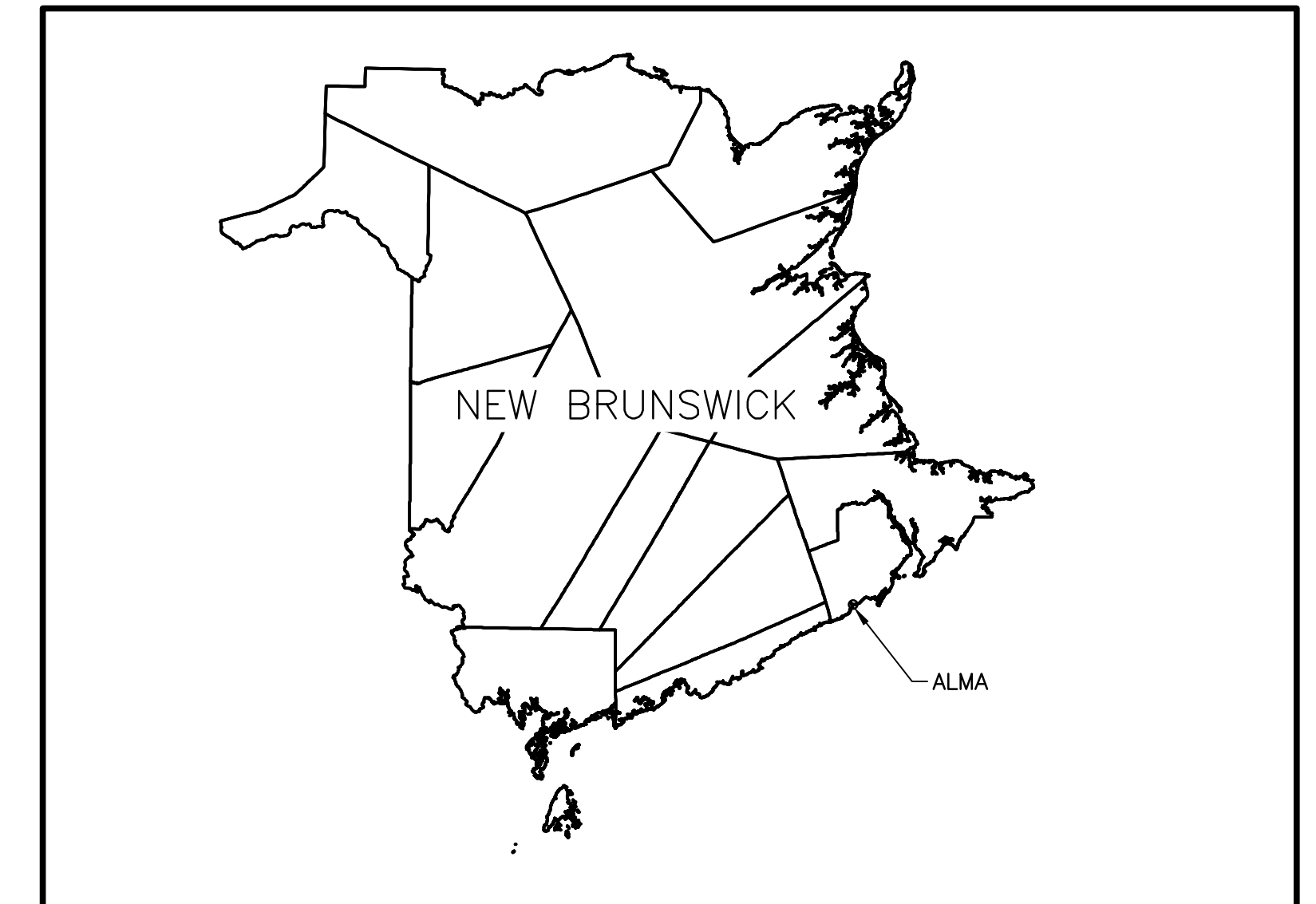


Parcs
Canada

Parks
Canada

SHORELINE PROTECTION WORKS HIGHWAY 114 AND BEACH AREA ALMA BAY OF FUNDY NEW BRUNSWICK

PROJECT NO. 1346



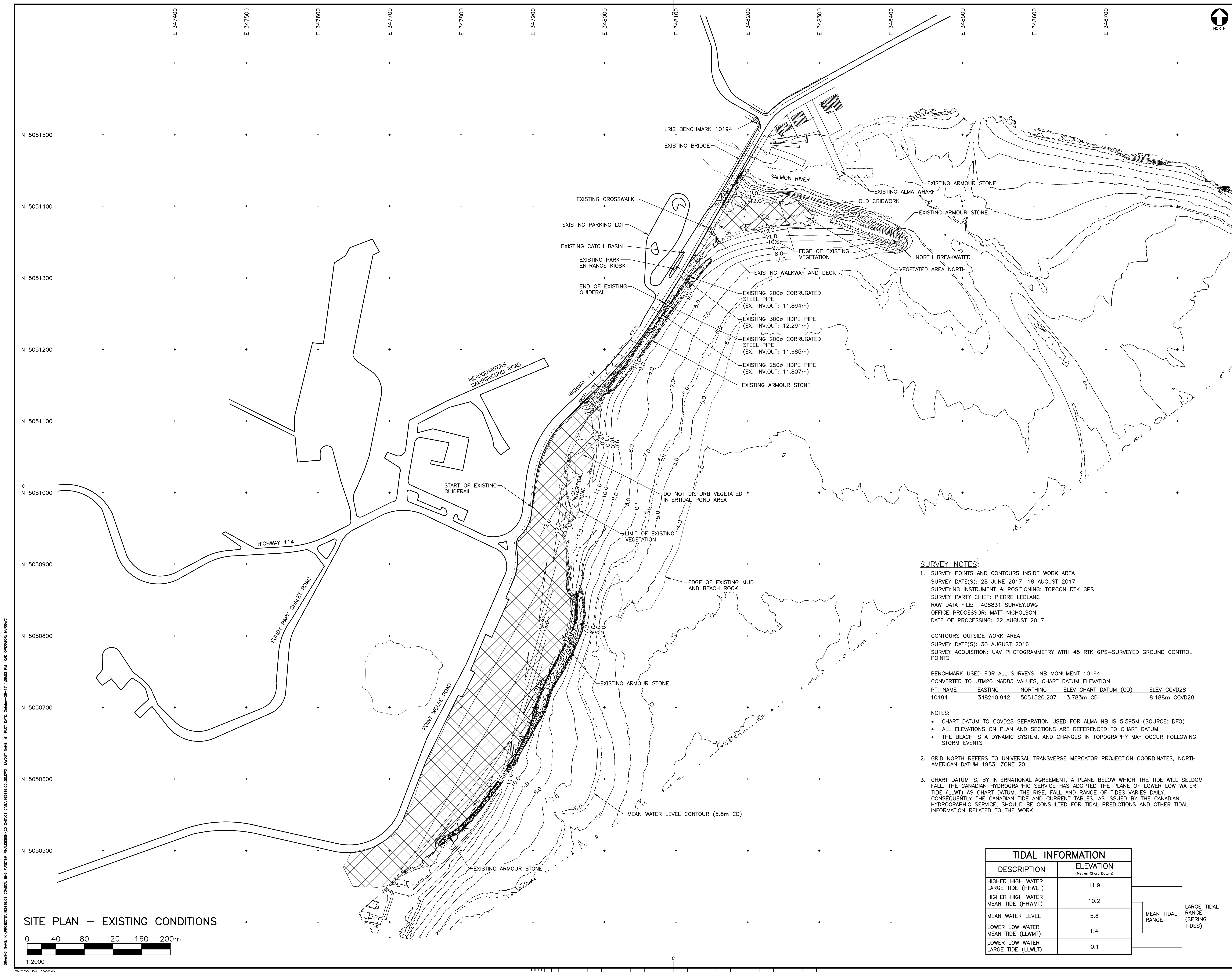
SHEET LIST TABLE

Sheet Number Sheet Title

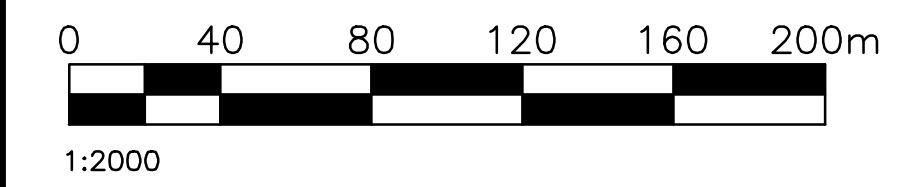
COVER SHEET

Cover Sheet	M0
MARINE	
M1	EXISTING CONDITIONS
M2	OVERALL SHORE PROTECTION PLAN
M3	HIGHWAY EMBANKMENT SHORE PROTECTION
M4	HIGHWAY EMBANKMENT CROSS SECTIONS
M5	SOUTH LAGOON SHORE PROTECTION
M6	SOUTH CLIFF SHORE PROTECTION
M7	SOUTH CLIFF SECTIONS 0+010 TO 0+180
M8	SOUTH LAGOON SECTIONS 0+330 TO 0+480
M9	HIGHWAY EMBANKMENT SECTIONS 0+590 TO 0+760
M10	HIGHWAY EMBANKMENT SECTIONS 0+770 TO 0+900
STRUCTURAL	
S-1	PROPOSED BOARDWALK LOCATION PLAN
S-2	SECTIONS AND DETAILS





SITE PLAN - EXISTING CONDITIONS



Parks Canada

CBCL LIMITED
Consulting Engineers

LEGEND

EXISTING VEGETATION

EXISTING ARMOUR STONE

GENERAL NOTES:

1. CONTOUR INTERVAL: 0.50m
2. ALL ELEVATIONS ARE REFERENCED TO CHART DATUM

GENERAL SITE DESCRIPTION:

THE SITE IS LOCATED IN FUNDY NATIONAL PARK ALONG NEW BRUNSWICK HIGHWAY 114 BETWEEN THE PARK VISITORS CENTRE AND THE SALMON RIVER CROSSING INTO THE TOWN OF ALMA. THE SITE IS CHARACTERIZED BY AN TIDAL SAND AND GRAVEL BEACH, A HIGHWAY EMBANKMENT WITH PARTIAL ARMOURSTONE PROTECTION, A TIDAL LAGOON CONTAINED WITHIN A SAND AND GRAVEL BERM, AND A STEEP BLUFF WITH MATURE TREES AND PARTIAL ARMOURSTONE PROTECTION. ONGOING EROSION ALONG THE SITE'S SHORELINE REQUIRES REMEDIATION THROUGH THE PARTIAL RETROFIT AND ADDITION OF NEW SHORELINE PROTECTION FEATURES. SECTIONS ALONG THE HIGHWAY EMBANKMENT AND BLUFFS FEATURE EXISTING ARMOURSTONE OF VARIOUS SIZES, TO BE GENERALLY LEFT IN PLACE AND INTEGRATED INTO THE PROPOSED SHORE PROTECTION WORKS AS INDICATED ON THE DRAWINGS.

O	ISSUED FOR TENDER	25 OCT 2017
D	ISSUED FOR 100% REVIEW	30 AUG 2017
C	ISSUED FOR 99% REVIEW	06 JUL 2017
B	RE-ISSUED FOR 66% REVIEW	13 JUN 2017
A	ISSUED FOR 66% REVIEW	17 MAY 2017
revisions		date

project

SHORELINE PROTECTION WORKS

FUNDY NATIONAL PARK ALMA, NB

drawing

EXISTING CONDITIONS

designed V. LEYS

date OCT. 2017

drawn J.R./C.M./M.E.C.

date OCT. 2017

approved *Vincent M.R. Leys*

date OCT. 2017

Tender *Vincent M.R. Leys* Submission

Parks Canada Project Manager *Vincent M.R. Leys* Administrateur de projets Parc Canada

project number **1346** no. du projet

drawing no. **M1** no. du dessin

TIDAL INFORMATION

DESCRIPTION	ELEVATION (Metres Chart Datum)
HIGHER HIGH WATER LARGE TIDE (HHWLT)	11.9
HIGHER HIGH WATER MEAN TIDE (HHWMT)	10.2
MEAN WATER LEVEL	5.8
LOWER LOW WATER MEAN TIDE (LLWMT)	1.4
LOWER LOW WATER LARGE TIDE (LLWLT)	0.1

MEAN TIDAL RANGE

LARGE TIDAL RANGE (SPRING TIDES)

SURVEY NOTES:

1. SURVEY POINTS AND CONTOURS INSIDE WORK AREA
 SURVEY DATE(S): 28 JUNE 2017, 18 AUGUST 2017
 SURVEYING INSTRUMENT & POSITIONING: TOPCON RTK GPS
 SURVEY PARTY CHIEF: PIERRE LEBLANC
 RAW DATA FILE: 408831 SURVEY.DWG
 OFFICE PROCESSOR: MATT NICHOLSON
 DATE OF PROCESSING: 22 AUGUST 2017

CONTOURS OUTSIDE WORK AREA
 SURVEY DATE(S): 30 AUGUST 2016
 SURVEY ACQUISITION: UAV PHOTOGRAMMETRY WITH 45 RTK GPS-SURVEYED GROUND CONTROL POINTS

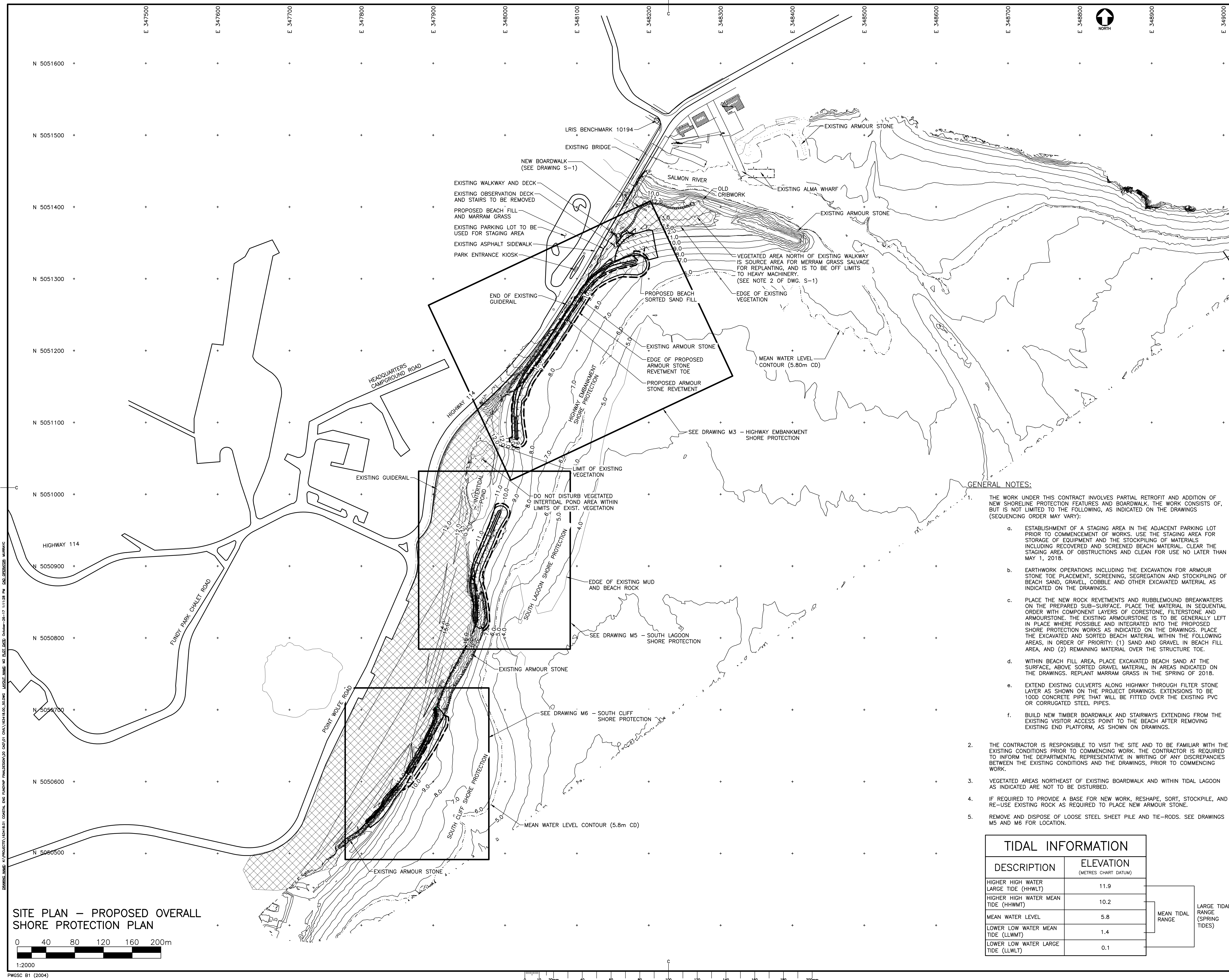
BENCHMARK USED FOR ALL SURVEYS: NB MONUMENT 10194
 CONVERTED TO UTM20 NAD83 VALUES, CHART DATUM ELEVATION
 PT. NAME EASTING NORTHING ELEV CHART DATUM (CD) ELEV CGVD28
 10194 348210.942 5051520.207 13.783m CD 8.188m CGVD28

NOTES:

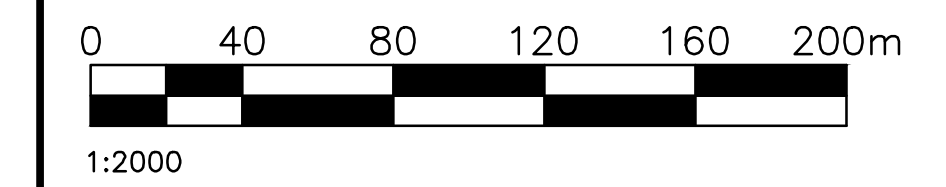
- CHART DATUM TO CGVD28 SEPARATION USED FOR ALMA NB IS 5.595M (SOURCE: DFO)
- ALL ELEVATIONS ON PLAN AND SECTIONS ARE REFERENCED TO CHART DATUM
- THE BEACH IS A DYNAMIC SYSTEM, AND CHANGES IN TOPOGRAPHY MAY OCCUR FOLLOWING STORM EVENTS

2. GRID NORTH REFERS TO UNIVERSAL TRANSVERSE MERCATOR PROJECTION COORDINATES, NORTH AMERICAN DATUM 1983, ZONE 20.
3. CHART DATUM IS, BY INTERNATIONAL AGREEMENT, A PLANE BELOW WHICH THE TIDE WILL SELDOM FALL; THE CANADIAN HYDROGRAPHIC SERVICE HAS ADOPTED THE PLANE OF LOWER LOW WATER TIDE (LLWT) AS CHART DATUM. THE RISE, FALL AND RANGE OF TIDES VARIES DAILY, CONSEQUENTLY THE CANADIAN TIDE AND CURRENT TABLES, AS ISSUED BY THE CANADIAN HYDROGRAPHIC SERVICE, SHOULD BE CONSULTED FOR TIDAL PREDICTIONS AND OTHER TIDAL INFORMATION RELATED TO THE WORK

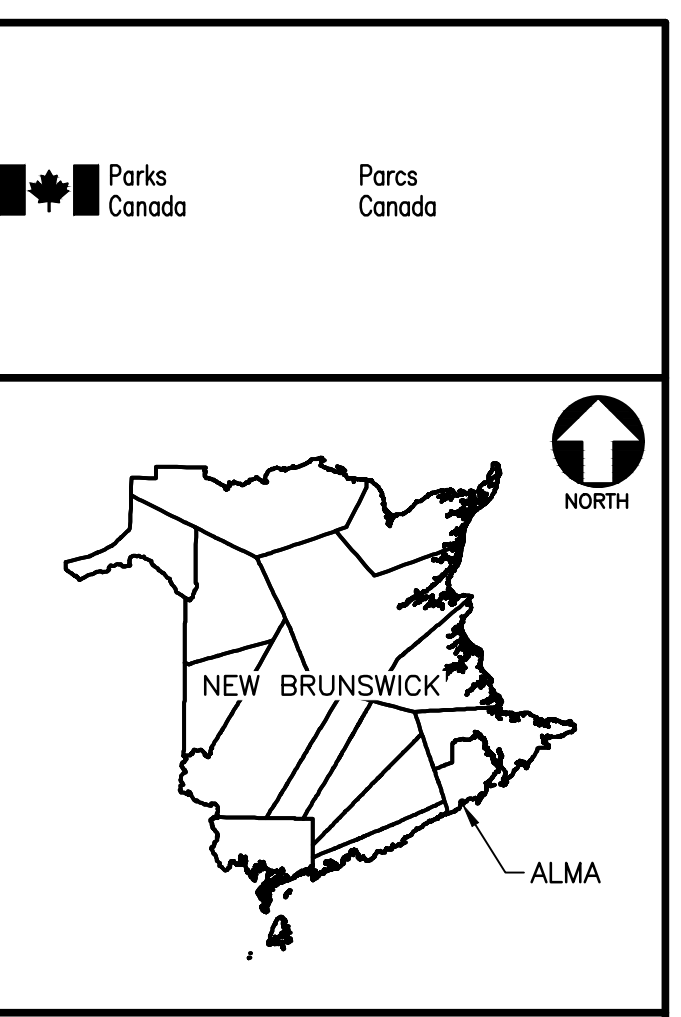
DRAWING NAME: K:\PROJECTS\1618181\01 - CONCEPT AND LAYOUT\PROJ\FINAL\DRAWING\01 - CONCEPT AND LAYOUT\1618181_01.DWG
 DATE: 2017-10-17 15:02:22
 USER: VLEYS
 PLOT: 1618181_01.DWG



SITE PLAN – PROPOSED OVERALL SHORE PROTECTION PLAN



PWGSC B1 (2004)



LEGEND

	EXISTING VEGETATION
	EXISTING ARMOUR STONE
	BEACH SORTED SAND FILL AREA (PR.)
	BEACH FILL AND REPLANTED MARRAM GRASS (PR.)
	NEW ARMOUR STONE (PR.)
	EDGE OF EXCAVATED TOE

SEE DRAWING M1 FOR SURVEY NOTES.

GENERAL NOTES:

THE WORK UNDER THIS CONTRACT INVOLVES PARTIAL RETROFIT AND ADDITION OF NEW SHORELINE PROTECTION FEATURES AND BOARDWALK. THE WORK CONSISTS OF, BUT IS NOT LIMITED TO THE FOLLOWING, AS INDICATED ON THE DRAWINGS (SEQUENCING ORDER MAY VARY):

- a. ESTABLISHMENT OF A STAGING AREA IN THE ADJACENT PARKING LOT PRIOR TO COMMENCEMENT OF WORKS. USE THE STAGING AREA FOR STORAGE OF EQUIPMENT AND THE STOCKPILING OF MATERIALS. INCLUDING RECOVERED AND SCREENED BEACH MATERIAL. CLEAR THE STAGING AREA OF OBSTRUCTIONS AND CLEAN FOR USE NO LATER THAN MAY 1, 2018.
 - b. EARTHWORK OPERATIONS INCLUDING THE EXCAVATION FOR ARMOUR STONE TOE PLACEMENT, SCREENING, SEGREGATION AND STOCKPILING OF BEACH SAND, GRAVEL, COBBLE AND OTHER EXCAVATED MATERIAL AS INDICATED ON THE DRAWINGS.
 - c. PLACE THE NEW ROCK REVETMENTS AND RUBBLEMOUND BREAKWATERS ON THE PREPARED SUB-SURFACE. PLACE THE MATERIAL IN SEQUENTIAL ORDER WITH COMPONENT LAYERS OF CORESTONE, FILTERSTONE AND ARMOURSTONE. THE EXISTING ARMOURSTONE IS TO BE GENERALLY LEFT IN PLACE WHERE POSSIBLE AND INTEGRATED INTO THE PROPOSED SHORE PROTECTION WORKS AS INDICATED ON THE DRAWINGS. PLACE THE EXCAVATED AND SORTED BEACH MATERIAL WITHIN THE FOLLOWING AREAS, IN ORDER OF PRIORITY: (1) SAND AND GRAVEL IN BEACH FILL AREA, AND (2) REMAINING MATERIAL OVER THE STRUCTURE TOE.
 - d. WITHIN BEACH FILL AREA, PLACE EXCAVATED BEACH SAND AT THE SURFACE, ABOVE SORTED GRAVEL MATERIAL, IN AREAS INDICATED ON THE DRAWINGS. REPLANT MARRAM GRASS IN THE SPRING OF 2018.
 - e. EXTEND EXISTING CULVERTS ALONG HIGHWAY THROUGH FILTER STONE LAYER AS SHOWN ON THE PROJECT DRAWINGS. EXTENSIONS TO BE 1000 CONCRETE PIPE THAT WILL BE FITTED OVER THE EXISTING PVC OR CORRUGATED STEEL PIPES.
 - f. BUILD NEW TIMBER BOARDWALK AND STAIRWAYS EXTENDING FROM THE EXISTING VISITOR ACCESS POINT TO THE BEACH AFTER REMOVING EXISTING END PLATFORM, AS SHOWN ON DRAWINGS.
2. THE CONTRACTOR IS RESPONSIBLE TO VISIT THE SITE AND TO BE FAMILIAR WITH THE EXISTING CONDITIONS PRIOR TO COMMENCING WORK. THE CONTRACTOR IS REQUIRED TO INFORM THE DEPARTMENTAL REPRESENTATIVE IN WRITING OF ANY DISCREPANCIES BETWEEN THE EXISTING CONDITIONS AND THE DRAWINGS, PRIOR TO COMMENCING WORK.
 3. VEGETATED AREAS NORTHEAST OF EXISTING BOARDWALK AND WITHIN TIDAL LAGOON AS INDICATED ARE NOT TO BE DISTURBED.
 4. IF REQUIRED TO PROVIDE A BASE FOR NEW WORK, RESHAPE, SORT, STOCKPILE, AND RE-USE EXISTING ROCK AS REQUIRED TO PLACE NEW ARMOUR STONE.
 5. REMOVE AND DISPOSE OF LOOSE STEEL SHEET PILE AND TIE-RODS. SEE DRAWINGS M5 AND M6 FOR LOCATION.



