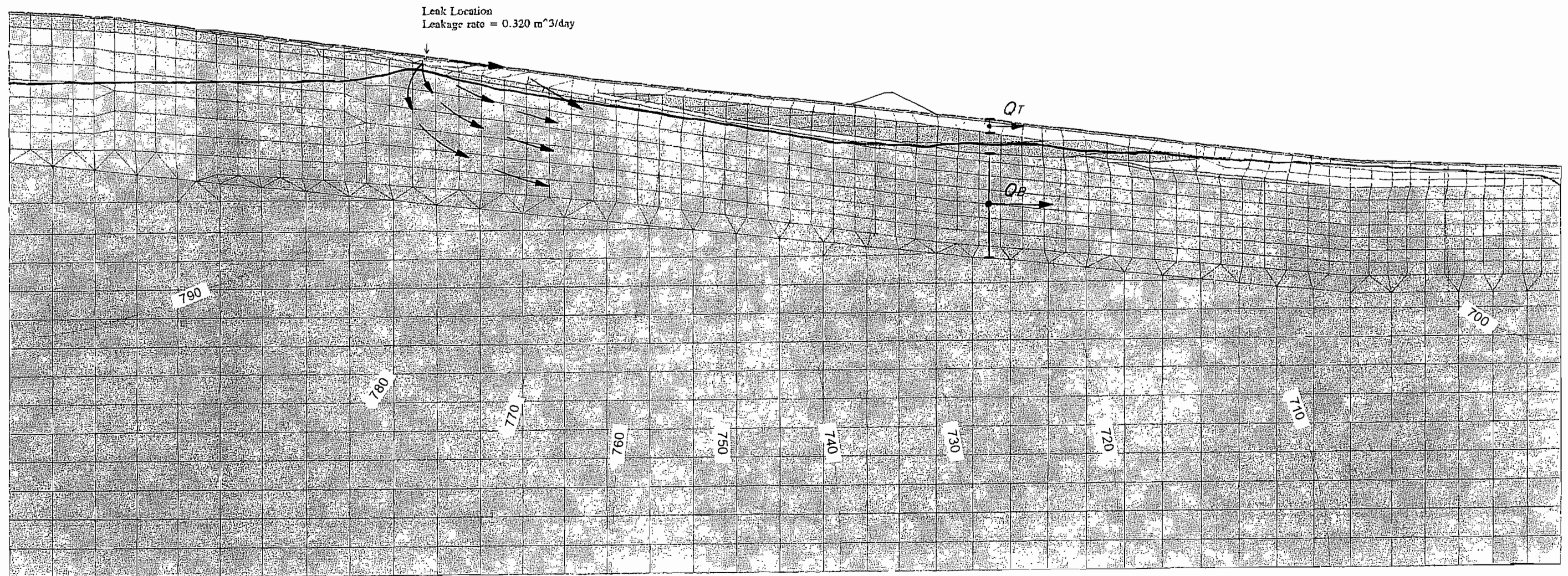


WESTERN COPPER HOLDINGS LIMITED
 CARMACKS COPPER PROJECT
 HEAP LEACH PAD
 HYDROGEOLOGICAL MODEL OF LEAK IN PAD
 AT 780 m CONTOUR ELEVATION



LEGEND

— 760 — Equipotentials

Leak to Perched Aquifer, $Q_T = 0.013 \text{ m}^3/\text{day}$ (4% of seepage)

Leak to Main Aquifer, $Q_B = 0.306 \text{ m}^3/\text{day}$ (96% of seepage)

→ Seepage flow vectors

J:\JOB\DATA\1784\SEEP\BLP 2-25

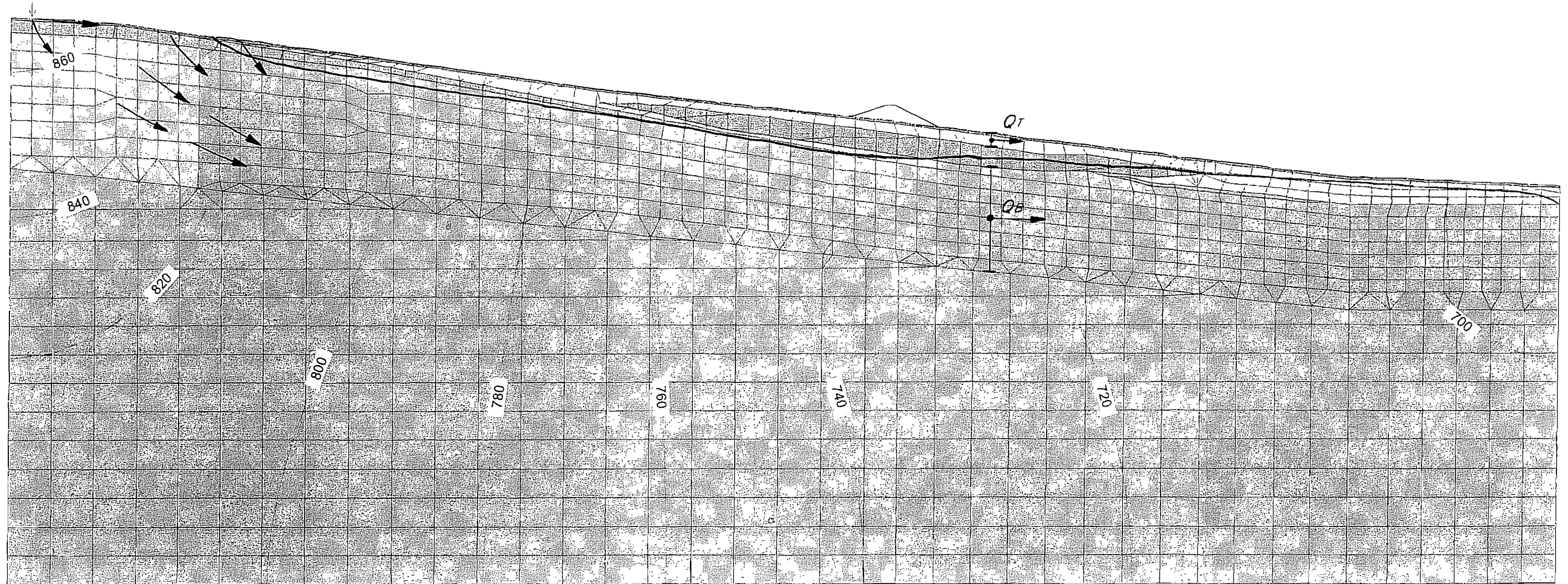
Feb. 12, 1997

KNIGHT PIESOLD LTD.
 CONSULTING ENGINEERS

FIGURE 2.19

WESTERN COPPER HOLDINGS LIMITED
CARMACKS COPPER PROJECT
HEAP LEACH PAD
HYDROGEOLOGICAL MODEL OF LEAK
AT TOP LIMIT OF HEAP LEACH PAD

Leak Location
 Leakage rate = 0.320 m³/day



LEGEND

— 760 — Equipotentials

Leak to Perched Aquifer, $Q_T = 0.010 \text{ m}^3/\text{day}$ (3% of seepage)

Leak to Main Aquifer, $Q_B = 0.310 \text{ m}^3/\text{day}$ (97% of seepage)

→ Seepage flow vectors

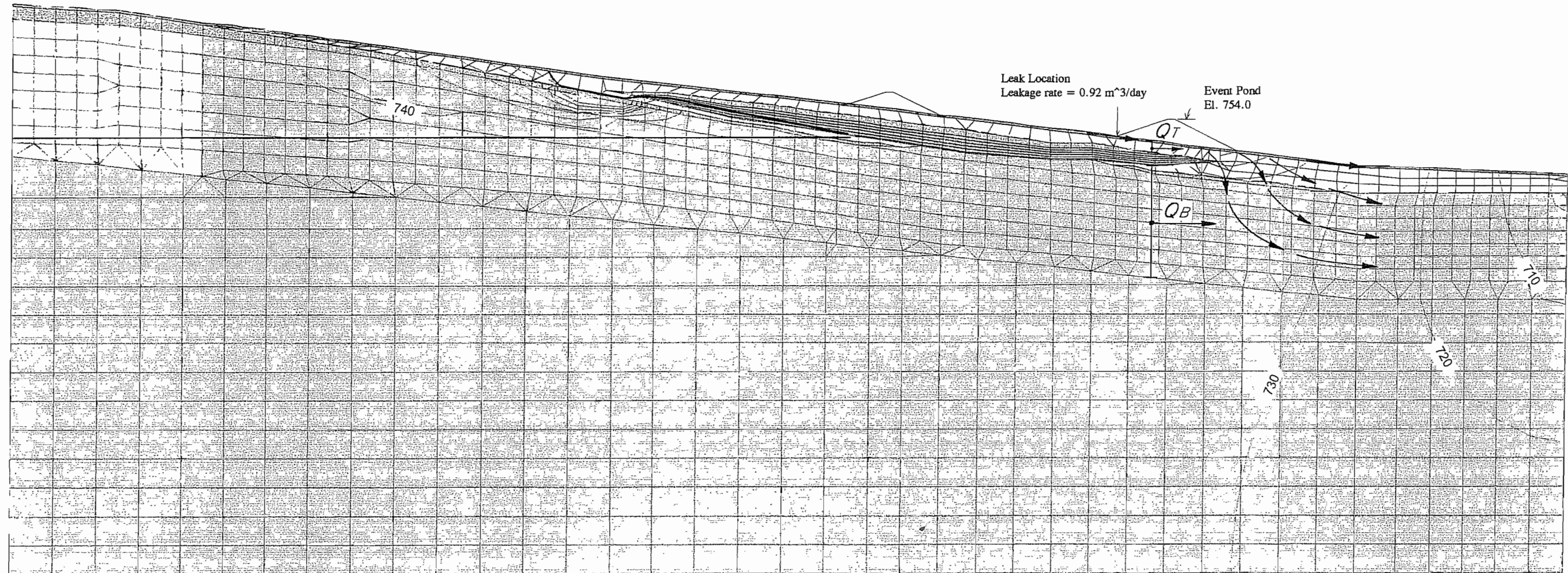
J:\00\DATA\1784\SEEP\HELP-2-16

Feb. 12, 1997

KNIGHT PIESOLD LTD.
 CONSULTING ENGINEERS

FIGURE 2.20

WESTERN COPPER HOLDINGS LIMITED
CARMACKS COPPER PROJECT
HEAP LEACH PAD
HYDROGEOLOGICAL MODEL OF LEAK IN EVENTS POND



J:\CSD\DATA\176452\EVENT-1.SEP

LEGEND

— 740 — Equipotentials

Leak to Perched Aquifer, $Q_T = 0.92 \text{ m}^3/\text{day}$ (100% of seepage)

