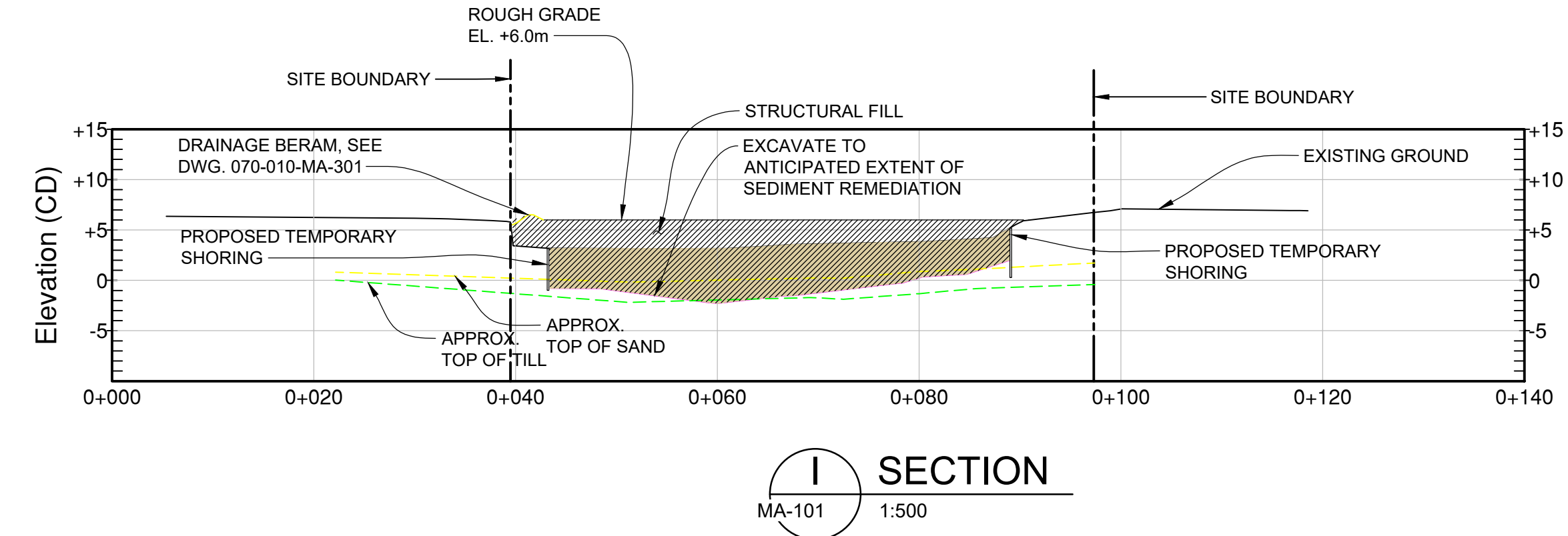
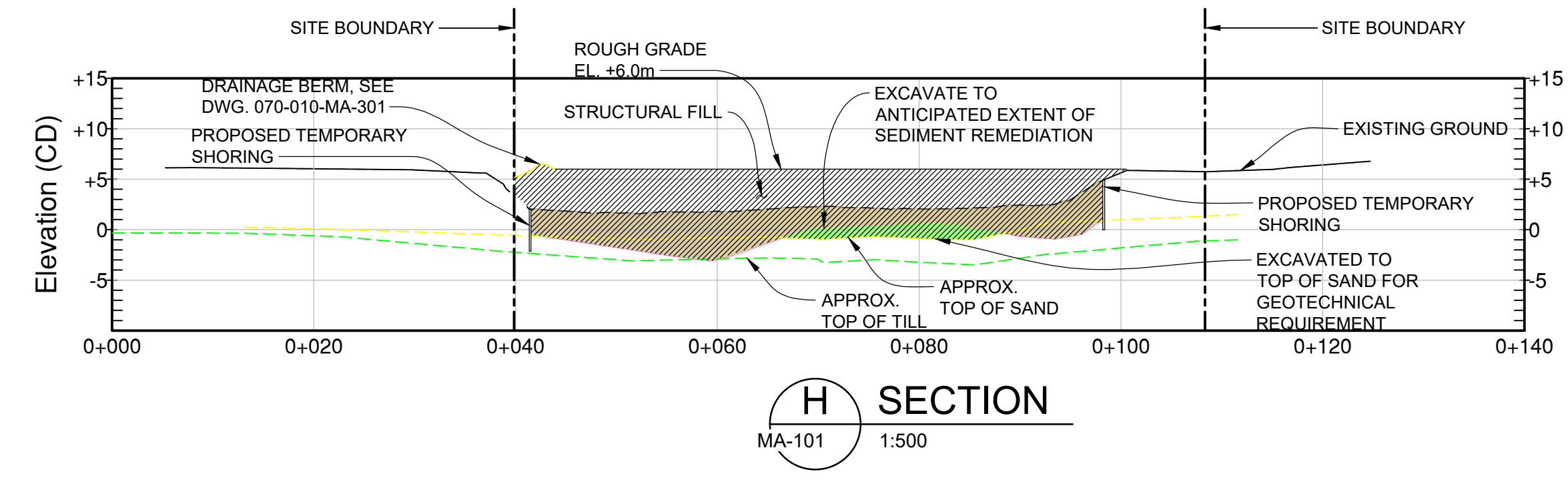
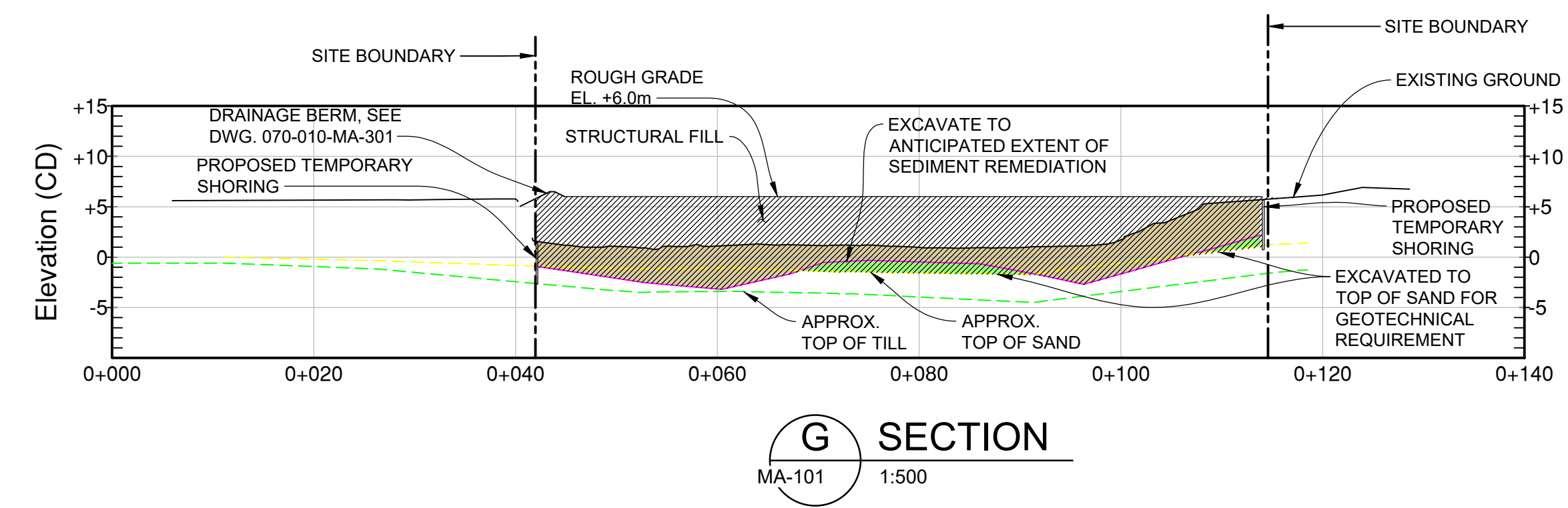
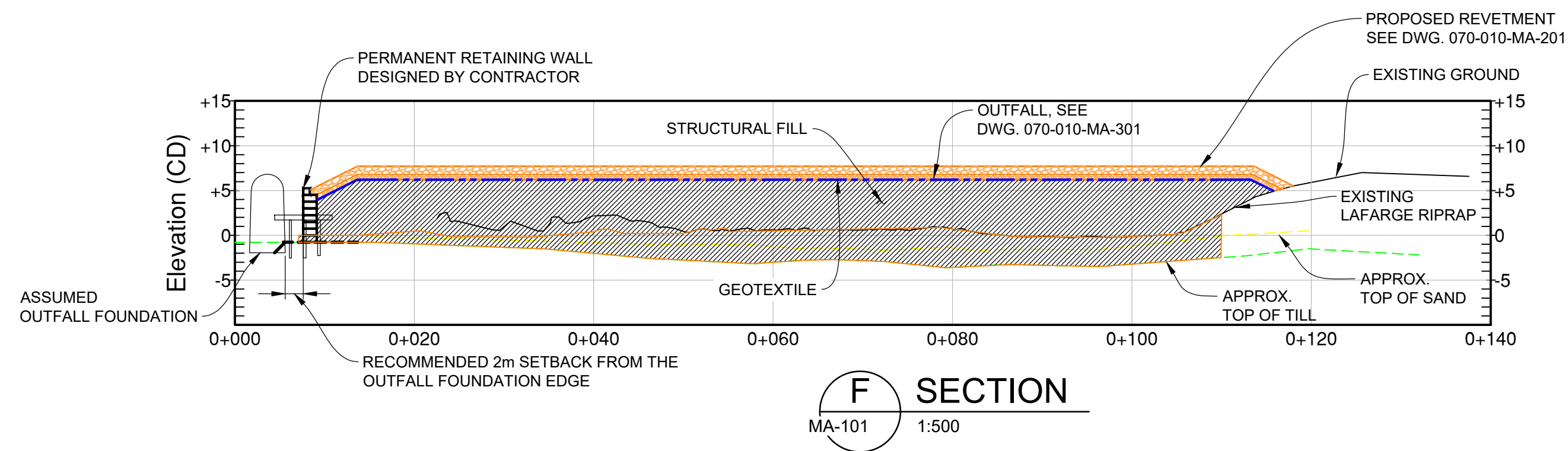