O	ISSUED FOR TENDER	25 OCT 2017
D	ISSUED FOR 100% REVIEW	30 AUG 2017
C	ISSUED FOR 99% REVIEW	06 JUL 2017
B	RE-ISSUED FOR 66% REVIEW	13 JUN 2017
A	ISSUED FOR 66% REVIEW	17 MAY 2017

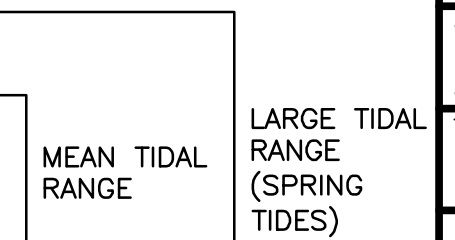
project **SHORELINE PROTECTION WORKS**
FUNDY NATIONAL PARK ALMA, NB

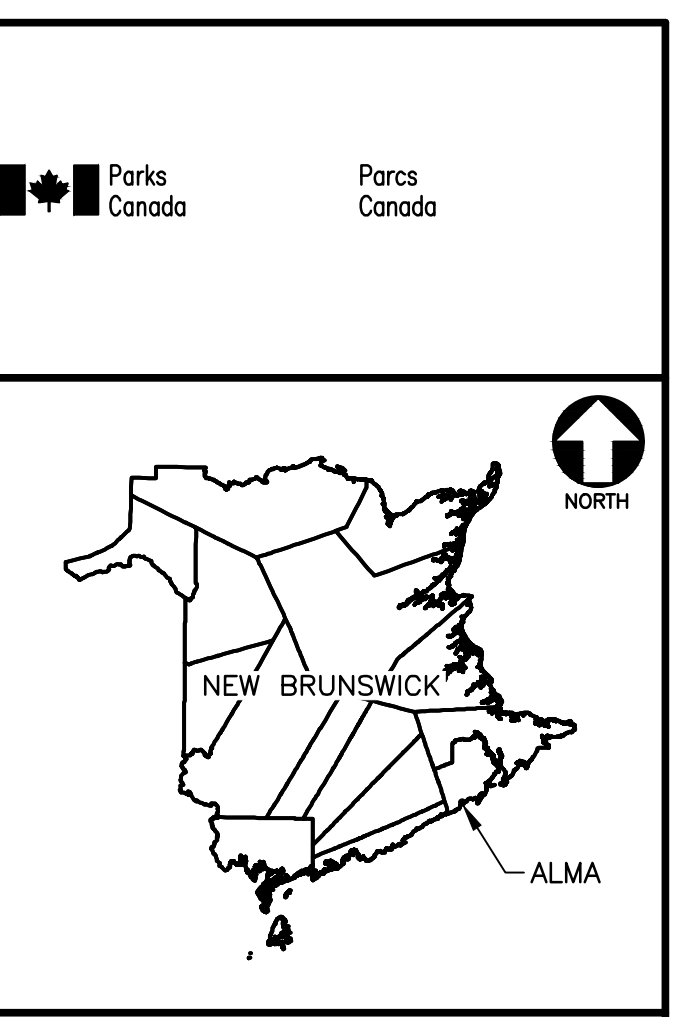
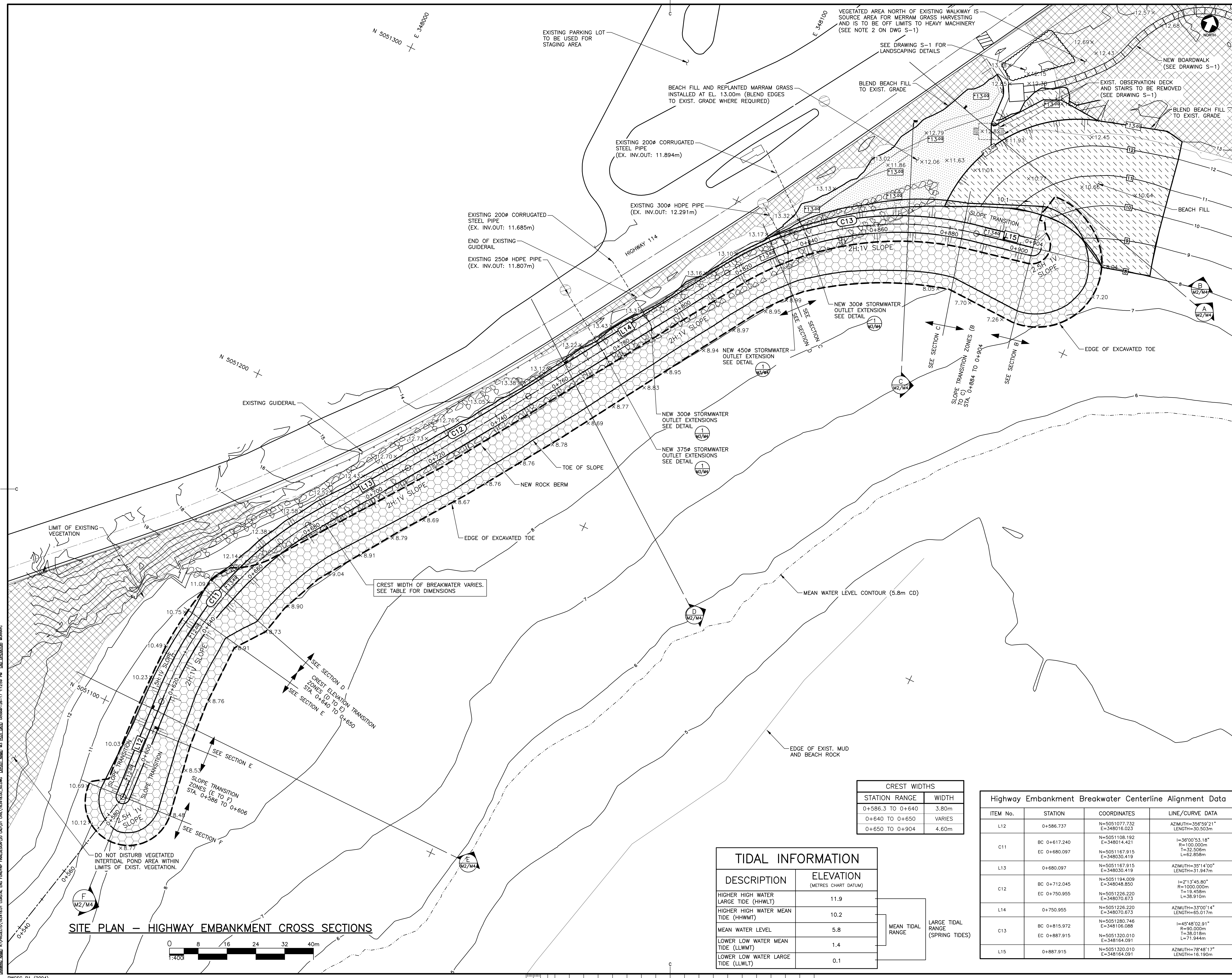
drawing **PROPOSED OVERALL SHORE PROTECTION PLAN**

designed	V. LEYS	conçu
date	OCT. 2017	
drawn	J.R./C.M./M.E.C.	dessiné
date	OCT. 2017	
approved	<i>Vincent M.R. Leys</i>	approuvé
date	OCT. 2017	
Tender	<i>Compelt</i>	Submission
Parks Canada Project Manager	<i>Adriana Chelcu</i>	Administrateur de projets Parcs Canada
project number	1346	no. du projet
drawing no.	M2	no. du dessin

TIDAL INFORMATION

DESCRIPTION	ELEVATION (METRES CHART DATUM)
HIGHER HIGH WATER LARGE TIDE (HHWLT)	11.9
HIGHER HIGH WATER MEAN TIDE (HHWMT)	10.2
MEAN WATER LEVEL (SPRING TIDES)	5.8
LOWER LOW WATER MEAN TIDE (LLWMT)	1.4
LOWER LOW WATER LARGE TIDE (LLWLT)	0.1





CBCL LIMITED
Consulting Engineers

GEMTEC EASTERN JV

LEGEND

[Symbol]	EXISTING VEGETATION
[Symbol]	EXISTING ARMOUR STONE
[Symbol]	BEACH SORTED SAND FILL AREA (PR.)
[Symbol]	BEACH FILL AND REPLANTED MARRAM GRASS (PR.)
[Symbol]	EDGE OF EXCAVATED TOE
[Symbol]	NEW ARMOUR STONE (PR.)

STATION	GRADING
0+575 TO 0+640	1.5 - 3T
0+640 TO 0+918	3 - 5T

x 13.00 EXIST. SPOT ELEVATION
T 13.00 PROP. SPOT ELEVATION

GENERAL NOTES:
SEE DRAWING M2 FOR GENERAL NOTES.

NOTES:
1. EXISTING ARMOUR STONE ALONG HIGHWAY EMBANKMENT IS TO REMAIN IN PLACE WHERE POSSIBLE AND BE INTEGRATED WITHIN NEW WORKS AS FILTER STONE TO SUPPORT NEW ARMOUR STONE LAYERS, PROVIDED IT MEETS FILTER STONE SPECIFICATIONS. RESHAPE AND RE-USE EXISTING ARMOUR STONE AS REQUIRED TO PLACE NEW ARMOUR STONE.



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D	ISSUED FOR 100% REVIEW	30 AUG 2017
C	ISSUED FOR 99% REVIEW	06 JUL 2017
B	RE-ISSUED FOR 66% REVIEW	13 JUN 2017
A	ISSUED FOR 66% REVIEW	17 MAY 2017

project **SHORELINE PROTECTION WORKS**
FUNDY NATIONAL PARK
ALMA, NB

drawing **PROPOSED HIGHWAY EMBANKMENT SHORE PROTECTION PLAN**

designed V. LEYS
date OCT. 2017
drawn J.R./C.M./M.E.C.
date OCT. 2017
approved [Signature]
date OCT. 2017
Tender [Signature] Submission
Parks Canada Project Manager Administrateur de projets Parcs Canada
project number **1346**
drawing no. **M3**

CREST WIDTHS

STATION RANGE	WIDTH
0+586.3 TO 0+640	3.80m
0+640 TO 0+650	VARIES
0+650 TO 0+904	4.60m

Highway Embankment Breakwater Centerline Alignment Data

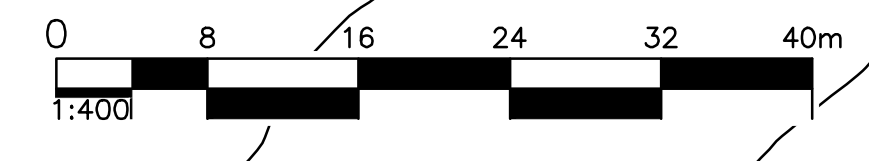
ITEM No.	STATION	COORDINATES	LINE/CURVE DATA
L12	0+586.737	N=5051077.732 E=348016.023	AZIMUTH=356°59'21" LENGTH=30.503m
C11	BC 0+617.240	N=5051108.192 E=348014.421	I=36°00'53.18" R=100.000m T=26.500m L=62.858m
	EC 0+680.097	N=5051167.915 E=348030.419	
L13	0+680.097	N=5051167.915 E=348030.419	AZIMUTH=351°4'00" LENGTH=31.947m
	BC 0+712.045	N=5051194.009 E=348048.850	I=2°13'45.80" R=1000.000m T=19.458m L=38.910m
C12	EC 0+750.955	N=5051226.220 E=348070.673	
	0+750.955	N=5051226.220 E=348070.673	AZIMUTH=33°00'14" LENGTH=65.017m
C12	BC 0+815.972	N=5051280.748 E=348106.088	I=45°48'02.91" R=90.000m T=38.018m L=71.944m
	EC 0+887.915	N=5051320.010 E=348164.091	
L15	0+887.915	N=5051320.010 E=348164.091	AZIMUTH=78°48'17" LENGTH=16.190m

TIDAL INFORMATION

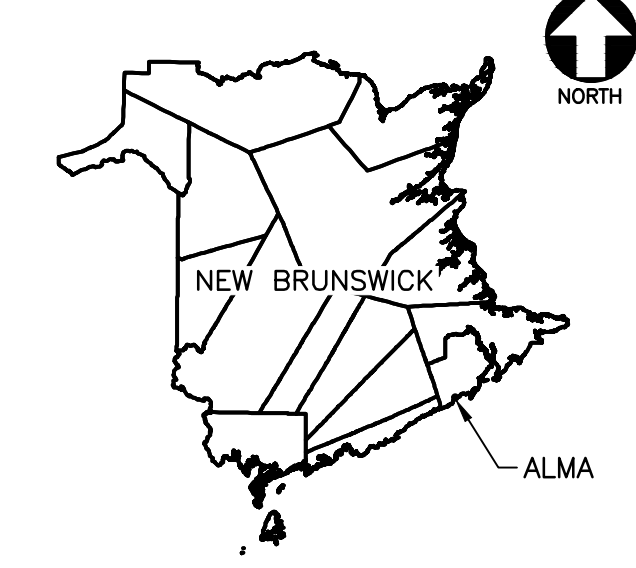
DESCRIPTION	ELEVATION (METRES CHART DATUM)
HIGHER HIGH WATER LARGE TIDE (HHWLT)	11.9
HIGHER HIGH WATER MEAN TIDE (HHWMT)	10.2
MEAN WATER LEVEL	5.8
LOWER LOW WATER MEAN TIDE (LLWMT)	1.4
LOWER LOW WATER LARGE TIDE (LLWLT)	0.1

MEAN TIDAL RANGE: LARGE TIDAL RANGE (SPRING TIDES)

SITE PLAN - HIGHWAY EMBANKMENT CROSS SECTIONS



DRAWING NAME: N:\PROJECTS\1346\1346_01\1346_01_01\1346_01_01_01.dwg DATE: 2017-10-25 11:28:58 AM USER: JLEYS



- LEGEND**
- SORTED SAND BEACH FILL (PR.)
 - SORTED GRAVEL FILL (PR.)
 - CORE STONE (PR.)
 - 200-600KG FILTER STONE (PR.)
 - NEW ARMOUR STONE (PR.)
 - GEOGRID COMPOSITE
 - EXIST. GRADE

GENERAL NOTES:
SEE DRAWING M2 FOR GENERAL NOTES.

- NOTES:**
1. PLACE THE EXCAVATED AND SORTED BEACH MATERIAL WITHIN THE FOLLOWING AREAS, IN ORDER OF PRIORITY:
1.1. SAND AND GRAVEL IN BEACH FILL AREA, AND
1.2. REMAINING MATERIAL OVER THE STRUCTURE TOE AFTER COMPLETION.
 2. EXISTING ARMOUR STONE ALONG HIGHWAY EMBANKMENT IS TO REMAIN IN PLACE WHERE POSSIBLE AND BE INTEGRATED WITHIN NEW WORKS AS FILTER STONE TO SUPPORT NEW ARMOUR STONE LAYERS, PROVIDED IT MEETS FILTER STONE SPECIFICATIONS. RESHAPE AND RE-USE EXISTING ARMOUR STONE AS REQUIRED TO PLACE NEW ARMOUR STONE.
 3. DO NOT PLACE GEOGRID COMPOSITE OVER EXISTING ARMOUR STONE OR OVER NEW FILTER STONE AND START GEOGRID COMPOSITE PLACEMENT SEAWARD OF EXISTING ARMOUR STONE.
 4. PLACE GEOTEXTILE ONLY AT FOLLOWING LOCATIONS: BACKFACE OF BREAKWATER UNDER NEW BEACH FILL, AND NEW CULVERT EXTENSIONS AS SHOWN.

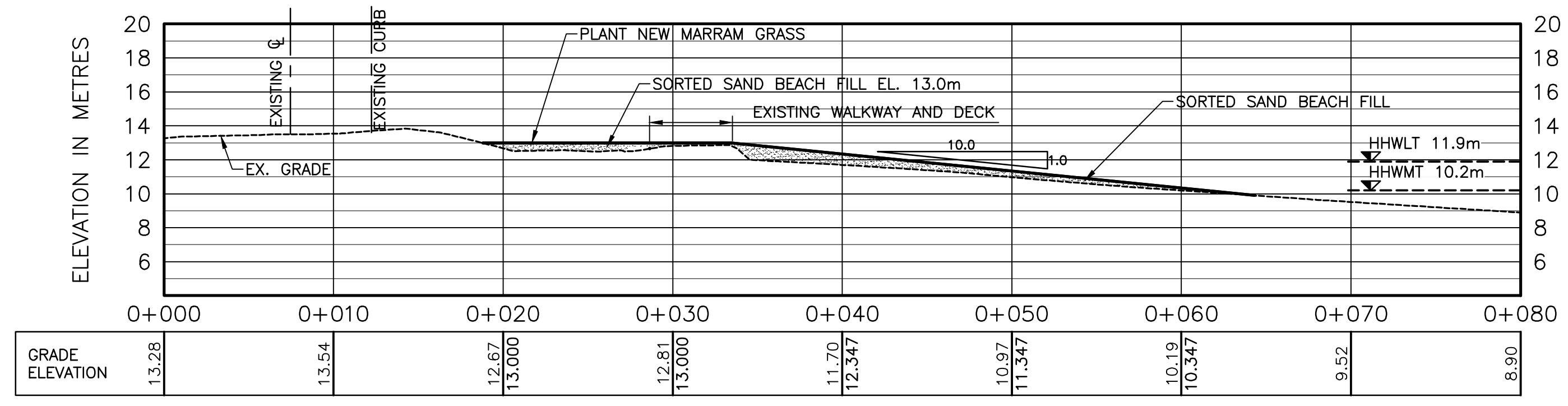
revisions	date
O	ISSUED FOR TENDER 25 OCT 2017
D	ISSUED FOR 100% REVIEW 30 AUG 2017
C	ISSUED FOR 99% REVIEW 06 JUL 2017
B	RE-ISSUED FOR 66% REVIEW 13 JUN 2017
A	ISSUED FOR 66% REVIEW 17 MAY 2017

SHORELINE PROTECTION WORKS

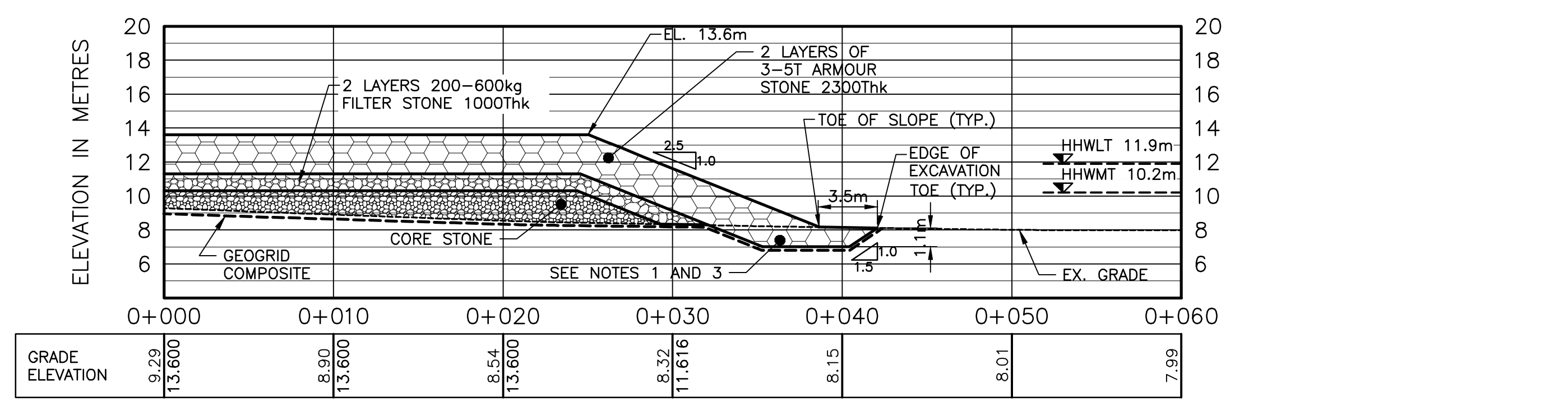
FUNDY NATIONAL PARK ALMA, NB

PROPOSED HIGHWAY EMBANKMENT CROSS SECTIONS

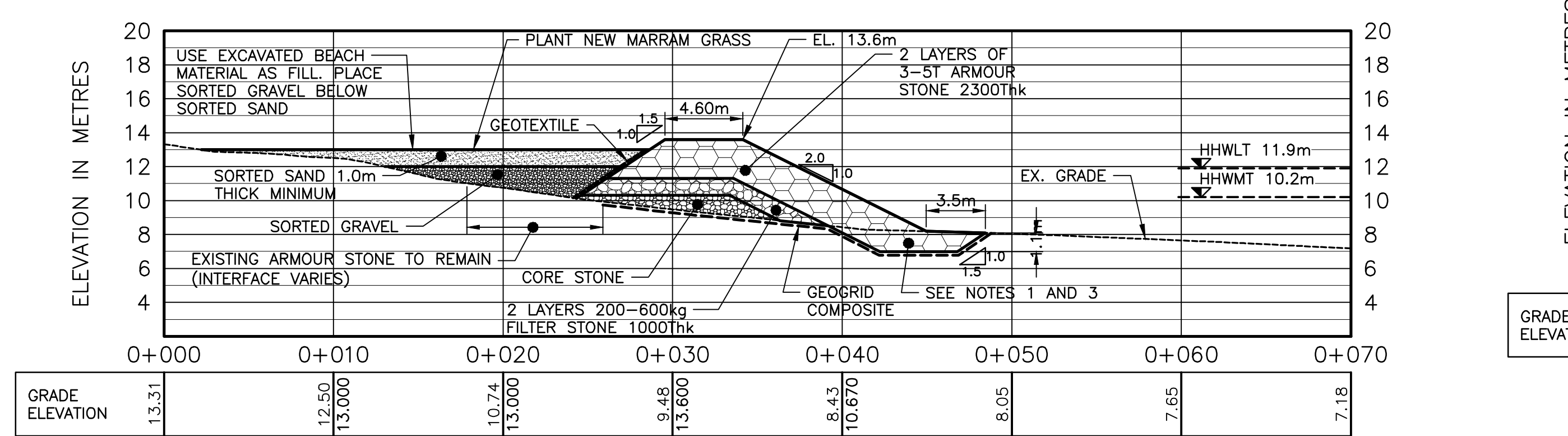
designed V. LEYS conçu
 date OCT. 2017 date
 drawn J.R./C.M./M.E.C. dessiné
 date OCT. 2017 date
 approved *[Signature]* approuvé
 date OCT. 2017 date
 Tender Submission Tendressement
 date OCT. 2017 date
 Parks Canada Project Manager Administrateur de projets Parcs Canada
 project number 1346 no. du projet
 drawing no. M4 no. du dessin



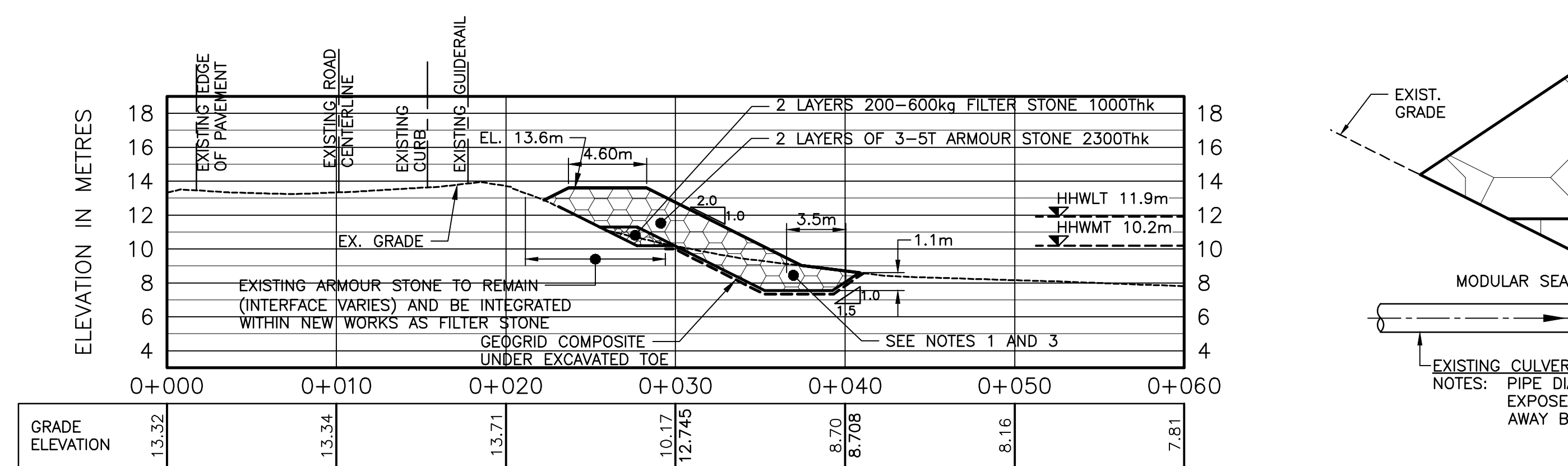
A SECTION
M2/M4 1:250 [H] 1:250 [V]



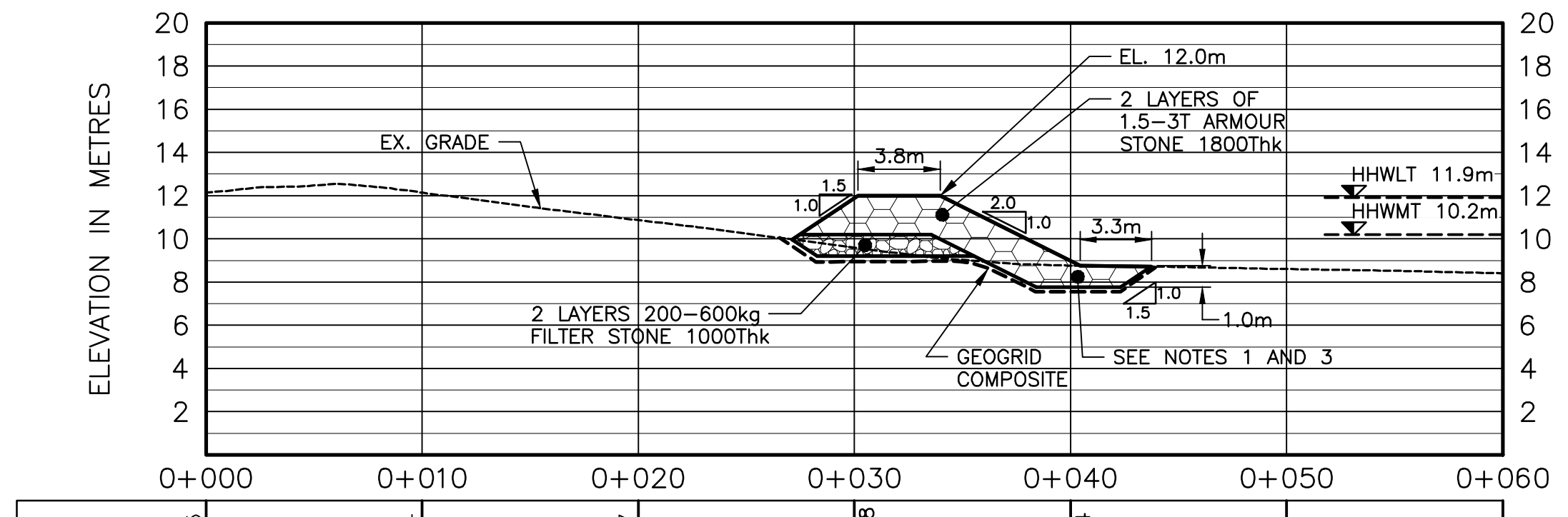
B SECTION
M2/M4 1:250 [H] 1:250 [V]



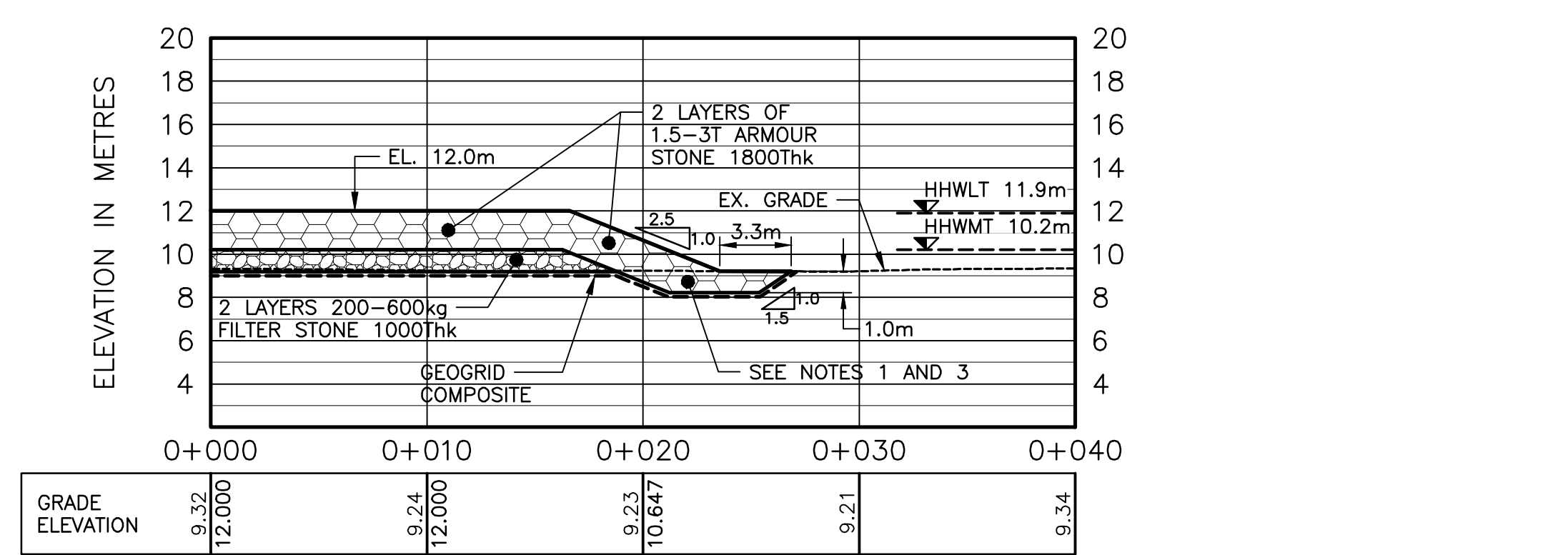
C SECTION
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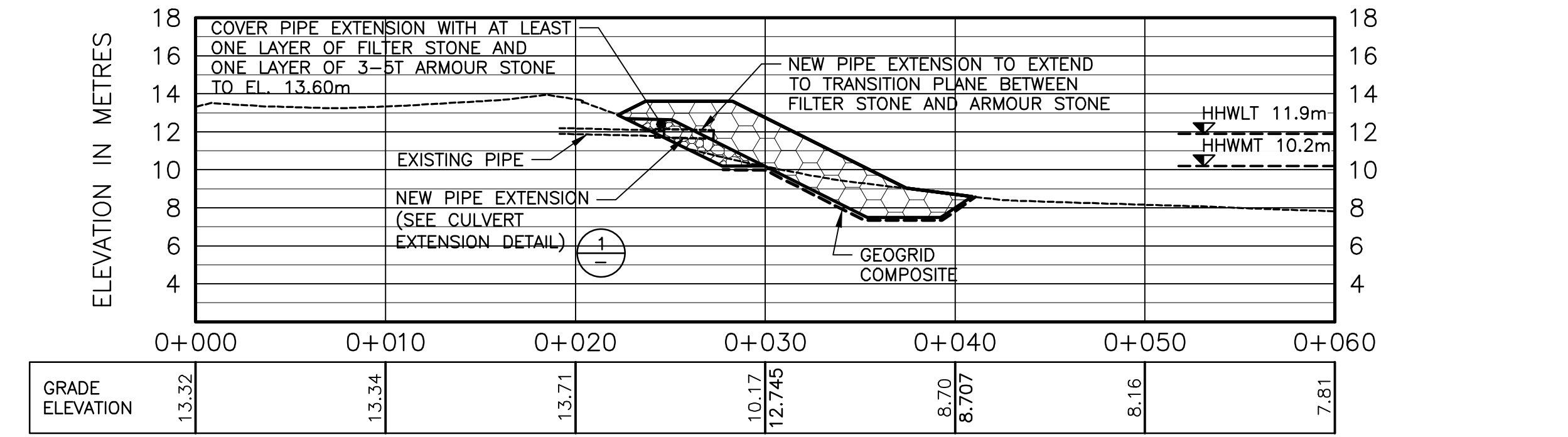
D SECTION
M2/M4 1:250 [H] 1:250 [V]