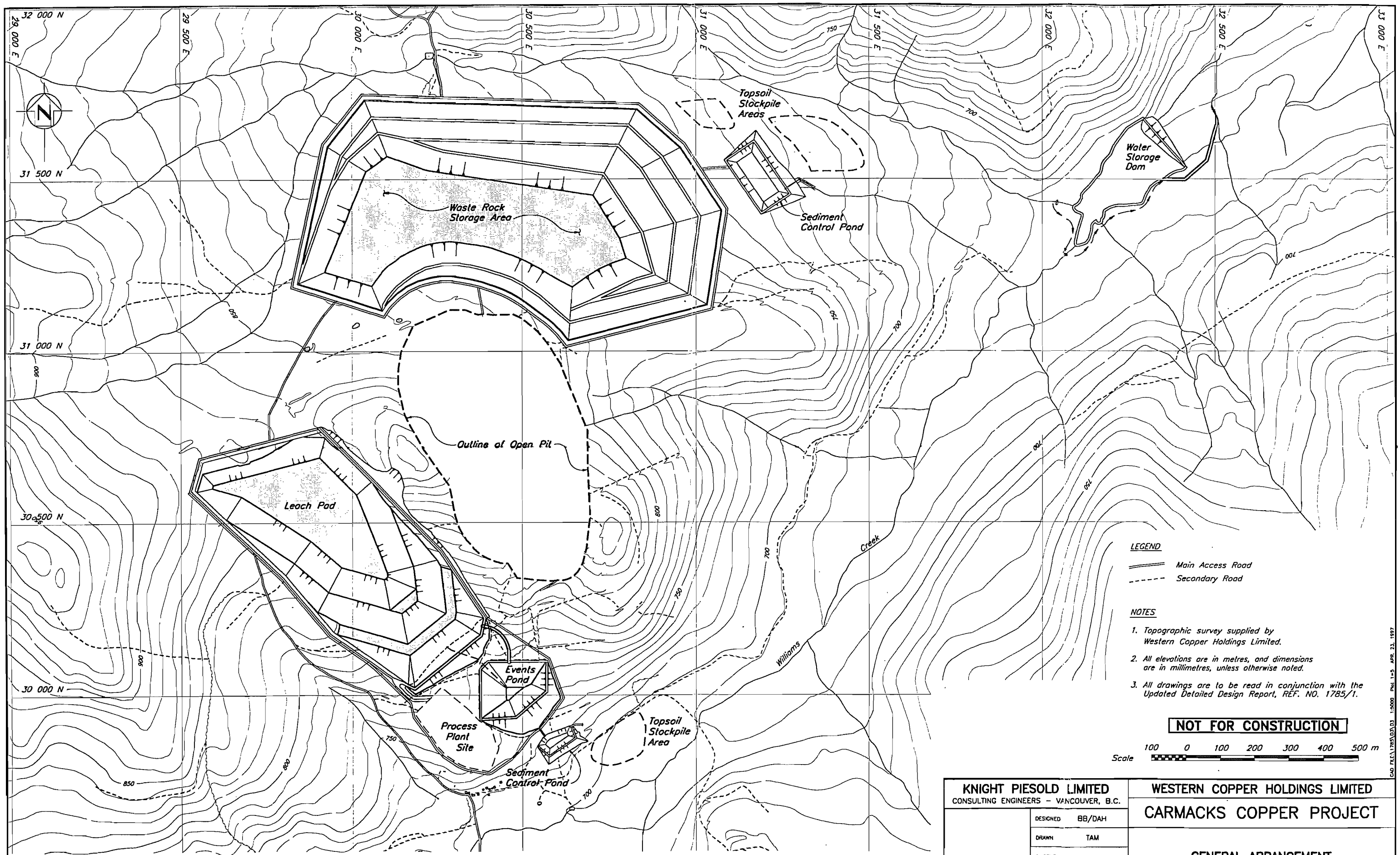
Leak to Main Aquifer, $Q_B = 0.0002 \text{ m}^3/\text{day}$ (0% of seepage)

→ Seepage flow vectors

Feb. 10, 1997

KNIGHT PIESOLD LTD.
 CONSULTING ENGINEERS

FIGURE 2.21



LEGEND

- Main Access Road
- - - Secondary Road

NOTES

1. Topographic survey supplied by Western Copper Holdings Limited.
2. All elevations are in metres, and dimensions are in millimetres, unless otherwise noted.
3. All drawings are to be read in conjunction with the Updated Detailed Design Report, REF. NO. 1785/1.

NOT FOR CONSTRUCTION



KNIGHT PIESOLD LIMITED CONSULTING ENGINEERS - VANCOUVER, B.C.	
DESIGNED	BB/DAH
DRAWN	TAM
CHECKED	
APPROVED	

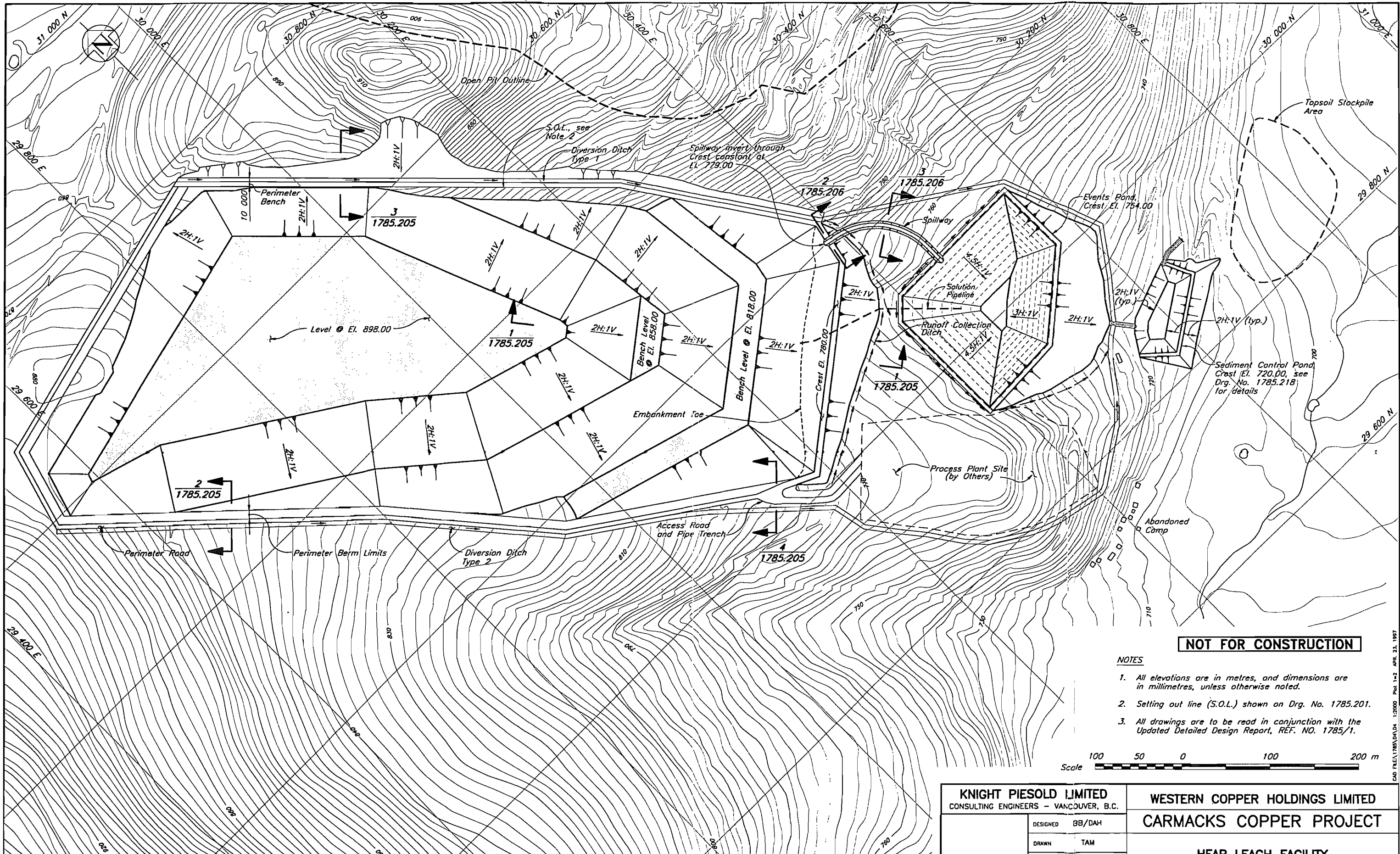
WESTERN COPPER HOLDINGS LIMITED	
CARMACKS COPPER PROJECT	
GENERAL ARRANGEMENT	

DRG. NO.	DESCRIPTION	REV.	DATE	DESCRIPTION	APPROVED
	REFERENCE DRAWINGS			REVISIONS	

REV.	DATE	DESCRIPTION	APPROVED
0	FEB. 21/97	ISSUED FOR DESIGN REPORT	

DATE	FEB. 21, 1997	SCALE AS SHOWN	DRG. NO.	1785.000	REV.	0
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CAD FILE: TRS03.DWG 1:5000 PLOT 1-5 APR 23 1997



NOT FOR CONSTRUCTION

NOTES

1. All elevations are in metres, and dimensions are in millimetres, unless otherwise noted.
2. Setting out line (S.O.L.) shown on Drg. No. 1785.201.
3. All drawings are to be read in conjunction with the Updated Detailed Design Report, REF. NO. 1785/1.



