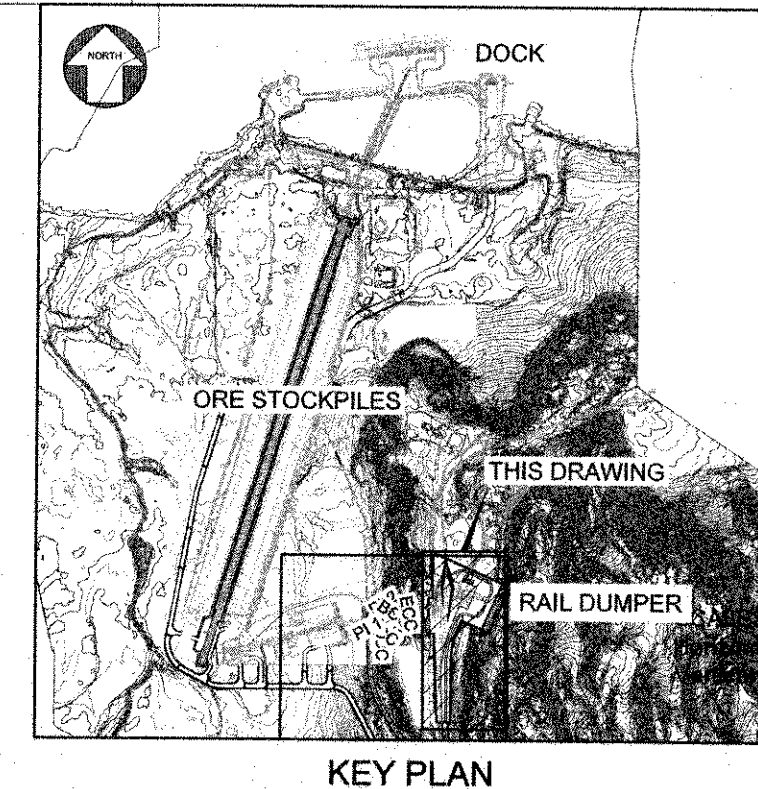
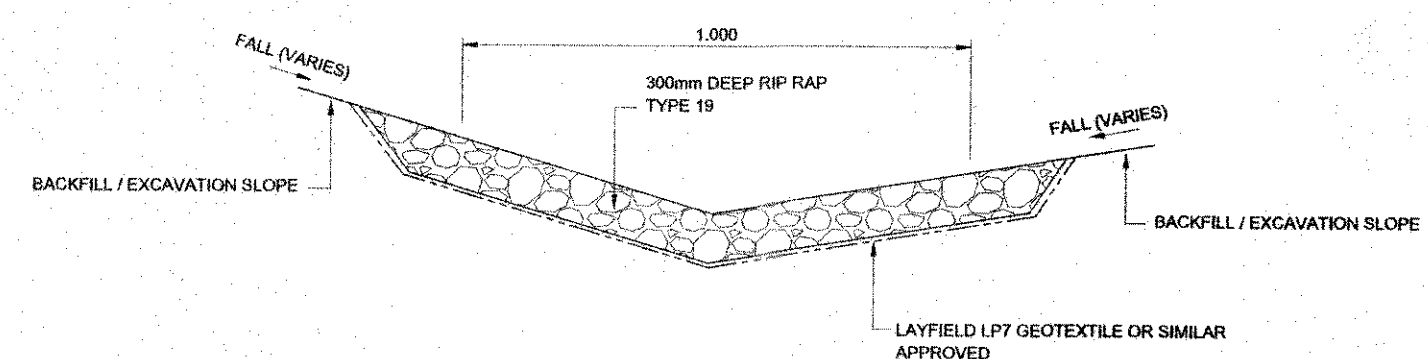
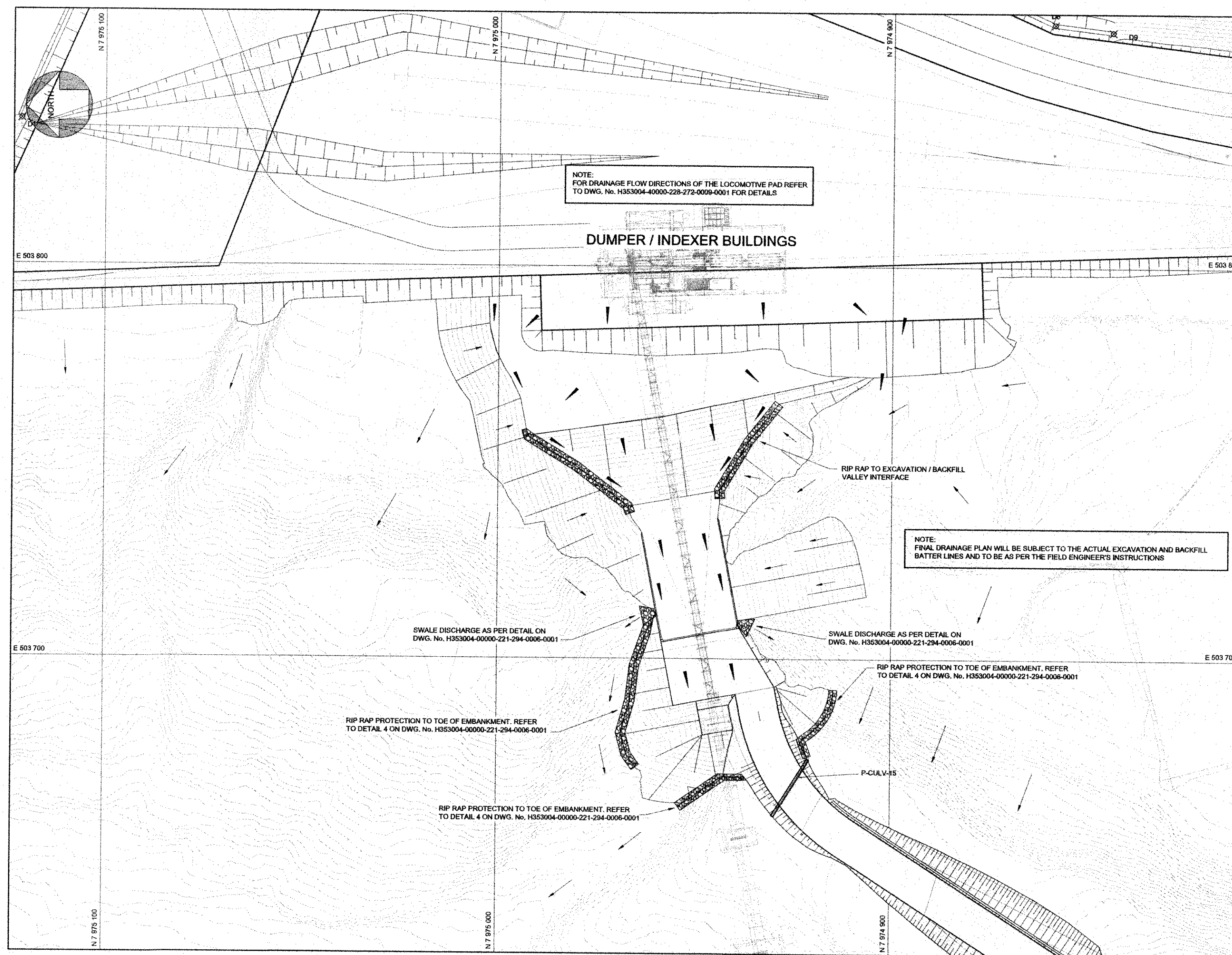


ATTACHMENT 15

Milne Port Material Handling and Water Management

(87 Pages)



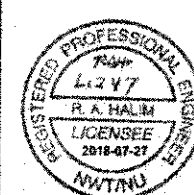
- NOTES:

1. LIDAR SURVEY PROVIDED BY PHOTSAT (2016).
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83), ZONE 17 AND IS METERS.
3. CONTOURS ARE IN METERS. THE CONTOUR INTERVAL IS 0.6m.
4. ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS OTHERWISE NOTED.

LEGEND:

- OFF PAD FLOW DIRECTION
ON PAD FLOW DIRECTION

H353004-40000-228-272-0009-0001	LOCOMOTIVE WORKSHOP PAD - DRAINAGE PLAN
H353004-40000-221-272-0011-0001	RAIL CAR DUMPER - PLAN AND PROFILES - STAGE 1 BACKFILL
H353004-40000-221-272-0011-0001	RAIL CAR DUMPER - PLAN AND PROFILES - BULK EXCAVATION
H353004-40000-221-272-0009-0001	LOCOMOTIVE WORKSHOP PAD - PLAN
H353004-00000-221-294-0008-0001	STANDARD DRAWINGS - TYPICAL PAD, DITCH AND BERM SECTIONS
H353004-00000-221-294-0006-0001	STANDARD DRAWING - EARTHWORKS AND DRAINAGE DETAILS
DRAWING No.	DRAWING TITLE
	REFERENCE DRAWINGS



FOR CONSTRUCTION

[illegible]