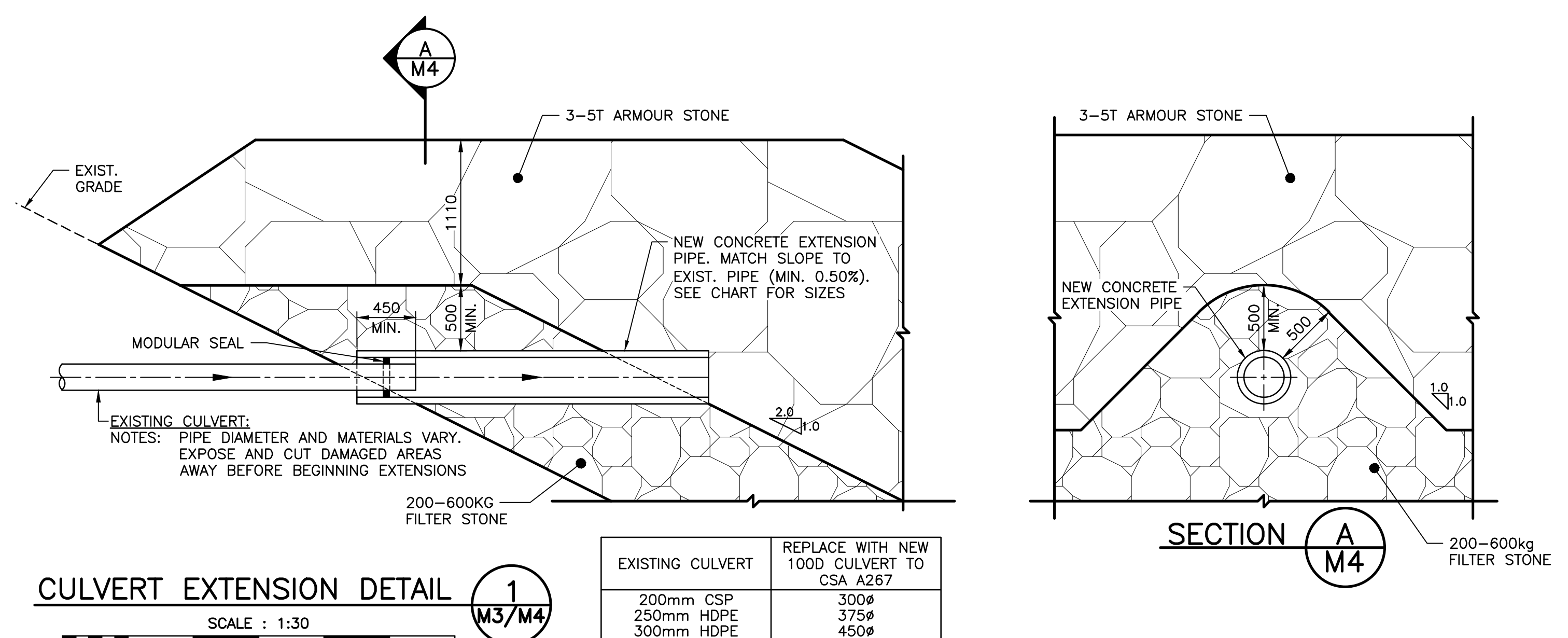
E SECTION
M2/M4 1:250 [H] 1:250 [V]



F SECTION
M2/M4 1:250 [H] 1:250 [V]



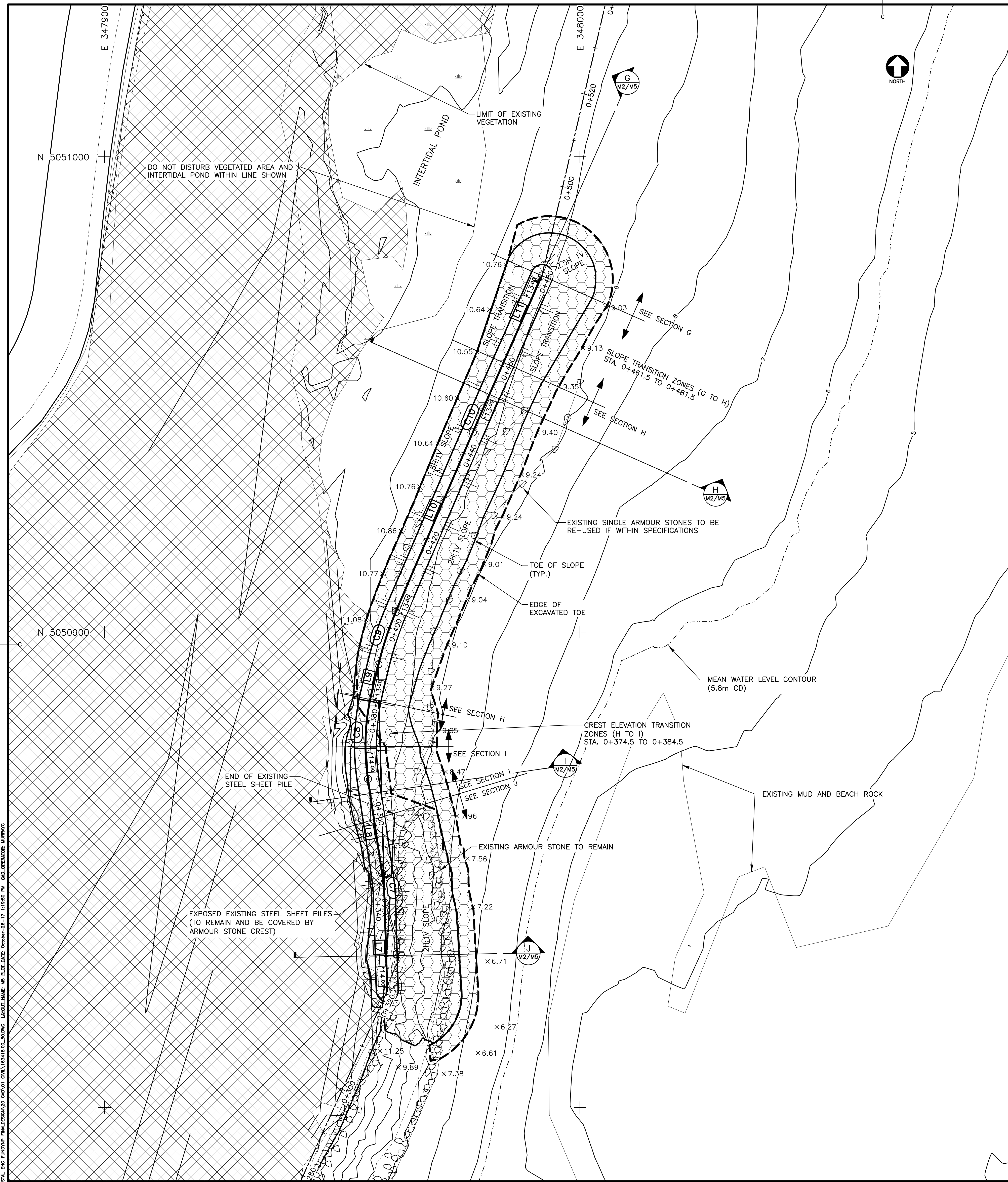
TYPICAL SECTION - STORMWATER OUTLET EXTENSION
1:250 [H] 1:250 [V]



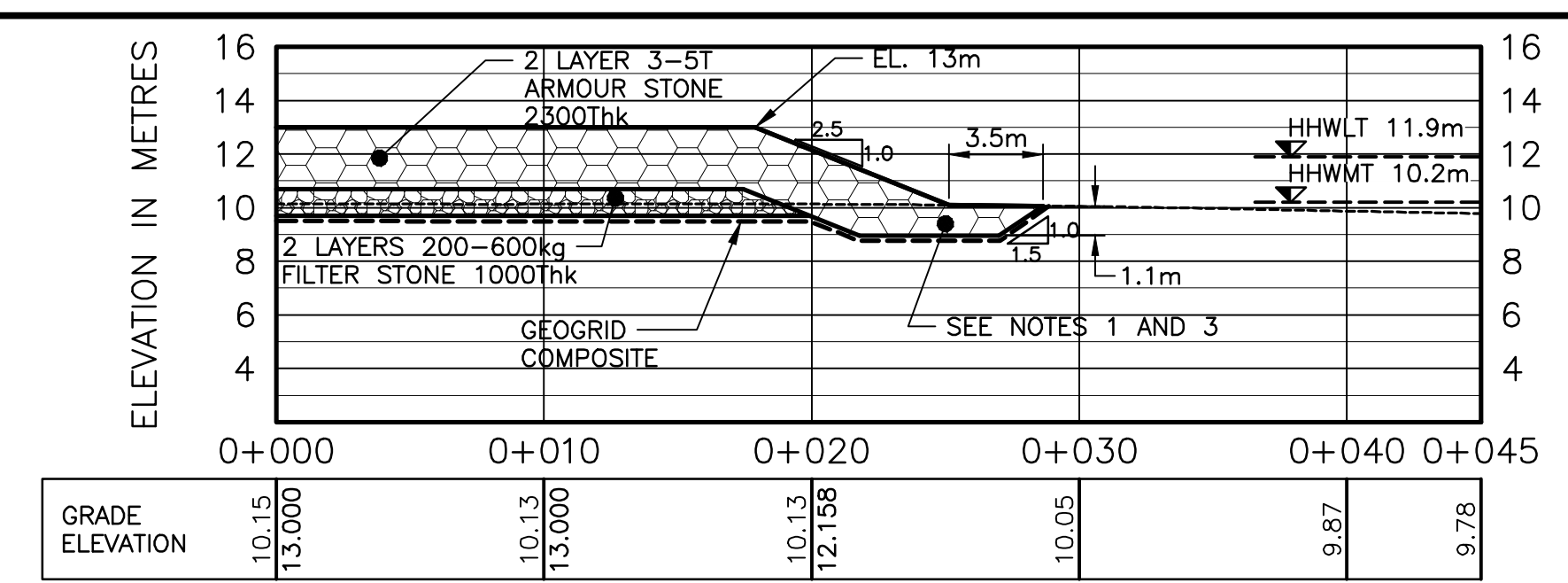
CULVERT EXTENSION DETAIL
SCALE: 1:30 M3/M4

EXISTING CULVERT	REPLACE WITH NEW 1000 CULVERT TO CSA A267
200mm CSP	300#
250mm HDPE	375#
300mm HDPE	450#

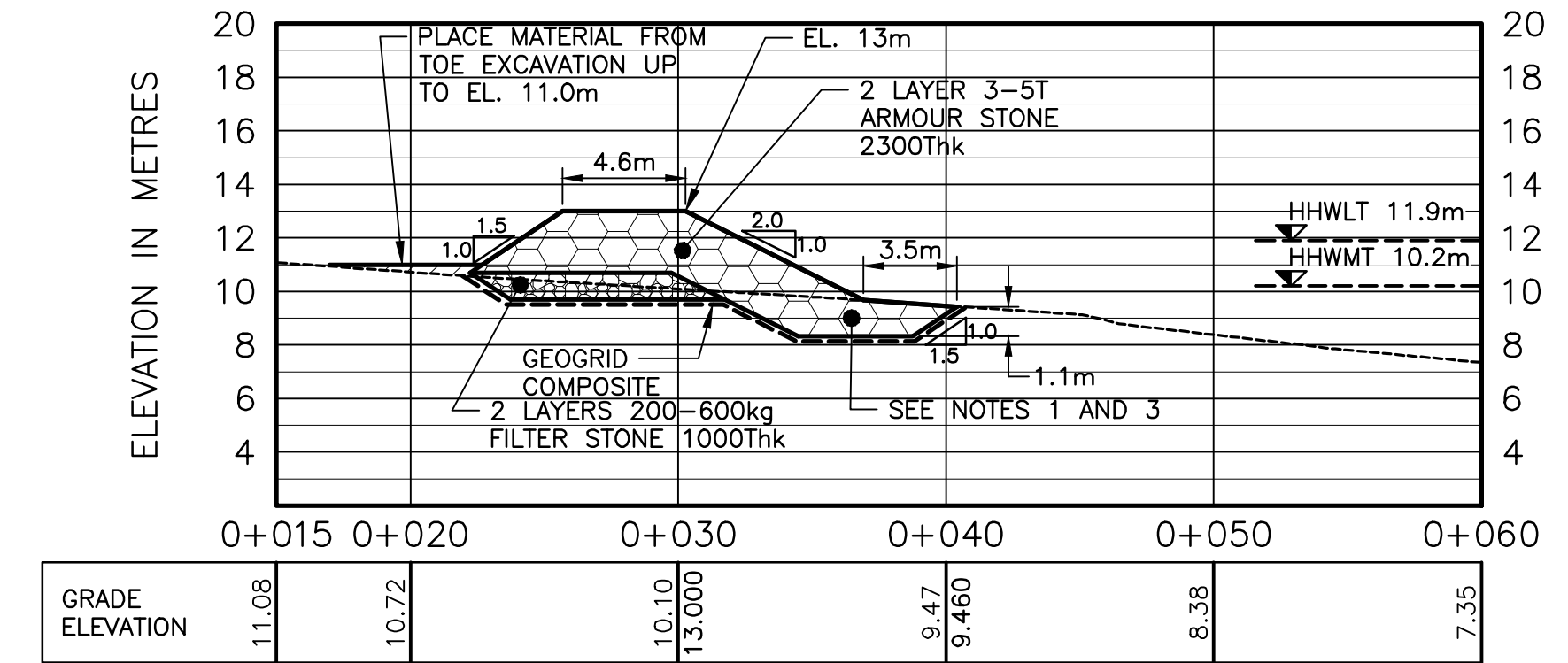
DRAWING NAME: PROJECTS/ALMA/01 - SHORELINE PROTECTION WORKS - FUNDY NATIONAL PARK - ALMA, NB. DATE: 25 OCT 2017. 11:48 AM. 2017.08.25.17.11:48 PM. CAD: BRENDA MARRAS. DATE: 25 OCT 2017.



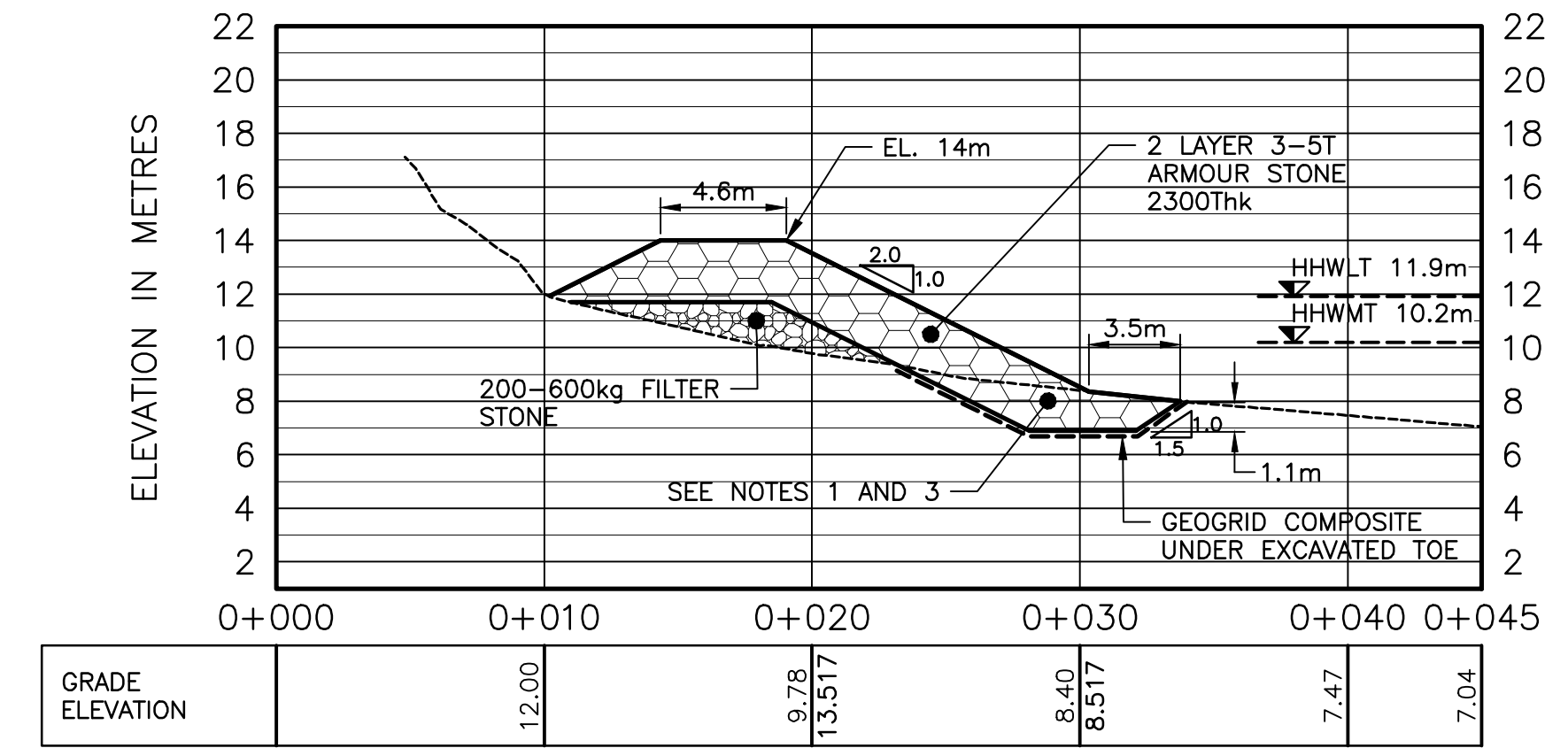
SITE PLAN – SOUTH LAGOON SHORE PROTECTION



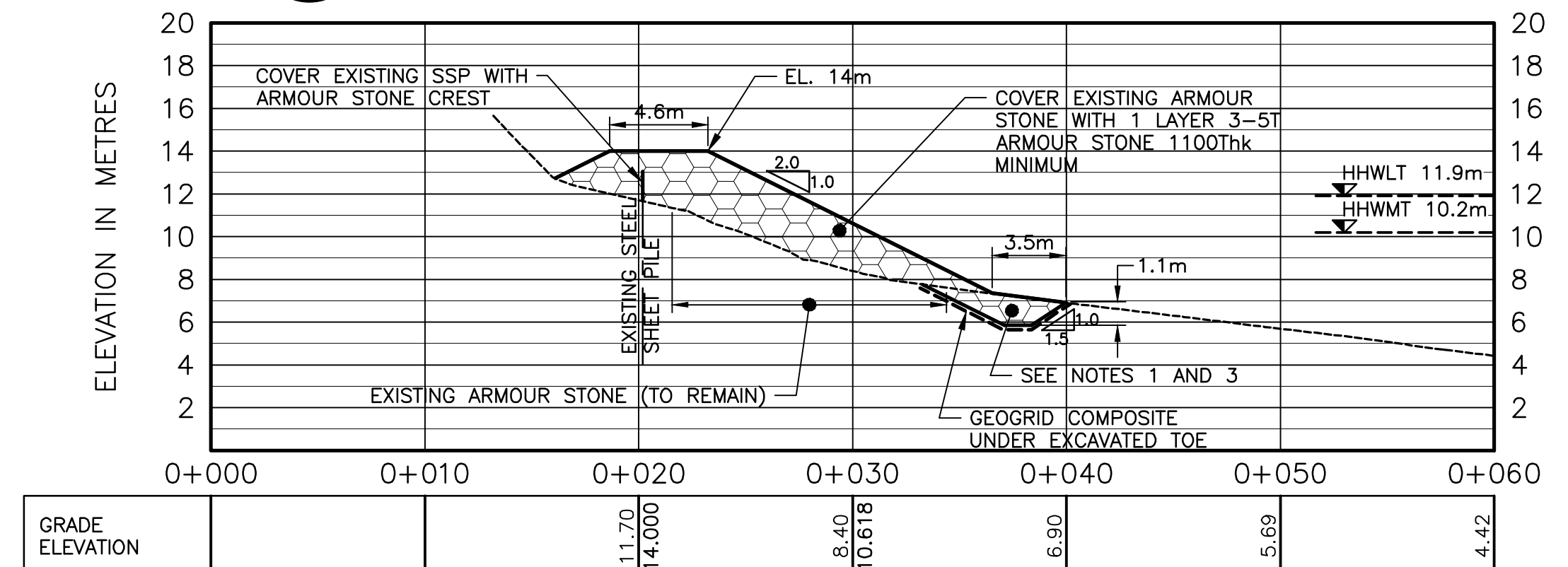
SECTION G
M2/M5 1:250 [H] 1:250 [V]



SECTION H
M2/M5 1:250 [H] 1:250 [V]



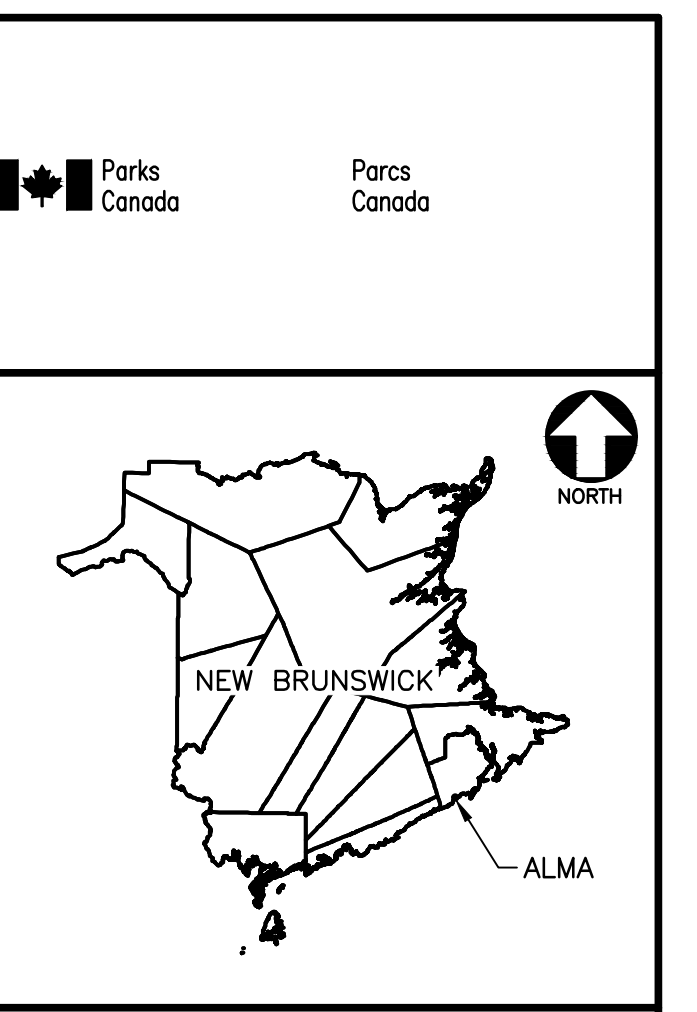
SECTION I
M2/M5 1:250 [H] 1:250 [V]



SECTION J
M2/M5 1:250 [H] 1:250 [V]

South Lagoon Breakwater Centerline Alignment Data

ITEM No.	STATION	COORDINATES	LINE/CURVE DATA
L7	0+323.207	N=5050824.526 E=347959.465	AZIMUTH=358°21'06" LENGTH=18.537m
C7	BC 0+341.744	N=5050843.055 E=347958.932	I=6°53'07.45" R=52.300m T=3.146m L=6.285m
	EC 0+348.029	N=5050849.311 E=347958.374	
L8	0+348.029	N=5050849.311 E=347958.374	AZIMUTH=351°22'58" LENGTH=20.021m
C8	BC 0+368.050	N=5050869.110 E=347955.403	I=21°54'57.82" R=47.700m T=9.236m L=18.246m
	EC 0+386.295	N=5050887.229 E=347956.171	
L9	0+386.295	N=5050887.229 E=347956.171	AZIMUTH=13°22'56" LENGTH=6.163m
C9	BC 0+392.458	N=5050893.224 E=347987.597	I=9°36'37.02" R=68.979m T=5.789m L=11.570m
	EC 0+404.028	N=5050904.203 E=347961.204	
L10	0+404.028	N=5050904.203 E=347961.204	AZIMUTH=27°14'18" LENGTH=41.140m
C10	BC 0+445.168	N=5050942.006 E=347977.436	I=0°37'35.08" R=501.750m T=2.743m L=4.866m
	EC 0+450.654	N=5050947.035 E=347979.628	
L11	0+450.654	N=5050947.035 E=347979.628	AZIMUTH=2°35'15.3" LENGTH=30.380m



- LEGEND (PLAN)**
- EXISTING VEGETATION
 - EXISTING ARMOUR STONE
 - NEW 3-5T ARMOUR STONE (PR.)
 - EDGE OF EXCAVATED TOE
- LEGEND (SECTIONS)**
- 200-600KG FILTER STONE (PR.)
 - NEW 3-5T ARMOUR STONE (PR.)
 - GEOGRID COMPOSITE
 - EXIST. GRADE
 - EXIST. SPOT ELEVATION
 - PROP. SPOT ELEVATION

GENERAL NOTES:
SEE DRAWING M2 FOR GENERAL NOTES.

- NOTES:**
- PLACE THE EXCAVATED AND SORTED BEACH MATERIAL WITHIN THE FOLLOWING AREAS, IN ORDER OF PRIORITY: 1.1 SAND AND GRAVEL IN BEACH FILL AREA, AND
 2. REMAINING MATERIAL OVER THE STRUCTURE TOE AFTER COMPLETION.
 - EXISTING ARMOUR STONE IS TO REMAIN WHERE POSSIBLE AND BE INTEGRATED WITHIN NEW WORKS.
 - DO NOT PLACE GEOGRID COMPOSITE OVER EXISTING ARMOUR STONE AND START GEOGRID COMPOSITE PLACEMENT SEAWARD OF EXISTING ARMOURSTONE.