1785.205	HEAP LEACH PAD - SECTIONS & DETAILS - SHT. 1 OF 4
1785.201	HEAP LEACH FACILITY - GENERAL LAYOUT
DRG. NO.	REFERENCE DRAWINGS

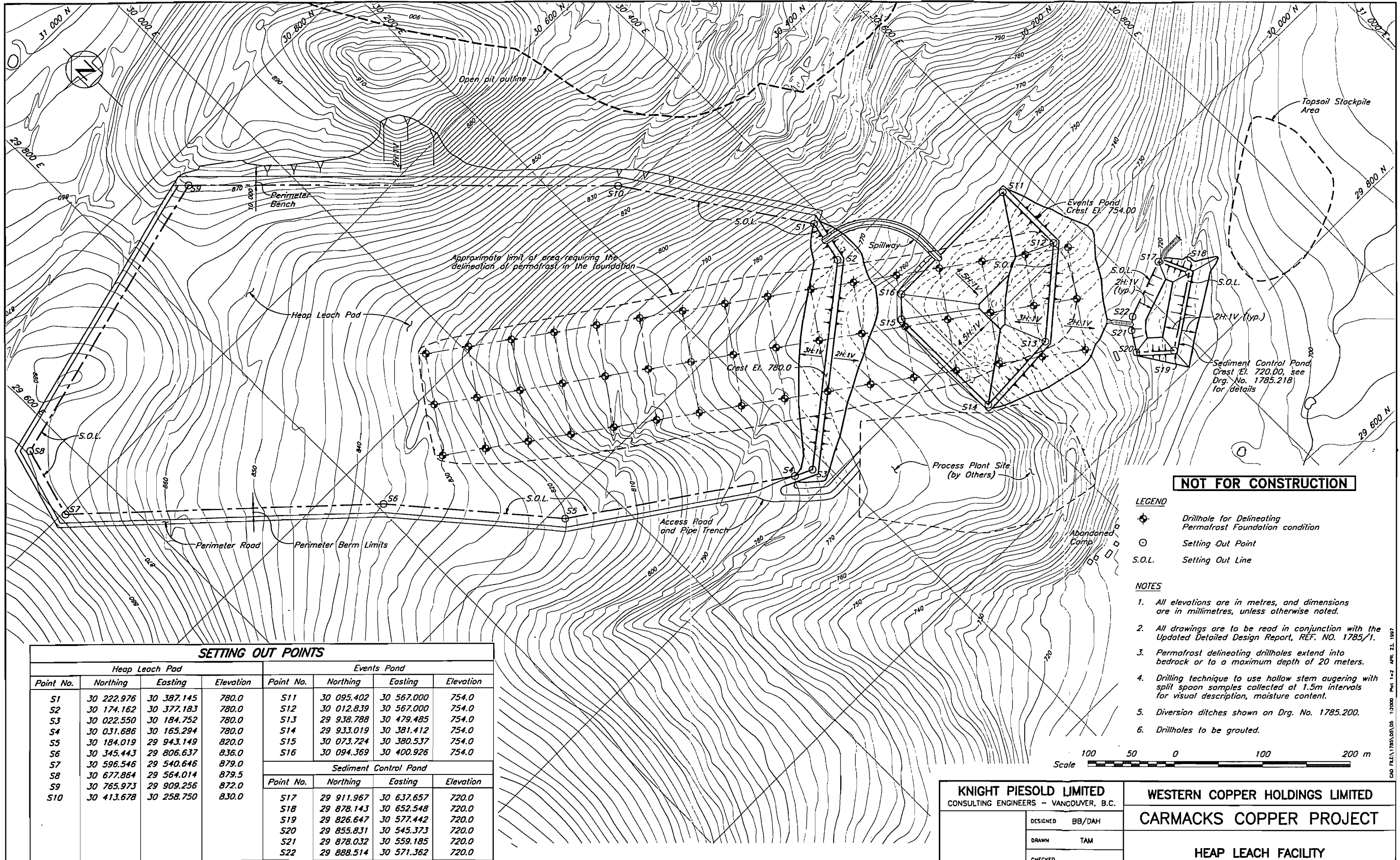
REV.	DATE	DESCRIPTION	APPROVED

REV.	DATE	DESCRIPTION	APPROVED
0	FEB. 21/97	ISSUED FOR DESIGN REPORT	

KNIGHT PIESOLD LIMITED CONSULTING ENGINEERS - VANCOUVER, B.C.	
DESIGNED	BB/DAH
DRAWN	TAM
CHECKED	
APPROVED	

WESTERN COPPER HOLDINGS LIMITED	
CARMACKS COPPER PROJECT	
HEAP LEACH FACILITY GENERAL ARRANGEMENT	
DATE	FEB. 21, 1997
SCALE	AS SHOWN
DRG. NO.	1785.200
REV.	0

CAD FILE: 1785.DAT/4 1:2000 Plot 1x2 APR. 23, 1997



NOT FOR CONSTRUCTION

LEGEND

- ⊕ Drillhole for Delineating Permafrost Foundation condition
- Setting Out Point
- S.O.L. Setting Out Line

NOTES

1. All elevations are in metres, and dimensions are in millimetres, unless otherwise noted.
2. All drawings are to be read in conjunction with the Updated Detailed Design Report, REF. NO. 1785/1.
3. Permafrost delineating drillholes extend into bedrock or to a maximum depth of 20 meters.
4. Drilling technique to use hollow stem augering with split spoon samples collected at 1.5m intervals for visual description, moisture content.
5. Diversion ditches shown on Drg. No. 1785.200.
6. Drillholes to be grouted.