DESIGN BY	AD, NA, GM, MN, MH, BH, AB, BL
DRAWN BY	J. GENG
APPROVED	J. KITSON
DATE	2021-MAR-01
SCALE	AS SHOWN
VFPA SITE	VAN 070

**STERLING SHIPYARD REMEDIATION & INFILL SECTIONS**

Ref. No.	REFERENCE

No.	Date	REVISION	Dr'n	Ch'd
1	22/10/28	REVISED REEF SIZE FOR FAA RESUBMISSION	JG	JK
0	22/05/17	ISSUED FOR CONSTRUCTION RFT #T220411-09	JG	JK



**NOTES:**  
1. FOR GENERAL NOTES, SEE DWG 070-010-GA-001.

**PRELIMINARY**  
DO NOT USE FOR CONSTRUCTION

0 1:500 25000

Ref. No.	REFERENCE



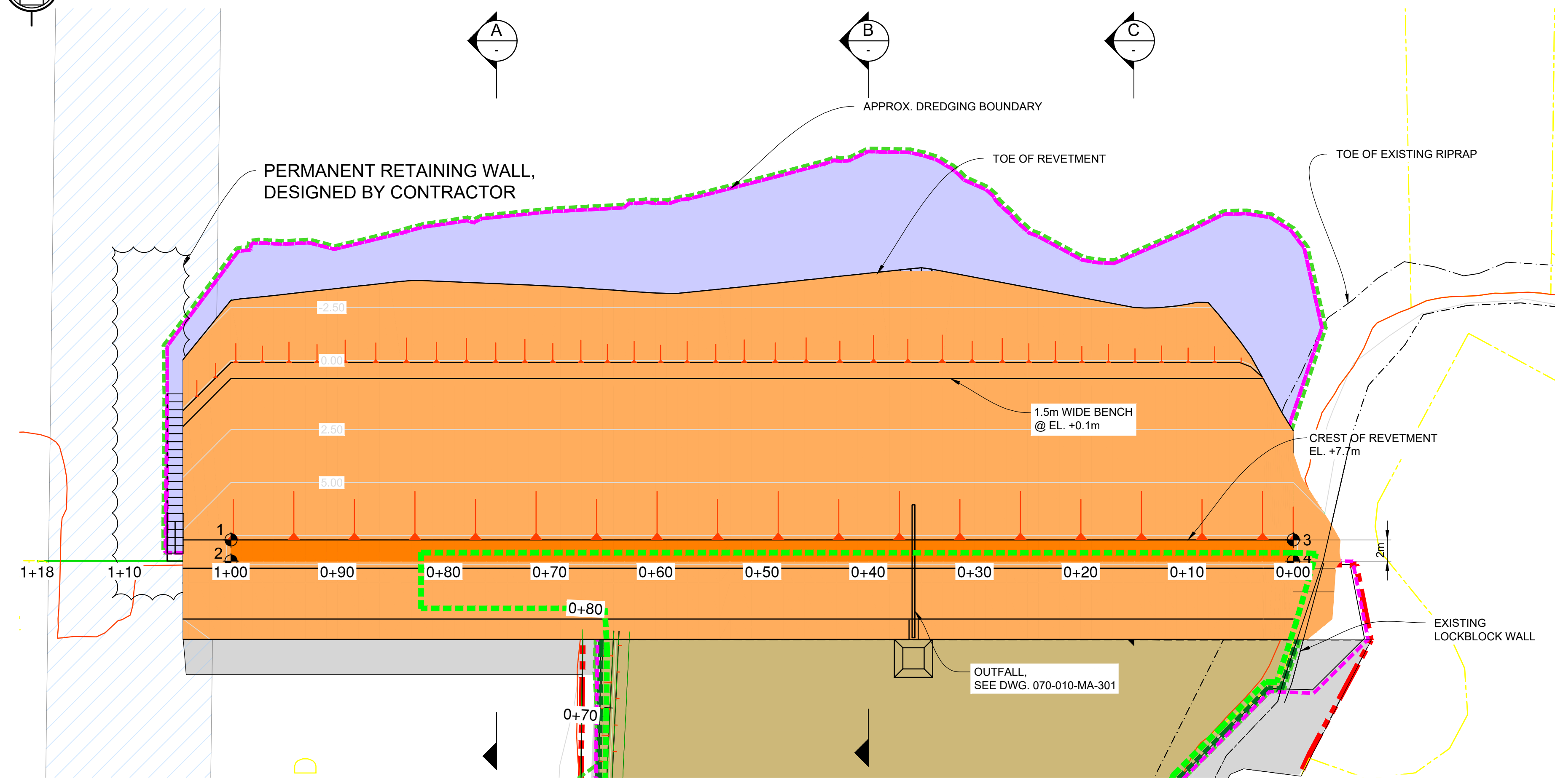
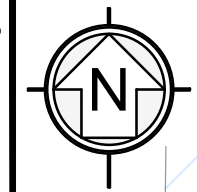
No.	Date	REVISION	Dr'n	Ch'd
1	22/10/28	REVISED REEF SIZE FOR FAA RESUBMISSION	JG	JK
0	22/05/17	ISSUED FOR CONSTRUCTION RFT #T220411-09	JG	JK



DESIGN BY	AD, NA, GMJ, MN, MH, BH, AB, JR
DRAWN BY	J. GENG
APPROVED	J. KITSON
DATE	2021-MAR-03
SCALE	AS SHOWN
VFPA SITE	VAN 070

<b>STERLING SHIPYARD REMEDIATION &amp; INFILL SECTIONS</b>	
SIZE	DWG.
<b>D</b>	<b>070-010-MA-103</b>
SHEET	REV.
<b>7 of 10</b>	<b>1</b>