O	ISSUED FOR TENDER	25 OCT 2017
D	ISSUED FOR 100% REVIEW	30 AUG 2017
C	ISSUED FOR 99% REVIEW	06 JUL 2017
B	RE-ISSUED FOR 66% REVIEW	13 JUN 2017
A	ISSUED FOR 66% REVIEW	17 MAY 2017

revisions: _____ date: _____

project: **SHORELINE PROTECTION WORKS** project

FUNDY NATIONAL PARK ALMA, NB

drawing: _____ design

PROPOSED SOUTH LAGOON SHORE PROTECTION PLAN AND SECTIONS

designed by: V. LEYS conq

date: OCT. 2017

drawn by: J.R./C.M./M.E.C. dessin

date: OCT. 2017

approved by: *Vincent M.R. Leys* approuv

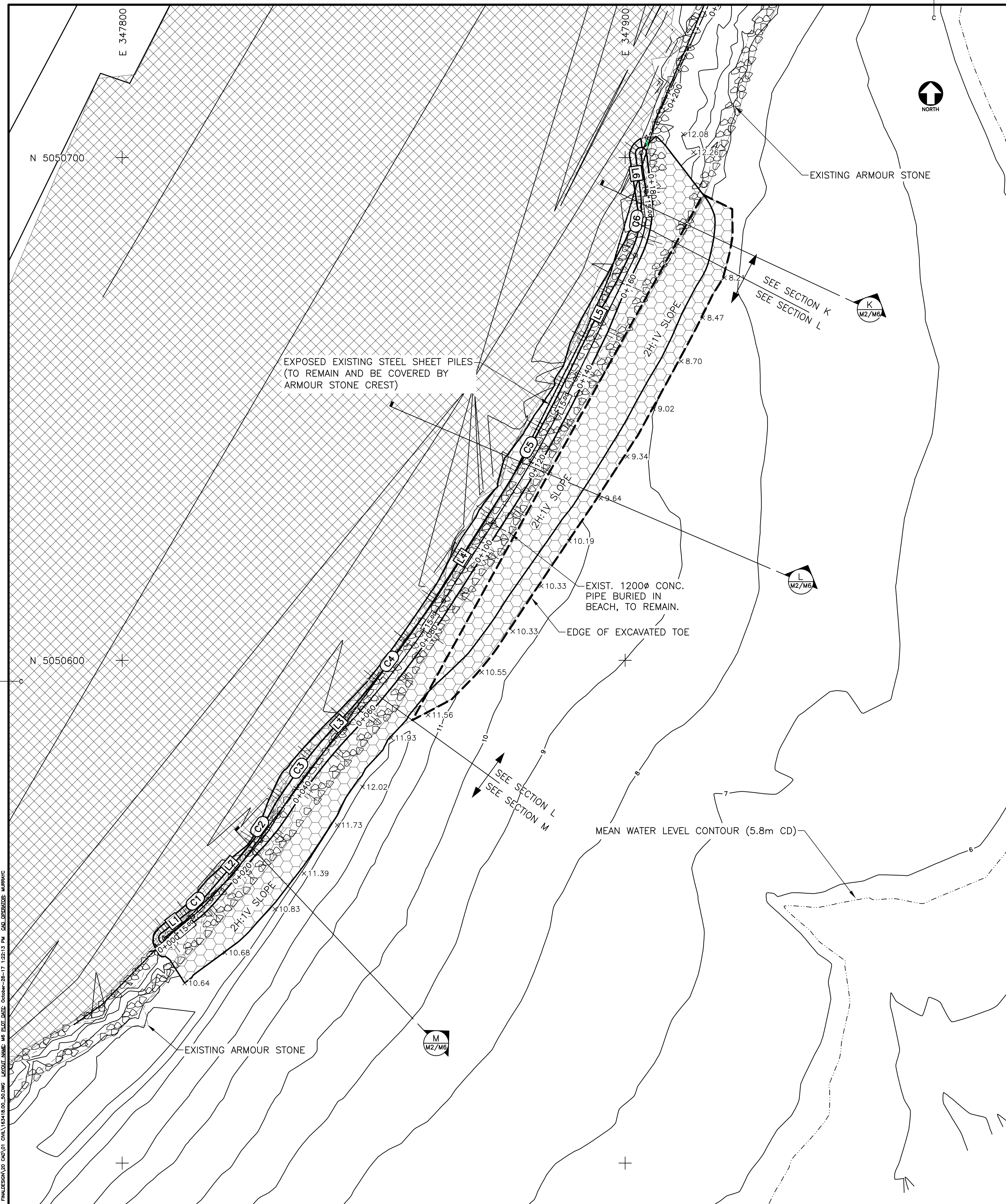
date: OCT. 2017

Tender: _____ Submission

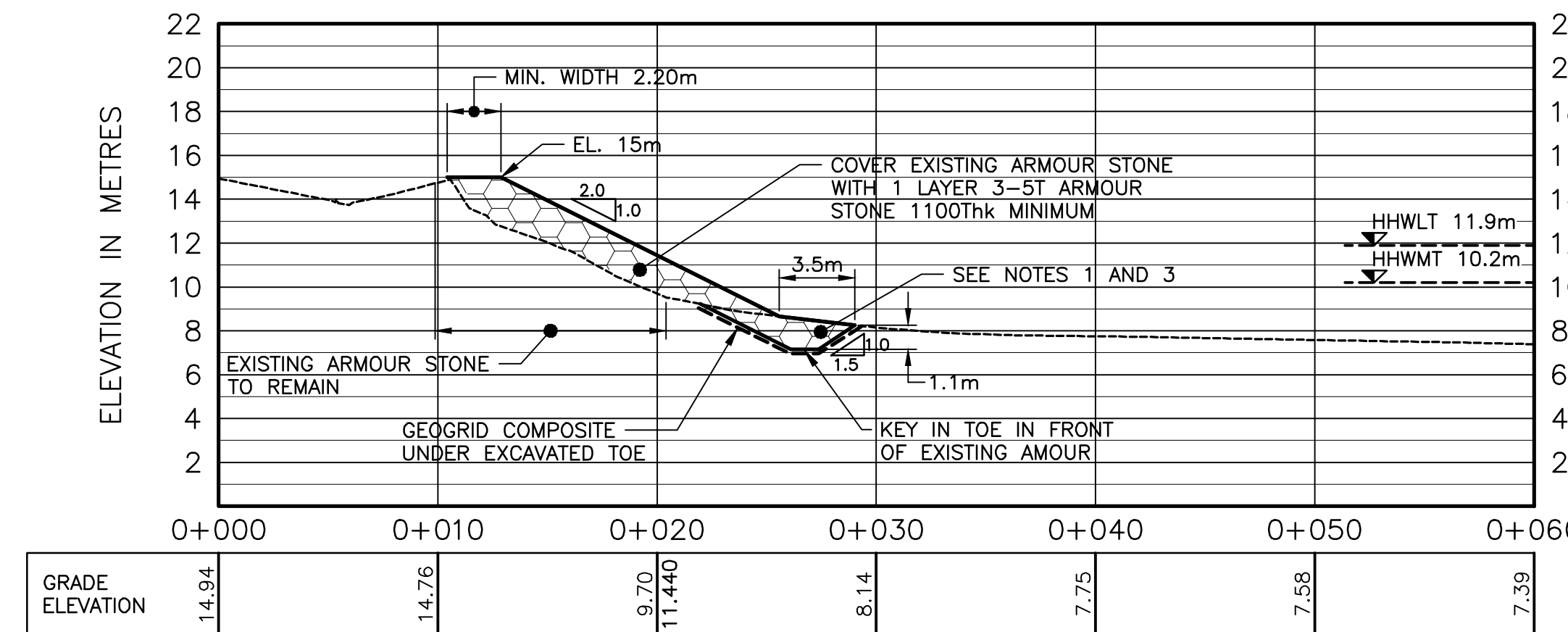
Project Manager: J.R./C.M./M.E.C. Administrateur de projet: J.R./C.M./M.E.C.

project number: **1346** no. du projet

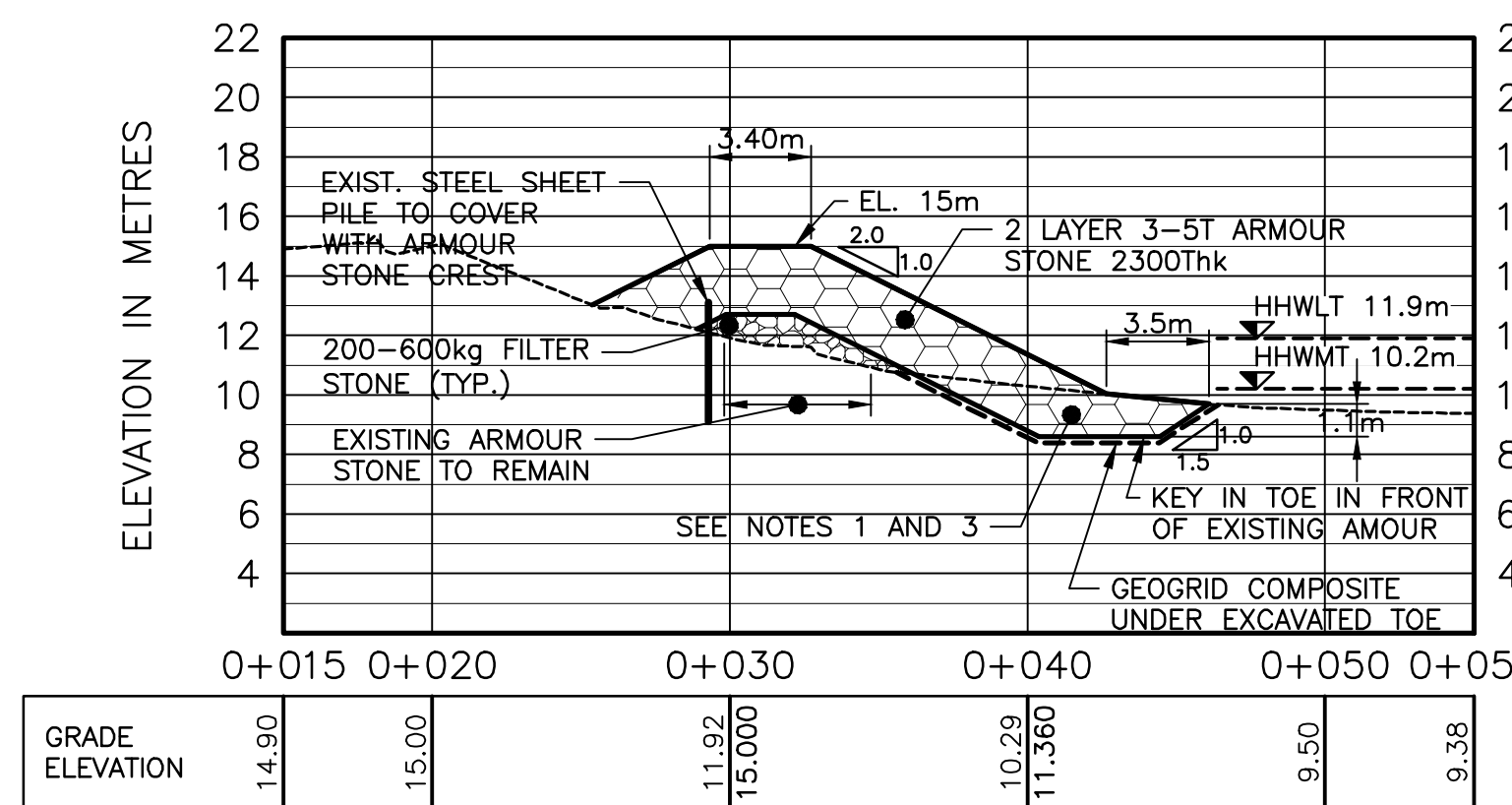
drawing no.: **M5** no. du dessin



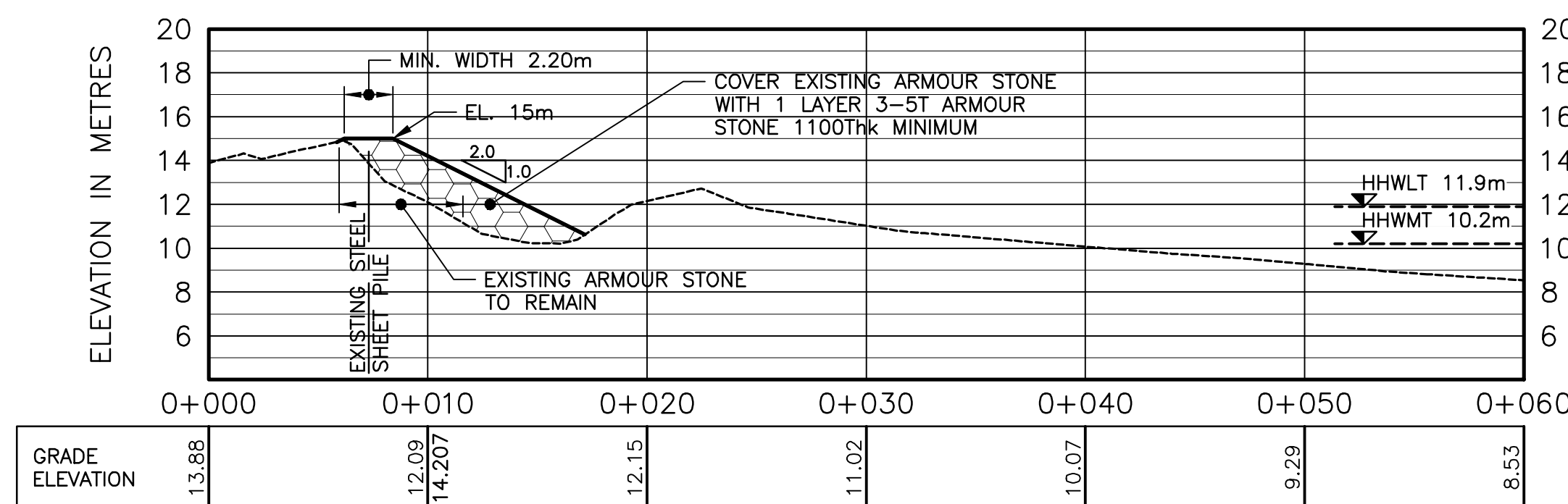
SITE PLAN – SOUTH CLIFF SHORE PROTECTION



K SECTION
1:250 [H] 1:250 [V]



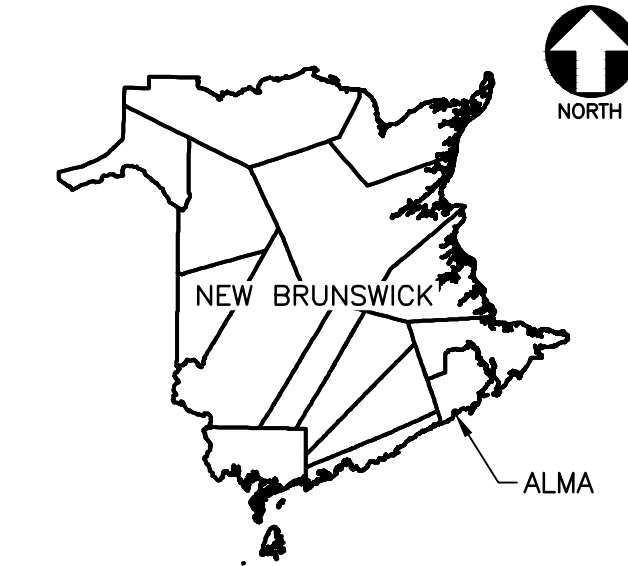
L SECTION
1:250 [H] 1:250 [V]



M SECTION
1:250 [H] 1:250 [V]

South Cliff Breakwater Centerline Alignment Data

ITEM No.	STATION	COORDINATES	LINE/CURVE DATA
L1	0+000.000	N=5050544.776 E=347898.384	AZIMUTH=52°18'12" LENGTH=7.022m
C1	BC 0+007.022	N=5050549.070 E=347813.919	I=11°35'30.25" R=25.000m
	EC 0+012.079	N=5050552.545 E=347817.583	T=2.538m L=5.058m
	0+012.079	N=5050552.545 E=347817.583	AZIMUTH=40°42'41" LENGTH=15.238m
C2	BC 0+027.318	N=5050564.096 E=347827.522	I=9°55'21.29" R=25.000m
	EC 0+031.647	N=5050567.605 E=347830.048	T=2.170m L=4.330m
	0+031.647	N=5050567.605 E=347830.048	I=12°16'24.93" R=110.000m
C3	BC 0+031.647	N=5050567.605 E=347830.048	I=12°16'24.93" R=110.000m
	EC 0+055.211	N=5050586.406 E=347844.178	T=11.827m L=23.564m
	0+055.211	N=5050586.406 E=347844.178	AZIMUTH=43°03'45" LENGTH=0.008m
C4	BC 0+055.218	N=5050586.412 E=347844.183	I=10°31'35.02" R=175.000m
	EC 0+087.370	N=5050611.781 E=347863.860	T=16.121m L=32.151m
	0+087.370	N=5050611.781 E=347863.860	AZIMUTH=32°32'10" LENGTH=18.654m
C5	BC 0+106.024	N=5050627.507 E=347873.893	I=7°32'23.14" R=248.235m
	EC 0+138.690	N=5050655.862 E=347890.066	T=16.357m L=32.666m
	0+138.690	N=5050655.862 E=347890.066	AZIMUTH=25°55'48" LENGTH=27.452m
C6	BC 0+166.142	N=5050680.550 E=347902.070	I=33°19'55.89" R=22.365m
	EC 0+179.153	N=5050693.211 E=347904.136	T=6.605m L=13.011m
	0+179.153	N=5050693.211 E=347904.136	AZIMUTH=35°23'52" LENGTH=7.717m



- LEGEND (PLAN)**
- EXISTING VEGETATION
 - EXISTING ARMOUR STONE
 - NEW 3-ST ARMOUR STONE (PR.)
 - EDGE OF EXCAVATED TOE
- LEGEND (SECTIONS)**
- 200-600KG FILTER STONE (PR.)
 - NEW 3-ST ARMOUR STONE (PR.)
 - GEOGRID COMPOSITE
 - EXIST. GRADE
 - ×13.00 EXIST. SPOT ELEVATION
 - PROP. SPOT ELEVATION

GENERAL NOTES:
SEE DRAWING M2 FOR GENERAL NOTES.

- NOTES:**
- PLACE THE EXCAVATED AND SORTED BEACH MATERIAL WITHIN THE FOLLOWING AREAS, IN ORDER OF PRIORITY:
1.1. SAND AND GRAVEL IN BEACH FILL AREA AND
1.2. REMAINING MATERIAL OVER THE STRUCTURE TOE AFTER COMPLETION.
 - EXISTING ARMOUR STONE IS TO REMAIN WHERE POSSIBLE AND BE INTEGRATED WITHIN NEW WORKS.
 - DO NOT PLACE GEOGRID COMPOSITE OVER EXISTING ARMOUR STONE AND START GEOGRID COMPOSITE PLACEMENT SEAWARD OF EXISTING ARMOURSTONE.

O	ISSUED FOR TENDER	25 OCT 2017
D	ISSUED FOR 100% REVIEW	30 AUG 2017
C	ISSUED FOR 99% REVIEW	06 JUL 2017
B	RE-ISSUED FOR 66% REVIEW	13 JUN 2017
A	ISSUED FOR 66% REVIEW	17 MAY 2017

revisions: date

project: **SHORELINE PROTECTION WORKS FUNDY NATIONAL PARK ALMA, NB**

drawing: design

PROPOSED SOUTH CLIFF SHORE PROTECTION PLAN AND SECTIONS

designed V. LEYS cong

date OCT. 2017

drawn J.R./C.M./M.E.C. dessiné

date OCT. 2017

approved *[Signature]* approuvé

date OCT. 2017

Tender *[Signature]* Submission

Parcs Canada Project Manager Administrateur de projets Parcs Canada

project number: 1346 no. du projet

drawing no.: M6 no. du dessin





GENERAL NOTES:
1. SEE DRAWING M2 FOR GENERAL NOTES.



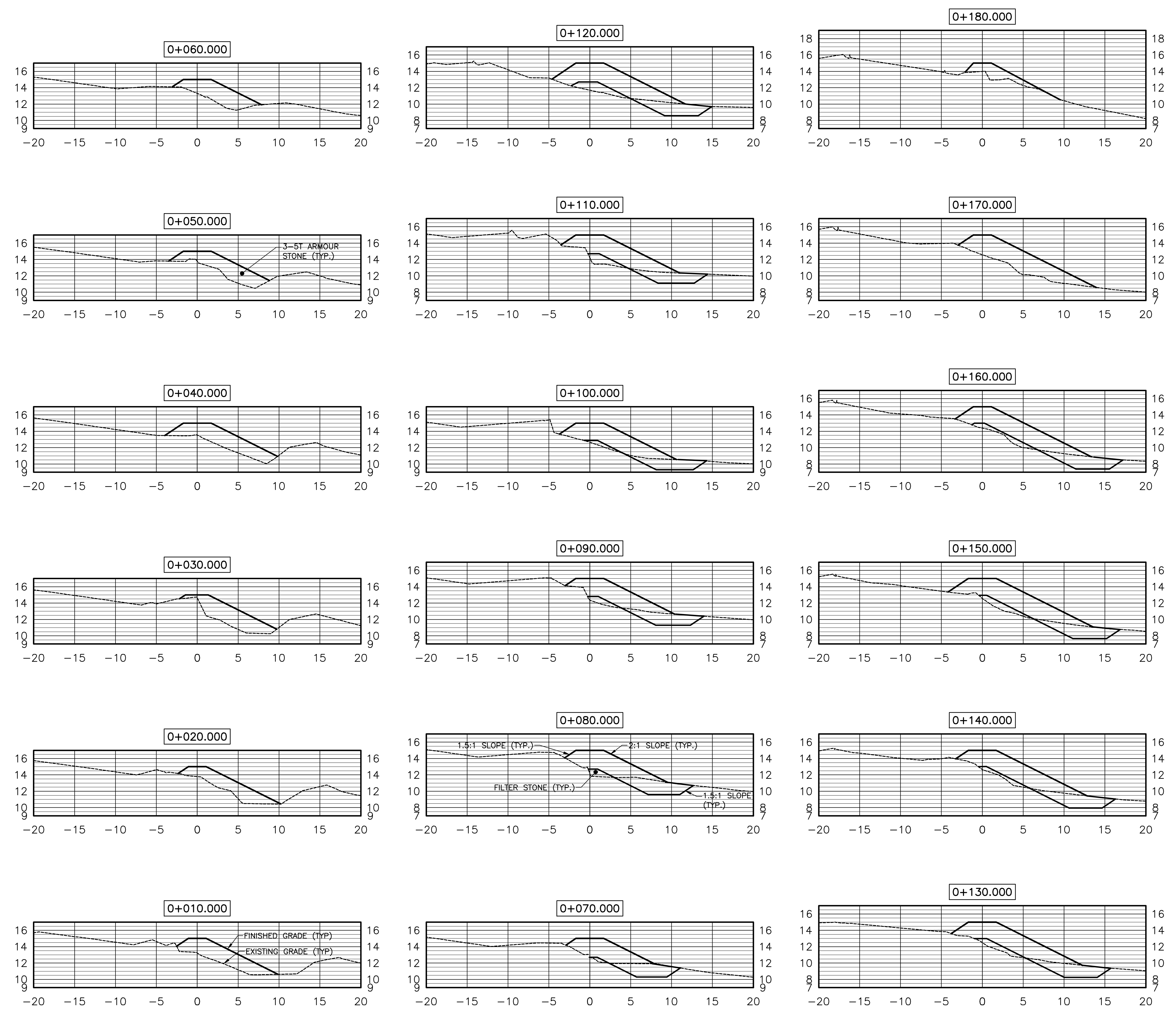
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0+010 TO 0+060	Drawing M6 - Section M
0+070 TO 0+170	Drawing M6 - Section L
0+180	Drawing M6 - Section K

revisions	date
O	ISSUED FOR TENDER 25 OCT 2017
D	ISSUED FOR 100% REVIEW 30 AUG 2017
C	ISSUED FOR 99% REVIEW 06 JUL 2017
B	RE-ISSUED FOR 66% REVIEW 13 JUN 2017
A	ISSUED FOR 66% REVIEW 17 MAY 2017

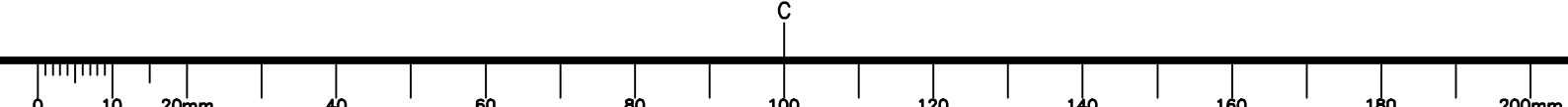
project SHORELINE PROTECTION WORKS
FUNDY NATIONAL PARK
ALMA, NB

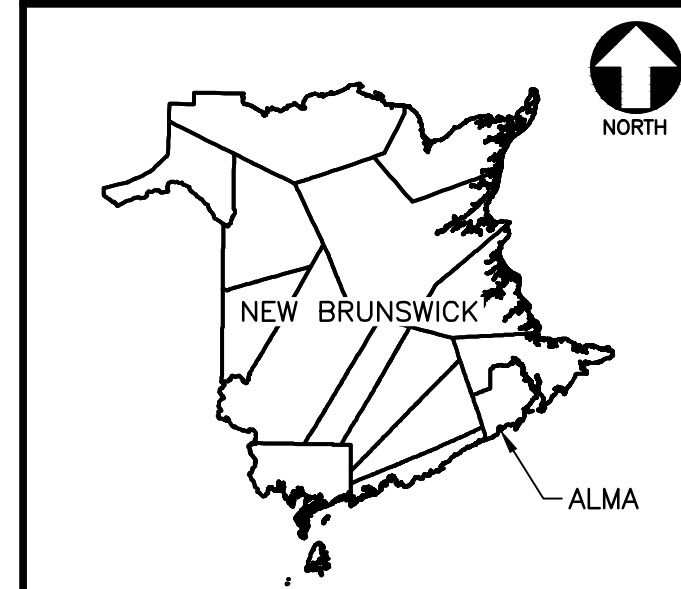
drawing SOUTH CLIFF SECTIONS
0+010 TO 0+180

designed V. LEYS	conçu
date OCT. 2017	
drawn J.R./C.M./M.E.C.	dessiné
date OCT. 2017	
approved <i>[Signature]</i>	approuvé
date OCT. 2017	
Tender <i>[Signature]</i>	Soumission
Parks Canada Project Manager	Administrateur de projets Parcs Canada
project number 1346	no. du projet
drawing no. M7	no. du dessin



DRAWING NAME: \\PROJECTS\1346\01_CROSSCLIFF.MXD; USER: JRM; DATE: 2017-10-25 11:20:13 AM; PLOT DATE: 2017-10-25 11:20:13 AM; PLOT SCALE: 1:1; PLOT SHEET: 1 OF 1; PLOT STATUS: OK





GENERAL NOTES:
1. SEE DRAWING M2 FOR GENERAL NOTES.



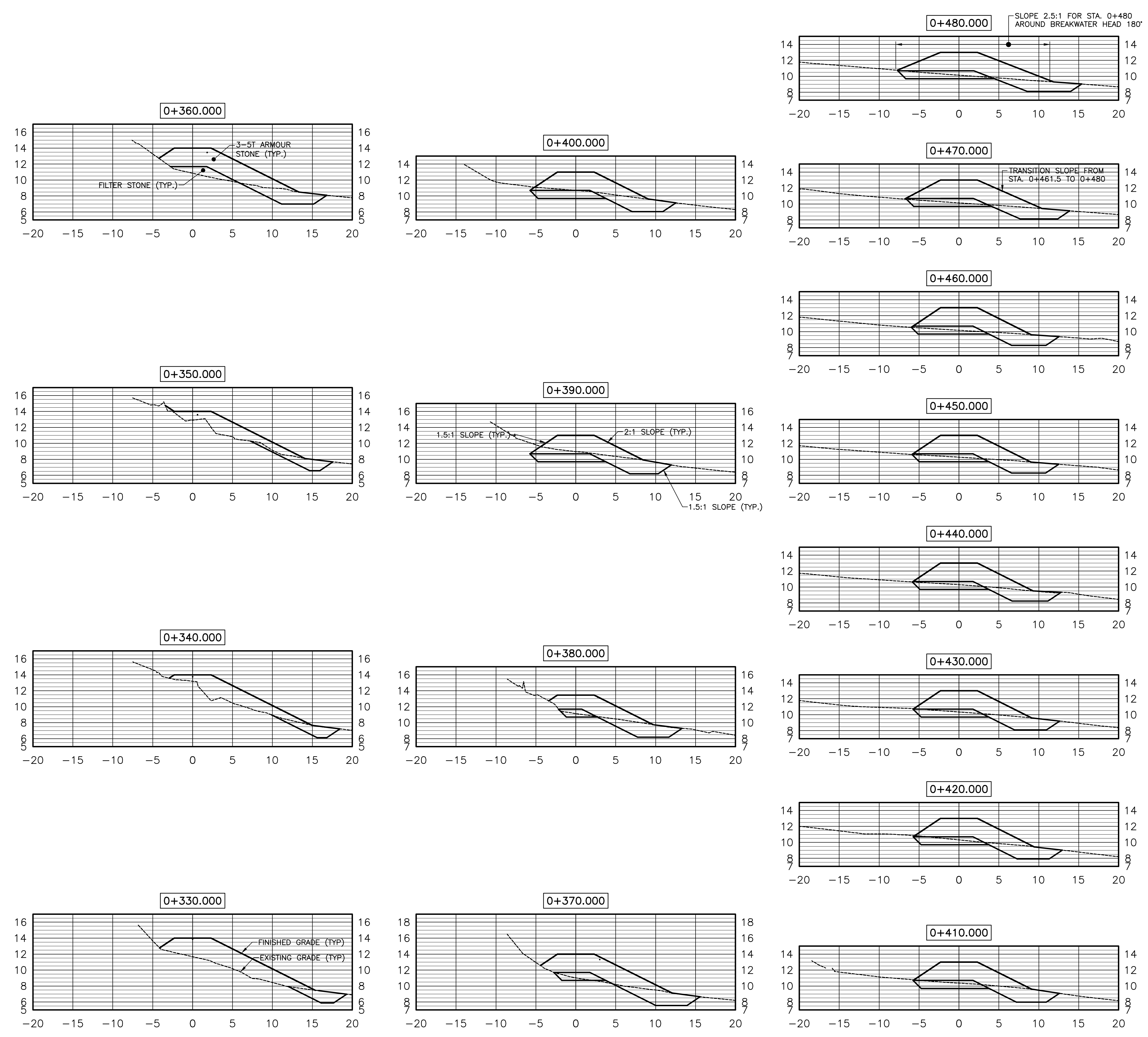
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0+330 TO 0+340	Drawing M5 - Section J
0+350 TO 0+360	Drawing M5 - Section I
0+370 TO 0+480	Drawing M5 - Sections H, G

revisions	date
O	ISSUED FOR TENDER 25 OCT 2017
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C	ISSUED FOR 99% REVIEW 06 JUL 2017
B	RE-ISSUED FOR 66% REVIEW 13 JUN 2017
A	ISSUED FOR 66% REVIEW 17 MAY 2017

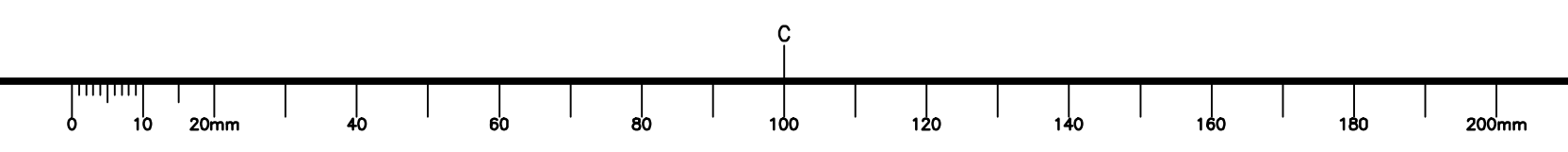
project SHORELINE PROTECTION WORKS
FUNDY NATIONAL PARK
ALMA, NB

drawing SOUTH LAGOON SECTIONS
0+330 TO 0+480

designed V. LEYS	conçu
date OCT. 2017	
drawn J.R./C.M./M.E.C.	dessiné
date OCT. 2017	
approved <i>[Signature]</i>	approuvé
date OCT. 2017	
Tender <i>[Signature]</i>	Soumission
Parks Canada Project Manager	Administrateur de projets Parcs Canada
project number 1346	no. du projet
drawing no. M8	no. du dessin



DRAWING NAME: \\PROJECTS\1346\1346_01_CONSTR.DWG PLOTNAME: P1346_01_CONSTR.DWG LAYOUT NAME: M8 DATE PLOTTED: 2017-10-17 10:41 PM CAD: JORDAN@CBCL.COM





GENERAL NOTES:
1. SEE DRAWING M2 FOR GENERAL NOTES.