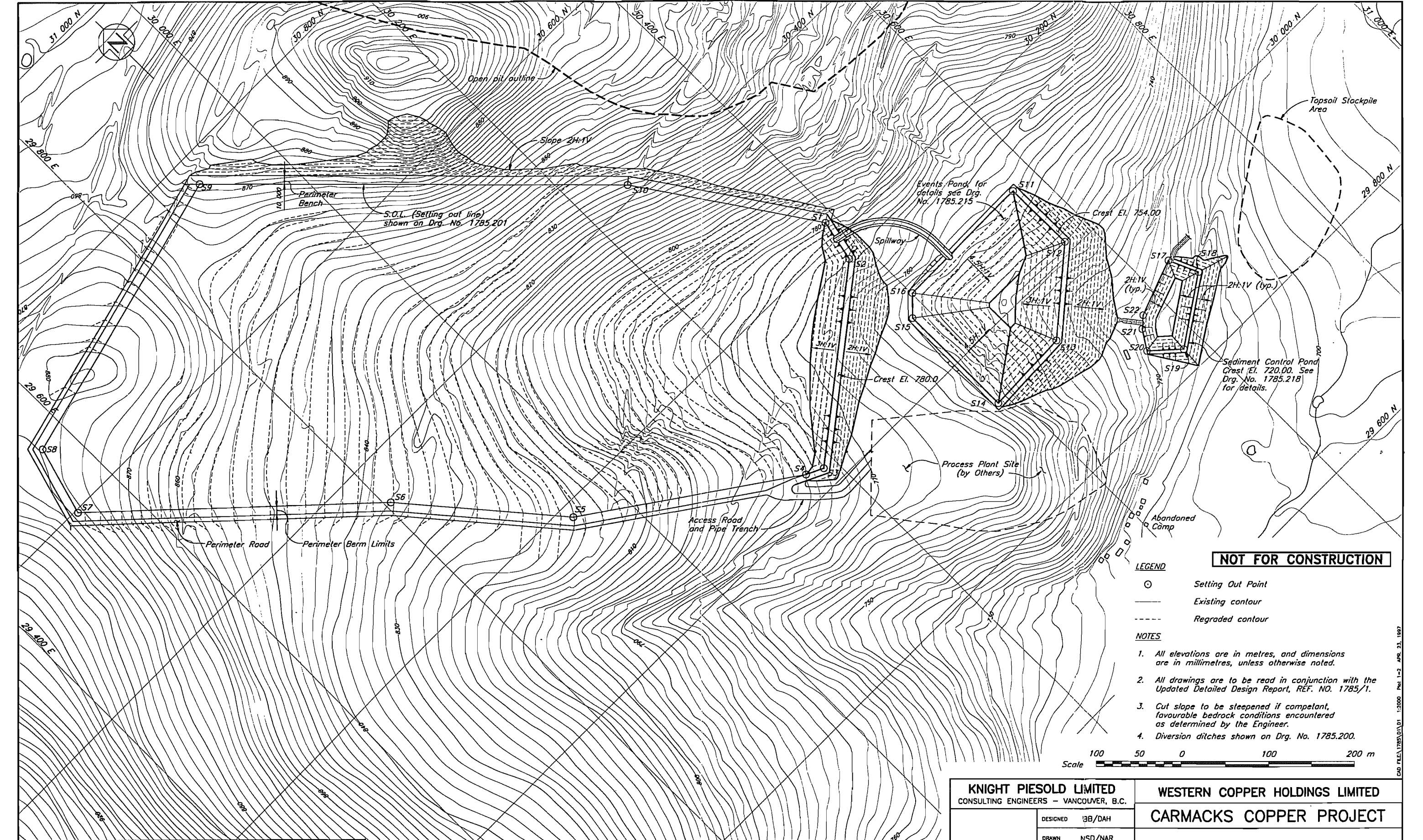


SETTING OUT POINTS							
Heap Leach Pad				Events Pond			
Point No.	Northing	Easting	Elevation	Point No.	Northing	Easting	Elevation
S1	30 222.976	30 387.145	780.0	S11	30 095.402	30 567.000	754.0
S2	30 174.162	30 377.183	780.0	S12	30 012.839	30 567.000	754.0
S3	30 022.550	30 184.752	780.0	S13	29 938.788	30 479.485	754.0
S4	30 031.686	30 165.294	780.0	S14	29 933.019	30 381.412	754.0
S5	30 184.019	29 943.149	820.0	S15	30 073.724	30 380.537	754.0
S6	30 345.443	29 806.637	836.0	S16	30 094.369	30 400.926	754.0
S7	30 596.546	29 540.646	879.0	Sediment Control Pond			
S8	30 677.864	29 564.014	879.5				
S9	30 765.973	29 909.256	872.0				
S10	30 413.678	30 258.750	830.0				
Point No.	Northing	Easting	Elevation	Point No.	Northing	Easting	Elevation
S17	29 911.967	30 637.657	720.0	S18	29 878.143	30 652.548	720.0
S18	29 878.143	30 652.548	720.0	S19	29 826.647	30 577.442	720.0
S19	29 826.647	30 577.442	720.0	S20	29 855.831	30 545.373	720.0
S20	29 855.831	30 545.373	720.0	S21	29 878.032	30 559.185	720.0
S21	29 878.032	30 559.185	720.0	S22	29 888.514	30 571.362	720.0
S22	29 888.514	30 571.362	720.0				

KNIGHT PIESOLD LIMITED CONSULTING ENGINEERS - VANCOUVER, B.C.		WESTERN COPPER HOLDINGS LIMITED	
DESIGNED	BB/DAH	CARMACKS COPPER PROJECT	
DRAWN	TAM	HEAP LEACH FACILITY GENERAL LAYOUT	
CHECKED			
APPROVED			
DATE	FEB. 21, 1997	SCALE AS SHOWN	DRG. NO. 1785.201
REV.	0		REV. 0

DRG. NO.	DESCRIPTION	REV.	DATE	DESCRIPTION	APPROVED
1785.200	HEAP LEACH FACILITY - GENERAL ARRANGEMENT				
	REFERENCE DRAWINGS			REVISIONS	

CAD FILE: 1785.DWG 1:2000 Plot 1-2 APR. 23. 1997



NOT FOR CONSTRUCTION

LEGEND

- ⊙ Setting Out Point
- Existing contour
- - - Regraded contour

NOTES

1. All elevations are in metres, and dimensions are in millimetres, unless otherwise noted.
2. All drawings are to be read in conjunction with the Updated Detailed Design Report, REF. NO. 1785/1.
3. Cut slope to be steepened if competent, favourable bedrock conditions encountered as determined by the Engineer.
4. Diversion ditches shown on Drg. No. 1785.200.



1785.218	SEDIMENT CONTROL POND - PLAN, SECTIONS AND DETAILS
1785.215	EVENTS POND - FOUNDATION DRAINAGE AND GRADING PLAN
1785.201	HEAP LEACH FACILITY - GENERAL LAYOUT
1785.200	HEAP LEACH FACILITY - GENERAL ARRANGEMENT
ORG. NO.	DESCRIPTION

REV.	DATE	DESCRIPTION	APPROVED

REV.	DATE	DESCRIPTION	APPROVED
0	FEB. 21/97	ISSUED FOR DESIGN REPORT	

KNIGHT PIESOLD LIMITED
CONSULTING ENGINEERS - VANCOUVER, B.C.

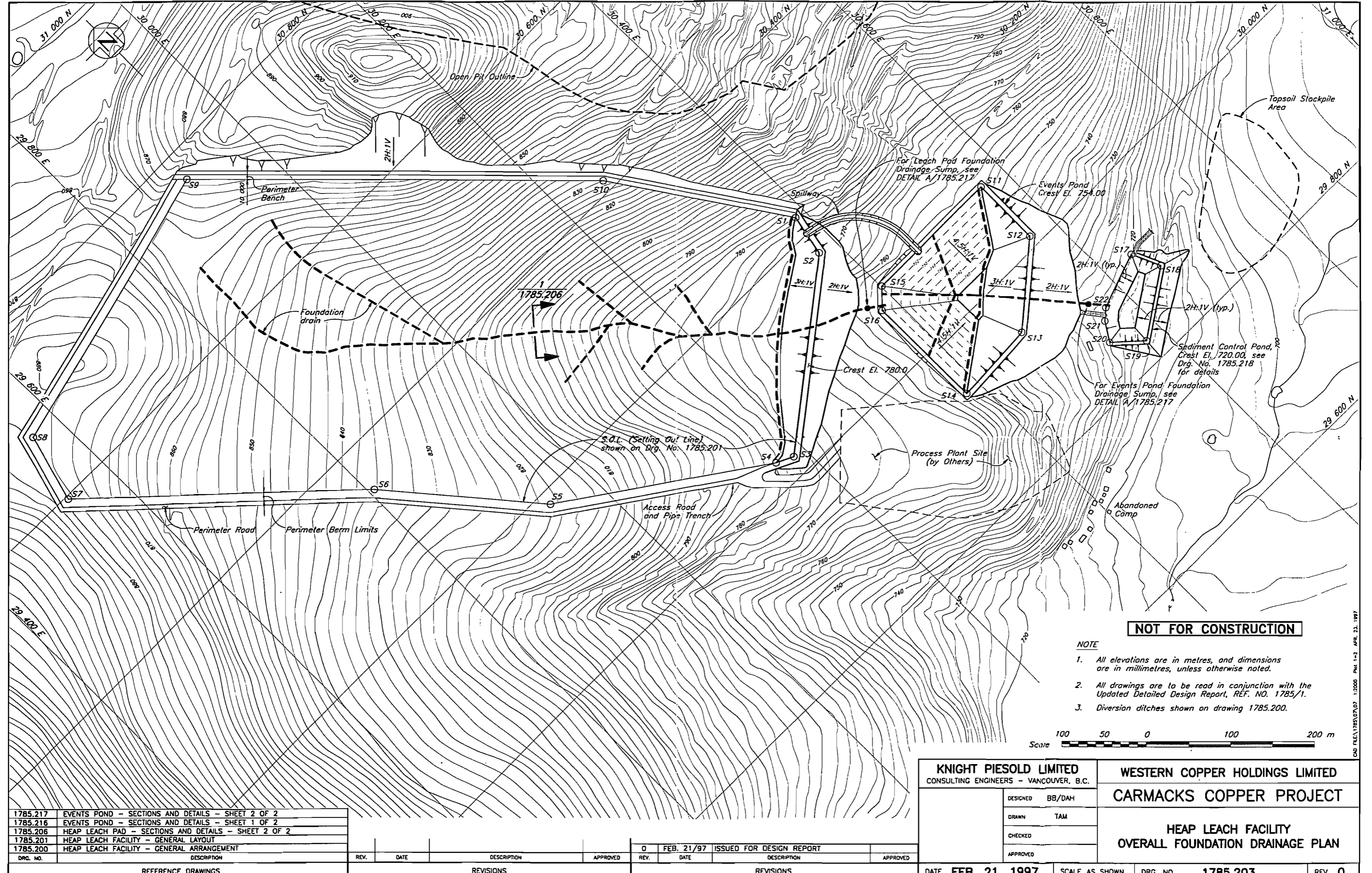
DESIGNED	IBB/DAH
DRAWN	NSD/NAR
CHECKED	
APPROVED	

WESTERN COPPER HOLDINGS LIMITED
CARMACKS COPPER PROJECT

HEAP LEACH FACILITY
OVERALL ROUGH GRADING PLAN

DATE **FEB. 21, 1997** SCALE AS SHOWN DRG. NO. **1785.202** REV. **0**

CAD FILE: 1785.D1A.D1 1:2000 PLOT 1-2 APR. 21, 1997



NOT FOR CONSTRUCTION

- NOTE**
- All elevations are in metres, and dimensions are in millimetres, unless otherwise noted.
 - All drawings are to be read in conjunction with the Updated Detailed Design Report, REF. NO. 1785/1.
 - Diversion ditches shown on drawing 1785.200.



1785.217	EVENTS POND - SECTIONS AND DETAILS - SHEET 2 OF 2
1785.216	EVENTS POND - SECTIONS AND DETAILS - SHEET 1 OF 2
1785.206	HEAP LEACH PAD - SECTIONS AND DETAILS - SHEET 2 OF 2
1785.201	HEAP LEACH FACILITY - GENERAL LAYOUT
1785.200	HEAP LEACH FACILITY - GENERAL ARRANGEMENT
DRG. NO.	DESCRIPTION

REV.	DATE	DESCRIPTION	APPROVED
0	FEB. 21/97	ISSUED FOR DESIGN REPORT	

REV.	DATE	DESCRIPTION	APPROVED
0	FEB. 21/97	ISSUED FOR DESIGN REPORT	

KNIGHT PIESOLD LIMITED
CONSULTING ENGINEERS - VANCOUVER, B.C.