TITLE BLOCK: DL-TB.dwg



**REVTMENT PLAN**  
1:300

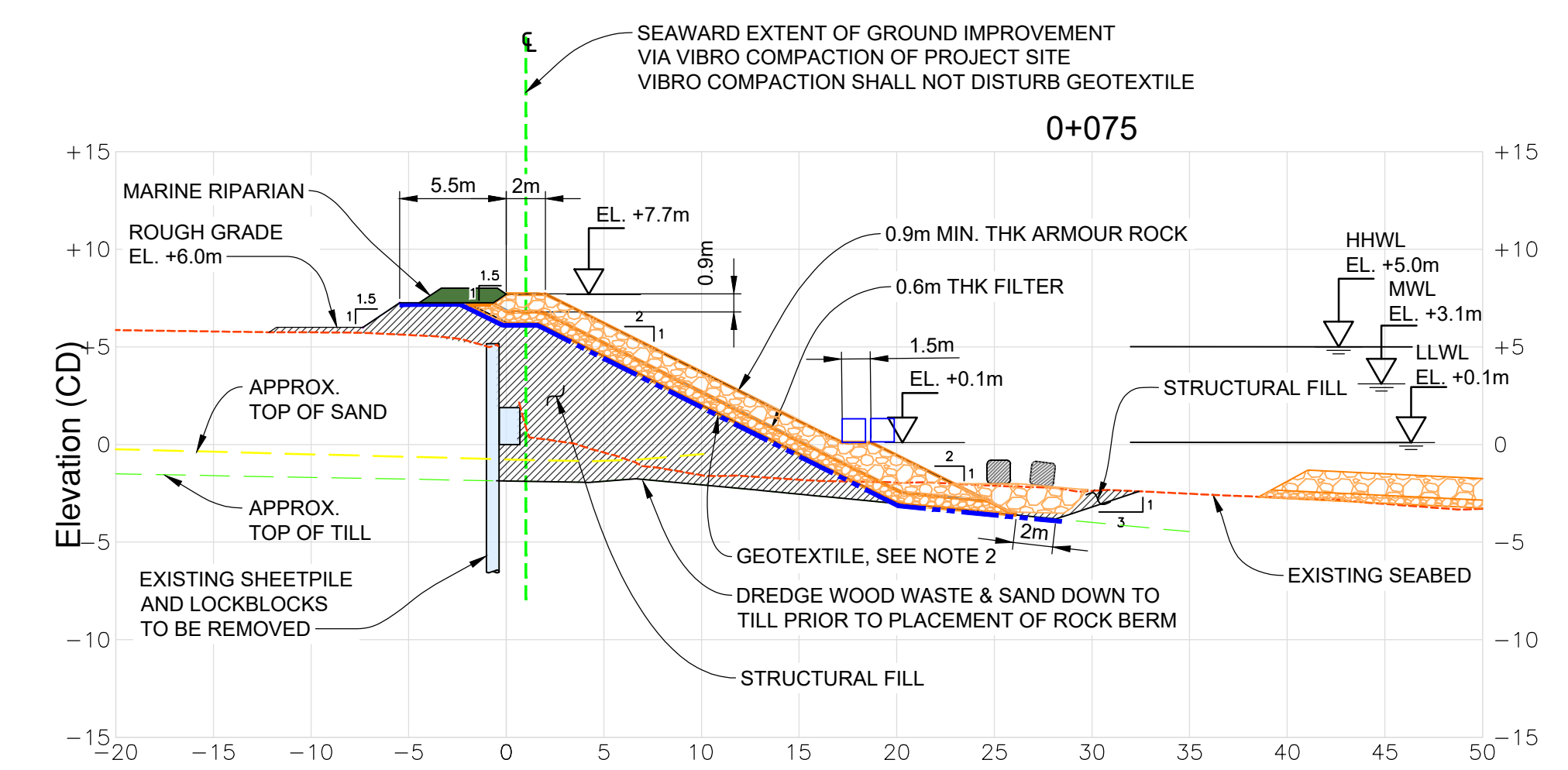
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2	5459398.38	495246.88	+7.70
3	5459400.38	495346.88	+7.70
4	5459398.38	495346.88	+7.70

VOLUME TABLE (m <sup>3</sup> )	
DREDGING	6100
SEDIMENT CONTAMINATION - INTERTIDAL AREA	11300
ARMOUR ROCK	2650
FILTER	1700

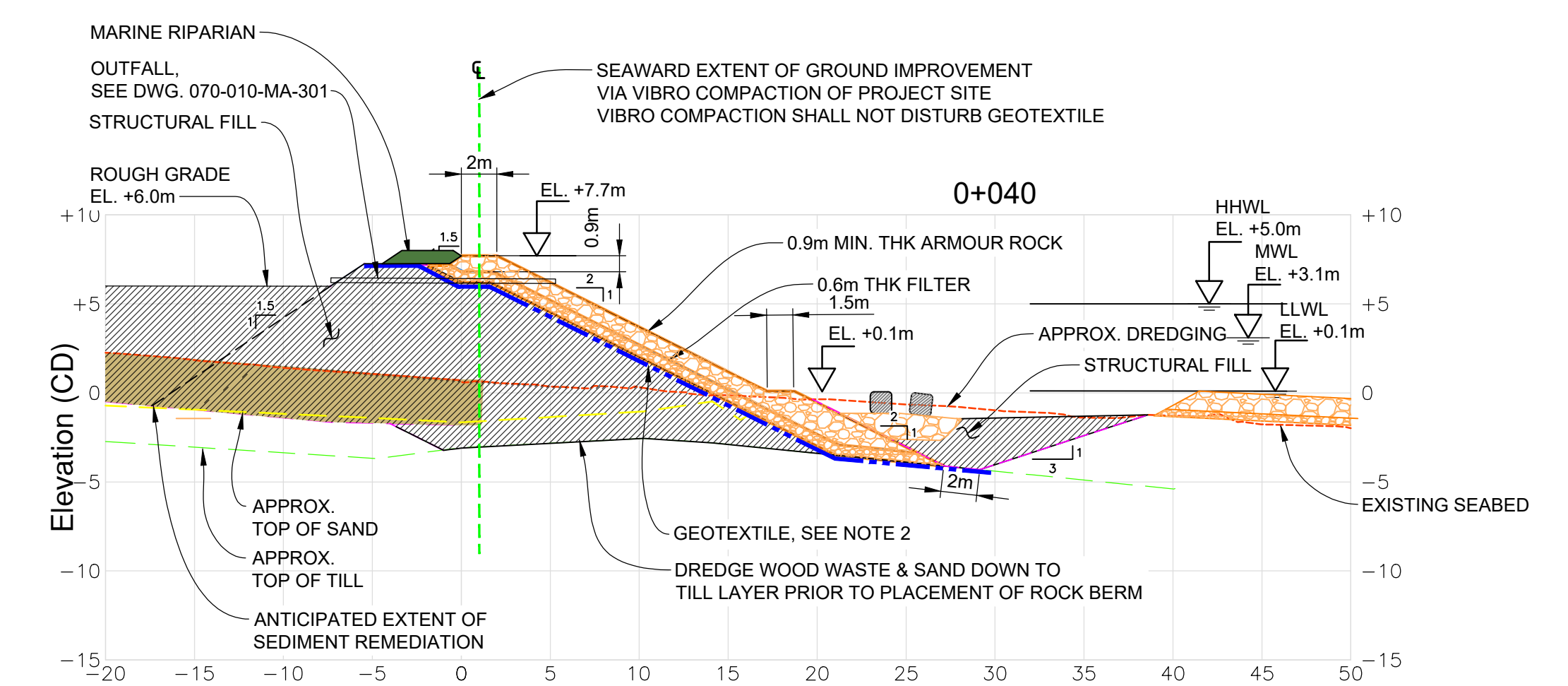
AREA TABLE (m <sup>2</sup> )	
DREDGING	3360
SEDIMENT CONTAMINATION - INTERTIDAL AREA	3270

- NOTES:**
- FOR GENERAL NOTES, SEE DWG 070-010-GA-001.
  - FOR GEOTEXTILE REFER TO DOCUMENT 677011-1000-4PEG-0001.