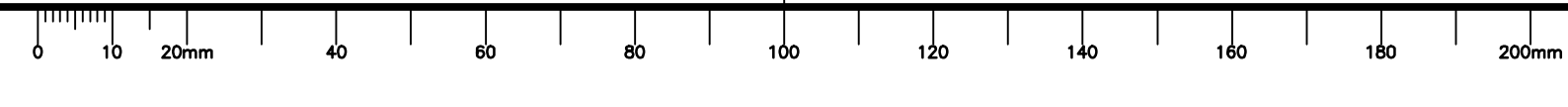
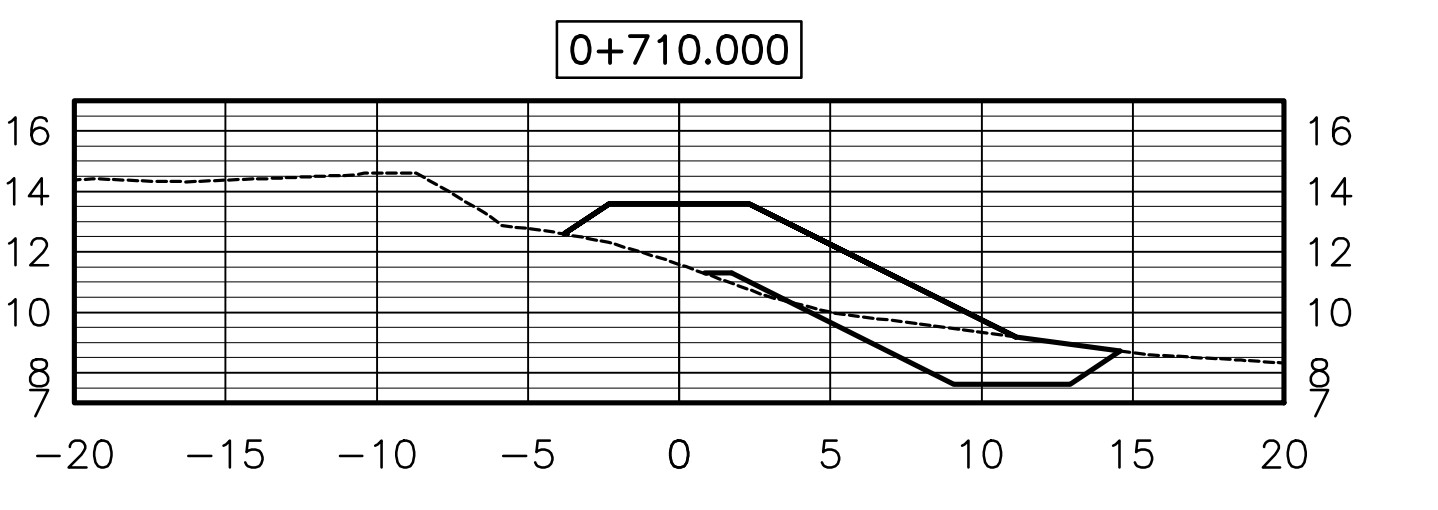
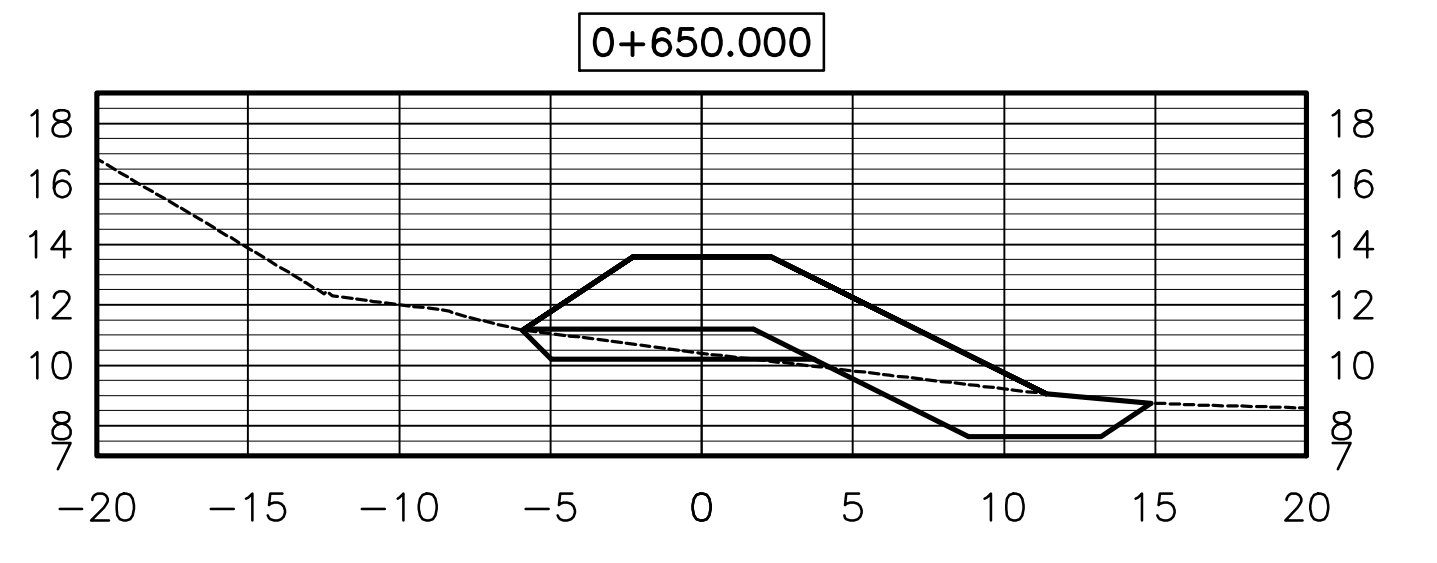
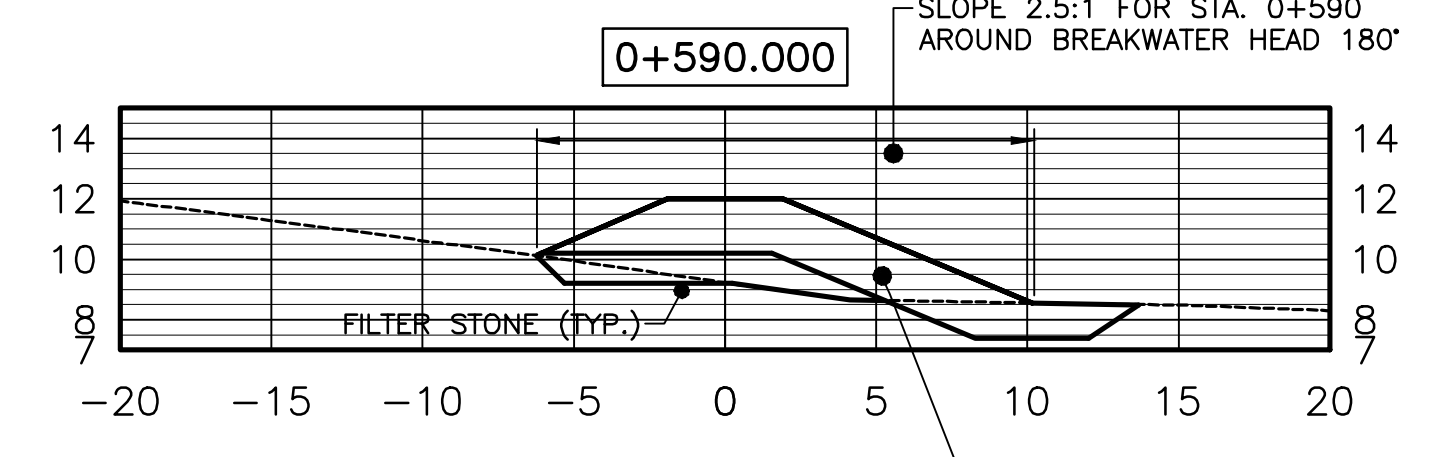
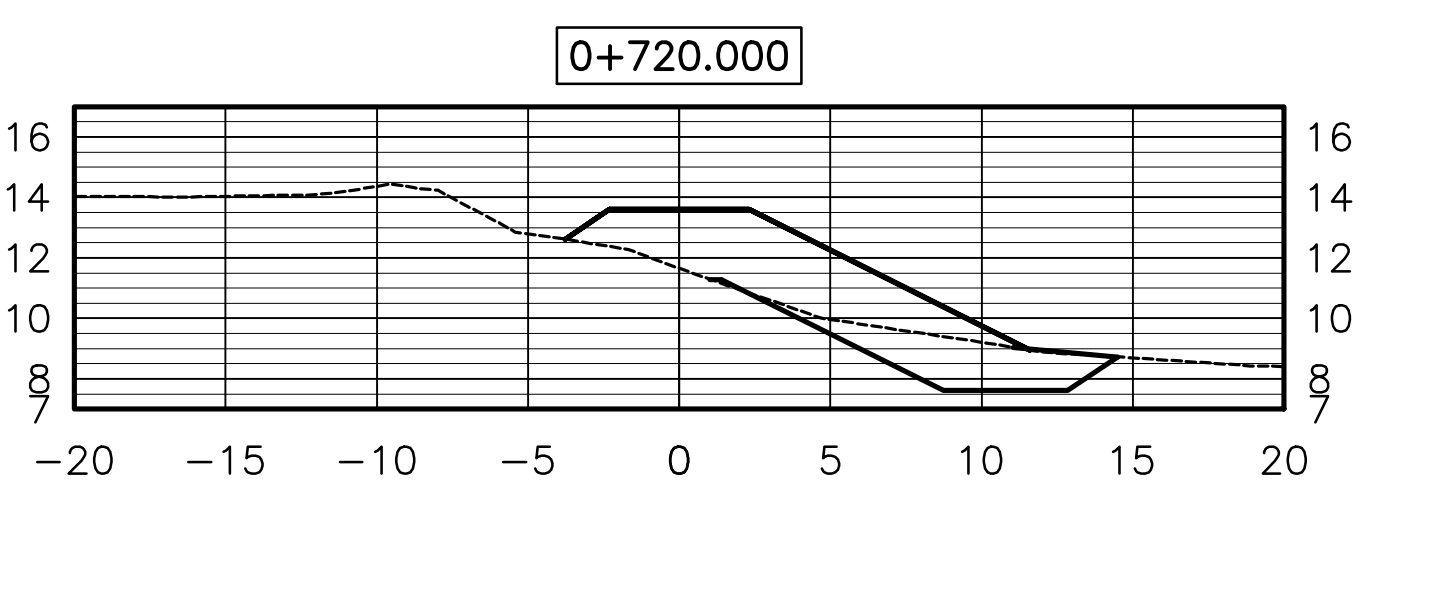
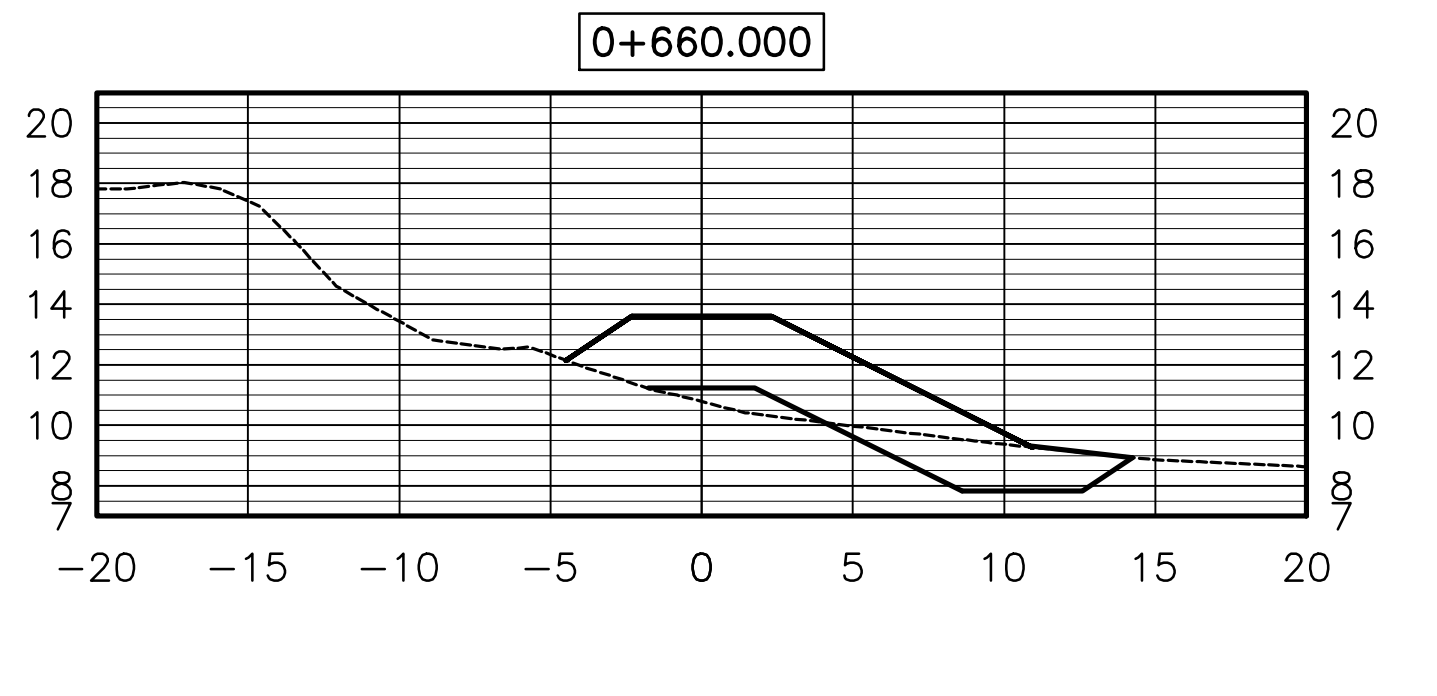
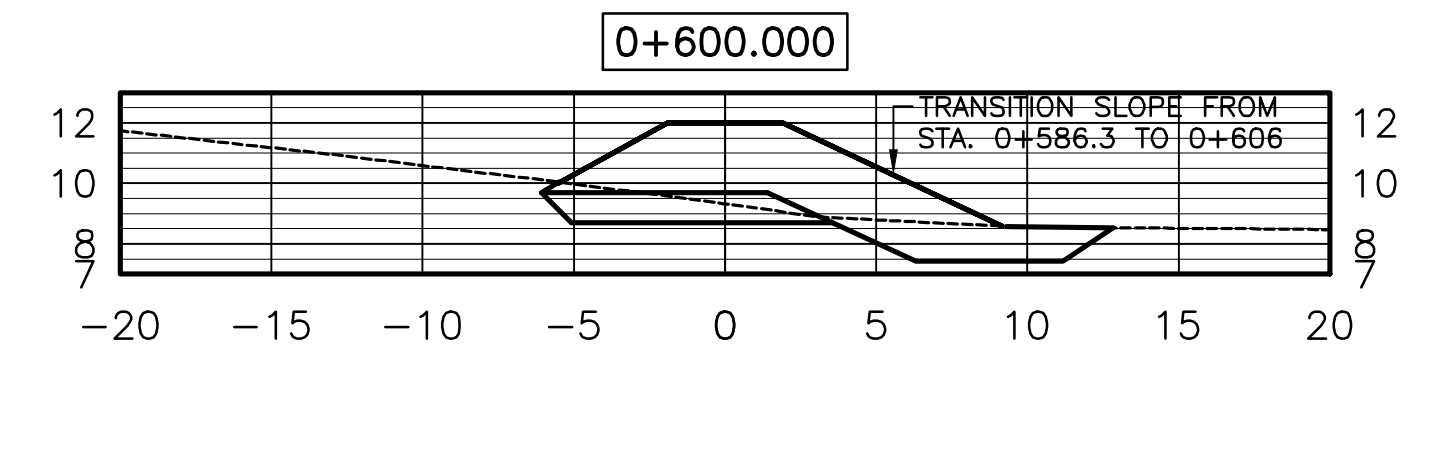
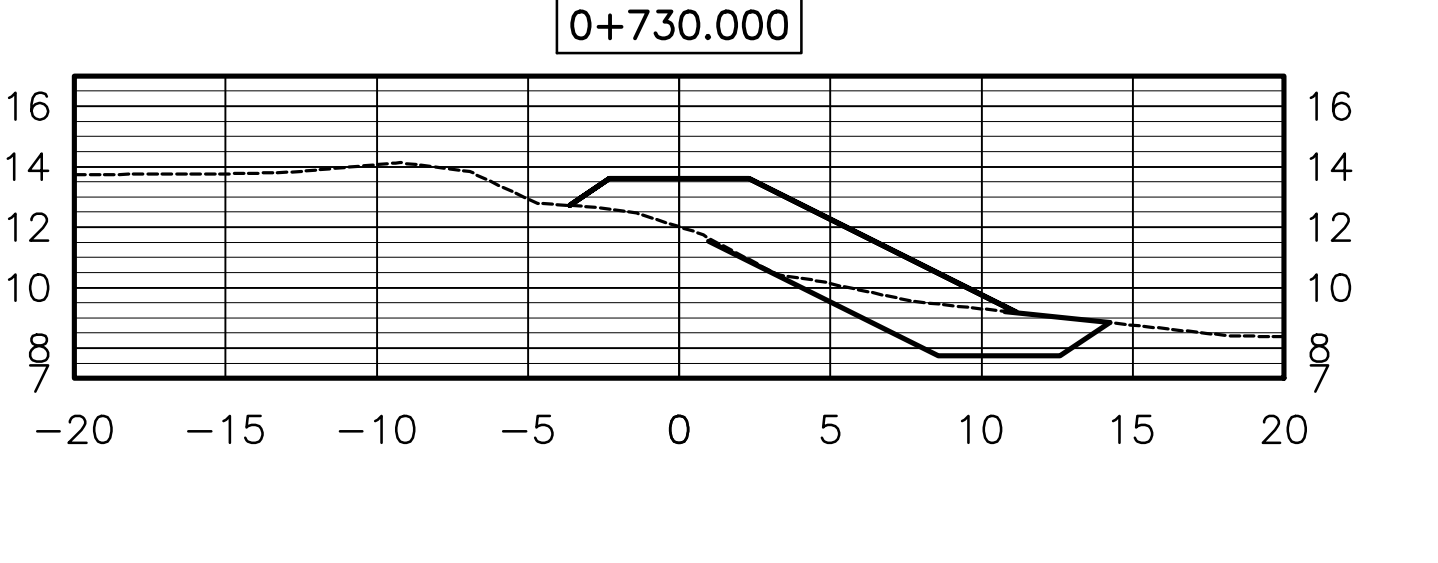
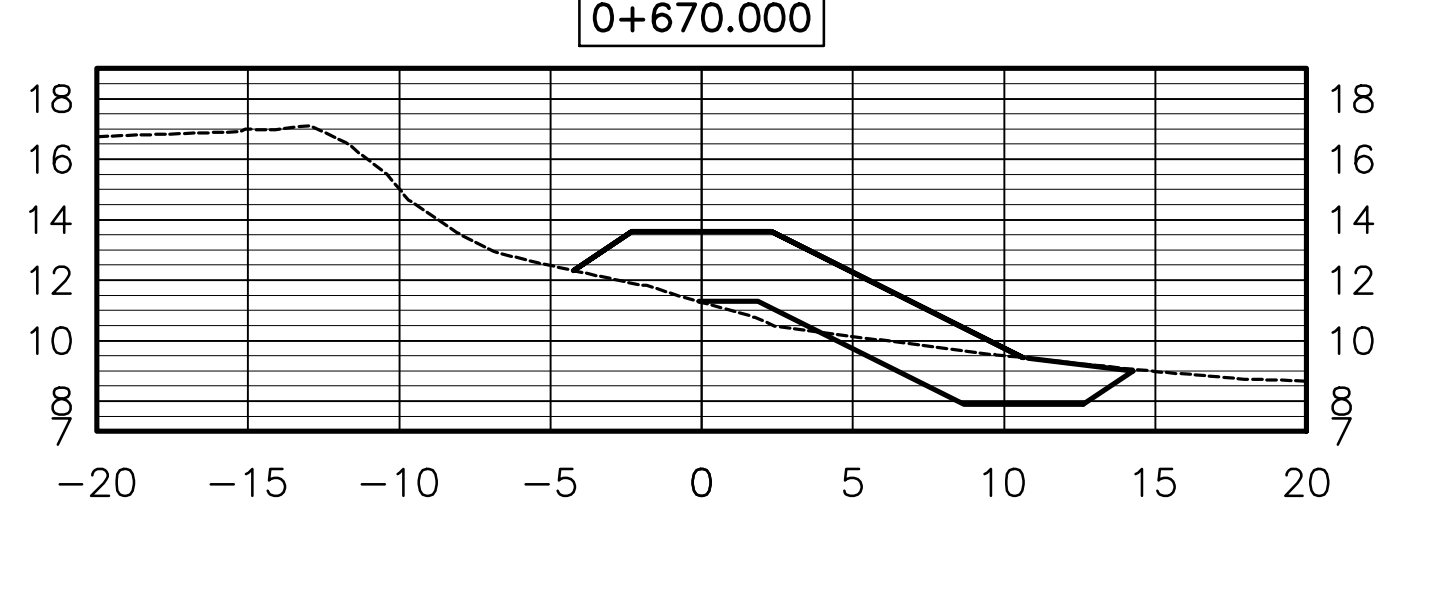
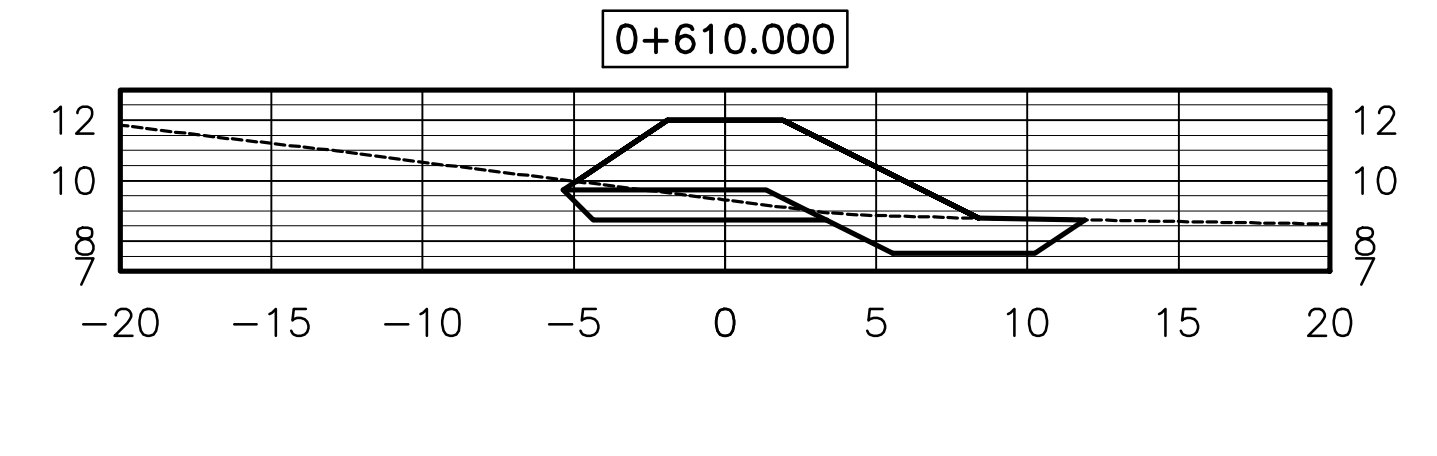
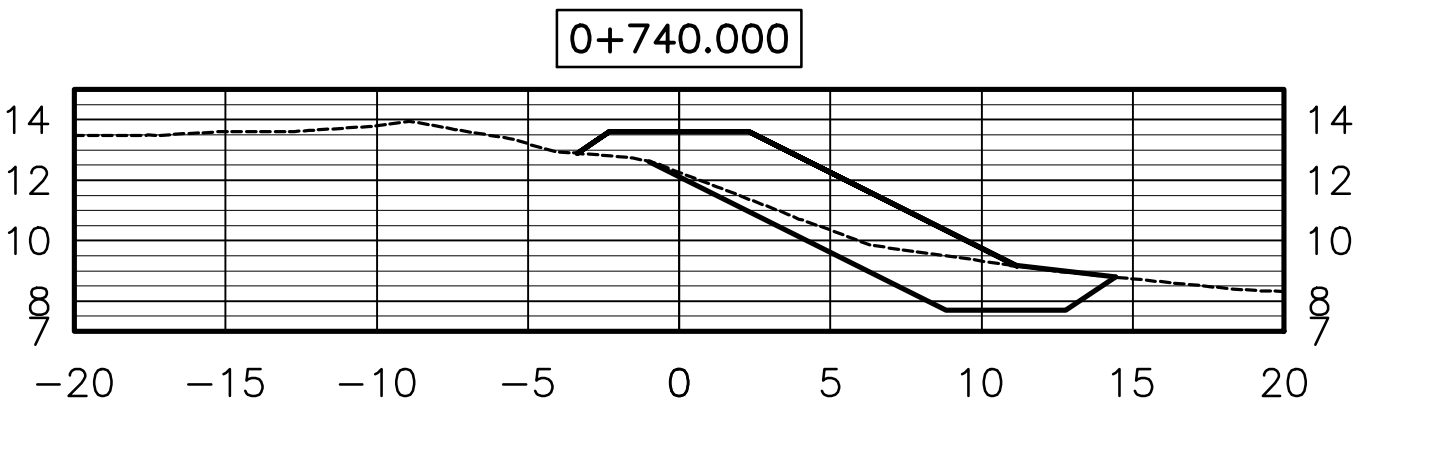
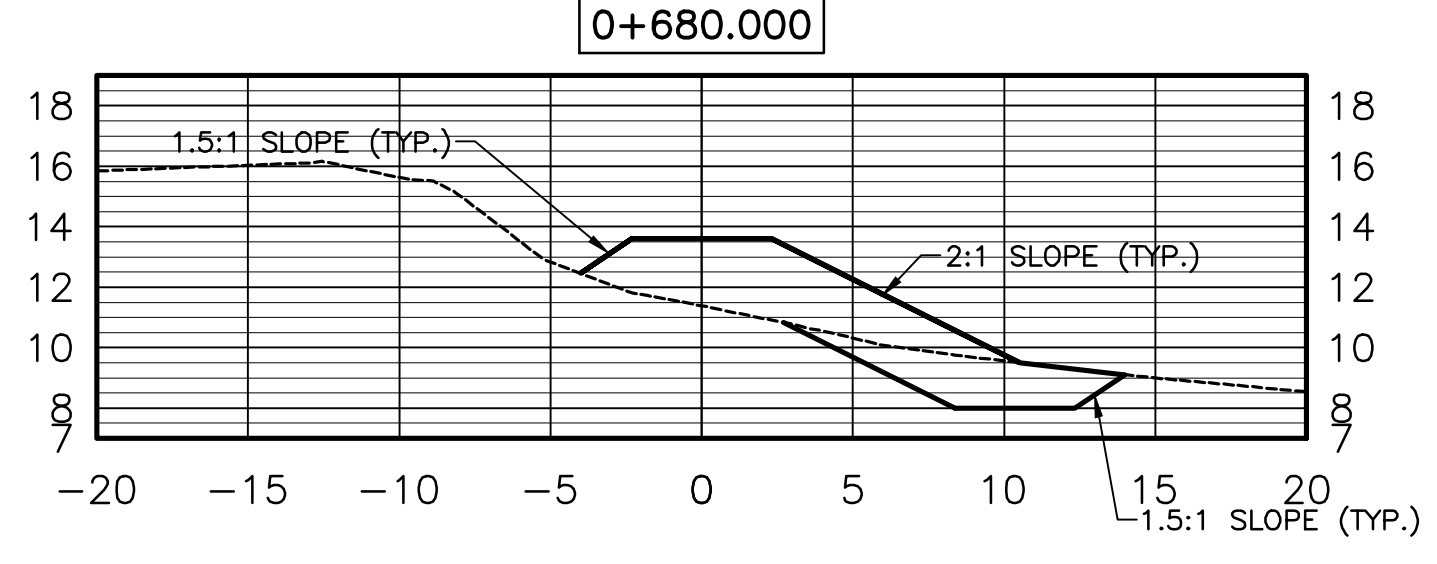
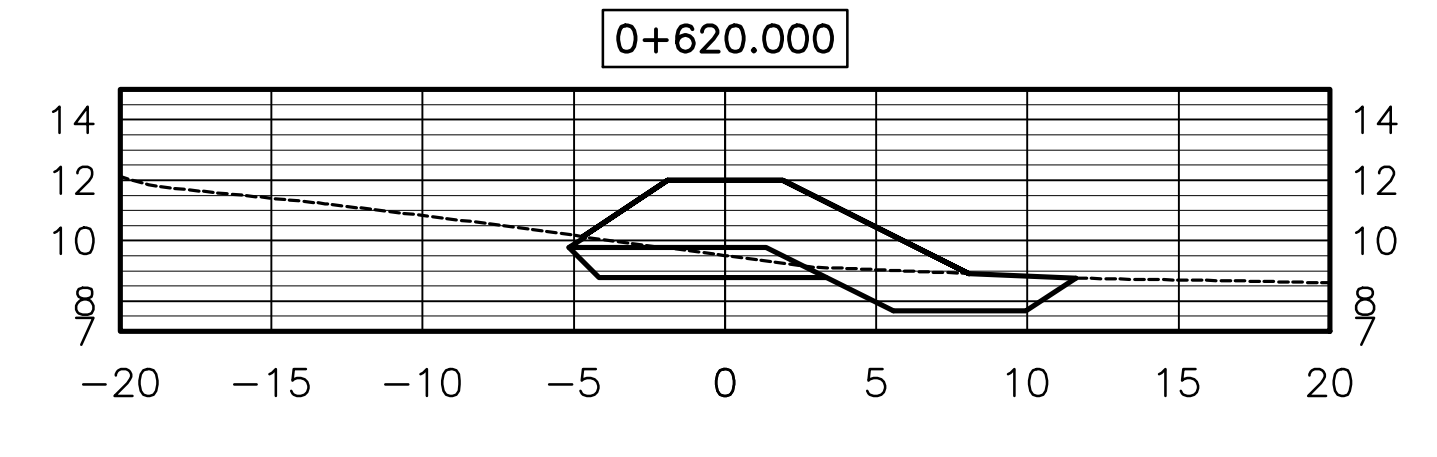
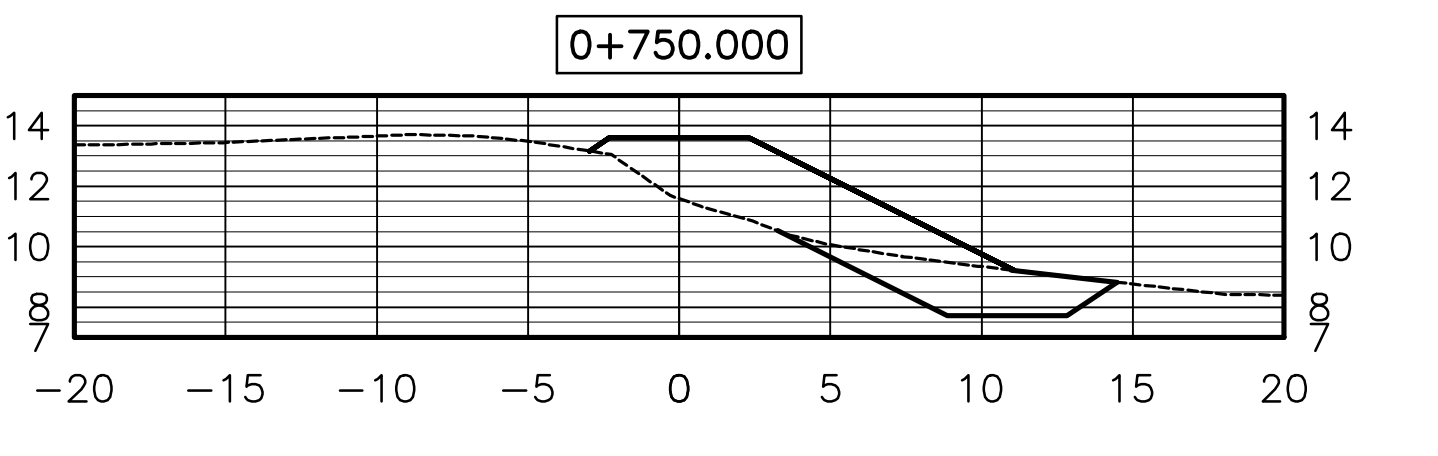
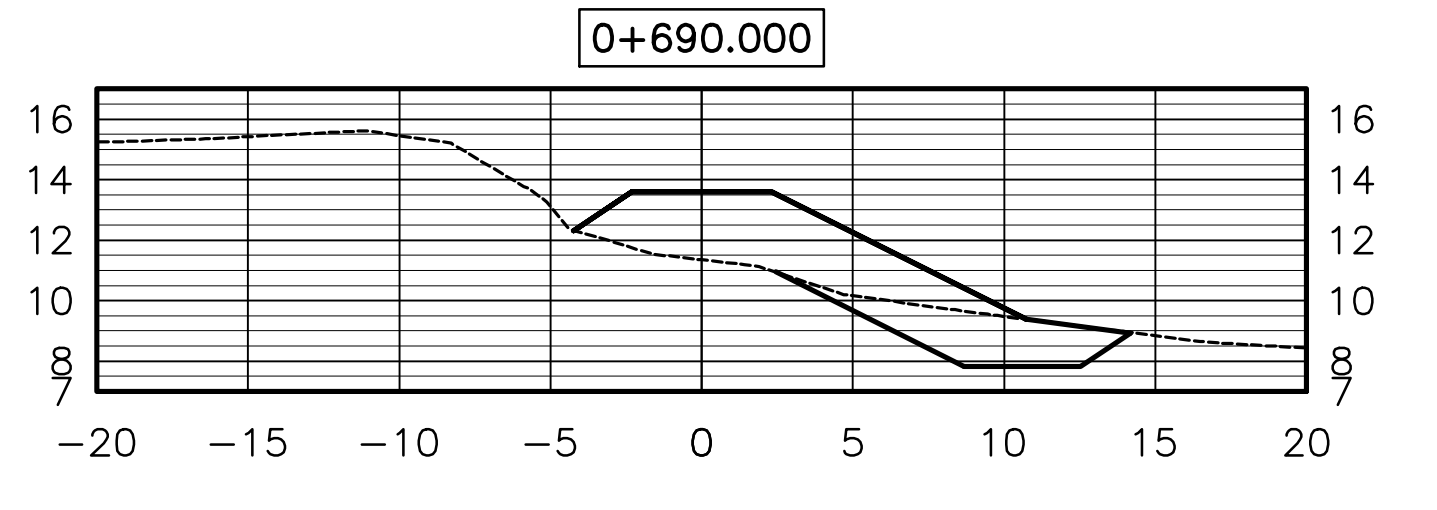
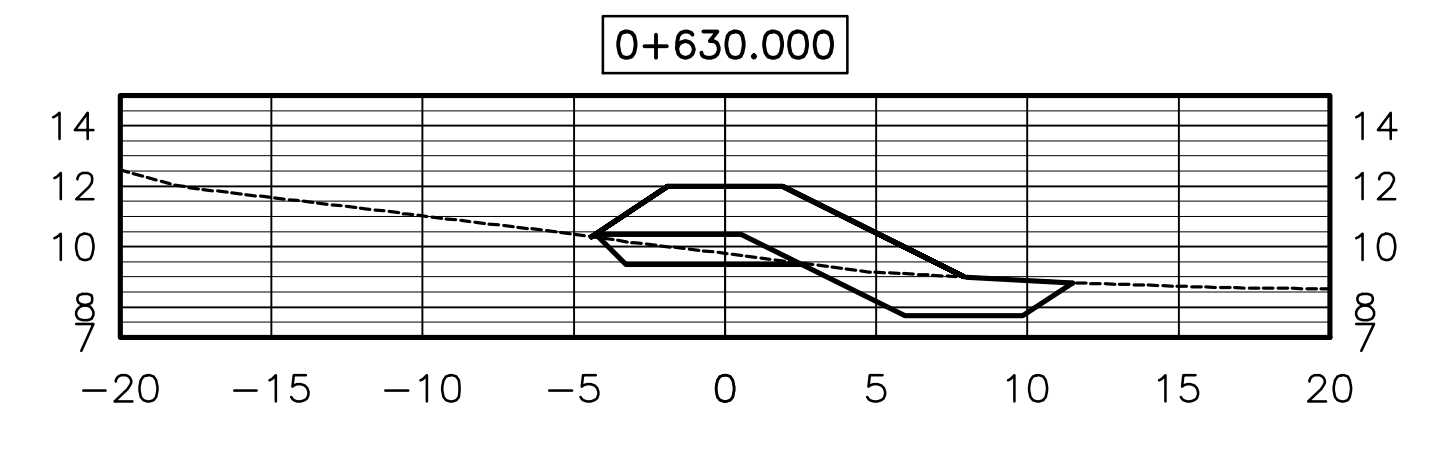
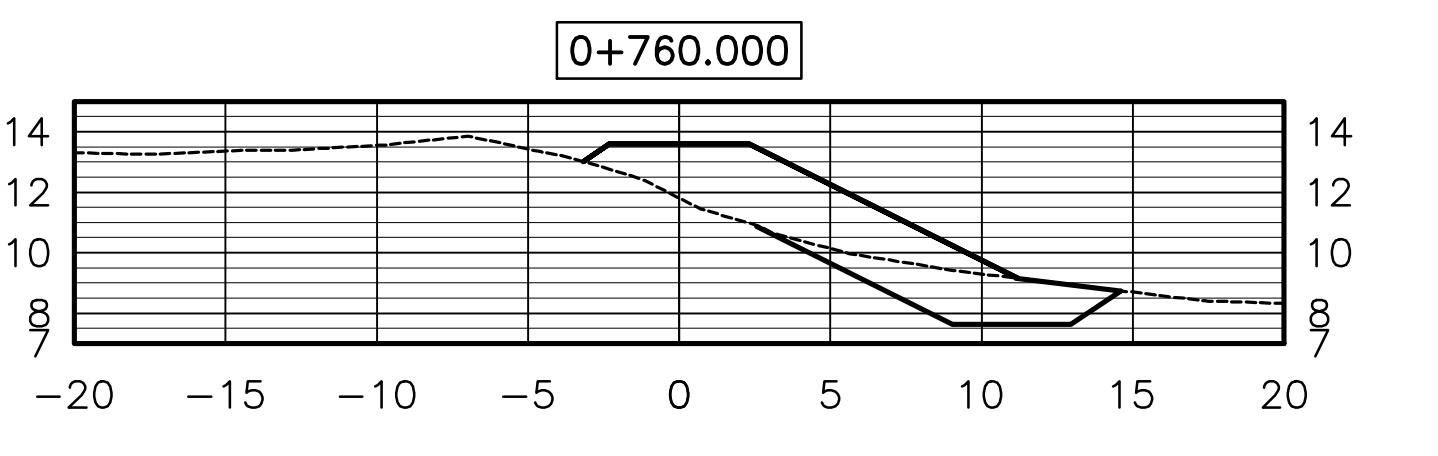
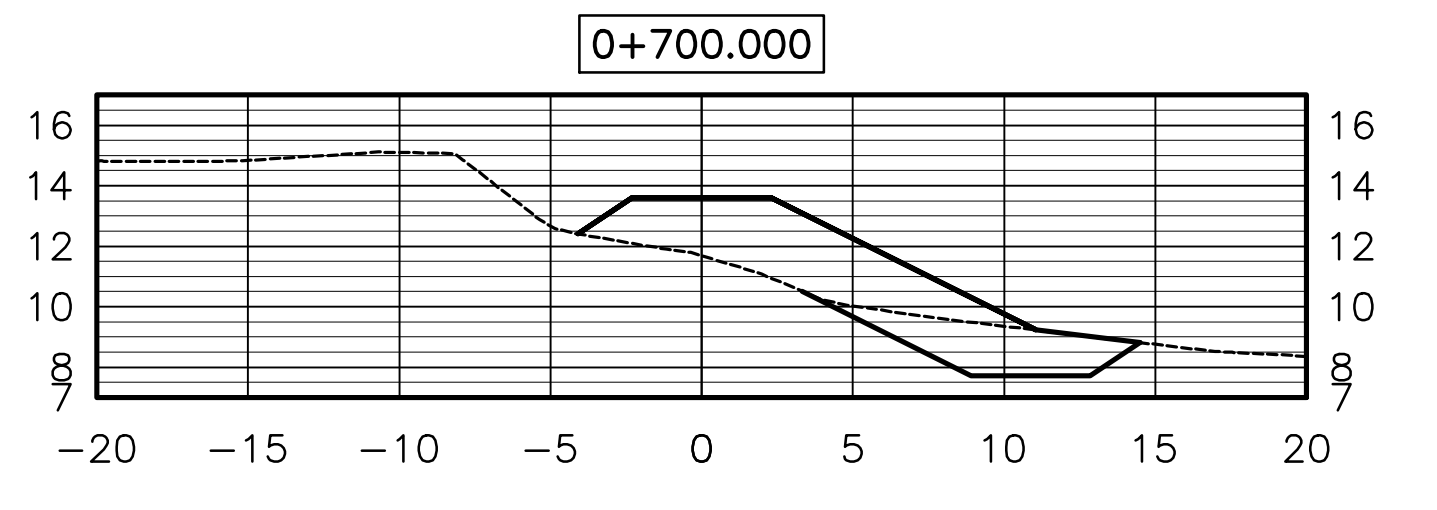
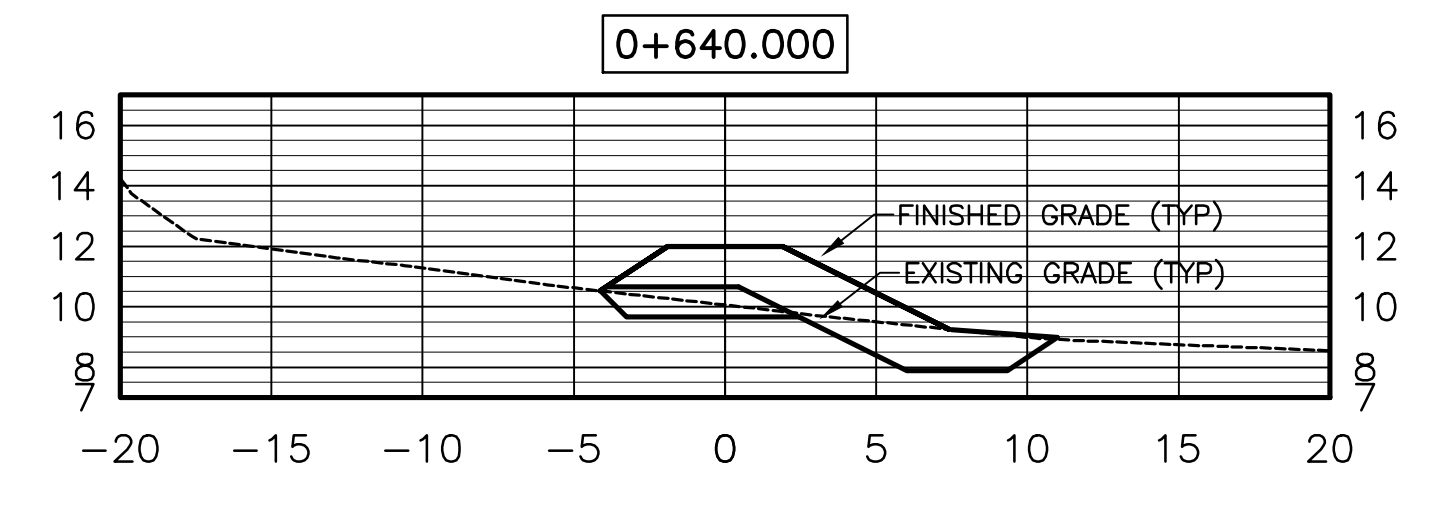
SECTIONS	SEE TYPICAL REFERENCE SECTION FOR DETAILS AND DIMENSIONS
0+590 TO 0+640	Drawing M4 - Sections F, E
0+650 TO 0+760	Drawing M4 - Section D