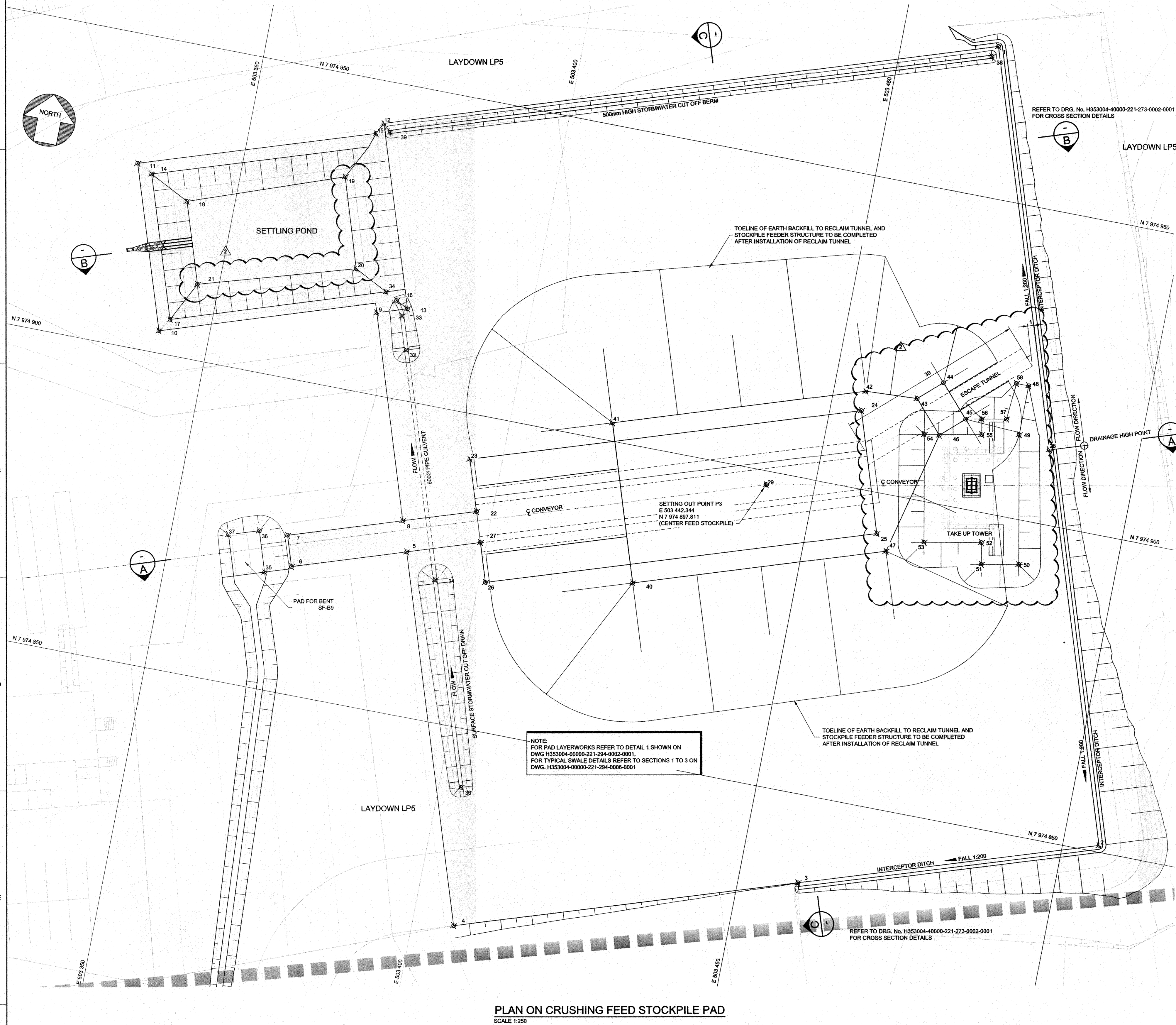
HATCH			
EXTRACT TO USE			
DRAFTSPERSON	I BARNARD	NR	17/07/2016
DESIGNER	I BARNARD	NR	17/07/2016
CHECKER	F HUGO		2016-07-27
DESIGN COORD.	R GOOSEN		2016-07-27
RESP. ENG.	R HALIM		2016-07-27
LEAD DISC. ENG.	A GROBBELAAR		2016-07-27
AREA LEAD	V LAMICR		2016-07-27
ENG. MANAGER	D STANGER		2016-07-27
AREA MANAGER	T ATIBA		2016-07-27
ROLE	NAME	SIGNATURE	DATE

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
RAIL CAR DUMPER
DRAINAGE PLAN

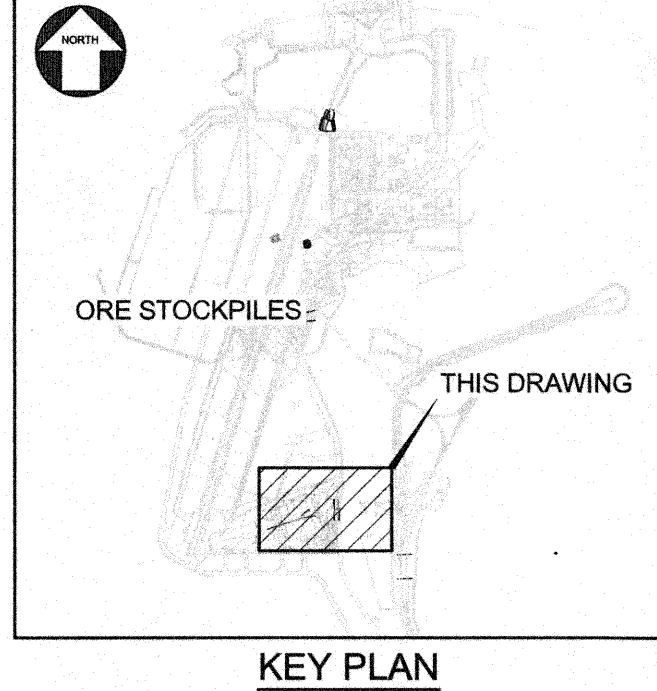
SCALE 1:500 OR AS NOTED	DWG. No. H353004-40000-221-272-0010-0001	RE C
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PLAN ON CRUSHING FEED STOCKPILE PAD
SCALE 1:250

CRUSHING FEED STOCKPILE PAD
SETTING OUT CO-ORDINATES

POINT	E	N	LEVEL
1	503 465.423	7 974 974.159	16.193
2	503 505.760	7 974 951.105	16.685
3	503 459.529	7 974 935.951	16.086
4	503 406.617	7 974 816.607	15.587
5	503 387.746	7 974 876.178	15.587
6	503 370.054	7 974 870.379	15.493
7	503 368.481	7 974 875.178	15.493
8	503 386.173	7 974 880.977	15.587
9	503 375.700	7 974 913.081	14.787
10	503 341.944	7 974 903.541	13.500
11	503 333.473	7 974 928.381	13.500
12	503 371.032	7 974 943.218	14.466
13	503 380.405	7 974 914.623	14.634
14	503 335.997	7 974 928.103	13.500
15	503 370.101	7 974 941.388	13.500
16	503 378.427	7 974 915.626	13.500
17	503 343.344	7 974 905.694	13.500
18	503 343.344	7 974 905.694	13.500
19	503 366.590	7 974 933.588	12.065
20	503 371.100	7 974 919.431	12.062
21	503 346.579	7 974 912.108	11.809
22	503 397.500	7 974 864.690	15.648
23	503 394.852	7 974 892.767	15.648
24	503 455.003	7 974 912.484	15.970
25	503 461.233	7 974 893.479	15.970
26	503 401.082	7 974 873.782	15.648
27	503 399.073	7 974 879.891	15.648
28	503 485.782	7 974 912.051	16.650
29	503 442.322	7 974 897.804	15.886
30	503 403.543	7 974 840.700	14.576
31	503 393.082	7 974 872.666	13.941
32	503 381.498	7 974 908.065	13.560
33	503 379.782	7 974 913.308	13.533
34	503 376.515	7 974 916.680	13.500
35	503 365.999	7 974 968.681	12.800
36	503 363.912	7 974 875.048	12.800
37	503 359.161	7 974 873.491	12.800
38	503 464.703	7 974 972.345	16.824
39	503 372.282	7 974 942.049	14.986
40	503 424.287	7 974 878.211	26.286
41	503 416.189	7 974 902.918	26.286
42	503 455.114	7 974 915.678	26.286
43	503 465.398	7 974 916.088	26.712
44	503 467.059	7 974 919.398	20.712
45	503 471.678	7 974 914.293	20.712
46	503 468.017	7 974 910.982	20.712
47	503 463.213	7 974 890.671	26.286
48	503 480.574	7 974 921.502	16.570
49	503 480.574	7 974 913.502	18.800
50	503 484.513	7 974 892.946	18.800
51	503 478.621	7 974 891.817	18.800
52	503 477.962	7 974 895.254	18.800
53	503 468.926	7 974 893.523	18.800
54	503 465.646	7 974 910.641	18.800
55	503 474.681	7 974 912.373	18.800
56	503 474.211	7 974 914.828	18.800
57	503 478.103	7 974 915.574	18.800
58	503 478.574	7 974 921.502	16.570



NOTES:

- LIDAR SURVEY PROVIDED BY PHOTOSAT (2016).
- CO-ORDINATE GRID IS SHOWN IN UTM (NAD83), ZONE 17 AND IS IN METERS.
- CONTOURS ARE IN METERS. THE CONTOUR INTERVAL IS 0.5m.
- ALL DIMENSIONS SHOWN ARE IN METERS, UNLESS OTHERWISE NOTED.
- ALL MECHANICAL AND MATERIALS HANDLING DRAWINGS BY OTHERS.
- PRODUCT STOCKPILE OMITTED FOR CLARITY.