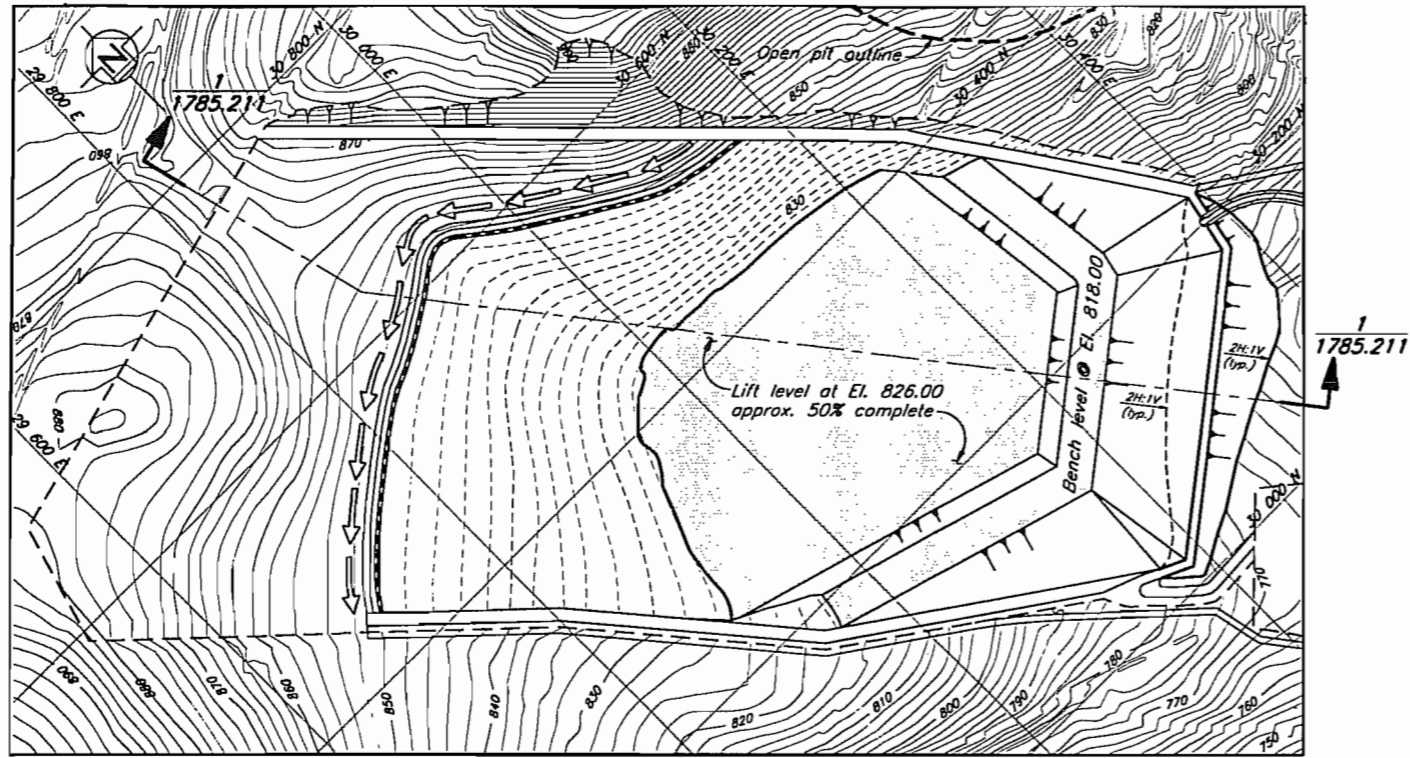
DESIGNED BB/DAH
DRAWN TAM
CHECKED
APPROVED

WESTERN COPPER HOLDINGS LIMITED
CARMACKS COPPER PROJECT

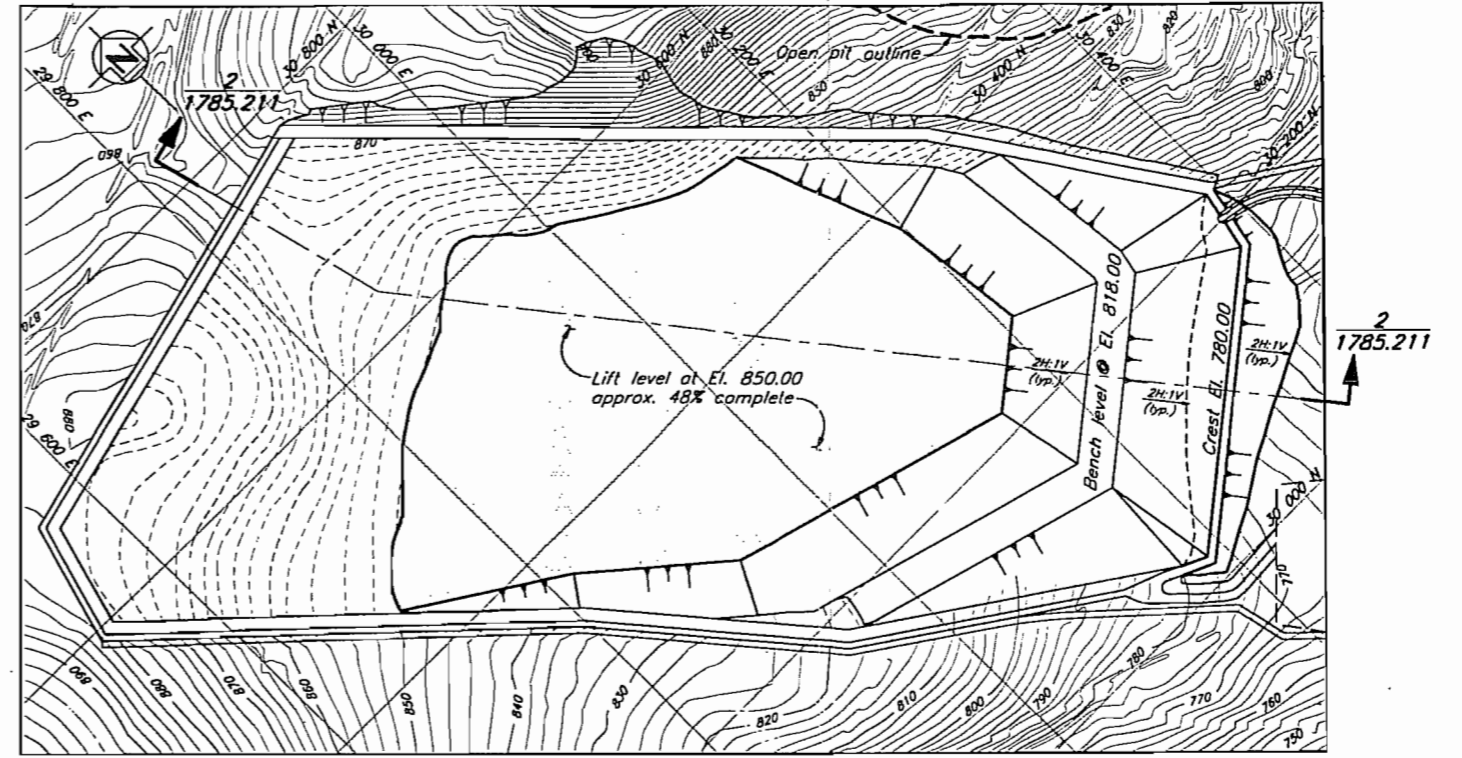
HEAP LEACH FACILITY
OVERALL FOUNDATION DRAINAGE PLAN

DATE **FEB. 21, 1997** SCALE AS SHOWN DRG. NO. **1785.203** REV. **0**

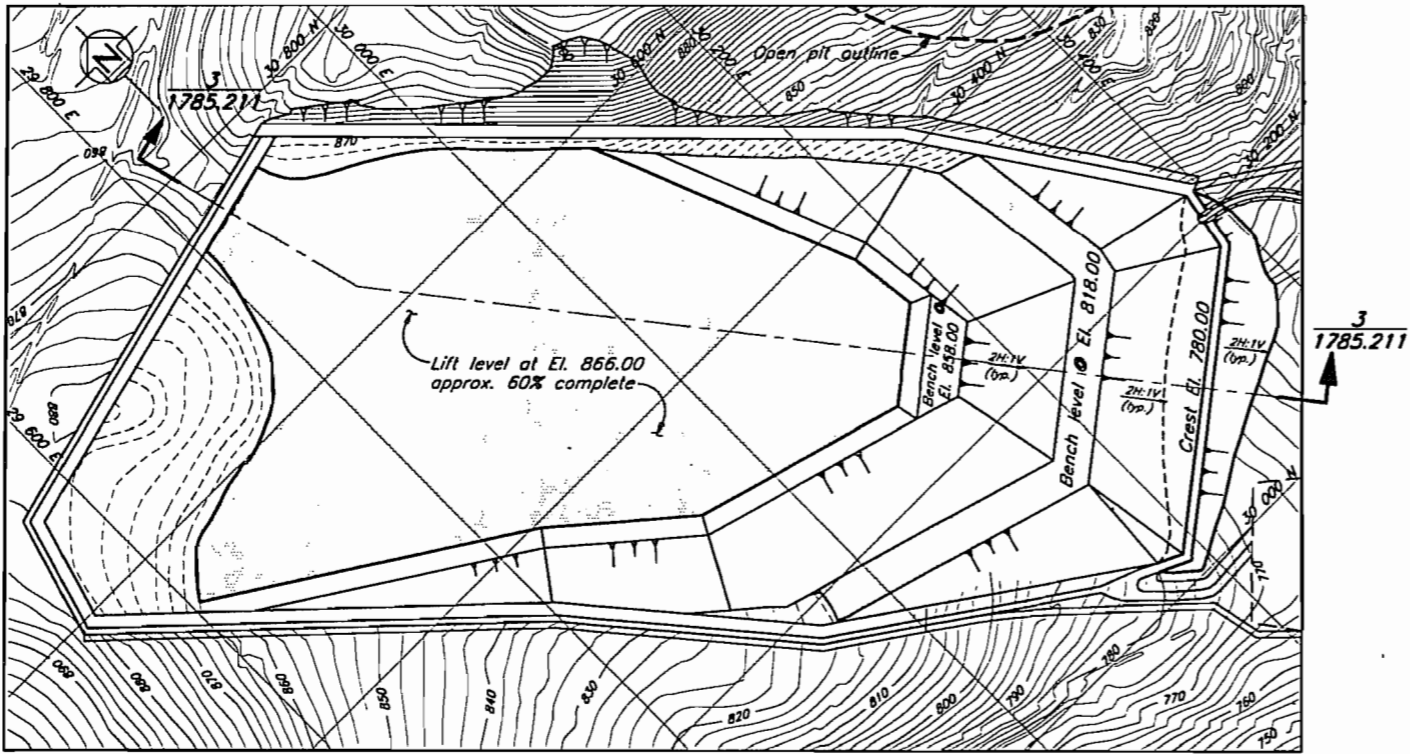
C:\O\FLEA\1785\DA\07 1:2000 Pkg 1-2 APR. 23, 1997