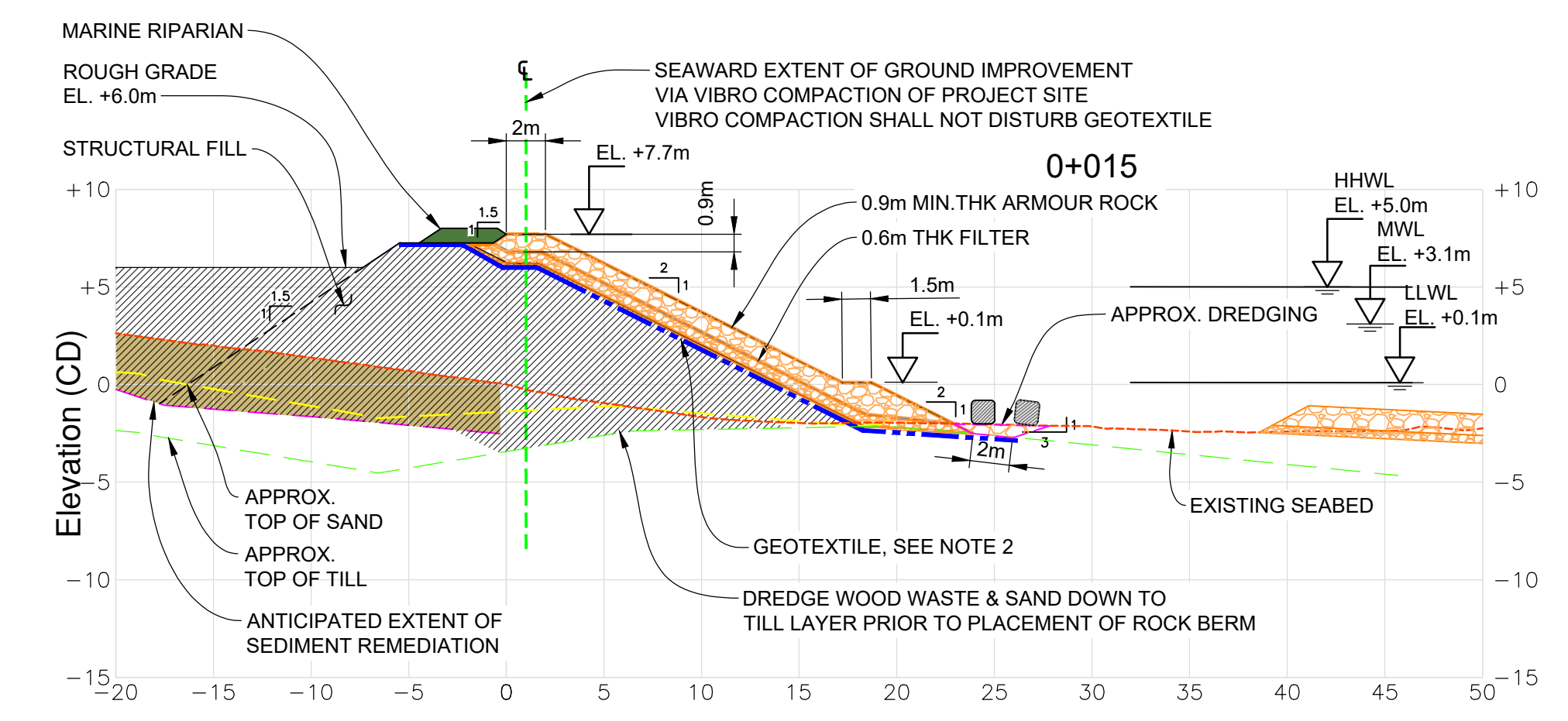
- LEGEND:**
- DREDGING AREA
  - REVTMENT
  - EXCAVATION AREA
  - SITE BOUNDARY
  - LOT BOUNDARY
  - FENCE
  - BOUNDARY OF ANTICIPATED EXTENT OF SEDIMENT REMEDIATION
  - INTERTIDAL AREA
  - PROPOSED EXCAVATION LIMITS
  - GROUND IMPROVEMENT LIMITS



**A SECTION**  
1:300

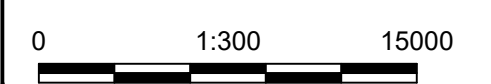


**B SECTION**  
1:300



**C SECTION**  
1:300

**PRELIMINARY**  
DO NOT USE FOR CONSTRUCTION



DATE: 2022/10/27 - 5:32pm  
PATH: Q:\677011 - Sterling Shipyard R&R\40\_Execution\45\_GIS\_Dwgs\MA-Marin\070-010-MA-01-102-103-201.dwg

Ref. No.	REFERENCE



No.	Date	REVISION	Dr'n	Ch'd
1	22/10/28	REVISED REEF SIZE FOR FAA RESUBMISSION	JG	JK
0	22/05/17	ISSUED FOR CONSTRUCTION RFT #T220411-09	JG	JK



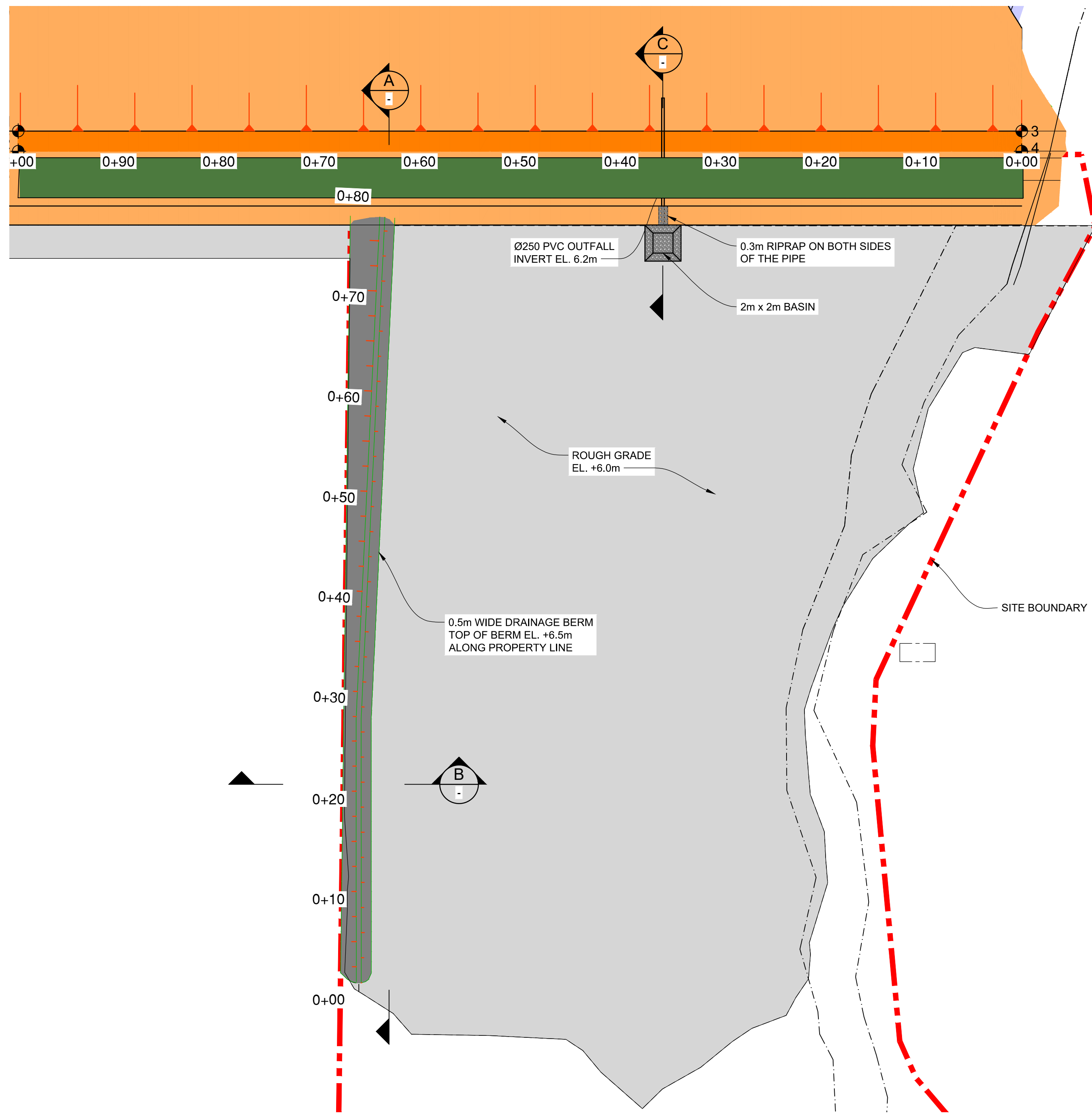
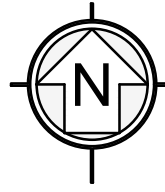
**VANCOUVER FRASER PORT AUTHORITY**  
ENGINEERING DEPARTMENT