H353004-40000-221-272-0002-0002	CRUSHING FEED STOCKPILE - PAD CROSS SECTIONS - SHEET 2 OF 2
BCSY-A-100	THYSSENKRUPP CONVEYOR 4122-CV-001 - GENERAL ARRANGEMENT
H353004-00000-221-294-0008-0001	STANDARD DRAWINGS - TYPICAL PAD, DITCH AND BERM SECTIONS
H353004-00000-221-294-0006-0001	STANDARD DRAWINGS - EARTHWORKS AND DRAINAGE DETAILS
H353004-00000-228-072-0003-0001	CRUSHING FEED STOCKPILE - SETTLING POND LAYOUT
H353004-40000-228-072-0005-0001	CRUSHING FEED STOCKPILE - DRAINAGE PLAN
H353004-40000-221-272-0002-0001	CRUSHING FEED STOCKPILE - PAD CROSS SECTIONS
H353004-40000-221-272-0003-0001	CRUSHING AND SCREENING PAD - LAYOUT PLAN
DRAWING No.	DRAWING TITLE

REFERENCE DRAWINGS

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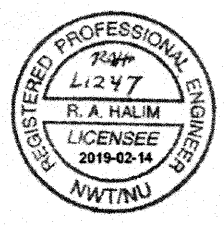
2

3

4

FOR CONSTRUCTION

2	POINTS 19 - 21, 40 - 42 AND 47 REVISED AND TAKE TOWER POSITION AND PAD ADDED	IHB	PH	14/02/2019	AREA LEAD	V LAVRIC	PP		
1	SETTING POINT P3, CONVEYOR BENT DRAIN AND THYSSENKRUPP REFERENCE DRAWING ADDED	IHB	PH	18/09/2018	ENG. MANAGER	R GOOSEN			
0	APPROVED FOR CONSTRUCTION	IHB	PH	20/03/2018	AREA MANAGER	T ATIBA			
No.	DESCRIPTION	BY	CHK'D	DATE	ROLE	NAME	SIGNATURE	DATE	



REG. PROFESSIONAL

THIS DRAWING WAS PREPARED BY INDIVIDUALS FOR THE EXCLUSIVE USE OF THE CLIENTS FOR WHOM IT WAS PREPARED AND ITS USE IS SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN HATCH LTD. AND THE CLIENT. NO PART OF THIS DRAWING OR ANY INFORMATION CONTAINED HEREIN IS TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF HATCH LTD. THE CLIENTS SHALL BE RESPONSIBLE FOR THE PROTECTION AND SECURITY OF THIS DRAWING AND THE INFORMATION CONTAINED HEREIN. HATCH LTD. SHALL BE RESPONSIBLE FOR THE PROTECTION AND SECURITY OF THIS DRAWING AND THE INFORMATION CONTAINED HEREIN. HATCH LTD. SHALL BE RESPONSIBLE FOR THE PROTECTION AND SECURITY OF THIS DRAWING AND THE INFORMATION CONTAINED HEREIN.

HATCH

DRAFTSPERSON	I BARNARD	NR	
DESIGNER	I BARNARD	NR	
CHECKER	F HUGO		2019-02-14
DESIGN COORD.	R GOOSEN		2019-02-14
RESP. ENG.	R HALIM		2019-02-14
LEAD DISC. ENG.	A GROBELEAAR		2019-02-14
AREA LEAD	V LAVRIC	PP	2019-02-14
ENG. MANAGER	R GOOSEN		2019-02-14
AREA MANAGER	T ATIBA		2019-02-14
ROLE	NAME	SIGNATURE	DATE

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

PORT SITE
CRUSHING FEED STOCKPILE PAD
LAYOUT PLAN

SCALE

1:250
OR AS NOTED

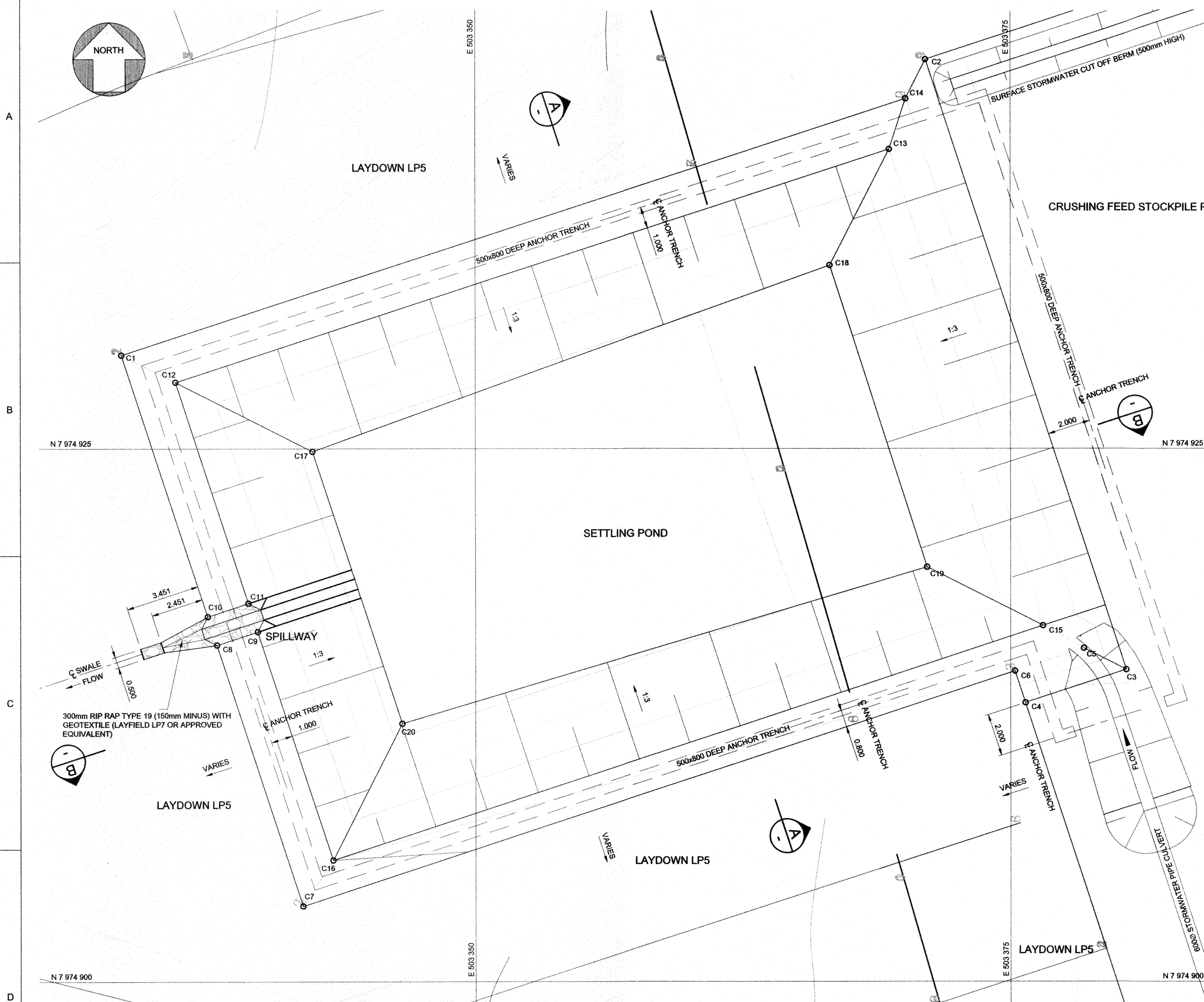
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H353004-40000-221-272-0002-0001

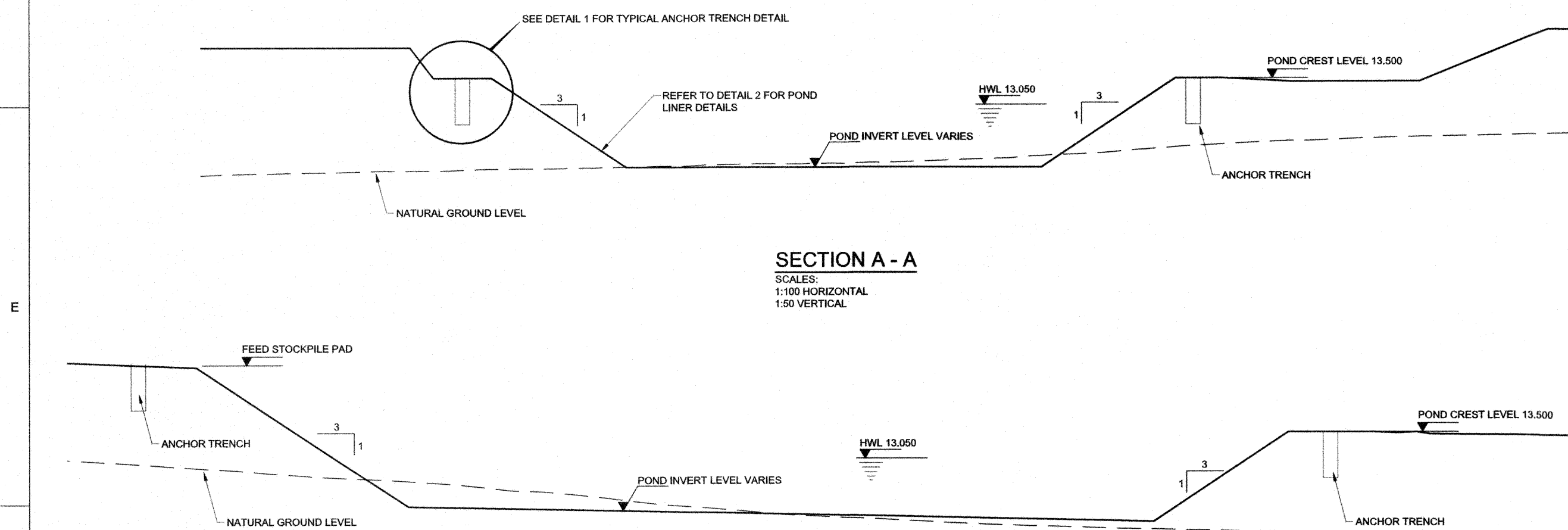
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2