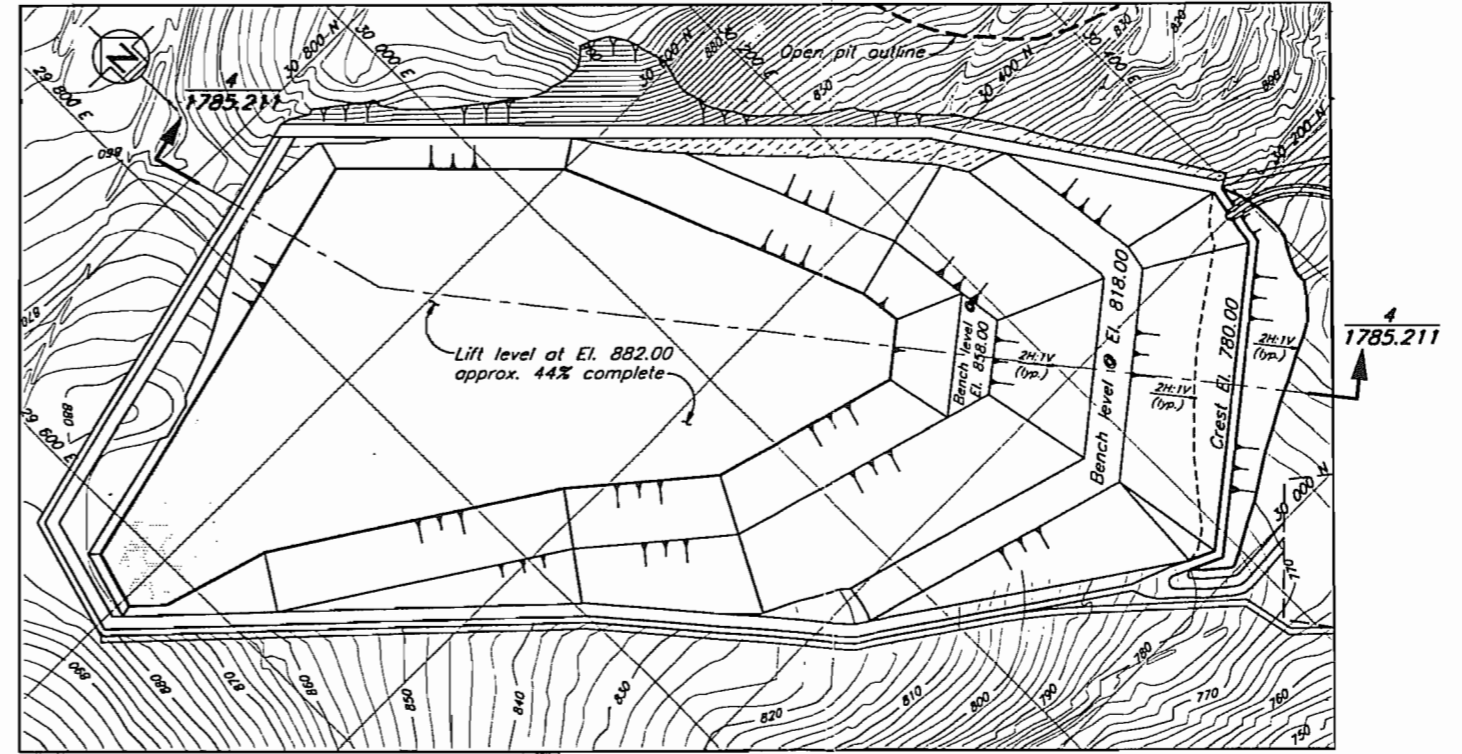
YEAR 2 LOADING CONFIGURATION



YEAR 4 LOADING CONFIGURATION



YEAR 6 LOADING CONFIGURATION

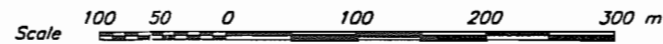


YEAR 8 LOADING CONFIGURATION

NOTE

1. All elevations are in metres, and dimensions are in millimetres, unless otherwise noted.
2. All drawings are to be read in conjunction with the Updated Detailed Design Report, REF. NO. 1785/1.

NOT FOR CONSTRUCTION

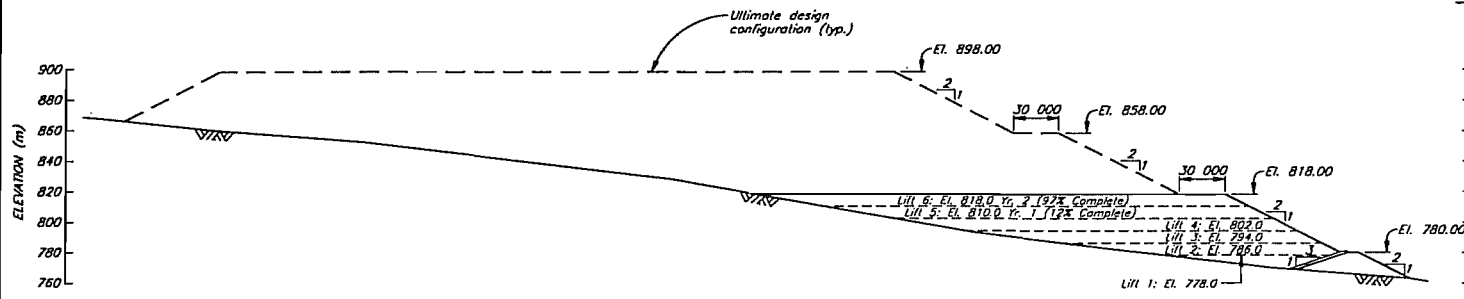


1785.211	HEAP LEACH PAD - STAGED LOADING - SECTIONS
DRG. NO.	DESCRIPTION
REFERENCE DRAWINGS	

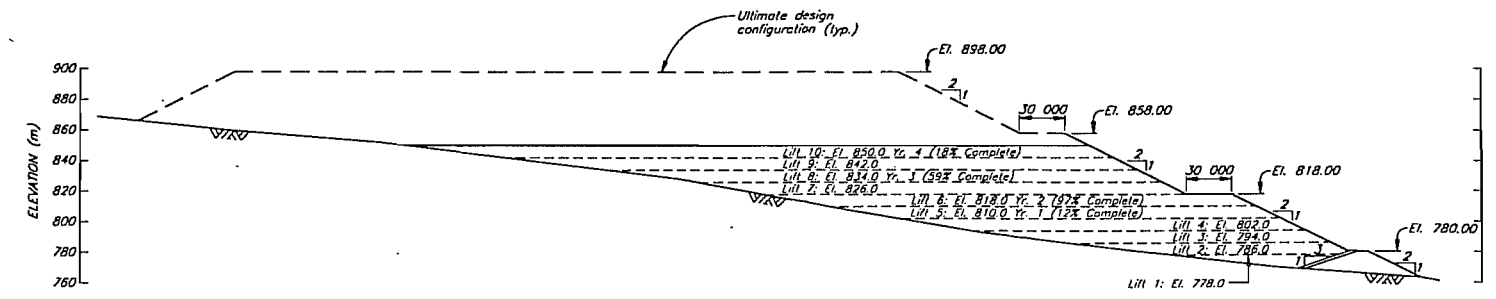
REV.	DATE	DESCRIPTION	APPROVED
0	FEB. 21/97	ISSUED FOR DESIGN REPORT	

REV.	DATE	DESCRIPTION	APPROVED
0	FEB. 21/97	ISSUED FOR DESIGN REPORT	

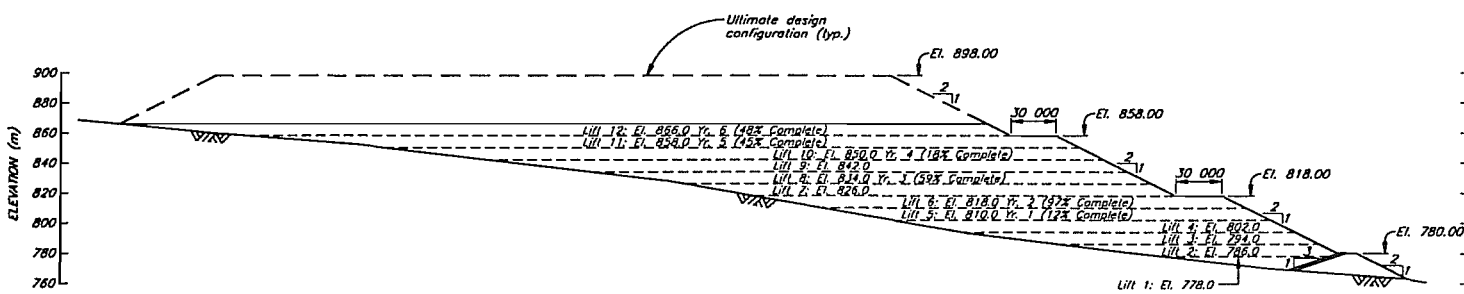
KNIGHT PIESOLD LIMITED CONSULTING ENGINEERS - VANCOUVER, B.C.		WESTERN COPPER HOLDINGS LIMITED	
DESIGNED	BB/DAH	CARMACKS COPPER PROJECT	
DRAWN	TAM	HEAP LEACH FACILITY	
CHECKED		STAGED LOADING	
APPROVED		PLAN	
DATE	FEB. 21, 1997	SCALE AS SHOWN	DRG. NO. 1785.210
			REV. 0