revisions	date
O	ISSUED FOR TENDER 25 OCT 2017
D	ISSUED FOR 100% REVIEW 30 AUG 2017
C	ISSUED FOR 99% REVIEW 06 JUL 2017
B	RE-ISSUED FOR 66% REVIEW 13 JUN 2017
A	ISSUED FOR 66% REVIEW 17 MAY 2017

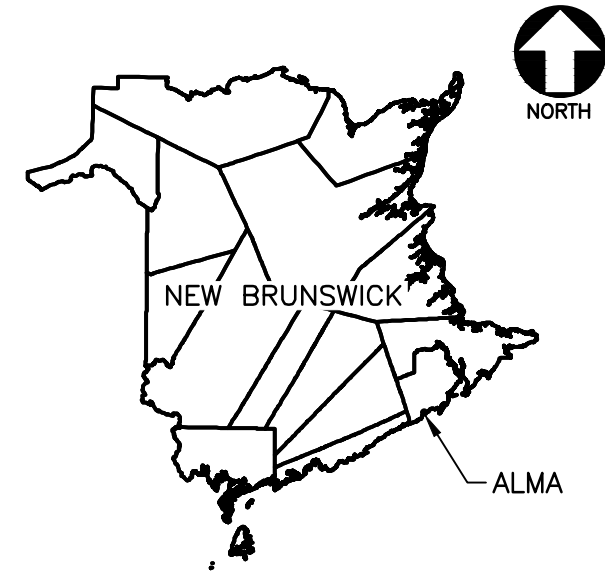
project **SHORELINE PROTECTION WORKS** project
FUNDY NATIONAL PARK
ALMA, NB

drawing **HIGHWAY EMBANKMENT SECTIONS** dessin
0+590 TO 0+760

designed V. LEYS	conçu
date OCT. 2017	
drawn J.R./C.M./M.E.C.	dessiné
date OCT. 2017	
approved <i>[Signature]</i>	approuvé
date OCT. 2017	
Tender <i>[Signature]</i>	Soumission
Parks Canada Project Manager	Administrateur de projets Parcs Canada
project number 1346	no. du projet
drawing no. M9	no. du dessin



DRAWING NAME: \\PROJECTS\1346\01_CONSTR\ENG\DWG\M9\000\M9_000.DWG DATE: 2017-10-17 10:51:31 PM CAD: JORDAN.MARRAS



GENERAL NOTES:
1. SEE DRAWING M2 FOR GENERAL NOTES.



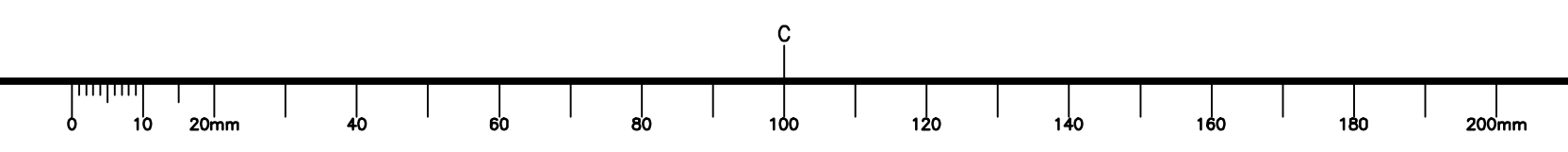
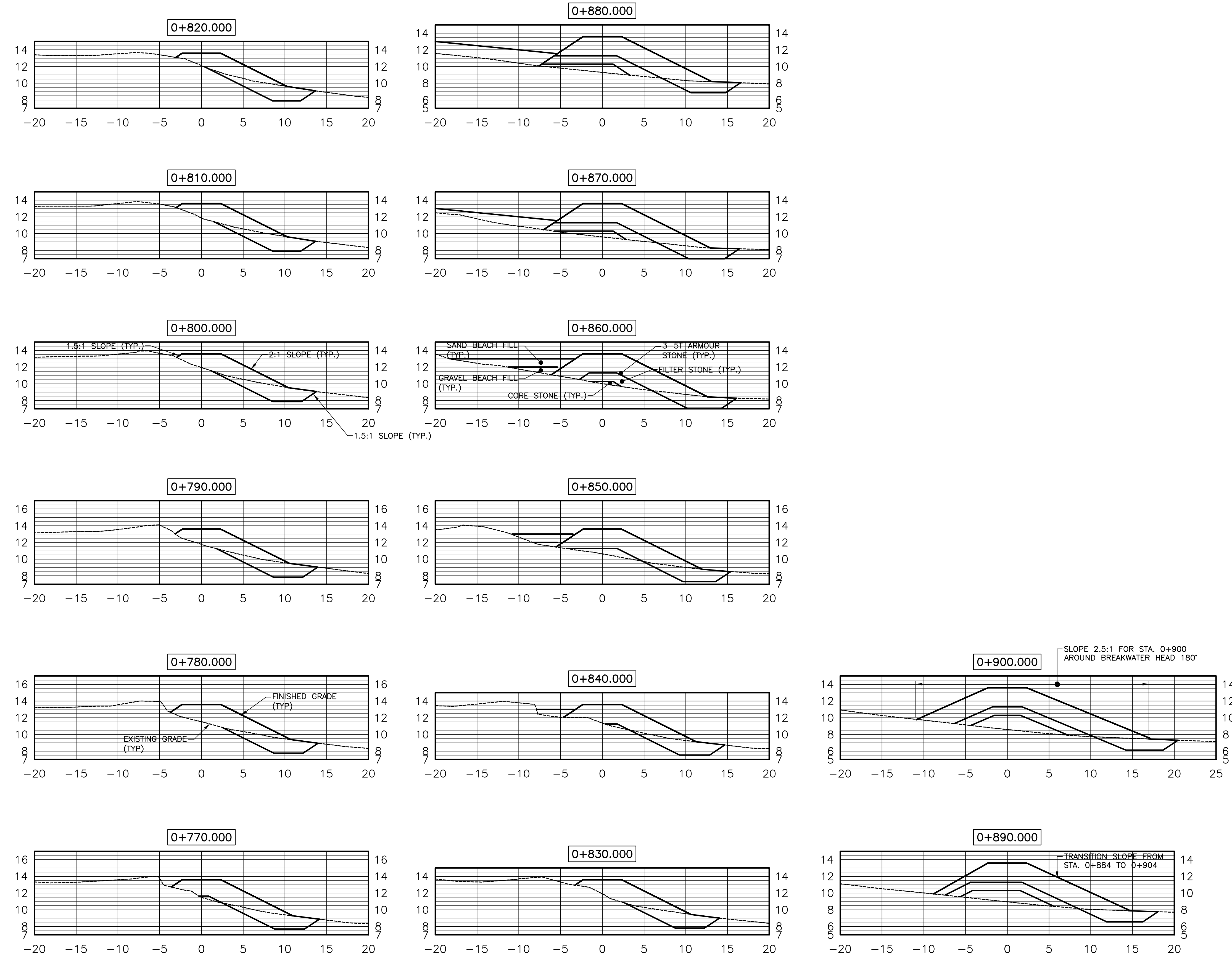
SECTIONS	SEE TYPICAL REFERENCE SECTION FOR DETAILS AND DIMENSIONS
0+770 TO 0+830	Drawing M4 - Section D
0+840 TO 0+880	Drawing M4 - Section C
0+890	Transition From B to C
0+900	Drawing M4 - Section B

revisions	date
O	ISSUED FOR TENDER 25 OCT 2017
D	ISSUED FOR 100% REVIEW 30 AUG 2017
C	ISSUED FOR 99% REVIEW 05 JUL 2017
B	RE-ISSUED FOR 66% REVIEW 13 JUN 2017
A	ISSUED FOR 66% REVIEW 17 MAY 2017

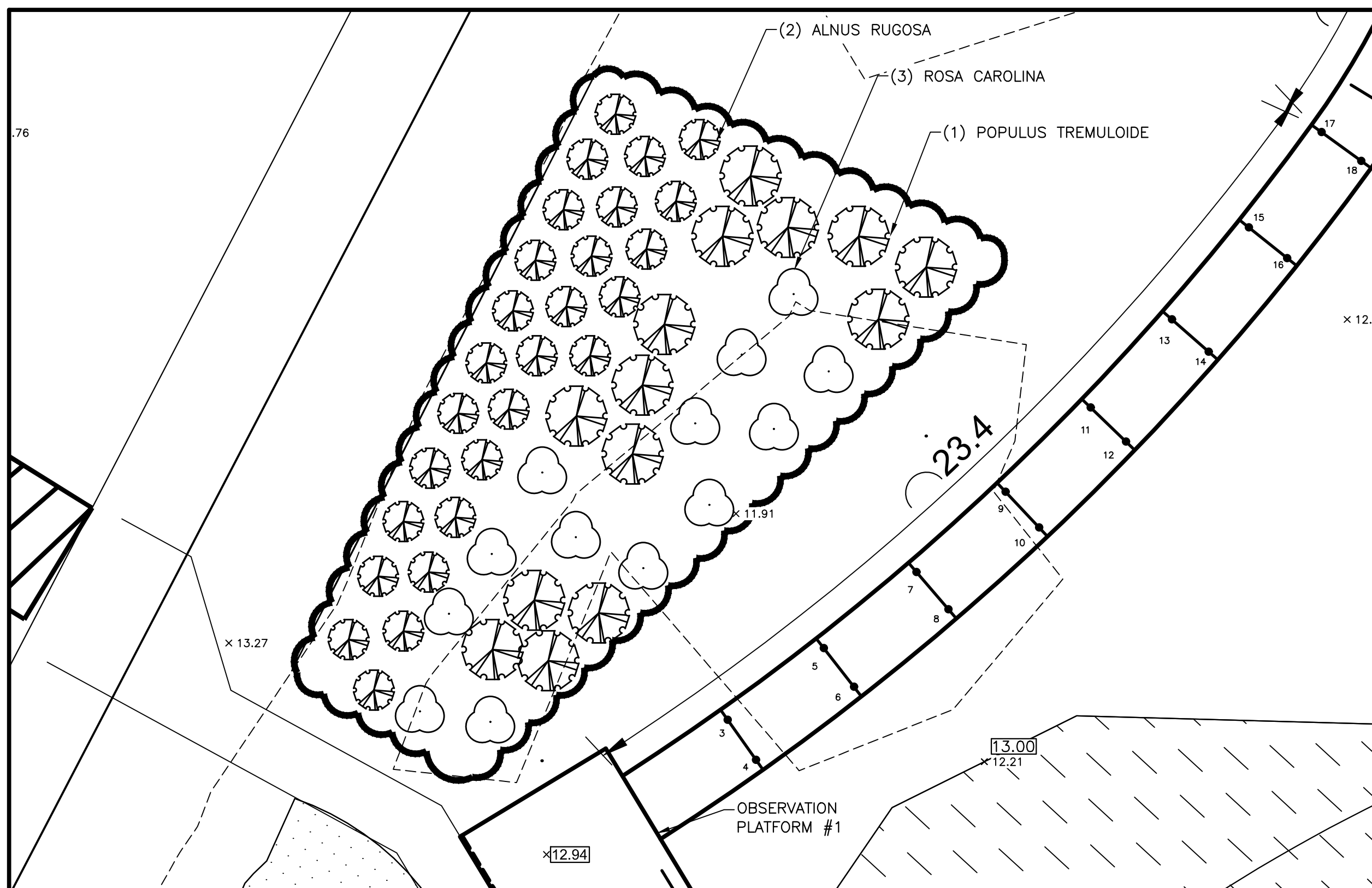
project **SHORELINE PROTECTION WORKS**
FUNDY NATIONAL PARK
ALMA, NB

drawing **HIGHWAY EMBANKMENT SECTIONS**
0+770 TO 0+900

designed	V. LEYS	conçu
date	OCT. 2017	
drawn	J.R./C.M./M.E.C.	dessiné
date	OCT. 2017	
approved	<i>[Signature]</i>	approuvé
date	OCT. 2017	
Tender	<i>[Signature]</i>	Soumission
Parks Canada Project Manager	Administrateur de projets Parcs Canada	
project number	1346	no. du projet
drawing no.	M10	no. du dessin



DRAWING NAME: \\PROJECTS\1346\101_CONSTR_ENG_FUNDY\MP_FUNDY\0503\0301_001_CHA\1346\100_50.DWG LAYOUT NAME: M10_EMBK_SECT_08-26-17_137113.PLT CDR: GEMTEC/EAS/RENE



PLANTING PLAN
SCALE: NTS

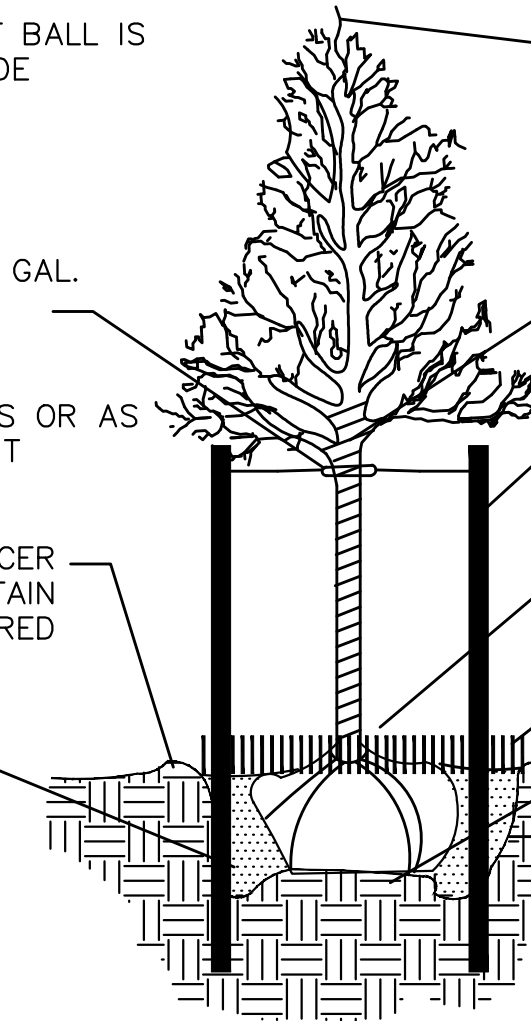
PLANT SO THAT TOP OF ROOT BALL IS EVEN WITH THE FINISHED GRADE

2 STRAND TWISTED 12 GAUGE GAL. WIRE ENCASED IN 25mm DIA. RUBBER HOSE
STAKE ABOVE FIRST BRANCHES OR AS NECESSARY FOR FIRM SUPPORT