DESIGN BY	AD, NA, GU, MN, ML, BH, AS, JR, BL
DRAWN BY	J. GENG
APPROVED	J. KITSON
DATE	2021-MAR-02
SCALE	AS SHOWN
VFPA SITE	VAN 070

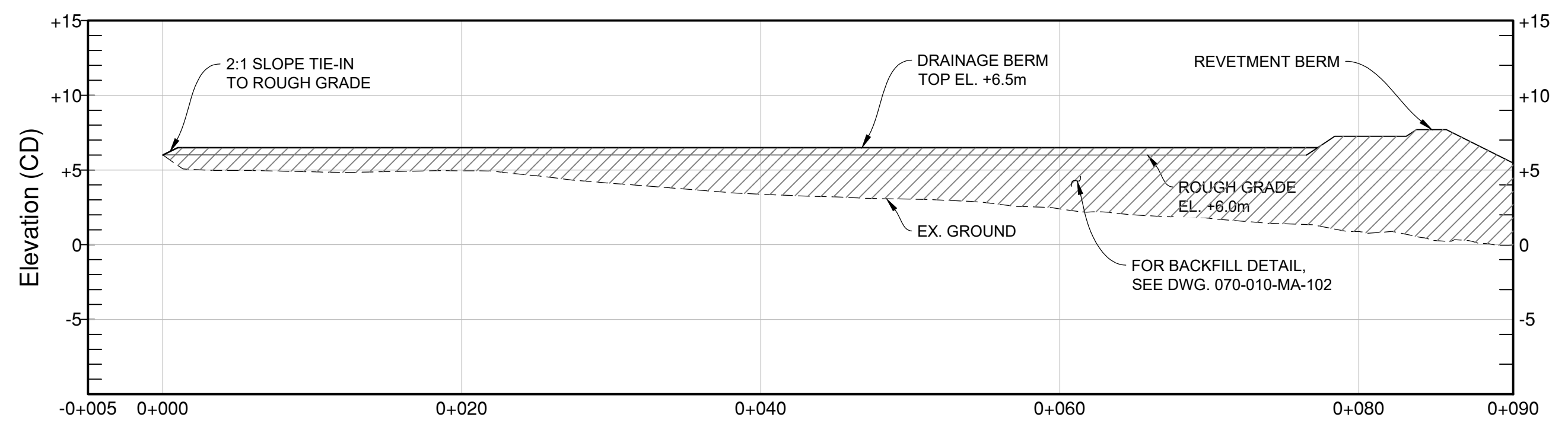
<b>STERLING SHIPYARD REMEDIATION &amp; INFILL REVTMENT PLAN AND SECTIONS</b>				
SIZE	DWG.	<b>070-010-MA-201</b>	SHEET	REV
<b>D</b>			<b>8 of 10</b>	<b>1</b>



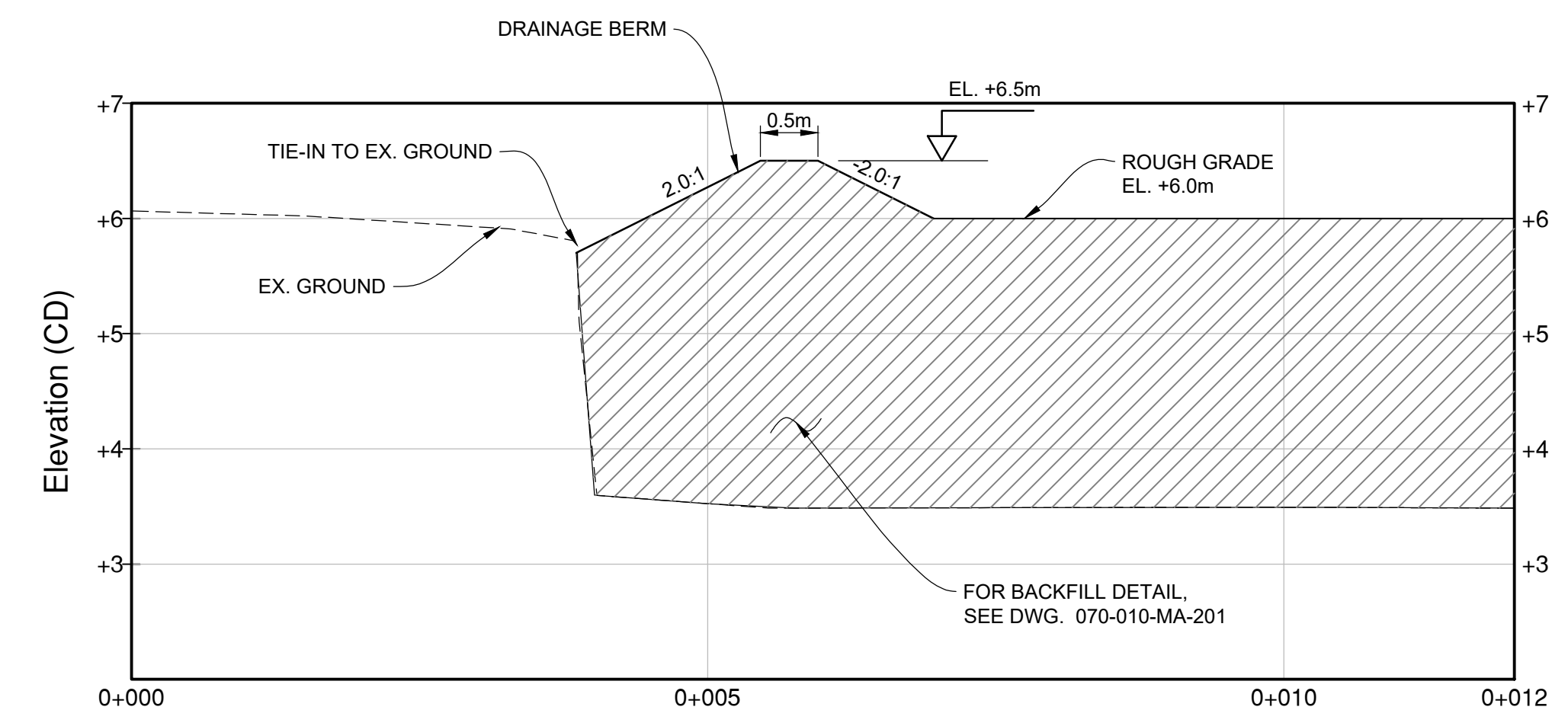
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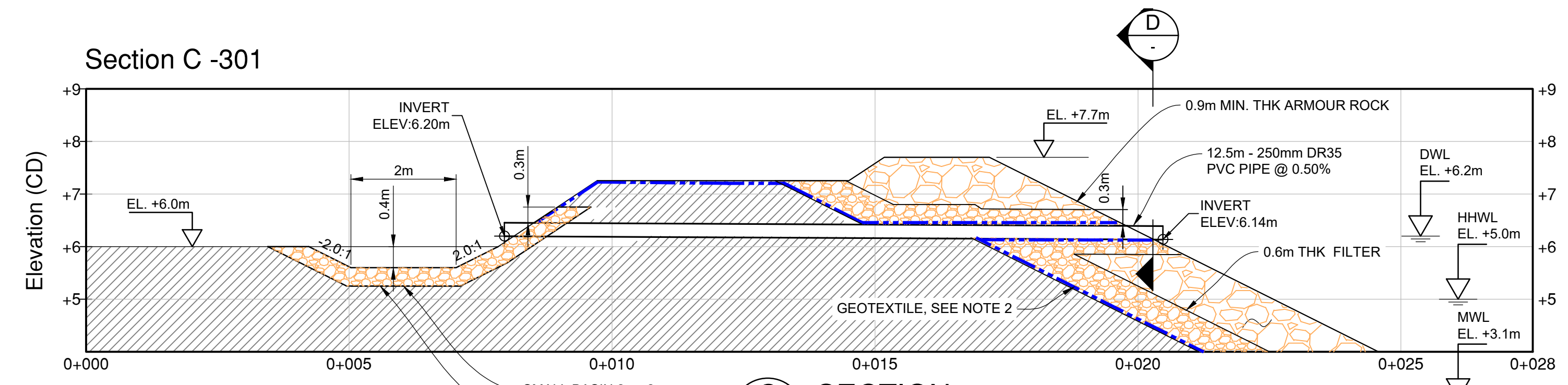
**DRAINAGE BERM PLAN**  
1:300