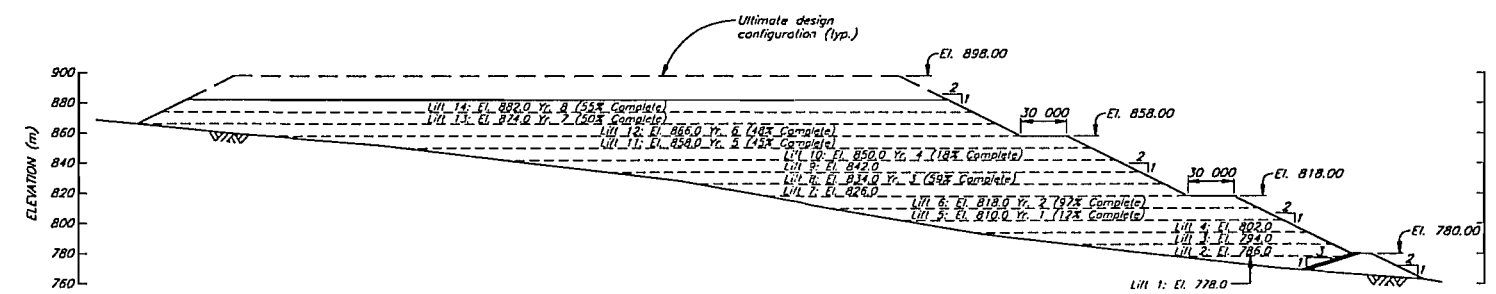
SECTION 1
LOADING CONFIGURATION - END OF YEAR 2



SECTION 2
LOADING CONFIGURATION - END OF YEAR 4



SECTION 3
LOADING CONFIGURATION - END OF YEAR 6



SECTION 4
LOADING CONFIGURATION - END OF YEAR 8

NOTES

- All elevations are in metres, and dimensions are in millimetres, unless otherwise noted.
- All drawings are to be read in conjunction with the Updated Detailed Design Report, REF. NO. 1785/1.
- Lift elevations correspond to top of lift.

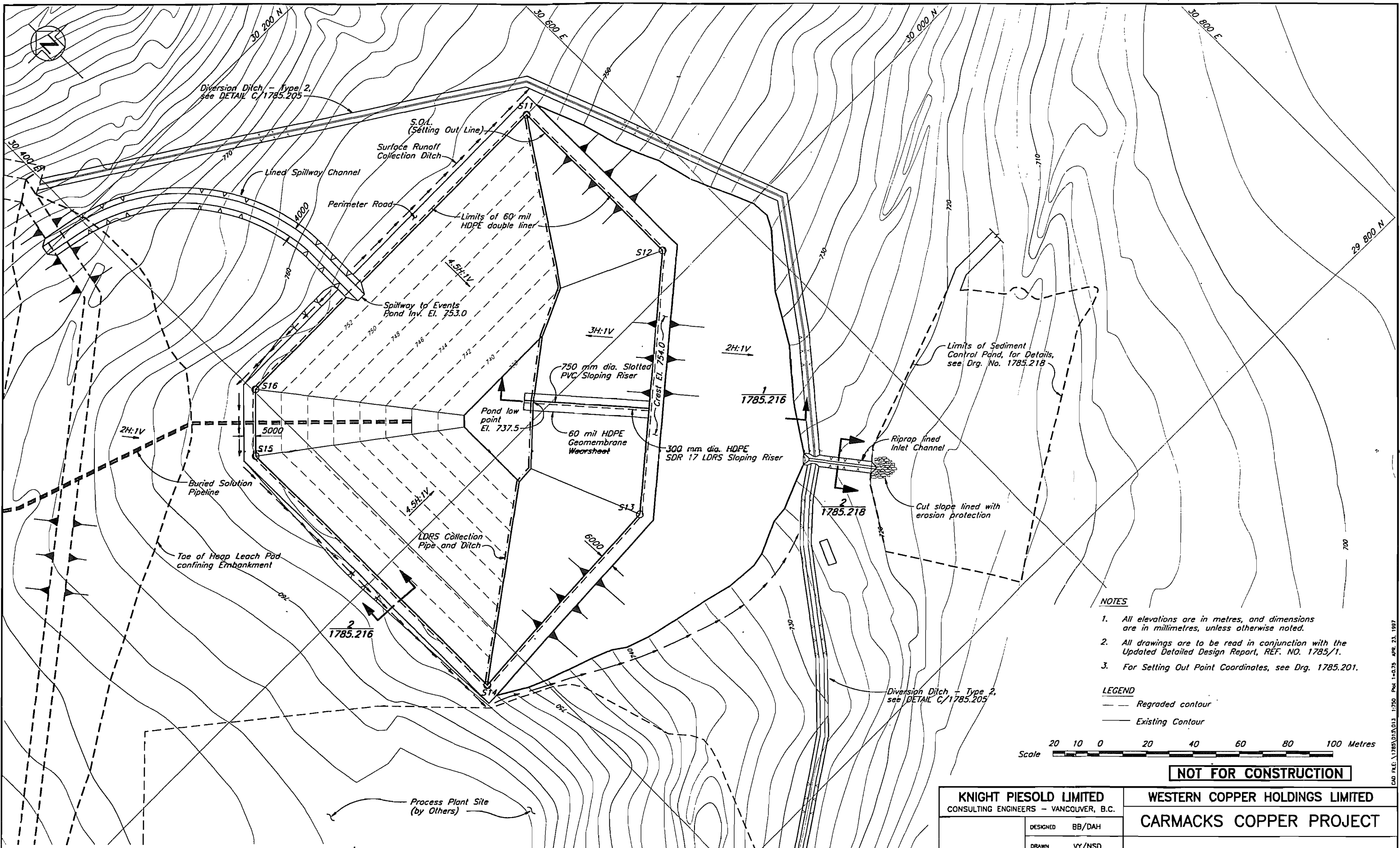


NOT FOR CONSTRUCTION

KNIGHT PIESOLD LIMITED CONSULTING ENGINEERS - VANCOUVER, B.C.		WESTERN COPPER HOLDINGS LIMITED CARMACKS COPPER PROJECT	
DESIGNED	BB/DAH	HEAP LEACH PAD STAGED LOADING SECTIONS	
DRAWN	NAR		
CHECKED			
APPROVED			
DATE FEB. 21, 1997		SCALE AS SHOWN	DRG. NO. 1785.211
REV. 0		REV. 0	REV. 0

DRG. NO.	DESCRIPTION	REV.	DATE	DESCRIPTION	APPROVED																		
1785.210	HEAP LEACH FACILITY - STAGED LOADING - PLAN																						
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REFERENCE DRAWINGS			REVISIONS																				

650-1785.211-01A-017-178500-Page 15-25-1785-17-1997



- NOTES**
- All elevations are in metres, and dimensions are in millimetres, unless otherwise noted.
 - All drawings are to be read in conjunction with the Updated Detailed Design Report, REF. NO. 1785/1.
 - For Setting Out Point Coordinates, see Drg. 1785.201.