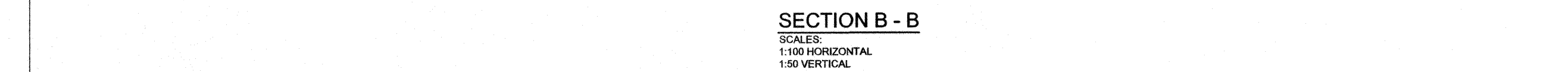
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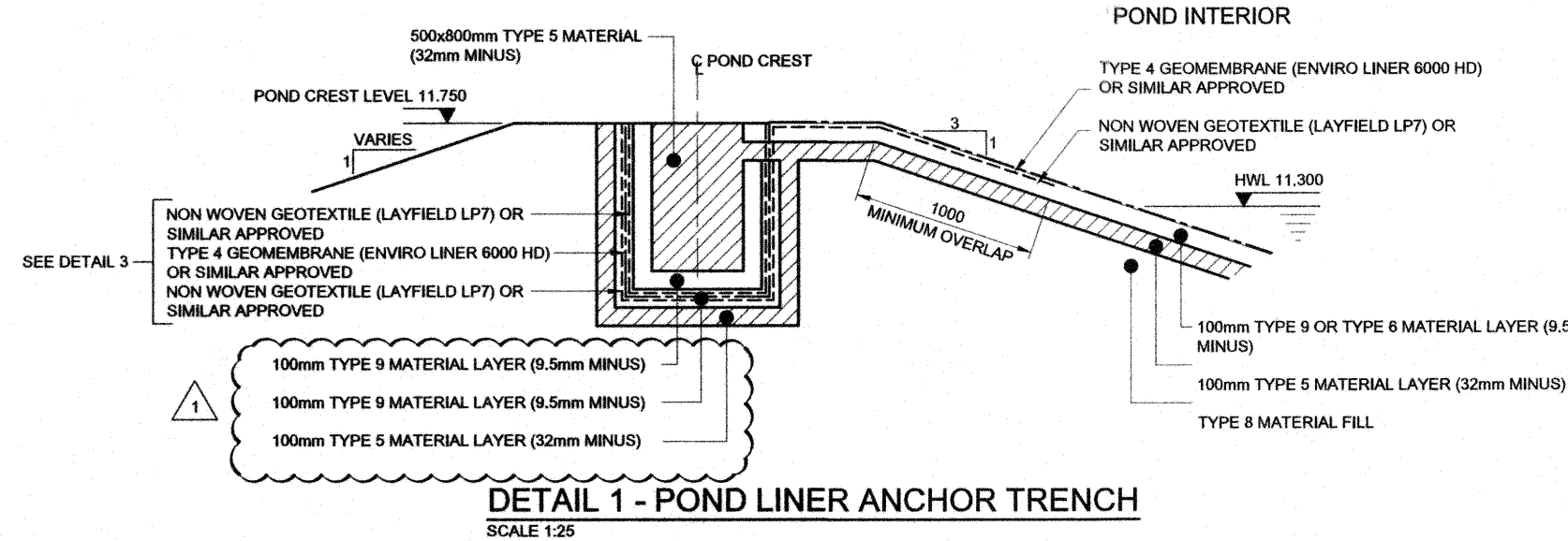
PLAN ON SETTLING POND
SCALE 1:100



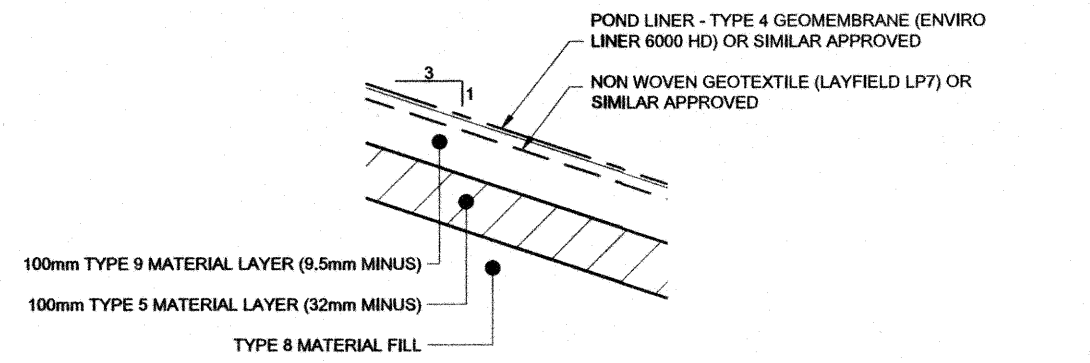
SECTION A - A
SCALES:
1:100 HORIZONTAL
1:50 VERTICAL



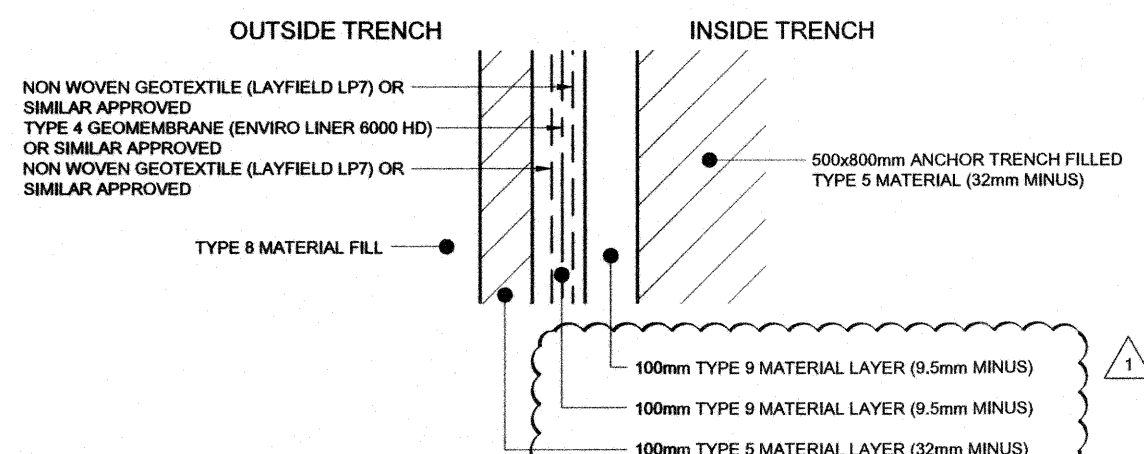
SECTION B - B
SCALES:
1:100 HORIZONTAL
1:50 VERTICAL



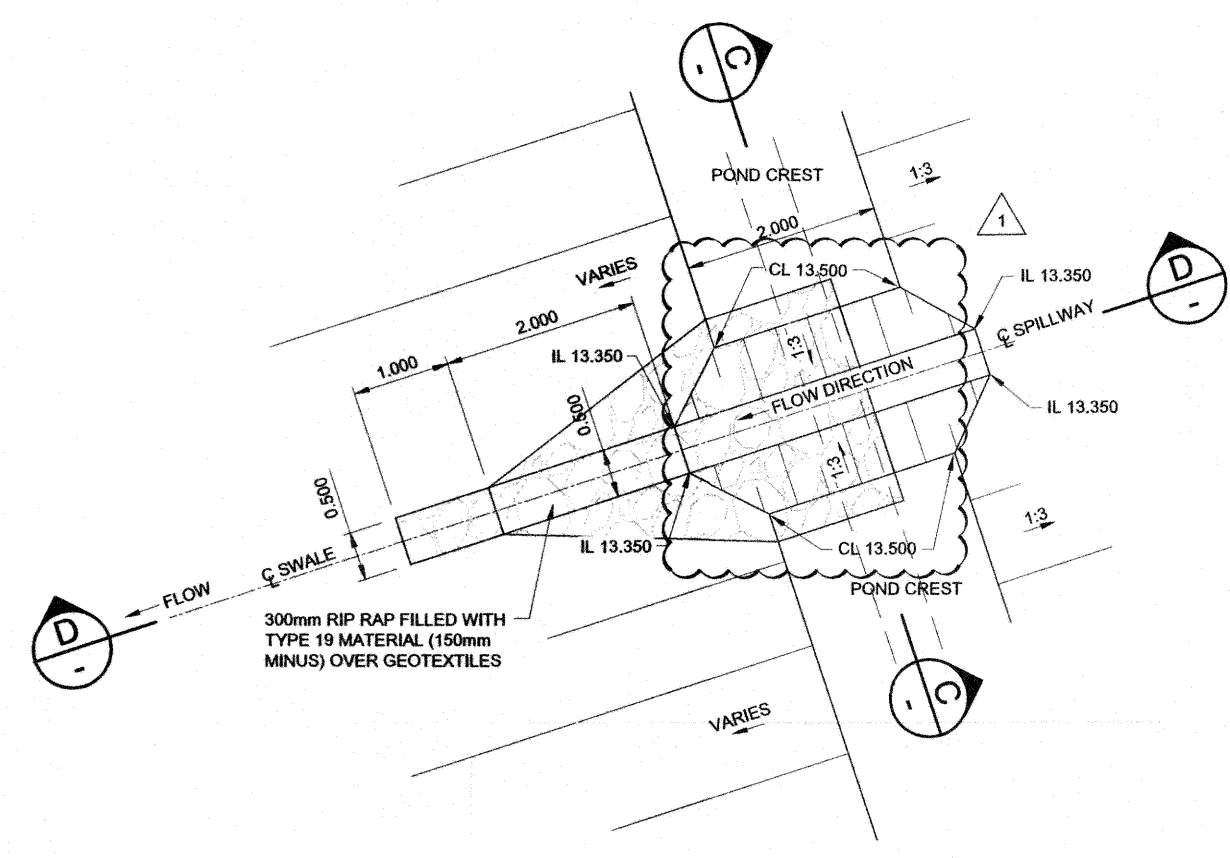
DETAIL 1 - POND LINER ANCHOR TRENCH
SCALE 1:25