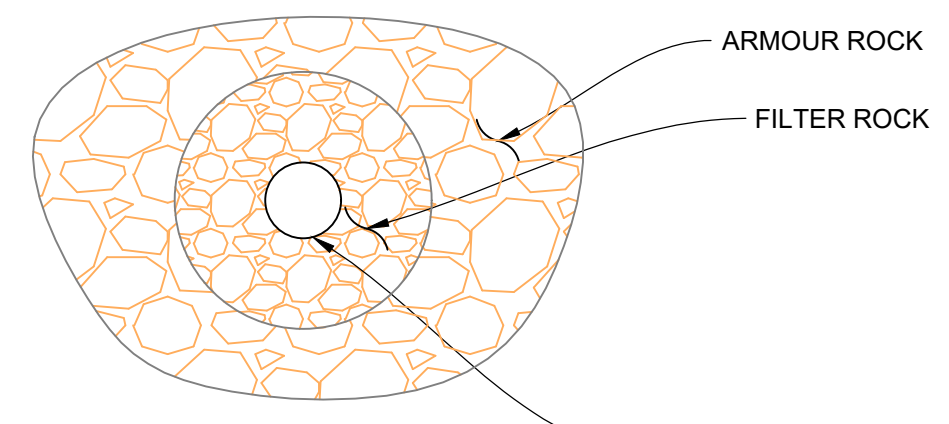
**A SECTION**  
1:300



**B SECTION**  
1:50



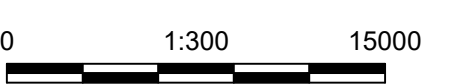
**C SECTION**  
1:75



**D SECTION**  
1:25

- NOTES:**
- FOR GENERAL NOTES, SEE DWG 070-010-GA-001.
  - FOR GEOTEXTILE REFER TO DOCUMENT 677011-1000-4PEG-0001.

**PRELIMINARY**  
DO NOT USE FOR CONSTRUCTION



Ref. No.	REFERENCE

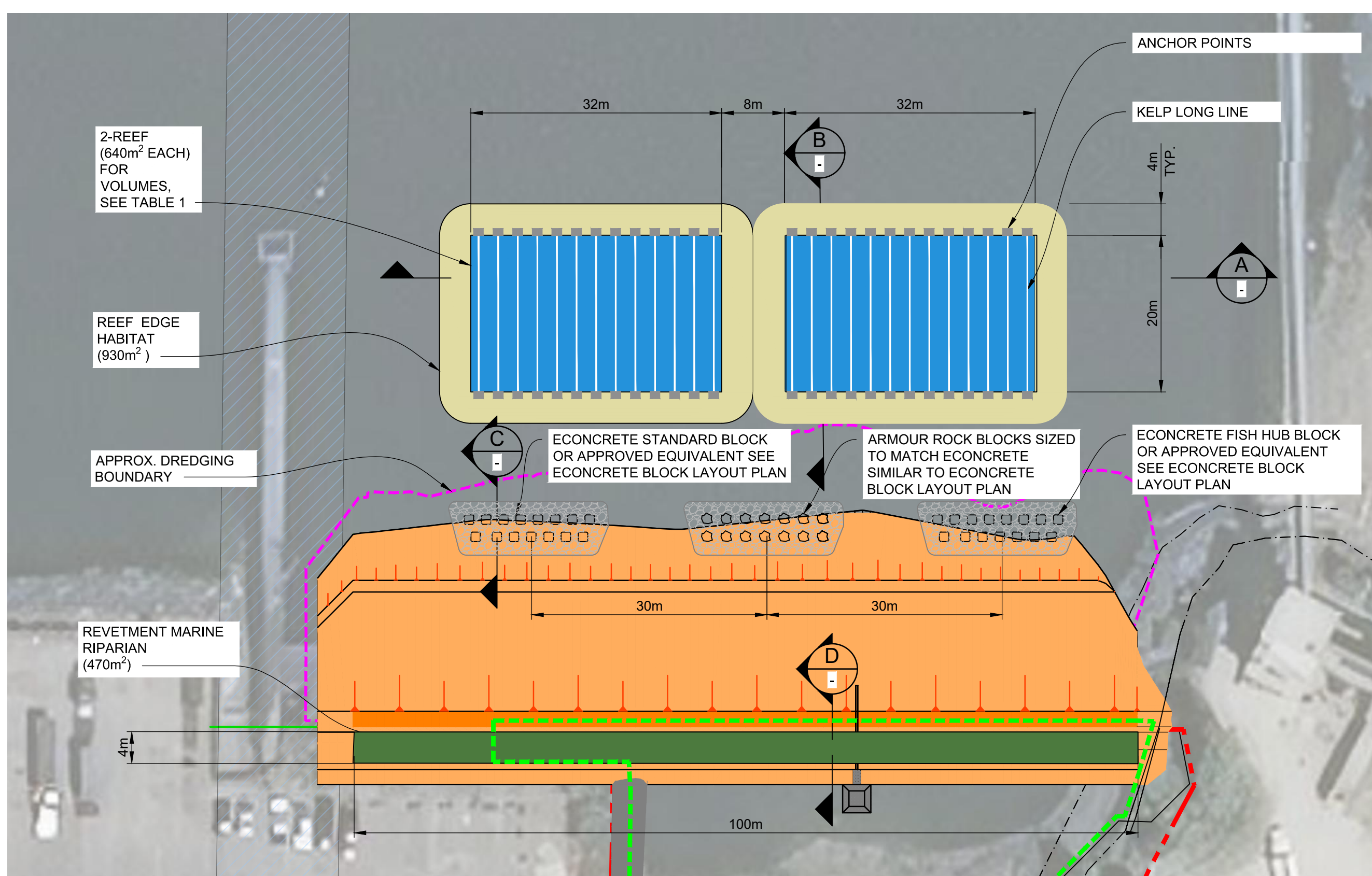


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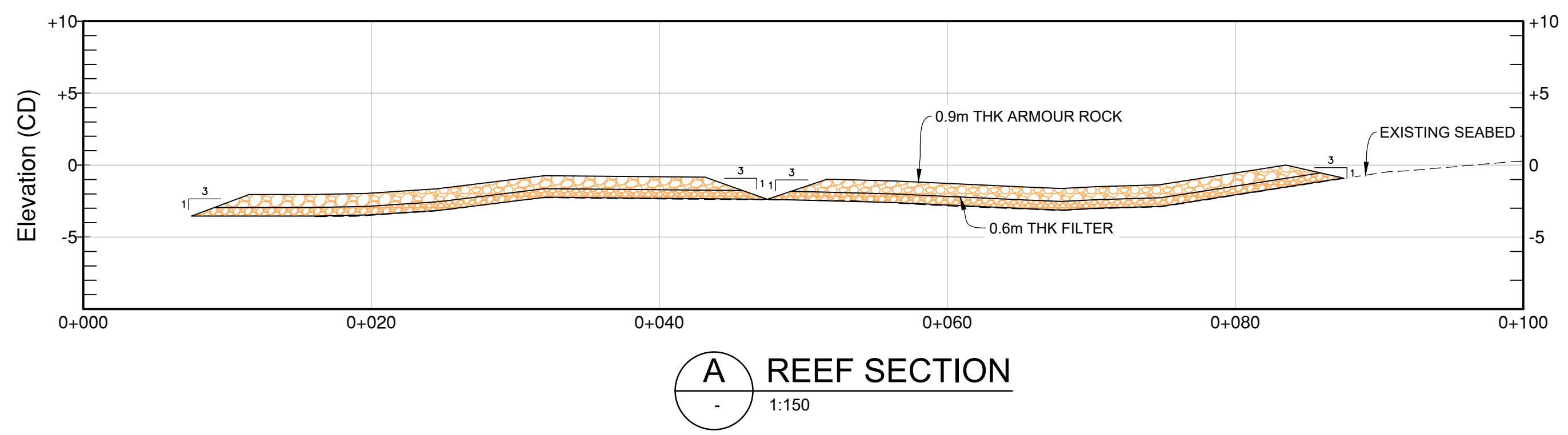