FORM CONTINUOUS SOIL SAUCER RING AROUND TREE TO RETAIN MOISTURE WHEN WATERED

SPECIFIED PLANTING SOIL MIX WATER & TAMP TO REMOVE AIR POCKETS

DO NOT TAMP WET SOIL TAMP SOIL AND THEN WATER



DO NOT CUT LEADER

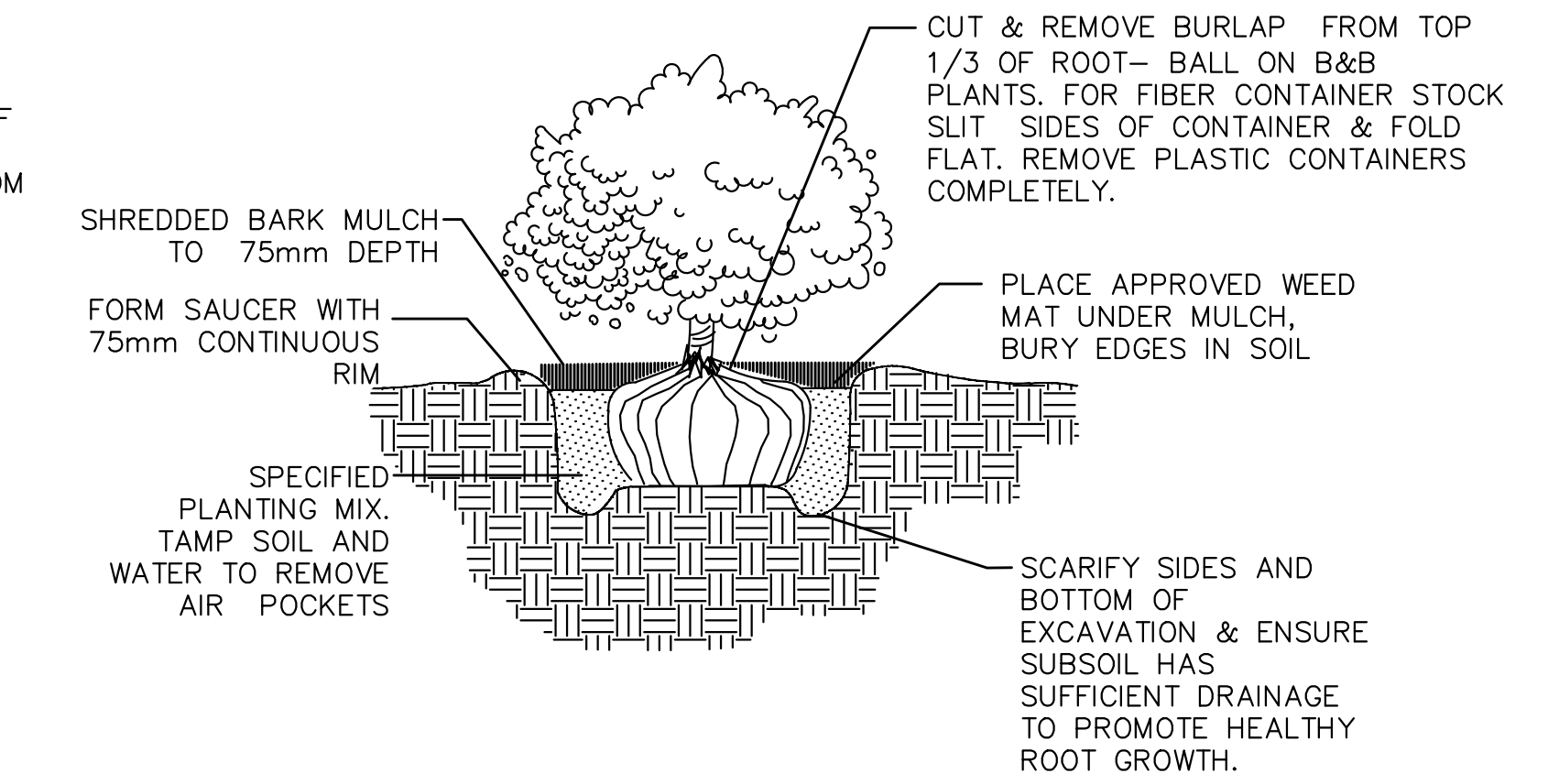
WRAP TREES WITH 'TREE GUARD' TREE WRAP FROM ROOTBALL TO 150mm ABOVE SECOND BRANCH
(2) 2400mm LONG WOOD POST, 75mm Ø AVOID ROOTS WHEN INSTALLING

CUT AND REMOVE BURLAP FROM TOP 1/3 OF ROOTBALL ON B&B PLANTS FOR FIBRE CONTAINER STOCK CUT POT SIDES TO BOTTOM & FOLD FLAT. REMOVE PLASTIC CONTAINERS COMPLETELY.
SHREDDED BARK MULCH AS SPECIFIED TO 75mm DEPTH

MOUNDED 75mm TO PROMOTE DRAINAGE TO EDGES OF EXCAVATION

SCARIFY SIDES & BOTTOM OF EXCAVATION AND ENSURE SUB-SOIL HAS SUFFICIENT DRAINAGE TO PROMOTE HEALTHY ROOT GROWTH

VEGETATION SCHEDULE						
CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	PLANTING DETAIL
1	14	POPULUS TREMULOIDE	TREMBLING ASPEN	200 CM HT	1.5m	1
2	27	ALNUS RUGOSA	SPECKLED ALDER	200 CM HT	1.0m	1
3	39 (SHOWN IN GROUPS OF 3)	ROSA CAROLINA	PASTURE ROSE	200 MM HT	3 WITHIN A 1.5m RADIUS	2



SHREDDED BARK MULCH TO 75mm DEPTH
FORM SAUCER WITH 75mm CONTINUOUS RIM

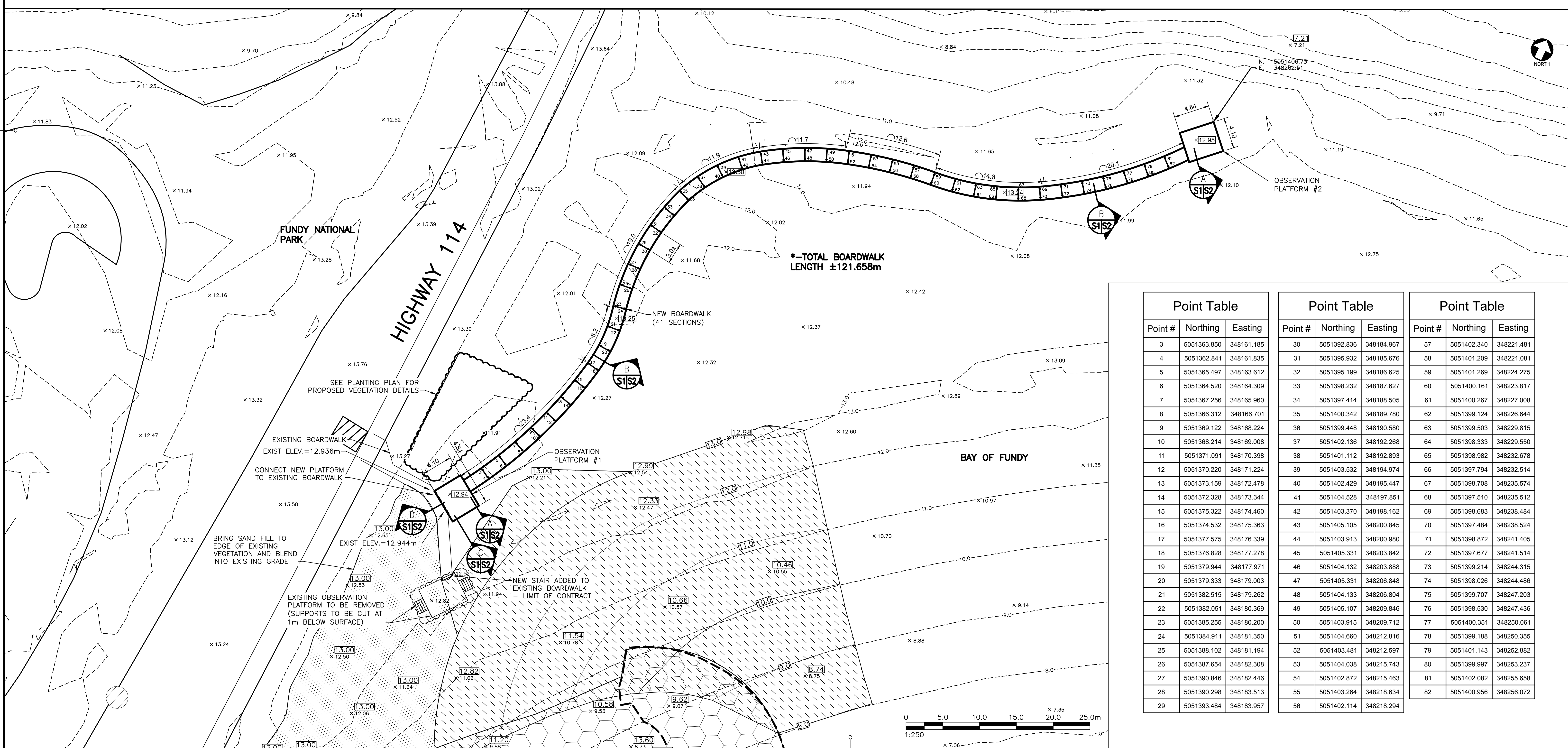
SPECIFIED PLANTING MIX. TAMP SOIL AND WATER TO REMOVE AIR POCKETS

CUT & REMOVE BURLAP FROM TOP 1/3 OF ROOT- BALL ON B&B PLANTS. FOR FIBER CONTAINER STOCK SLIT SIDES OF CONTAINER & FOLD FLAT. REMOVE PLASTIC CONTAINERS COMPLETELY.
PLACE APPROVED WEED MAT UNDER MULCH, BURY EDGES IN SOIL

SCARIFY SIDES AND BOTTOM OF EXCAVATION & ENSURE SUBSOIL HAS SUFFICIENT DRAINAGE TO PROMOTE HEALTHY ROOT GROWTH.

1
S1 DECIDUOUS TREES
SCALE: NTS

2
S1 SHRUB PLANTING
SCALE: NTS



± TOTAL BOARDWALK LENGTH ±121.658m

Point Table			Point Table			Point Table		
Point #	Northing	Easting	Point #	Northing	Easting	Point #	Northing	Easting
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4	5051362.841	348161.835	31	5051395.932	348185.676	58	5051401.209	348221.081
5	5051365.497	348163.612	32	5051395.199	348186.625	59	5051401.269	348224.275
6	5051364.520	348164.309	33	5051398.232	348187.627	60	5051400.161	348223.817
7	5051367.256	348165.960	34	5051397.414	348188.505	61	5051400.267	348227.008
8	5051366.312	348166.701	35	5051400.342	348189.780	62	5051399.124	348226.844
9	5051369.122	348168.224	36	5051399.448	348190.580	63	5051399.503	348229.815
10	5051368.214	348169.008	37	5051402.136	348192.268	64	5051398.333	348229.550
11	5051371.091	348170.398	38	5051401.112	348192.893	65	5051398.982	348232.678
12	5051370.220	348171.224	39	5051403.532	348194.974	66	5051397.794	348232.514
13	5051373.159	348172.478	40	5051402.429	348195.447	67	5051398.708	348235.574
14	5051372.328	348173.344	41	5051404.528	348197.851	68	5051397.510	348235.512
15	5051375.322	348174.460	42	5051403.370	348198.162	69	5051398.683	348238.484
16	5051374.532	348175.363	43	5051405.105	348200.845	70	5051397.484	348238.524
17	5051377.575	348176.339	44	5051403.913	348200.980	71	5051398.872	348241.405
18	5051376.828	348177.278	45	5051405.331	348203.842	72	5051397.677	348241.514
19	5051379.944	348177.971	46	5051404.132	348203.888	73	5051399.214	348244.315
20	5051379.333	348179.003	47	5051405.331	348206.848	74	5051398.026	348244.486
21	5051382.515	348179.262	48	5051404.133	348206.804	75	5051399.707	348247.203
22	5051382.051	348180.369	49	5051405.107	348209.846	76	5051398.530	348247.436
23	5051385.255	348180.200	50	5051403.915	348209.712	77	5051400.351	348250.061
24	5051384.911	348181.350	51	5051404.660	348212.816	78	5051399.188	348250.355
25	5051388.102	348181.194	52	5051403.481	348212.597	79	5051401.143	348252.882
26	5051387.654	348182.308	53	5051404.038	348215.743	80	5051399.997	348253.237
27	5051390.846	348182.446	54	5051402.872	348215.643	81	5051402.882	348255.658
28	5051390.298	348183.513	55	5051403.264	348218.634	82	5051400.956	348256.072
29	5051393.484	348183.957	56	5051402.114	348218.294			

Parks Canada

CBCL LIMITED
Consulting Engineers

GEMTEC EASTERN JV

LEGEND

- BEACH SORTED SAND FILL AREA (PR.)
- BEACH FILL AND REPLANTED MARRAM GRASS (PR.)
- EDGE OF EXCAVATED TIE
- PROPOSED VEGETATION AREA
- NEW 3-5 T ARMOUR STONE
- PROPOSED GRADE
- EXISTING GRADE
- PROPOSED POSTECH LOCATION

GENERAL NOTES:

- SEE DRAWING M1 FOR GENERAL NOTES.
- THERE WILL BE ABSOLUTELY NO EQUIPMENT PERMITTED ON THE BEACH OR GRASSED AREA. CONSTRUCTION OF BOARDWALK WILL BE COMPLETED BY STAGING OFF THE COMPLETED SECTIONS. THE CONTRACTOR SHALL PROVIDE EQUIPMENT OF SUITABLE SIZE AND CAPACITY TO ALLOW STAGING OFF COMPLETED SECTION OF THE BOARDWALK FOR ALL ELEMENTS OF THE BOARDWALK CONSTRUCTION. INSTALLATION EQUIPMENT WEIGHT TO BE LIMITED TO 2000 KG. BOARDWALK SURFACE DECKING TO BE PROTECTED FROM DAMAGE DURING CONSTRUCTION.

REGISTERED PROFESSIONAL ENGINEER
#4111
S. D. Brigham
15/10/2017
PROFESSIONAL ENGINEER (MARRAM GRASS)

0	ISSUED FOR TENDER	25 OCT 2017
D	ISSUED FOR 100% REVIEW	30 AUG 2017
C	ISSUED FOR 99% REVIEW	06 JUL 2017
B	RE-ISSUED FOR 66% REVIEW	13 JUN 2017
A	ISSUED FOR 66% REVIEW	17 MAY 2017

revisions: _____ date: _____

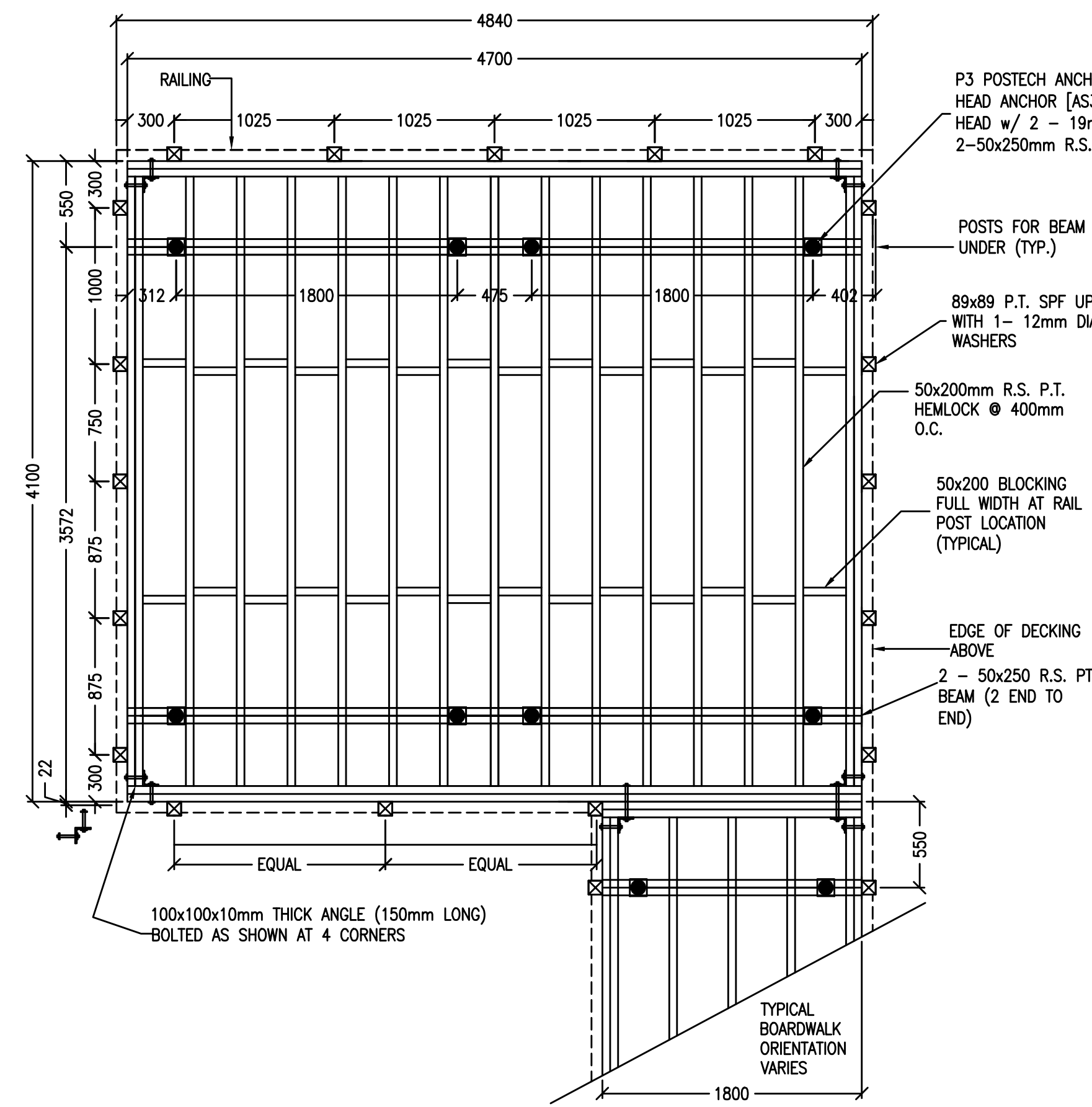
project: **SHORELINE PROTECTION WORKS FUNDY NATIONAL PARK ALMA, NB**

drawing: _____ design: _____

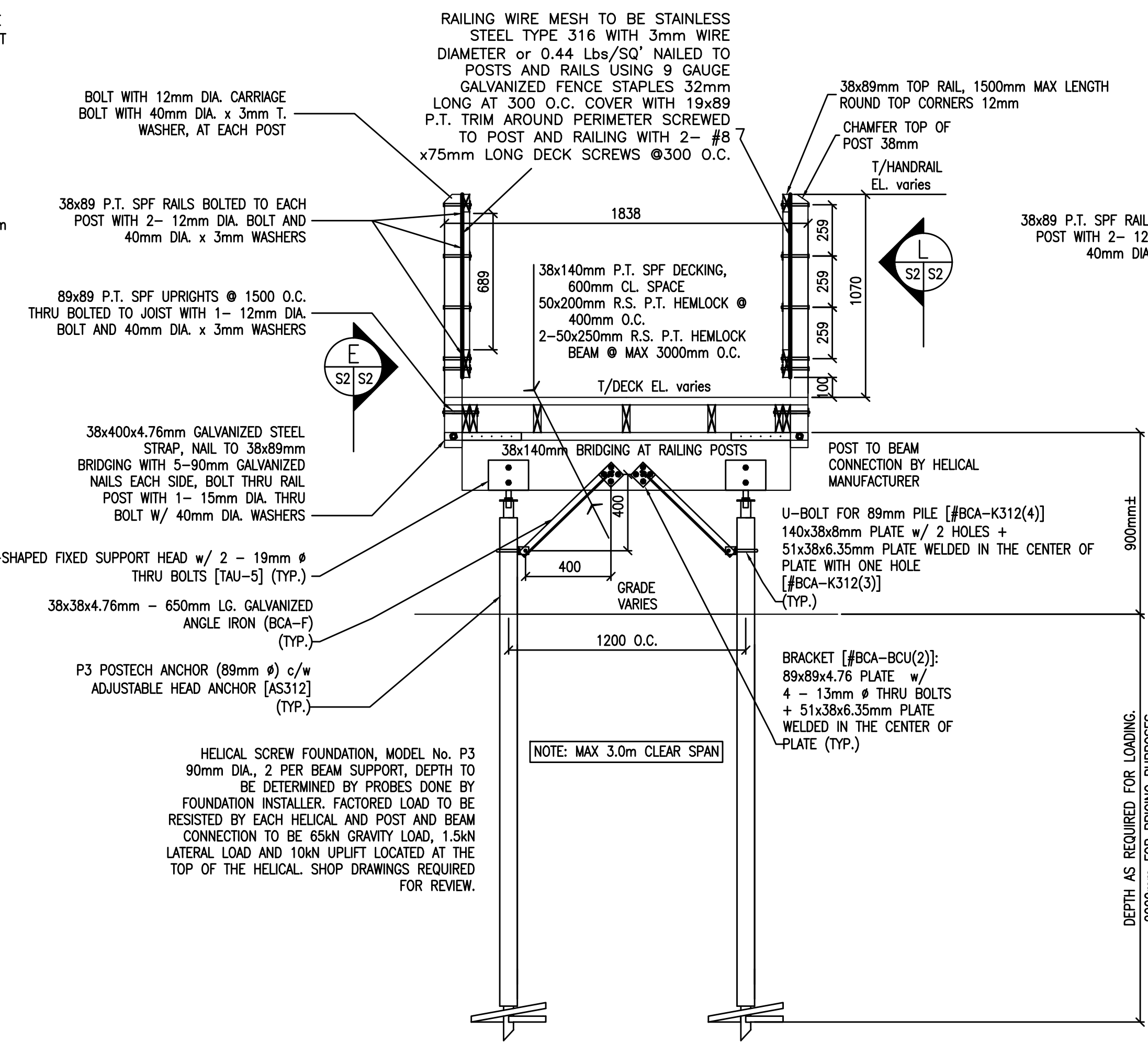
PROPOSED BOARDWALK LOCATION PLAN

designed S. BRINGHAM conqtd
date: OCTOBER 2017
drawn M. FILIAITRAULT dessin4
date: OCTOBER 2017
approved _____ approve4
date: OCT. 2017
Tender: _____ Submission
PWSC Project Manager: _____ Administrateur de projets TPSC
project number: **1346** no. du projet
drawing no.: **S-1** no. du dessin

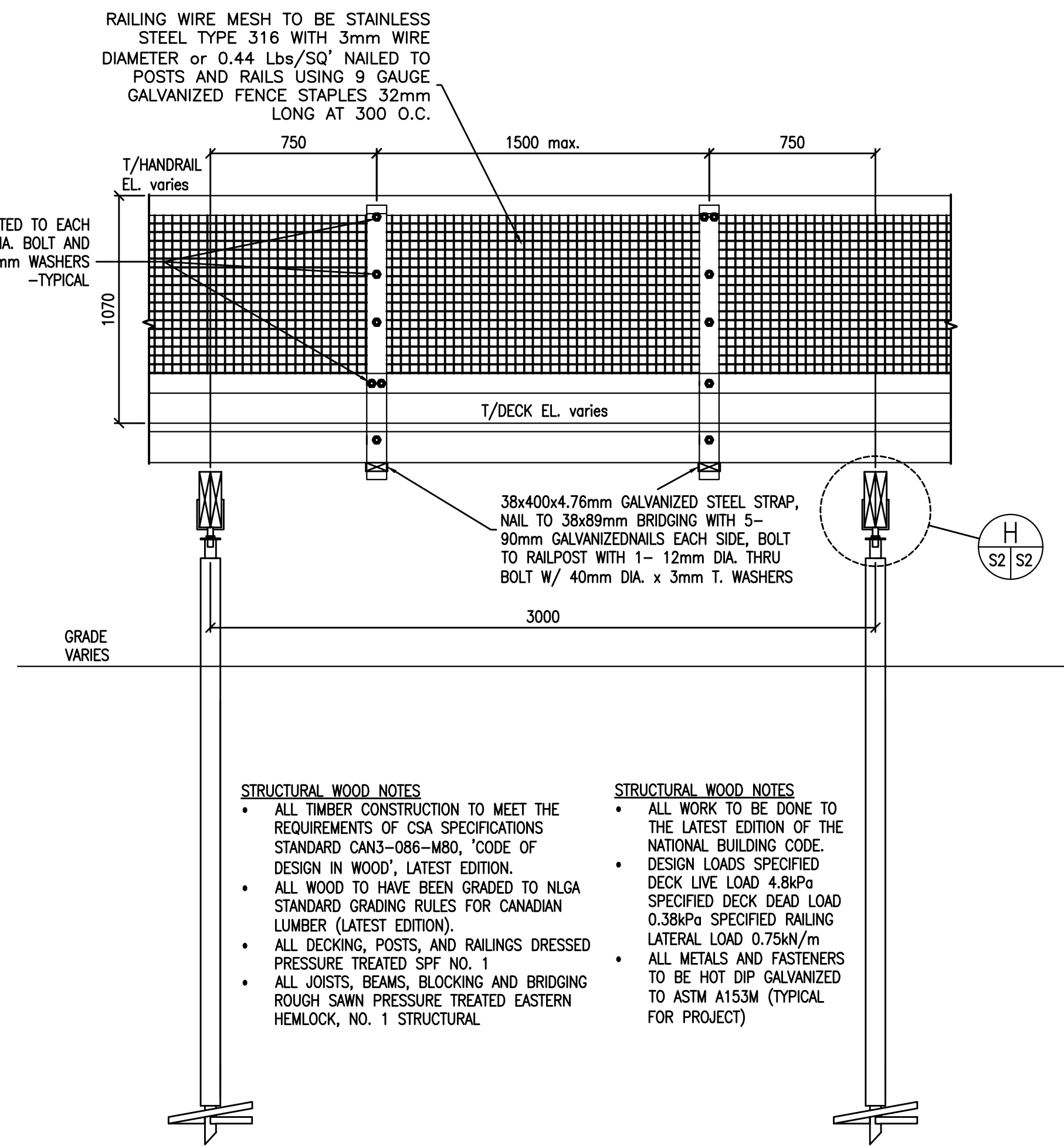
E-DRM/gdd-E



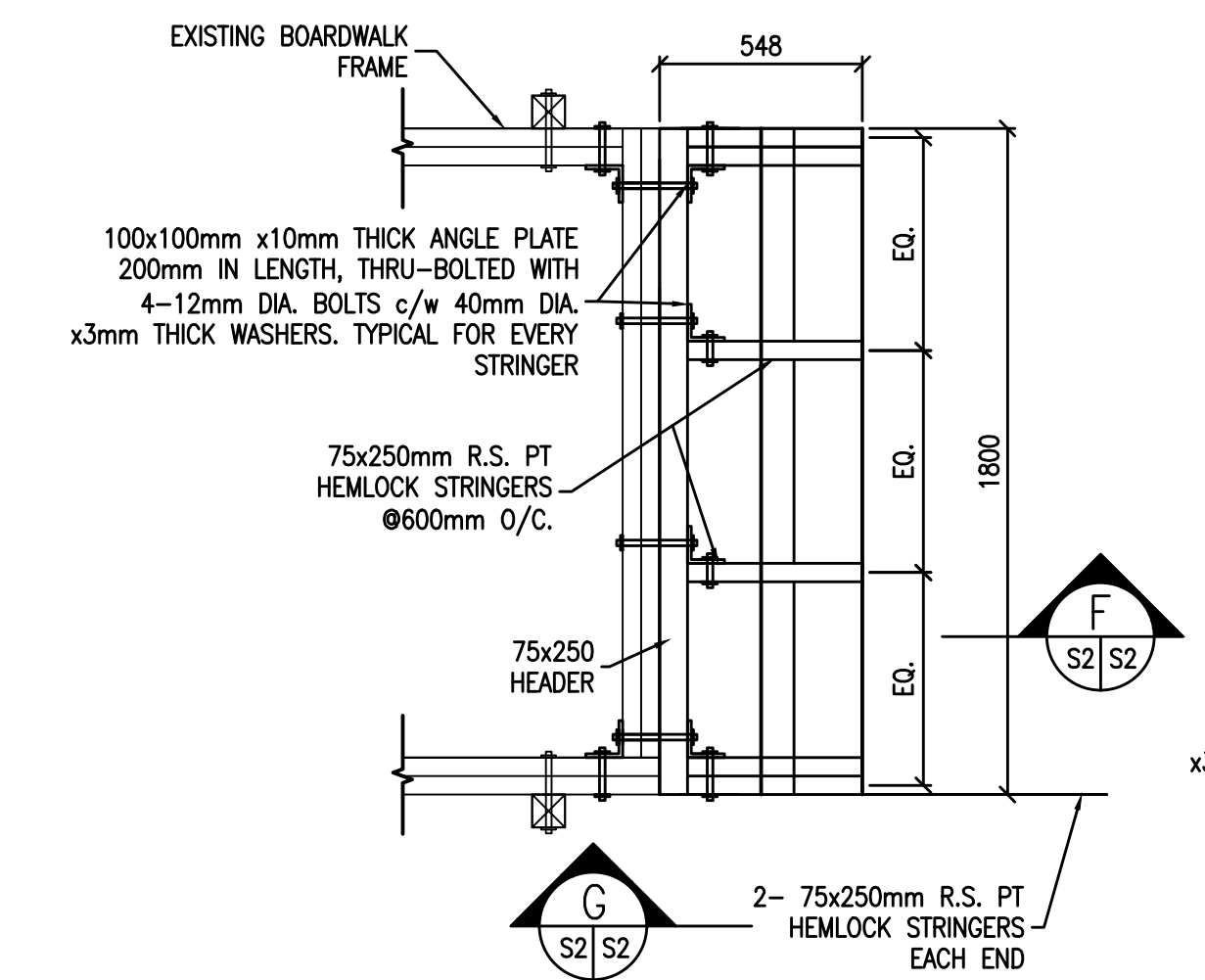
A TERRESTRIAL OBSERVATION AREA PLAN
SCALE: 1:30



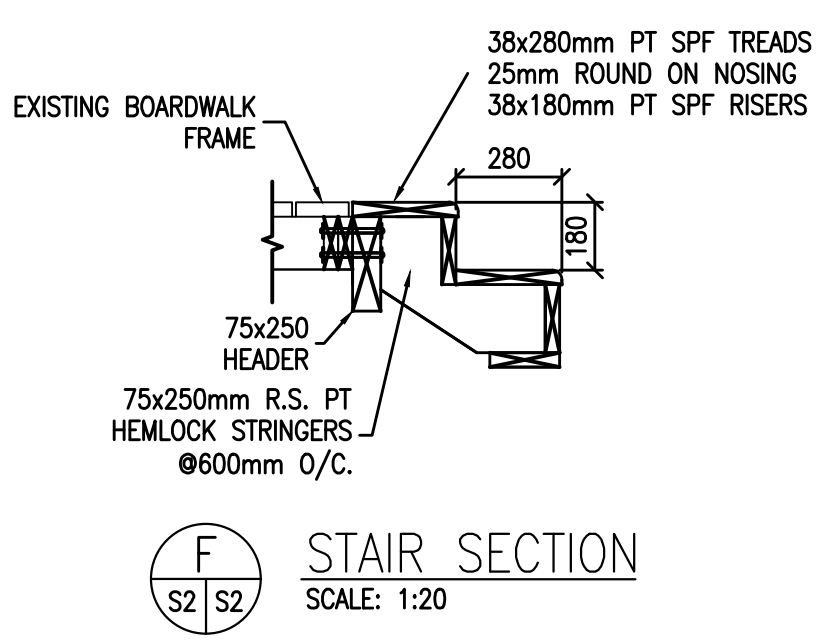
B TERRESTRIAL BOARDWALK SECTION
SCALE: 1:20