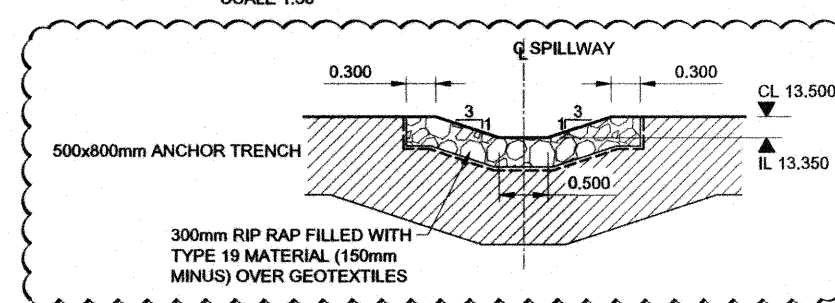
DETAIL 2 - POND LINER
SCALE 1:10



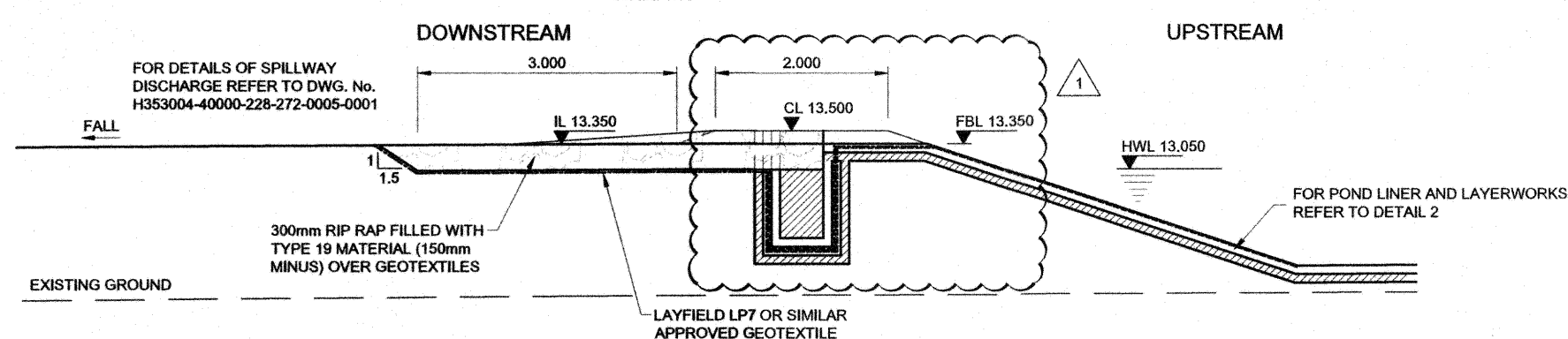
DETAIL 3 - TRENCH LINER
SCALE 1:10



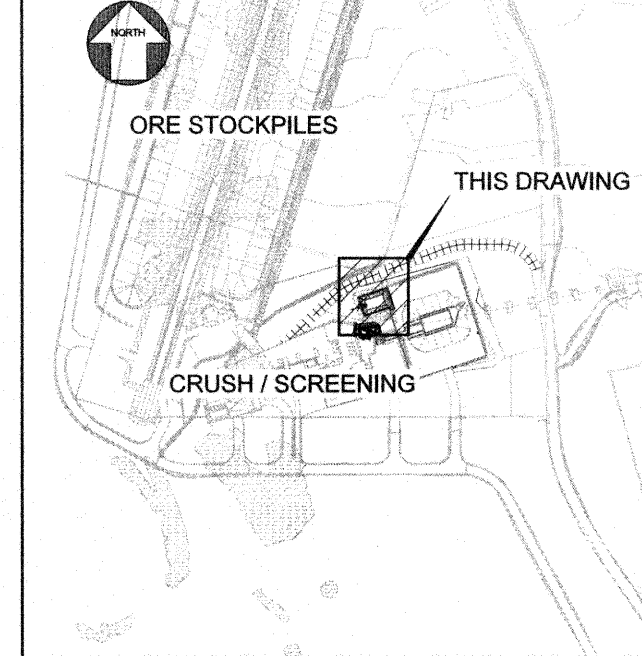
PLAN ON SETTLING POND SPILLWAY
SCALE 1:50



SECTION C - C
SCALE 1:50



SECTION D - D
SCALE 1:50



KEY PLAN

- NOTES:
1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2016).
 2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83), ZONE 17 AND IS IN METERS.
 3. CONTOURS ARE IN METERS. THE CONTOUR INTERVAL IS 0.5m.
 4. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.
 5. IT IS ASSUMED THAT ALL RUN OFF CAPTURED BY THE SETTLING POND IS NON-ACID GENERATING AND CAN BE DISCHARGED TO THE ENVIRONMENT ONCE THE REQUIREMENTS OF BIM ENVIRONMENTAL CRITERIA HAS BEEN ACHIEVED. WATER TO BE DISCHARGED TO AN APPROVED POINT, IN ACCORDANCE WITH THE CLIENT'S (BIM) ENVIRONMENTAL REQUIREMENTS.
 6. THE INSTALLATION OF THE GEOMEMBRANE (ENVIRO LINER 6000HD) IS TO BE IN STRICT ACCORDANCE WITH THE SPECIALIST PROVIDERS SPECIFICATIONS.

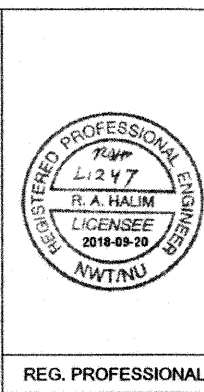
LEGEND:

CL	CREST LEVEL
IL	INVERT LEVEL
HWL	HIGH WATER LEVEL
FBL	FREE BOARD LEVEL
---	TYPE 4 GEO-MEMBRANE (ENVIRO LINER 6000 HD) OR SIMILAR APPROVED
---	NON WOVEN GEO-TEXTILE (LAYFIELD LP7) OR SIMILAR APPROVED

POND SETTING OUT DATA				
POINT	E	N	LEVEL	
C1	503 333.473	7 974 929.380	13.500	
C2	503 371.031	7 974 943.218	14.465	
C3	503 380.405	7 974 914.623	14.165	
C4	503 375.699	7 974 913.080	14.575	
C5	503 378.426	7 974 915.625	13.500	
C6	503 375.209	7 974 914.558	13.500	
C7	503 341.943	7 974 903.540	13.500	
C8	503 337.929	7 974 915.789	13.500	
C9	503 339.829	7 974 916.412	13.500	
C10	503 337.492	7 974 917.119	13.500	
C11	503 339.393	7 974 917.742	13.500	
C12	503 335.996	7 974 928.103	13.500	
C13	503 368.815	7 974 938.861	13.500	
C14	503 370.100	7 974 941.387	13.500	
C15	503 375.913	7 974 916.898	13.500	
C16	503 343.221	7 974 906.064	13.500	
C17	503 342.401	7 974 924.861	11.800	
C18	503 366.037	7 974 933.402	12.060	
C19	503 370.472	7 974 919.656	12.060	
C20	503 346.456	7 974 912.480	11.800	

DRAWING No.	DRAWING TITLE
H353004-00000-221-294-0006-0001	STANDARD DRAWING - EARTHWORKS AND DRAINAGE DETAILS
H353004-40000-221-273-0002-0001	CRUSHING FEED STOCKPILE - PAD CROSS SECTIONS
H353004-40000-221-272-0002-0001	CRUSHING FEED STOCKPILE PAD - LAYOUT PLAN