DESIGN BY	AD, CL
DRAWN BY	J. GENG
APPROVED	J. KITSON
DATE	2021-MAR-02
SCALE	AS SHOWN
VFPA SITE	VAN 070

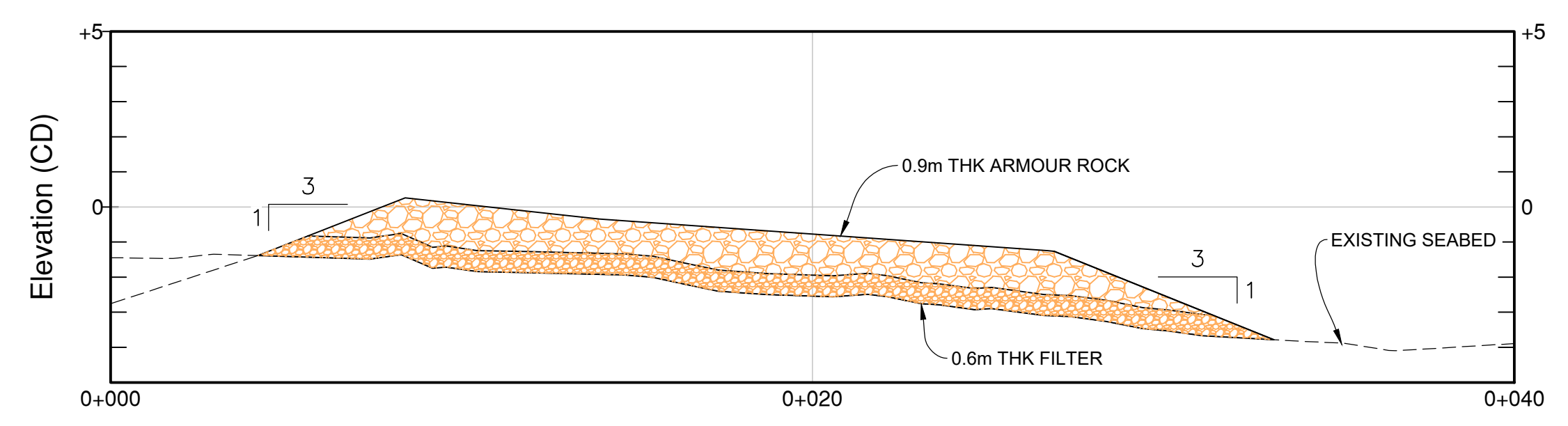
<b>STERLING SHIPYARD REMEDIATION &amp; INFILL DRAINAGE SYSTEM PLAN AND SECTIONS</b>		SIZE	DWG.	<b>070-010-MA-301</b>	SHEET	REV
		<b>D</b>			<b>9 of 10</b>	<b>1</b>



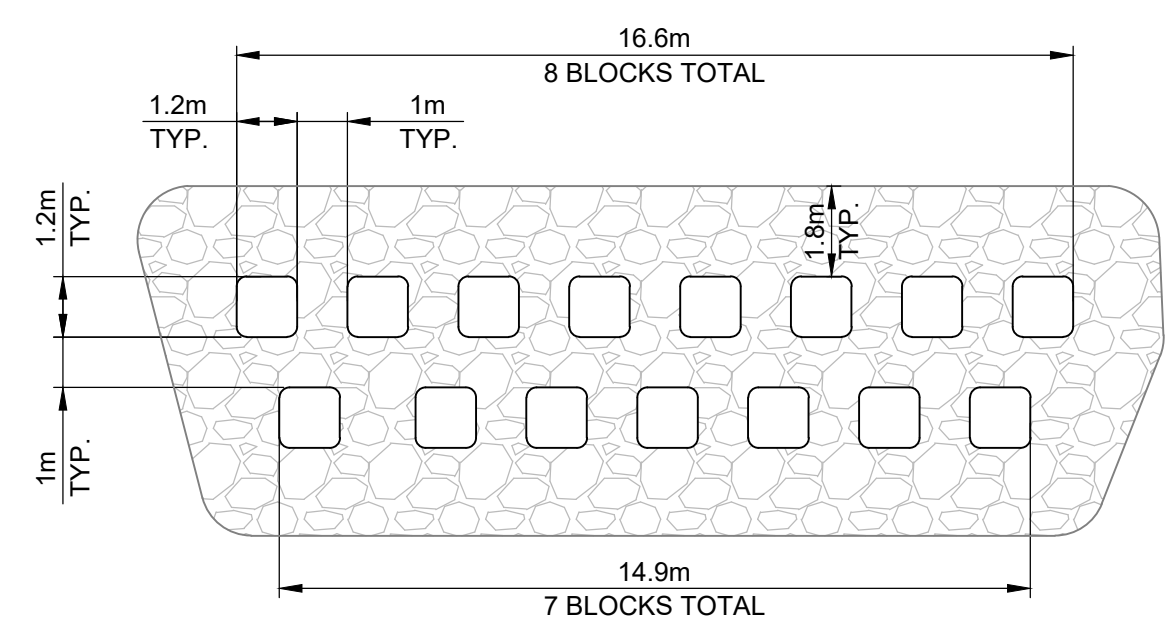
**PLAN - HABITAT COMPENSATION**  
1:1000