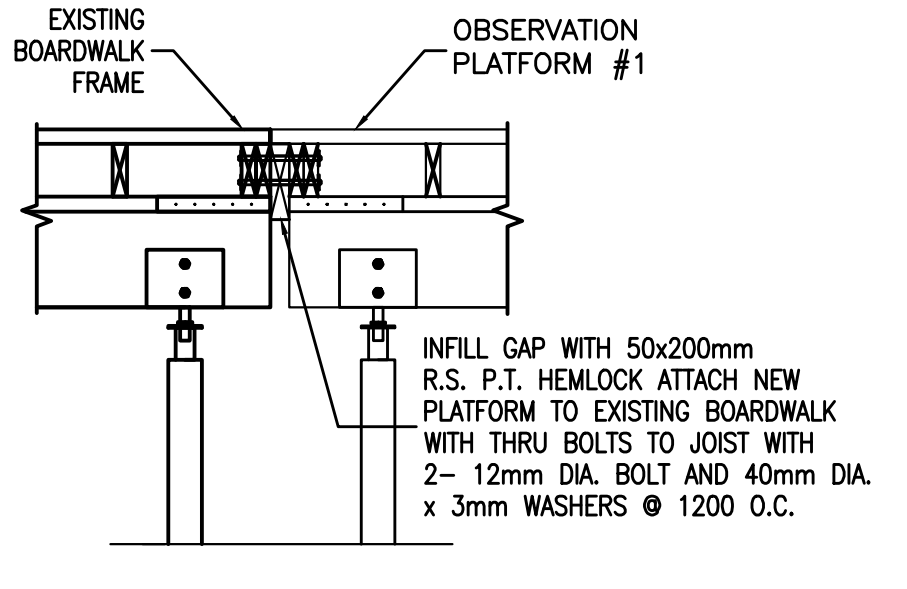
E TERRESTRIAL BOARDWALK ELEVATION
SCALE: 1:20



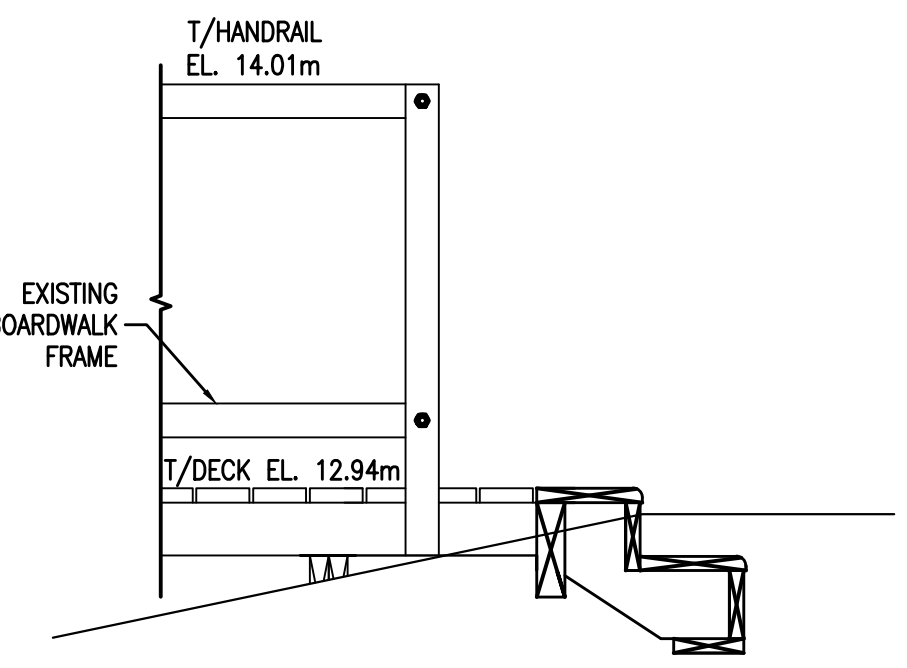
C STAIR PLAN
SCALE: 1:20



F STAIR SECTION
SCALE: 1:20

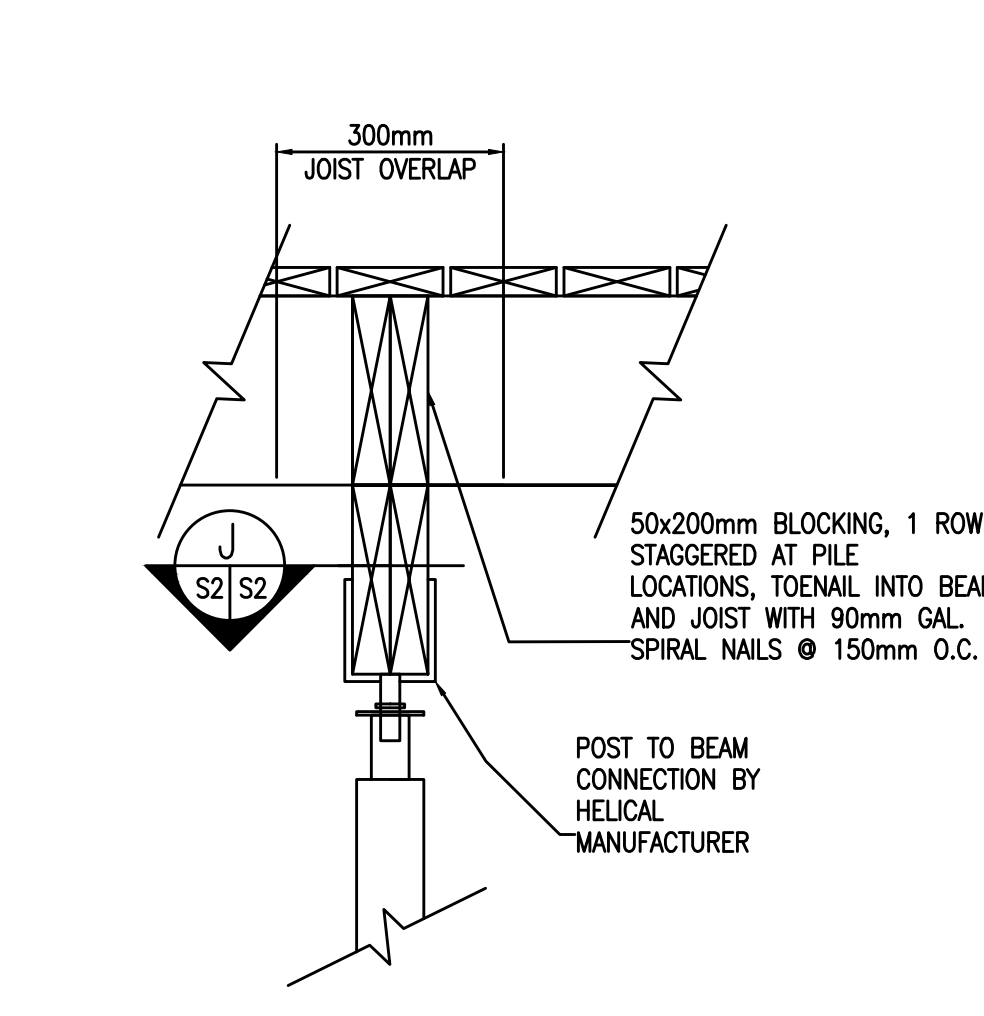


N SECTION
SCALE: 1:20

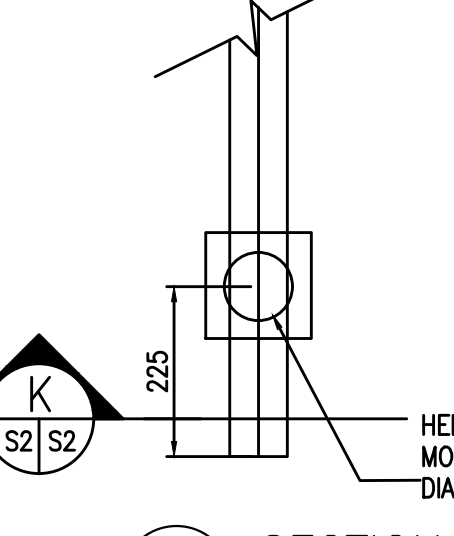


G STAIR SECTION
SCALE: 1:20

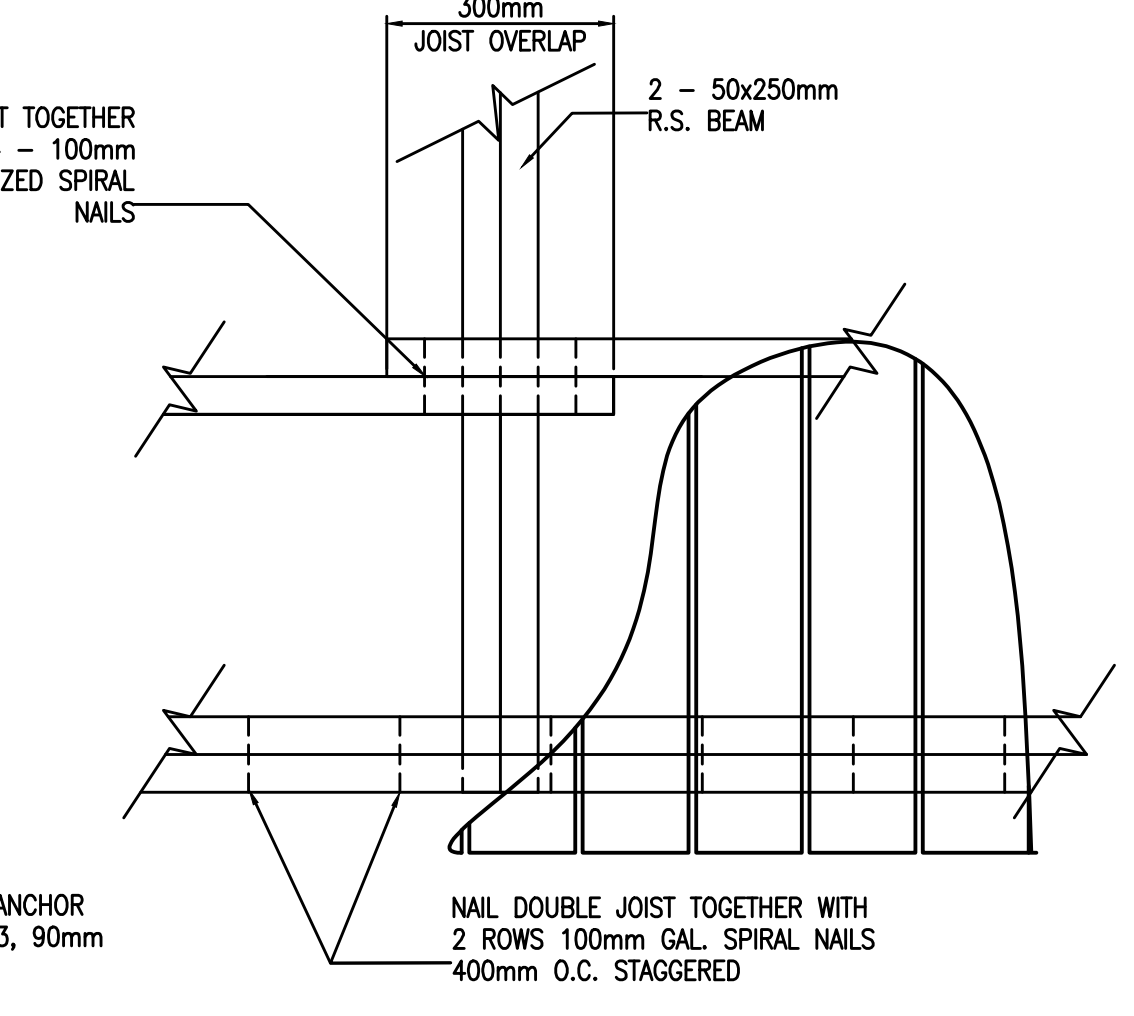
NOTES:
ALL STAIR LUMBER SHALL BE P.T. EASTERN HEMLock NO. 1 STRUCTURAL GRADE or P.T. SPF NO. 1.
ALL METAL WORK AND FASTENERS TO BE HOT DIPPED GALVANIZED TO ASTM A153M.
ALL WELDS TO BE GRIND SMOOTH, STAIR LENGTH TO BE DETERMINED WITH SPECIFIC ON-SITE MEASUREMENTS. SHOP DRAWINGS REQUIRED FOR APPROVAL OF METAL WORK.
STAIR STRINGERS FASTENED TO STRINGERS WITH 2-90mm GALVANIZED DECK SCREWS, 2 EACH STRINGER.



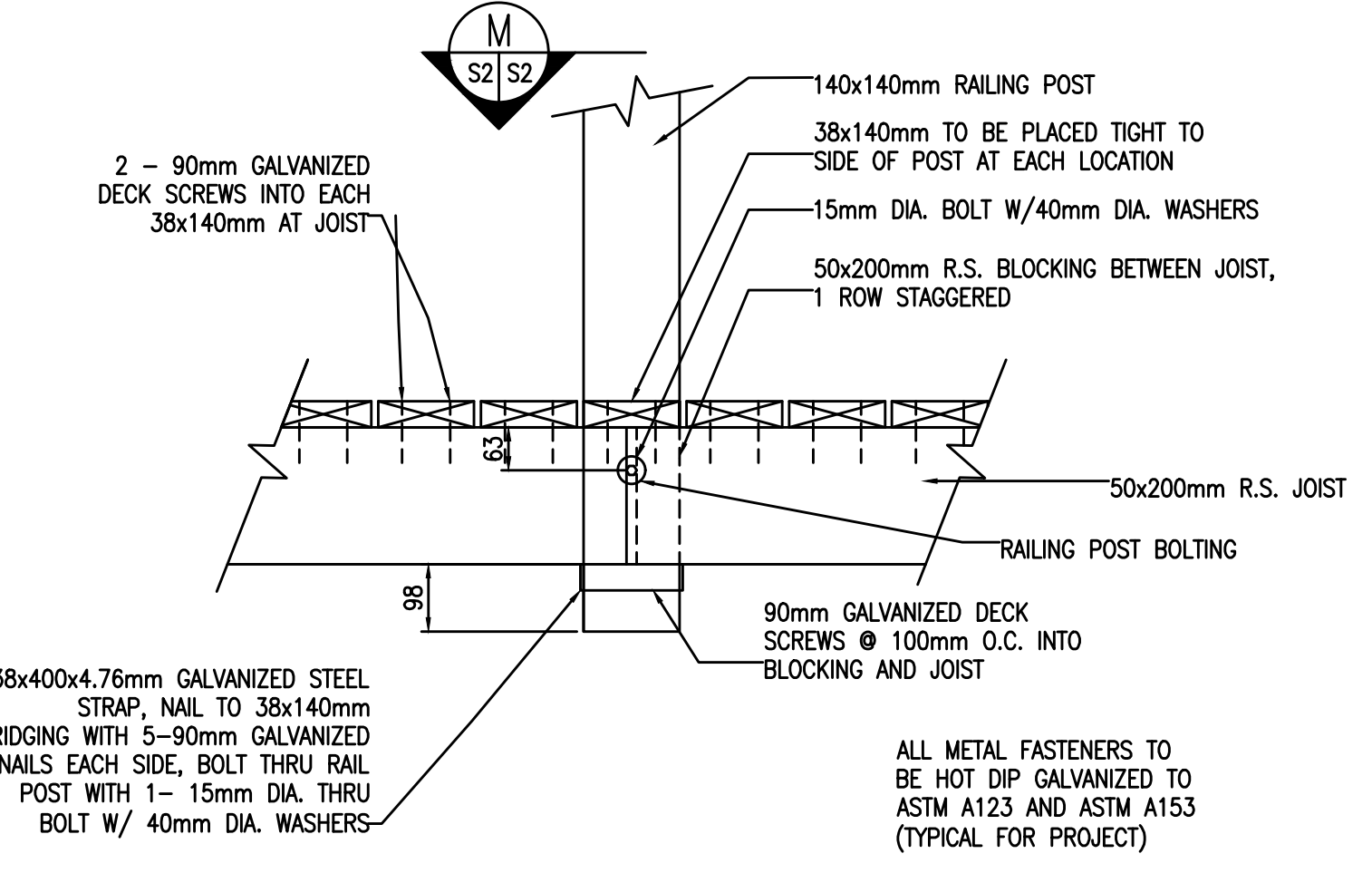
H FRAMING AT HELICAL
SCALE: 1:10



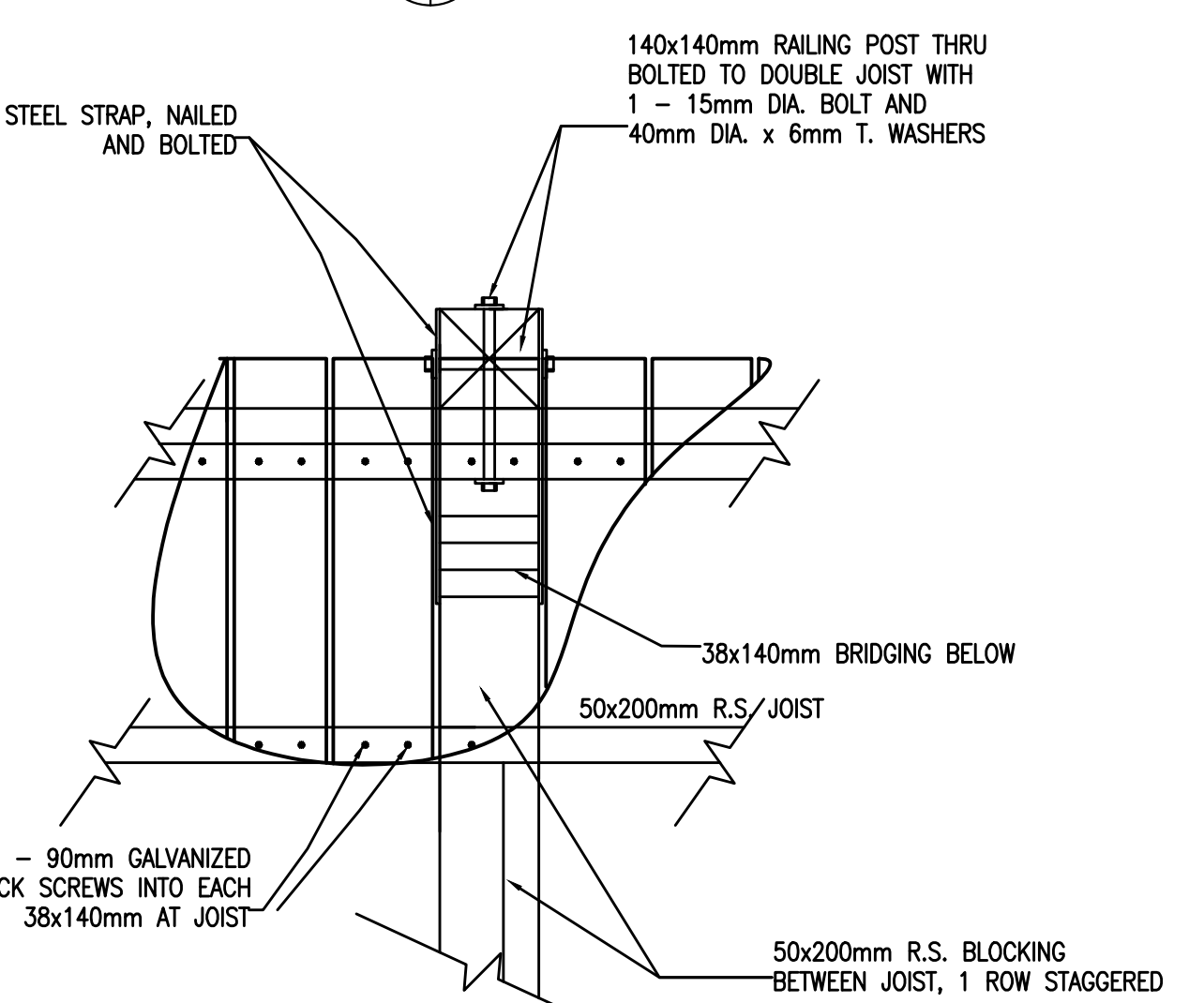
J SECTION
SCALE: 1:10



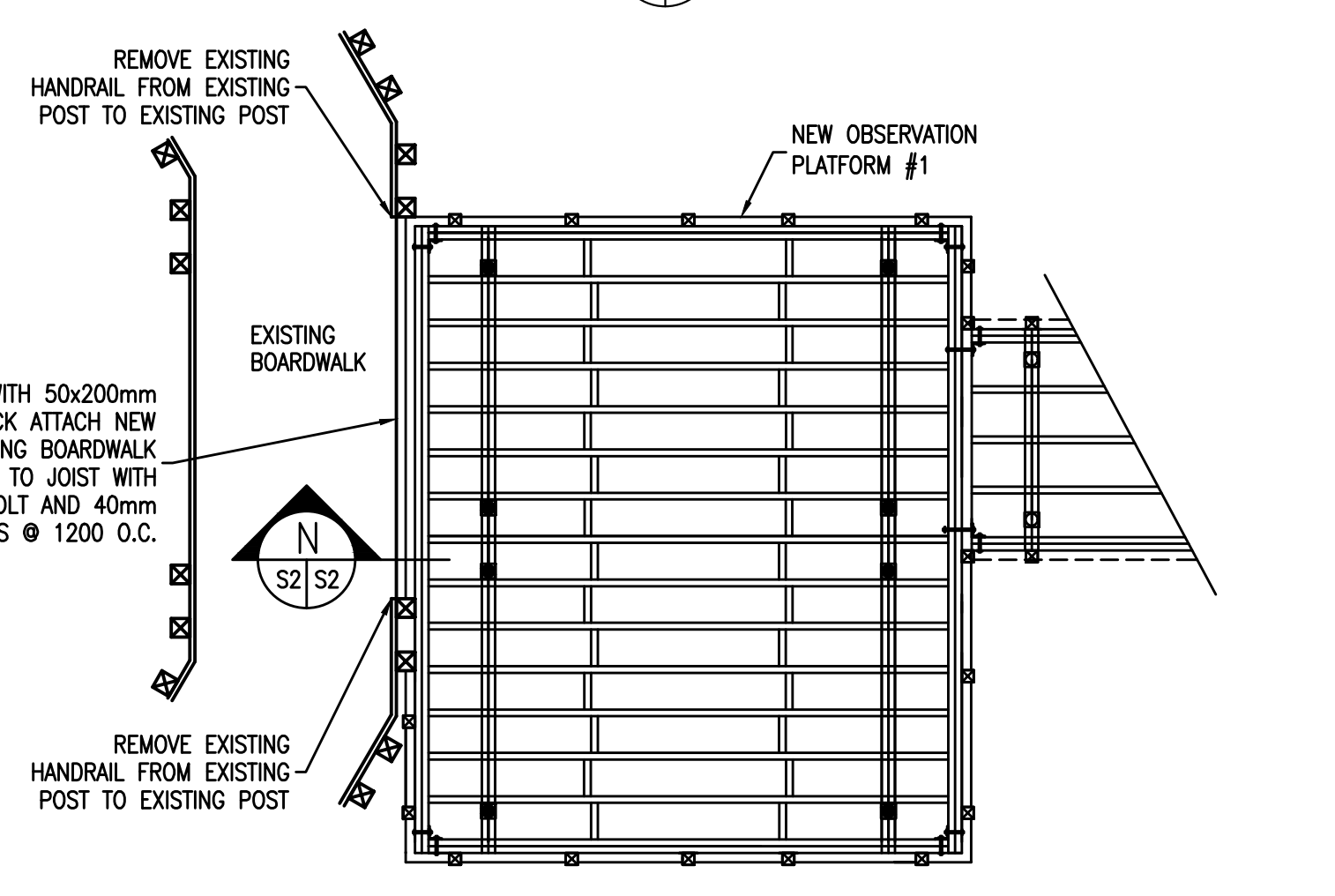
K SECTION
SCALE: 1:10



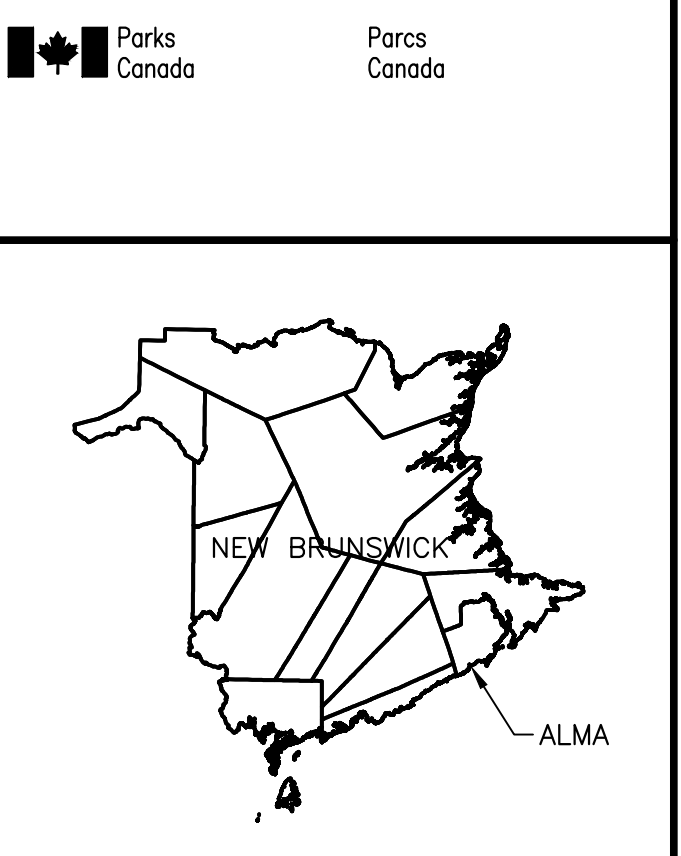
L RAILING POST CONNECTION
SCALE: 1:10



M SECTION
SCALE: 1:10

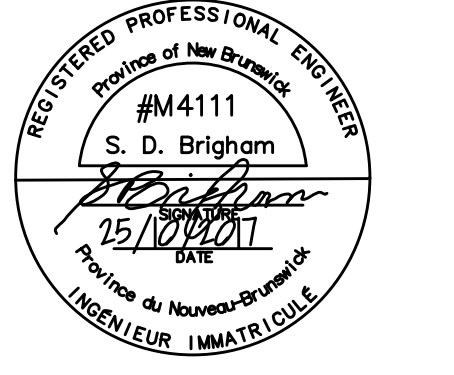


D EXISTING BOARDWALK CONNECTION TO NEW OBSERVATION AREA PLAN
SCALE: 1:50



CBCL LIMITED
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GEMTEC EASTERN JV



O	ISSUED FOR TENDER	26 OCT 2017
D	ISSUED FOR 100% REVIEW	30 AUG 2017
C	ISSUED FOR 99% REVIEW	06 JUL 2017
B	RE-ISSUED FOR 66% REVIEW	13 JUN 2017
A	ISSUED FOR 66% REVIEW	07 MAY 2017
revisions		date

FNP SHORELINE PROTECTION WORKS
FUNDY NATIONAL PARK ALMA, NB

SECTIONS AND DETAILS

designed S. BRINGHAM
date OCTOBER 2017
drawn M. FILIAITRAULT
date OCTOBER 2017
approved [Signature]
date OCT. 2017
Tender [Signature]
date OCT. 2017
PWSC Project Manager [Signature]
project number [Blank]
drawing no. 1346

no. du projet
no. du dessin
S-2