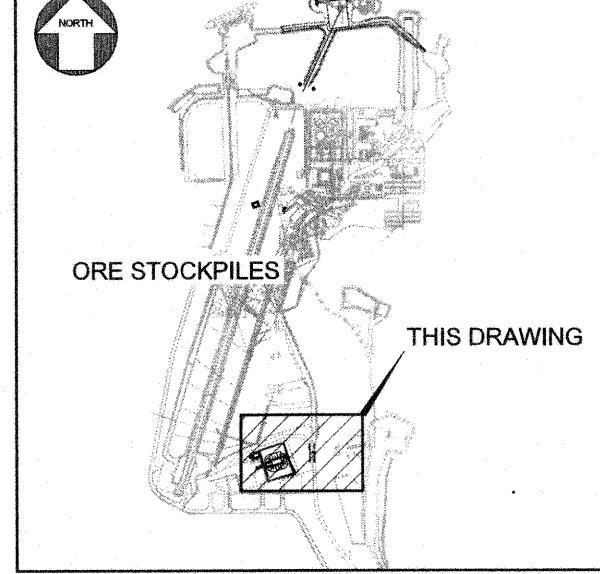
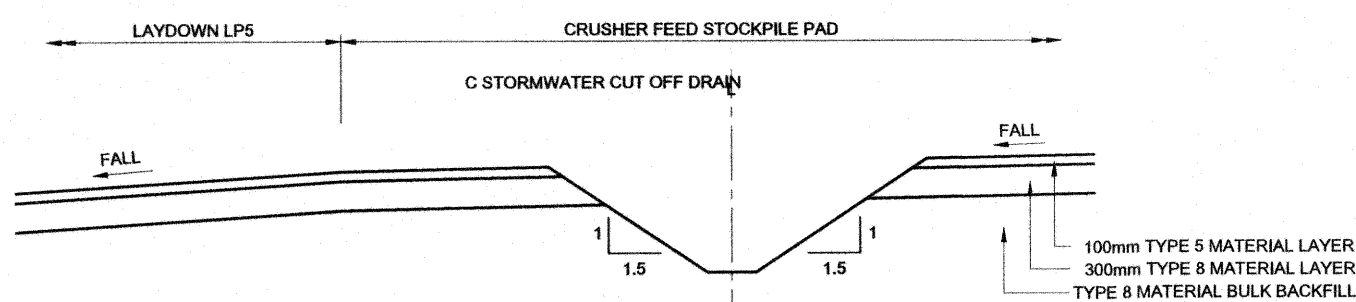
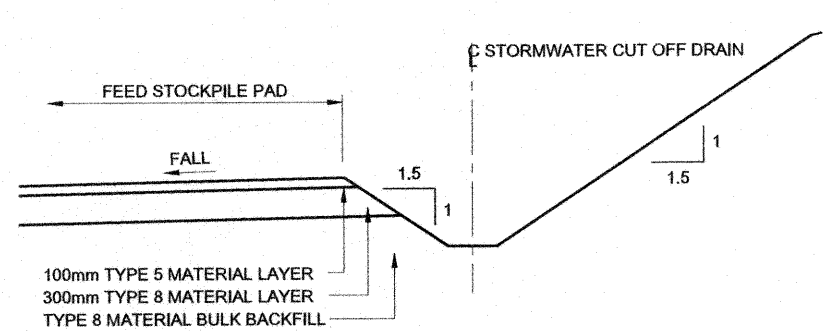
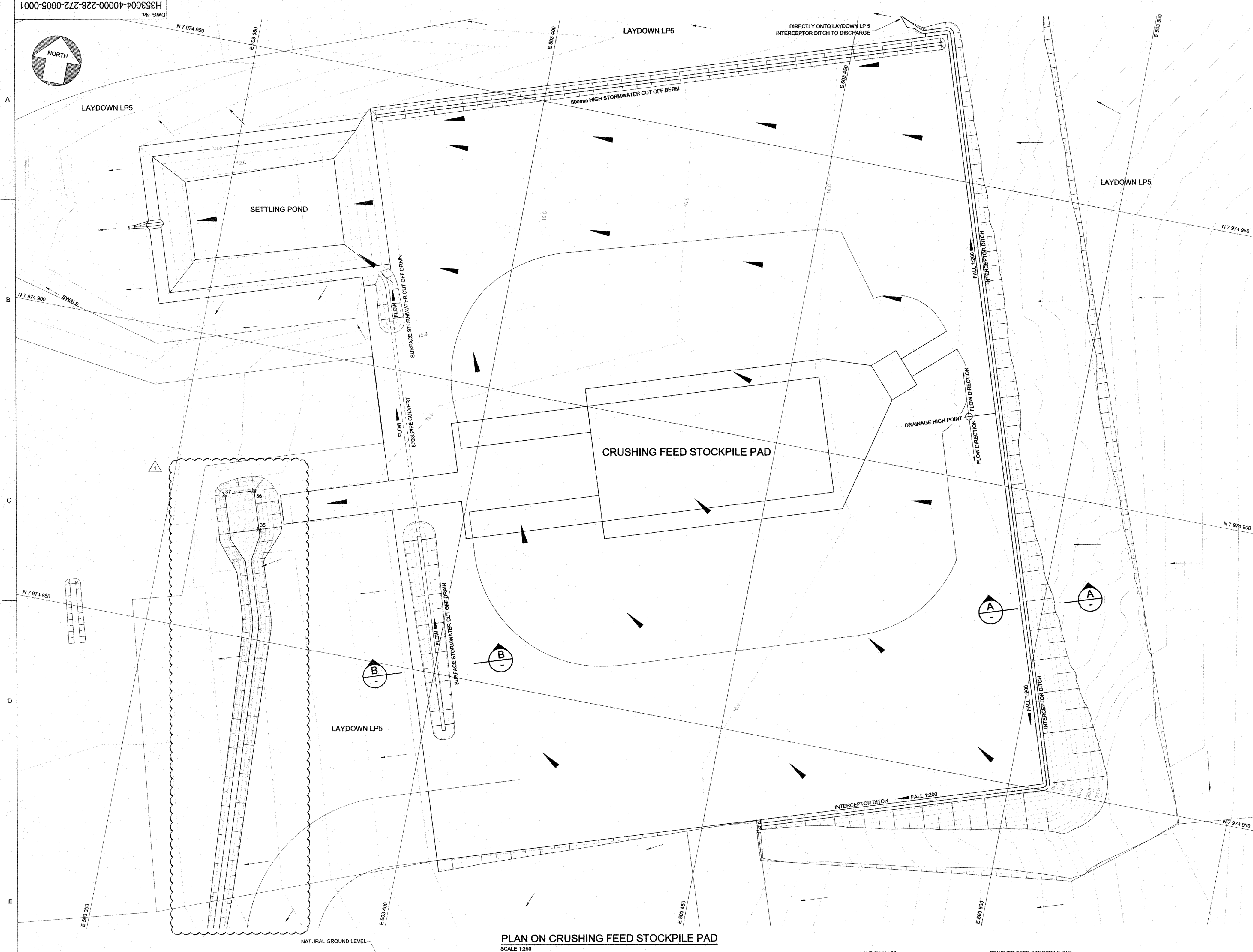
REFERENCE DRAWINGS	1	2	3	4	5	6	7	8



FOR CONSTRUCTION					REVISIONS				
No.	DESCRIPTION	BY	CHKD	DATE	No.	DESCRIPTION	BY	CHKD	DATE
1	SPILLWAY DETAIL AND NOTES REISED	IBH	FH	15/08/2018	1	SPILLWAY DETAIL AND NOTES REISED	IBH	FH	15/08/2018
0	APPROVED FOR CONSTRUCTION	IBH	FH	21/03/2018	0	APPROVED FOR CONSTRUCTION	IBH	FH	21/03/2018

HATCH					Baffinland				
DRAFTSPERSON	I BARNARD	NR	21/03/2018		DRAFTSPERSON	I BARNARD	NR	21/03/2018	
DESIGNER	I BARNARD	NR	21/03/2018		DESIGNER	I BARNARD	NR	21/03/2018	
CHECKER	F HUGO	NR	2018-09-20		CHECKER	F HUGO	NR	2018-09-20	
DESIGN COORD.	R GOOSEN	NR	2018-09-20		DESIGN COORD.	R GOOSEN	NR	2018-09-20	
RESP. ENG.	R HALIM	NR	2018-09-20		RESP. ENG.	R HALIM	NR	2018-09-20	
LEAD DISC. ENG.	A GROBBELAAR	NR	2018-09-20		LEAD DISC. ENG.	A GROBBELAAR	NR	2018-09-20	
AREA LEAD	V LAVRIC	NR	2018-09-20		AREA LEAD	V LAVRIC	NR	2018-09-20	
ENG. MANAGER	D STANGER	NR	2018-09-20		ENG. MANAGER	D STANGER	NR	2018-09-20	
AREA MANAGER	T ATIBA	NR	2018-09-20		AREA MANAGER	T ATIBA	NR	2018-09-20	

Baffinland					Baffinland Iron Mines LP				
Baffinland Iron Mines LP					MARY RIVER EXPANSION PROJECT				
PORT SITE					CRUSHING FEED STOCKPILE PAD				
SETTLING POND LAYOUT					SETTLING POND LAYOUT				
SCALE 1:100 OR AS NOTED					DWG. No. H353004-40000-228-272-0003-0001				
DRAWING APPROVAL STATUS: Approved for Construction					REV 1				

**NOTES:**

1. LIDAR SURVEY PROVIDED BY PHOTSAT (2016).
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83), ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. THE CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.
5. IT IS ASSUMED THAT ALL RUN OFF CAPTURED BY THE SETTLING POND IS NON-ACID GENERATING AND CAN BE DISCHARGED TO THE ENVIRONMENT ONCE THE BIM ENVIRONMENTAL CRITERIA HAS BEEN ACHIEVED. WATER TO BE DISCHARGED TO AN APPROVED POINT, IN ACCORDANCE WITH THE CLIENT'S (BIM) ENVIRONMENTAL REQUIREMENTS.
6. THE INSTALLATION OF THE GEOMEMBRANE (ENVIRO LINER 6000HD) IS TO BE IN STRICT ACCORDANCE WITH THE SPECIALIST PROVIDERS SPECIFICATIONS.

LEGEND:

- OFF PAD FLOW DIRECTION
▲ ON PAD FLOW DIRECTION

PLAN ON CRUSHING FEED STOCKPILE PAD
SCALE 1:250**SECTION B - B**
SCALE 1:20**FOR CONSTRUCTION**

No.	DESCRIPTION	BY	CHKD	DATE	ROLE	NAME	SIGNATURE	DATE
1	CONVEYOR BENT DRAIN SHOWN, NOTES REVISED AND THYSSENKRUPP REFERENCE DRAWING ADDED	IHB	FH	19/08/2018	ENG. MANAGER	D STANGER		19/08/2018
0	APPROVED FOR CONSTRUCTION	IHB	FH	20/03/2018	AREA MANAGER	T ATIBA		20/03/2018