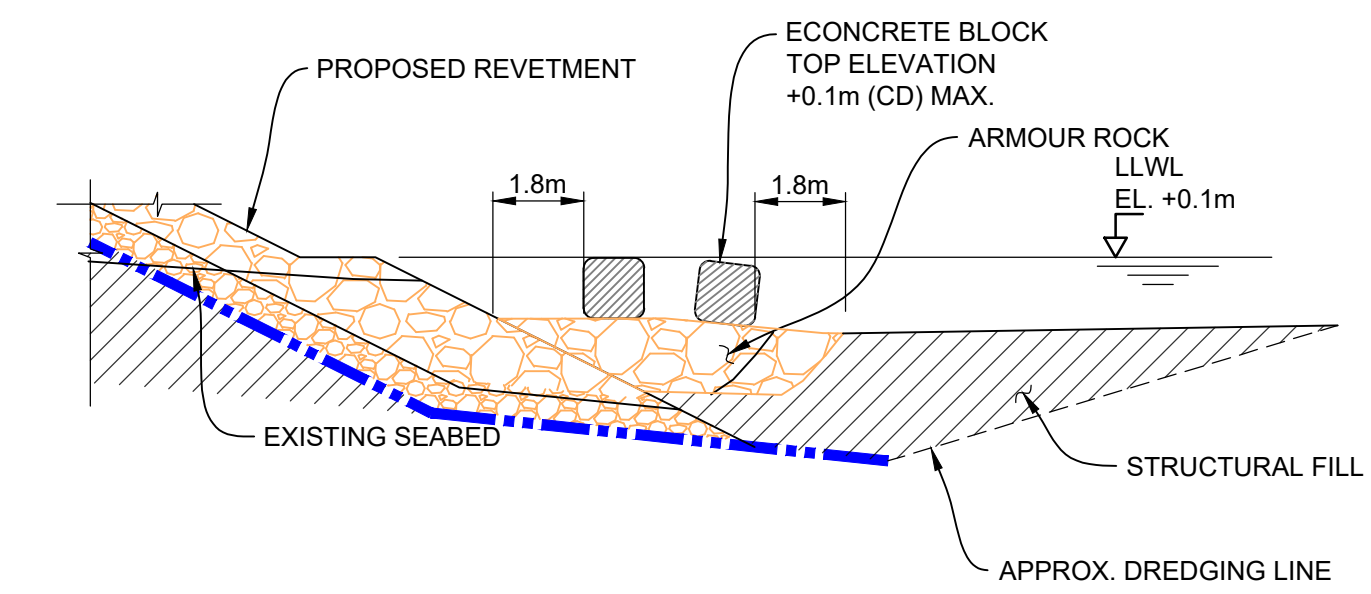
**A REEF SECTION**  
1:150



**B REEF SECTION**  
1:150



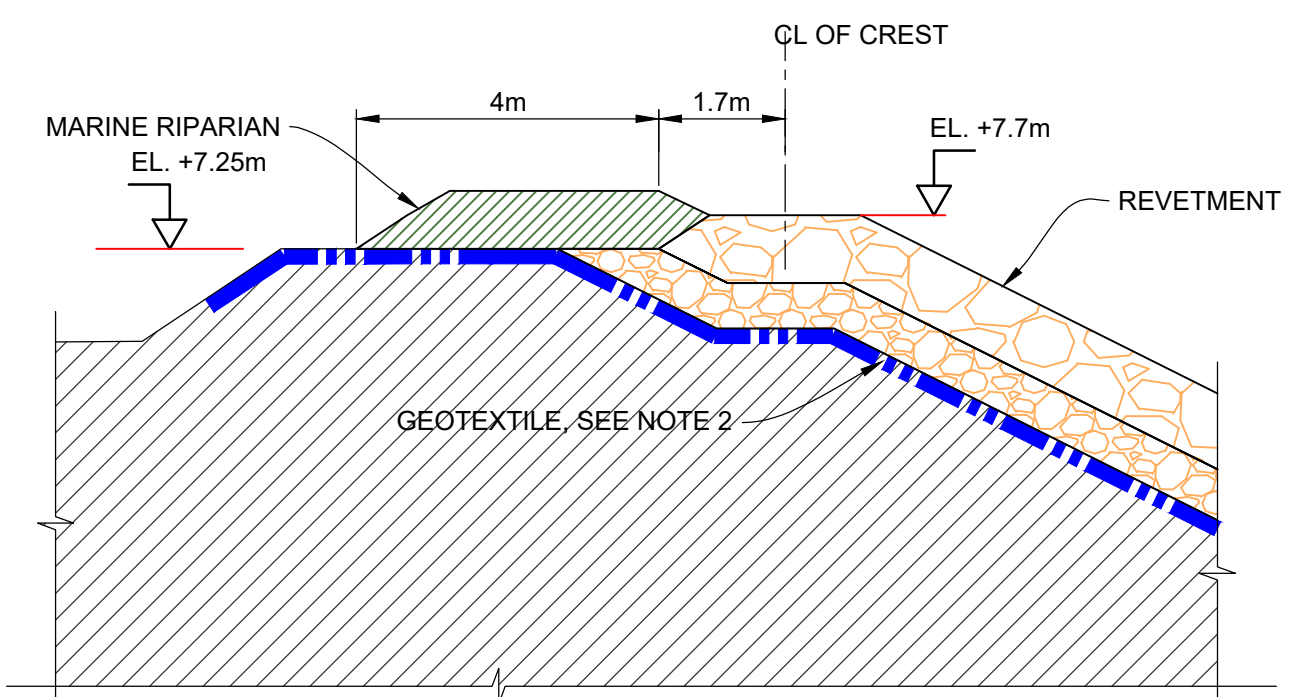
**PLAN - ECONCRETE BLOCK LAYOUT**  
1:150



**C SECTION**  
1:150

PROPOSED NATIVE TREE AND SHRUB SPECIES TO BE PLANTED IN THE MARINE RIPARIAN										
SPECIES		MARINE	DRY	SOME MOISTURE	HEIGHT (M)	SIZE	NOTES	NUMBER OF POTS	% OF TOTAL	POT SIZE
SCIENTIFIC NAME	COMMON NAME									
<b>TREES</b>										
ACER CIRCINATUM	VINE MAPLE	✓		✓	9	TALL	DROUGHT TOLERANT	8	1	#2
PINUS CONTORTATA	SHORE PINE	✓	✓	✓	5-15	TALL	FAST GROWING	8	1	#2
RHAMNUS PURSHIANA*	CASCARA	✓	✓	✓	8-10	TALL	FRUITING	11	2	#2
<b>SHRUBS</b>										
AMELANCHIER ALNIFOLIA	SASKATOON	✓	✓	✓	1-5	TALL		41	5	#2
CORNUS STOLONIFERA*	RED OSIER DOGWOOD	✓		✓	1-6	TALL	FAST GROWING; FRUITING	40	5	#2
CORYLUS CORNUTA*	BEAKED HAZELNUT	✓	✓	✓	4	TALL	FRUITING	25	4	#2
HOLODISCUS DISCOLOR	OCEAN SPRAY	✓		✓	4	TALL		41	5	#2
LONICERA INVOLUCRATE*	BLACK TWINBERRY	✓			1-3	LOW	LIKES SHADE; FRUITING	15	1.5	#2
OEMLERIA CERASIFORMIS	INDIAN PLUM	✓	✓		1.5-5	TALL	EARLY FLOWERING; FRUITING	73	10	#2
PHYSOCARPUS CAPITATUS	PACIFIC NINEBARK	✓	✓		2-4	LOW		15	1.5	#2
RIBES SANQUINEUM*	RED -FLOWERING CURRANT	✓	✓	✓	1-3	TALL	FRUITING	40	4	#2
ROSA GYMNOCARPA*	BALDHIP ROSE	✓	✓	✓	1.5	LOW	DRIER SITES; FRUITING	63	10	#1
ROSA NUTKEANA*	NOOTKA ROSE	✓	✓	✓	3	LOW	FRUITING	100	10	#1
RUBUS PARVIFLORUS*	THIMBLEBERRY	✓	✓	✓	0.5-3	LOW	THICKET; FRUITING	83	10	#1
RUBUS SPECTABILIS*	SALMONBERRY	✓	✓	✓	2-3	LOW	THICKET; FRUITING	80	10	#1
SALIX SCOULERIANA	SCOULER'S WILLOW	✓	✓	✓	2-12	TALL	DRY UPLAND SITES	30	1.5	#2
SALIX SITCHENSIS	SITKA WILLOW	✓	✓	✓	1-8	TALL		11	3.5	#2
SAMBUCUS RACEMOSA*	RED ELDERBERRY	✓		✓	3-6	TALL	FRUITING	40	5	#2
SYMPHORICARPOS ALBUS*	SNOWBERRY	✓	✓	✓	1-2	LOW	THICKET; FRUITING	90	10	#1
<b>TOTAL</b>								<b>814</b>	<b>100</b>	

NOTE: \* DENOTES FRUITING SPECIES.

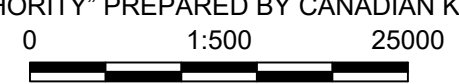


**D SECTION**  
1:100

**PRELIMINARY**  
DO NOT USE FOR CONSTRUCTION

2 REEF VOLUME (m³) - TABLE 1	
ARMOUR ROCK	1270
FILTER	1320

- NOTES:**
- FOR GENERAL NOTES, SEE DWG 070-010-GA-001.
  - FOR GEOTEXTILE REFER TO DOCUMENT 677011-1000-4PEG-0001.
  - CONTRACTOR TO DESIGN, SUPPLY, INSTALL AND MAINTAIN AN AUTOMATIC IRRIGATION SYSTEM TO IRRIGATE THE PLANTING ZONE. A SOLAR POWER CONTROL SYSTEM IS REQUIRED AS THERE IS NOT A SOURCE OF 120V POWER. THE TIE-IN POINT FOR THE IRRIGATION SYSTEM IS AS SHOWN ON THE DRAWINGS. A BACKFLOW PREVENTER AND WATER METER TO VFPA STANDARDS SHALL BE PROVIDED AT THE TIE-IN POINT.
  - KELP ROPES AND ANCHOR POINTS SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY. FOR DETAILED INFORMATION ON KELP ROPE LOCATION AND CONNECTION METHODOLOGY REFER TO THE DOCUMENT "FEASIBILITY ASSESSMENT OF KELP RESTORATION AT STERLING SHIPYARD SITE FOR VANCOUVER FRASER PORT AUTHORITY" PREPARED BY CANADIAN KELP RESOURCES LTD. (2022).



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DESIGN BY	AD, NA, GMJ, AB, JR, BL, VO
DRAWN BY	J. GENG
APPROVED	J. KITSON
DATE	2021-FEB-26
SCALE	AS SHOWN
VFPA SITE	VAN 070

**STERLING SHIPYARD REMEDIATION & INFILL HABITAT OFFSETTING PLAN AND SECTIONS**

070-010-MA-401

SHEET 10 of 10 REV 1