HATCH

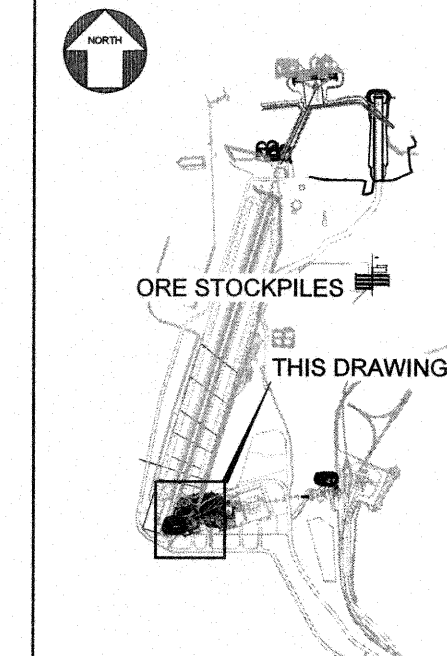
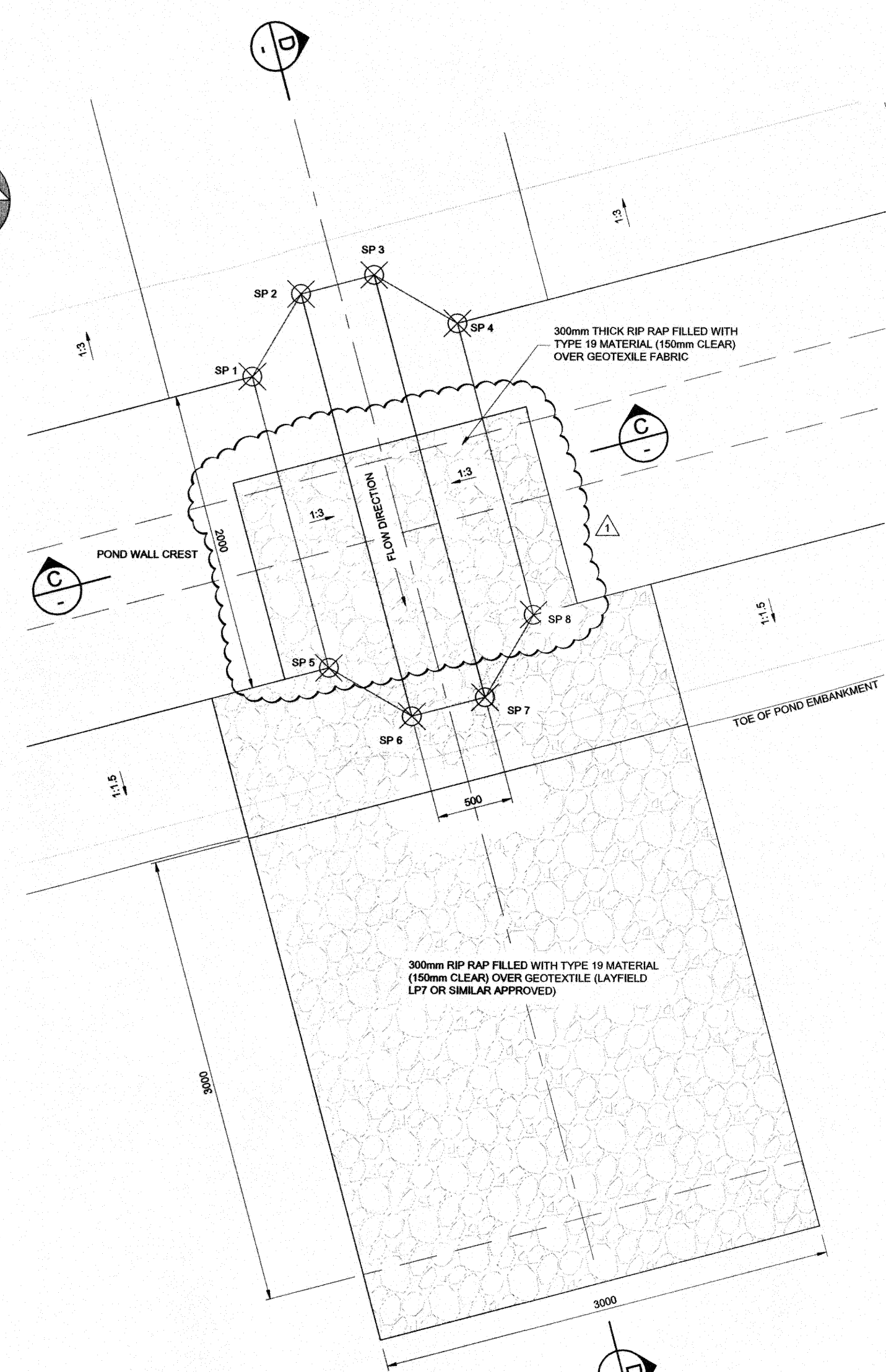
DRAFTSPERSON	I BARNARD	NR	
DESIGNER	H HERBST	NR	
CHECKER	F HUGO		2018-09-21
DESIGN COORD.	R GOOSEN		2018-09-21
RESP. ENG.	R HALIM		2018-09-27
LEAD DISC. ENG.	A GROSBELAAR		21 September
AREA LEAD	V LAVRIC		
ENG. MANAGER	D STANGER		19/08/2018

DRAWING APPROVAL STATUS: Approved for Construction

Baffinland**BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT****PORT SITE
CRUSHING FEED STOCKPILE PAD
DRAINAGE PLAN**SCALE: 1:250
DWG. No. H353004-40000-228-272-0005-0001
REV 1

BCSY-A-100	THYSSENKRUPP CONVEYOR 4122-CV-001 - GENERAL ARRANGEMENT
H353004-00000-221-294-0008-0001	STANDARD DRAWINGS - TYPICAL PAD, DITCH AND BERM SECTIONS
H353004-00000-221-294-0008-0001	STANDARD DRAWINGS - EARTHWORKS AND DRAINAGE DETAILS
H353004-00000-228-272-0003-0001	CRUSHING FEED STOCKPILE - SETTLING POND LAYOUT
H353004-40000-221-278-0002-0001	CRUSHING FEED STOCKPILE - PAD CROSS SECTIONS
H353004-40000-221-272-0003-0001	CRUSHING AND SCREENING PAD - LAYOUT PLAN

DRAWING No. REFERENCE DRAWINGS



SETTING OUT CO-ORDINATES SETTLING POND

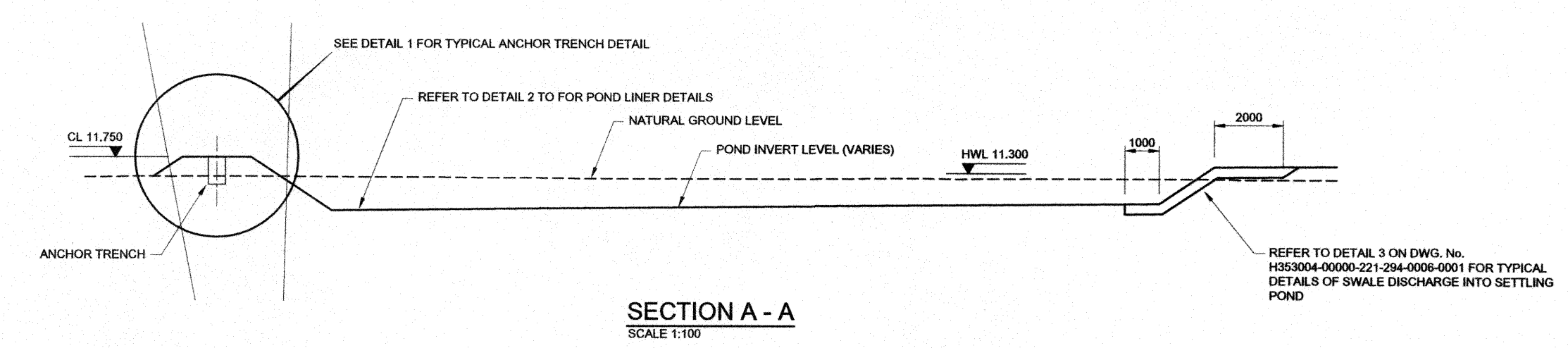
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CS 1	503 134.854	7 974 761.478	11.756
CS 2	503 130.468	7 974 778.250	11.756
CS 3	503 159.469	7 974 785.926	11.756
CS 31	501 161.668	7 974 777.634	11.621
CS 38	503 132.913	7 974 776.829	11.756
CS 39	503 159.981	7 974 783.963	11.756
CS 40	503 163.348	7 974 771.274	11.756
CS 41	503 136.276	7 974 764.122	11.756
SP 9	503 135.767	7 974 775.169	10.972
SP 10	503 158.683	7 974 781.603	11.091
SP 11	503 160.116	7 974 777.224	11.091
SP 12	503 161.038	7 974 772.710	10.971
SP 13	503 137.936	7 974 768.976	10.971

51.75	595,181,555	7,074,765,975	10,572
SETTLING POND SPILLWAY			

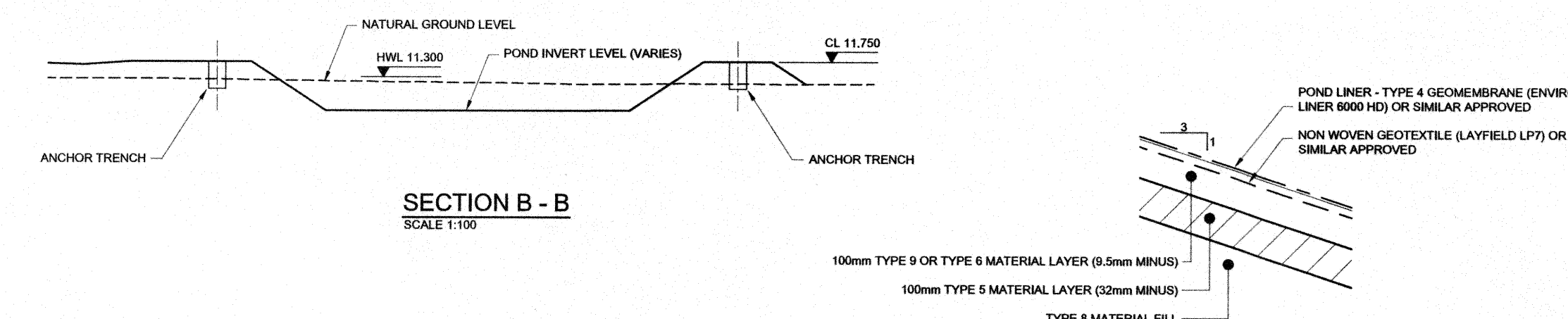
SP 1	503 139.775	7 974 765.047	11.750
SP 2	503 140.095	7 974 765.597	11.600
SP 3	503 140.579	7 974 765.725	11.600
SP 4	503 141.129	7 974 765.405	11.750
SP 5	503 140.288	7 974 763.116	11.750
SP 6	503 140.837	7 974 762.796	11.600
SP 7	503 141.320	7 974 762.924	11.600
SP 8	503 141.640	7 974 763.474	11.750

NOTES:

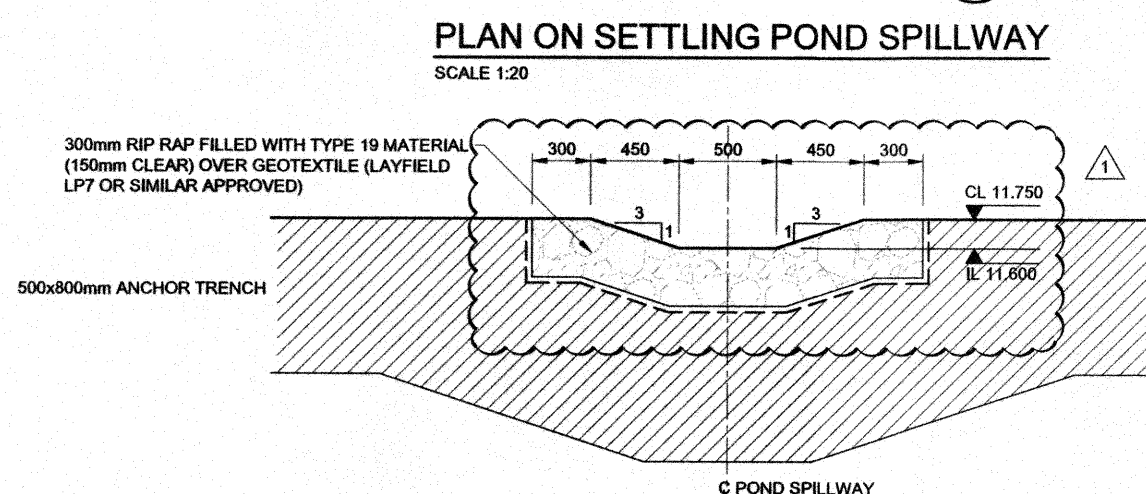
1. LIDAR SURVEY PROVIDED BY PHOTOSAT (2010).
2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83), ZONE 17 AND IS IN METERS.
3. CONTOURS ARE IN METERS. THE CONTOUR INTERVAL IS 0.5m.
4. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.
5. IT IS ASSUMED THAT ALL RUN OFF CAPTURED BY THE SETTLING POND IS NON-ACID GENERATING AND CAN BE DISCHARGED TO THE ENVIRONMENT SINCE THE REQUIREMENTS OF BIF ENVIRONMENTAL CRITERIA HAS BEEN ACHIEVED. WATER TO BE DISCHARGED TO AN APPROVED POINT, IN ACCORDANCE WITH THE CLIENT'S (BIM) ENVIRONMENTAL REQUIREMENTS.
6. THE INSTALLATION OF THE GEOMEMBRANE (ENVIRO LINER 6000HD) IS TO BE IN STRICT ACCORDANCE WITH THE SPECIALIST PROVIDERS SPECIFICATIONS.



SECTION A - A
SCALE 1:100

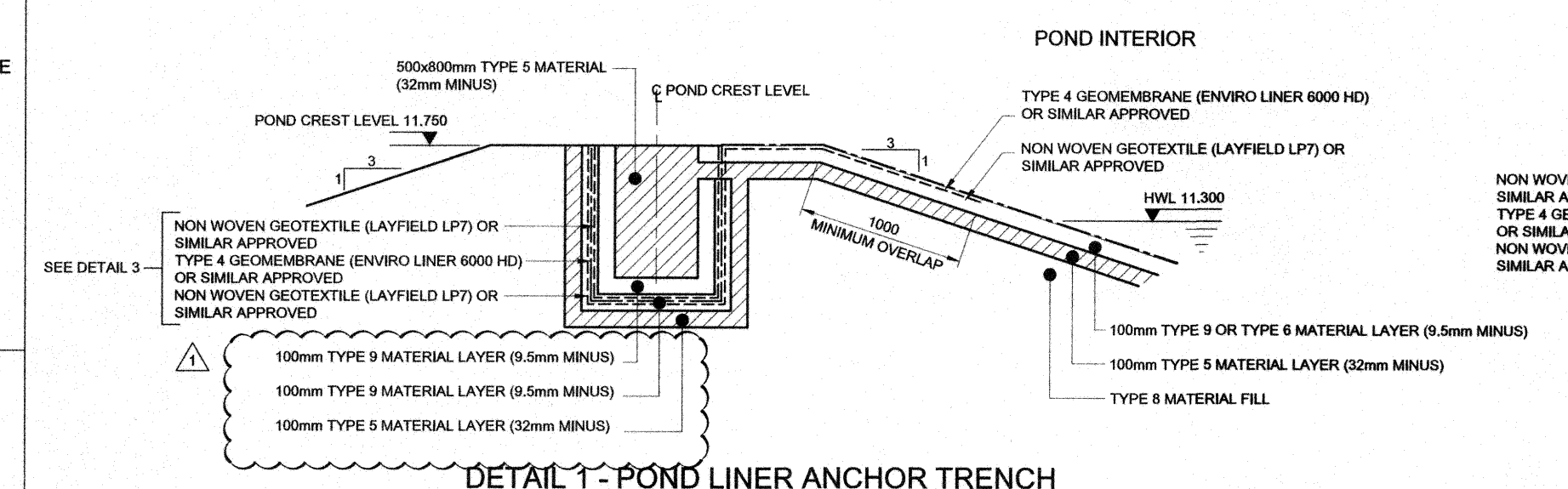


SECTION B - B
SCALE 1:100

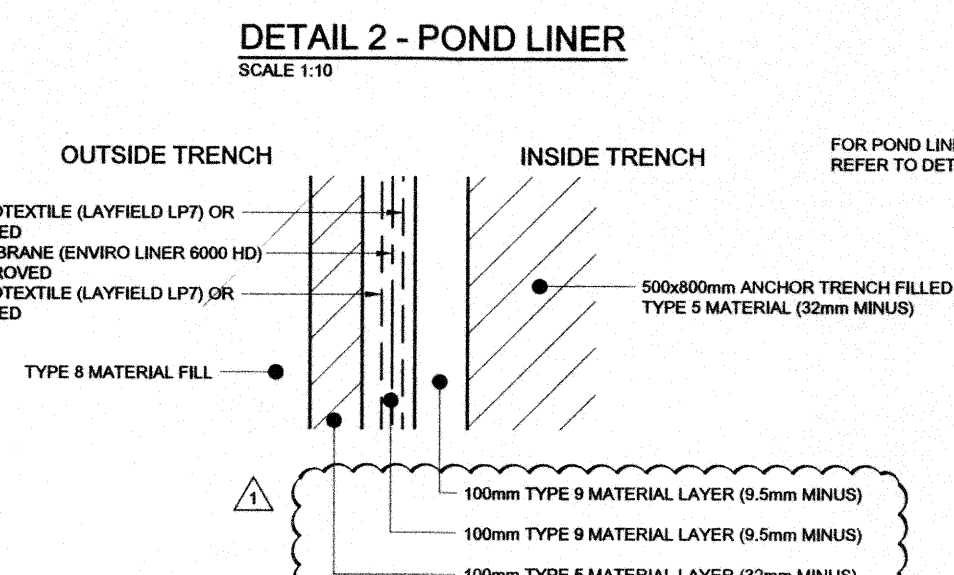


PLAN ON SETTLING POND SPILLWAY

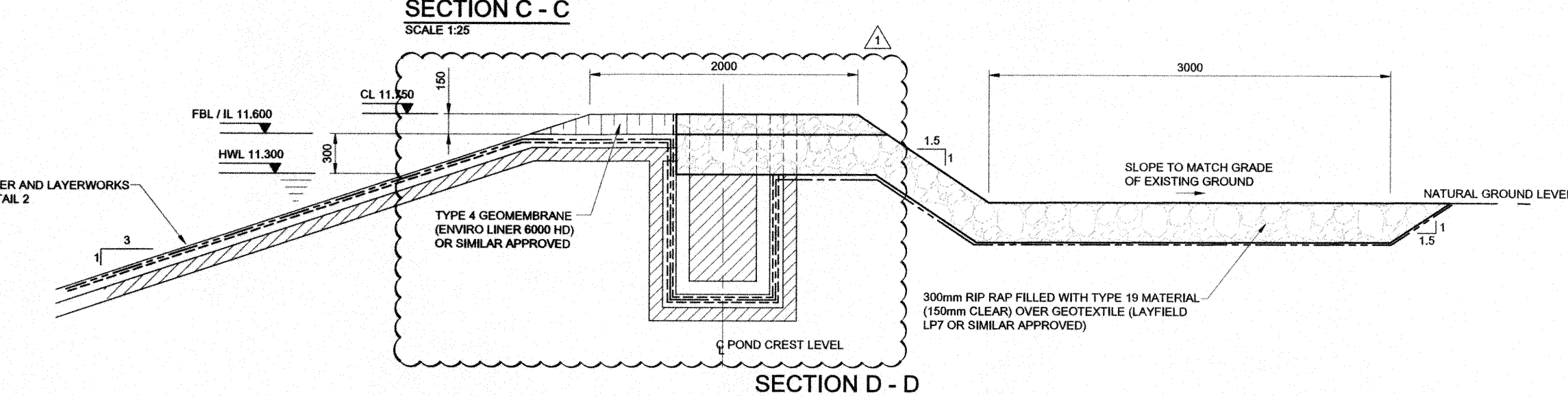
SCALE 1:20



DETAIL 1 - POND LINER ANCHOR TRENCH



DETAIL 3 - TRENCH LINER
SCALE 1:10



SECTION D - D
SCALE 1:25

LEGEND:

CL	CREST LEVEL
IL	INVERT LEVEL
HWL	HIGH WATER LEVEL
FBL	FREE BOARD LEVEL

----- TYPE 4 GEO-MEMBRANE (ENVIRO LINER 6000 HD) OR SIMILAR APPROVED

----- NON WOVEN GEO-TEXTILE (LAYFIELD LPT) OR SIMILAR APPROVED

PERMIT TO PRACTICE
HATCH LTD.
Signature _____
Date 2018-09-20
PERMIT NUMBER: P 512
The Association of Professional Engineers
Geologists and Geophysicists of NWT/NUN

Baffinland

PORT SITE
CRUSHING AND SCREENING PAD
SETTLING POND LAYOUT

SCALE 1:1,000 OR AS NOTED	DWG. No. H353004-40000-228-272-0004-0001	RE 1
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8

SHEET SIZE

EV	USERNAMES
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FOR CONSTRUCTION

[illegible]

ROLE	NAME	SIGNATURE	DATE
DRAWING APPROVAL STATUS:		Approved for Construction	

TE	