- LEGEND**
- Regraded contour
 - Existing contour



NOT FOR CONSTRUCTION

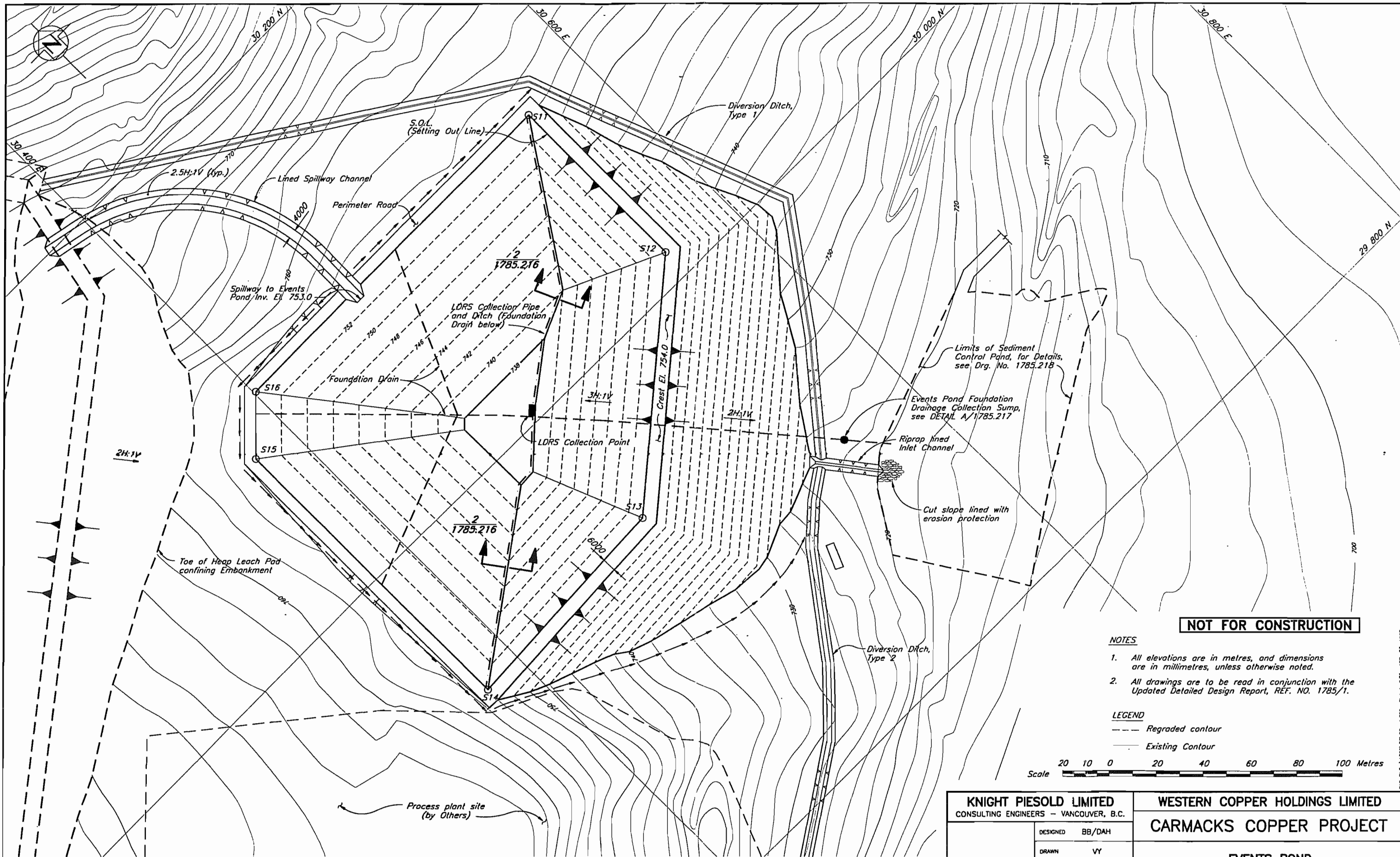
1785.216	EVENTS POND - SECTIONS AND DETAILS - SHEET 1 OF 2
1785.206	HEAP LEACH PAD - SECTIONS AND DETAILS - SHEET 2 OF 2
1785.205	HEAP LEACH PAD - SECTIONS AND DETAILS - SHEET 1 OF 2
DRG. NO.	DESCRIPTION

REV.	DATE	DESCRIPTION	APPROVED
0	FEB. 21/97	ISSUED FOR DESIGN REPORT	

REV.	DATE	DESCRIPTION	APPROVED
0	FEB. 21/97	ISSUED FOR DESIGN REPORT	

KNIGHT PIESOLD LIMITED CONSULTING ENGINEERS - VANCOUVER, B.C.		WESTERN COPPER HOLDINGS LIMITED	
DESIGNED BB/DAH DRAWN VY/NSD CHECKED APPROVED		CARMACKS COPPER PROJECT EVENTS POND GENERAL LAYOUT	
DATE	FEB. 21, 1997	SCALE	AS SHOWN
DRG. NO.	1785.214	REV.	0

Dwg FILE: \\1785\10\1013_1785_P01_1-079.dwg APR. 23, 1997



NOT FOR CONSTRUCTION

NOTES

1. All elevations are in metres, and dimensions are in millimetres, unless otherwise noted.
2. All drawings are to be read in conjunction with the Updated Detailed Design Report, REF. NO. 1785/1.

LEGEND

- Regraded contour
- Existing Contour



1785.218	SEDIMENT CONTROL POND - PLAN, SECTIONS AND DETAILS
1785.217	EVENTS POND - SECTIONS AND DETAILS - SHEET 2 OF 2
1785.216	EVENTS POND - SECTIONS AND DETAILS - SHEET 1 OF 2
DRG. NO.	DESCRIPTION
REFERENCE DRAWINGS	

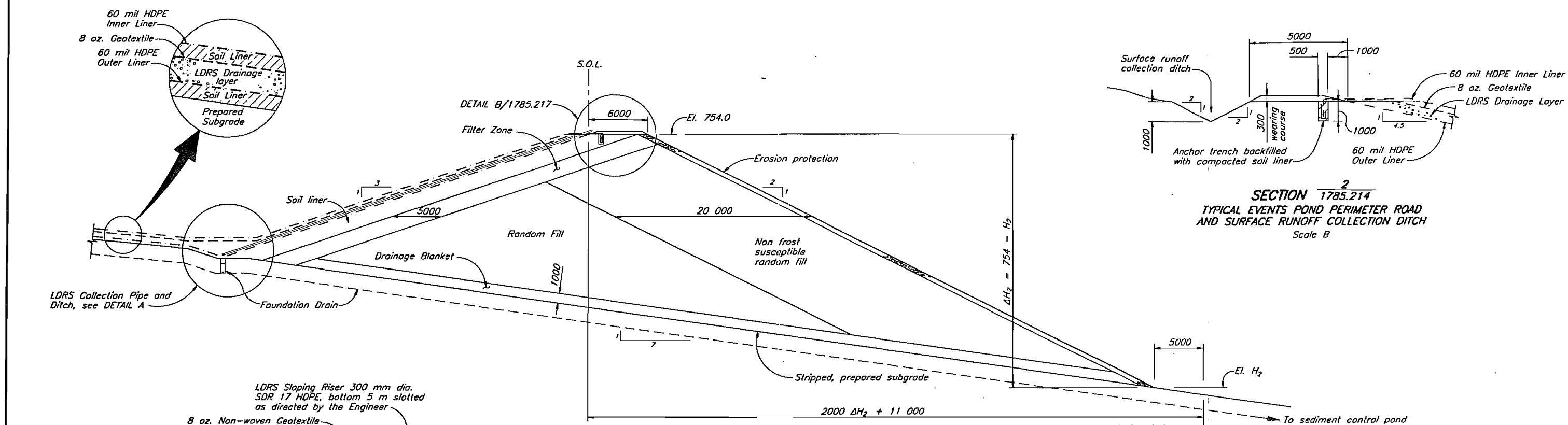
REV.	DATE	DESCRIPTION	APPROVED
0	FEB. 21/97	ISSUED FOR DESIGN REPORT	
REVISIONS			

KNIGHT PIESOLD LIMITED CONSULTING ENGINEERS - VANCOUVER, B.C.	
DESIGNED	BB/DAH
DRAWN	VY
CHECKED	
APPROVED	

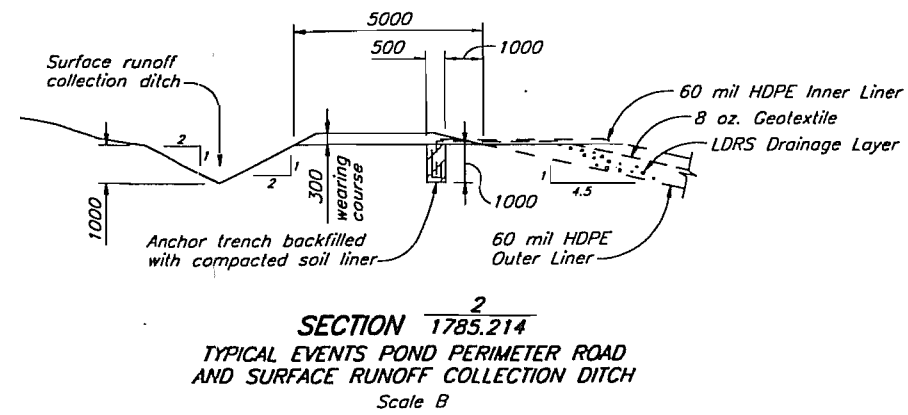
WESTERN COPPER HOLDINGS LIMITED	
CARMACKS COPPER PROJECT	
EVENTS POND FOUNDATION DRAINAGE AND GRADING PLAN	

DATE	FEB. 21, 1997	SCALE	AS SHOWN	DRG. NO.	1785.215	REV.	0
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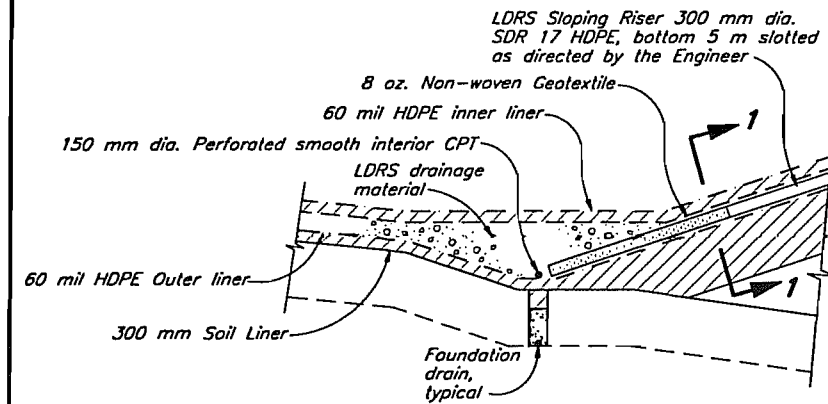
D:\P.L.E.\1785\DRG\02_178501.dwg Plot 1=0.75 APR. 23, 1997



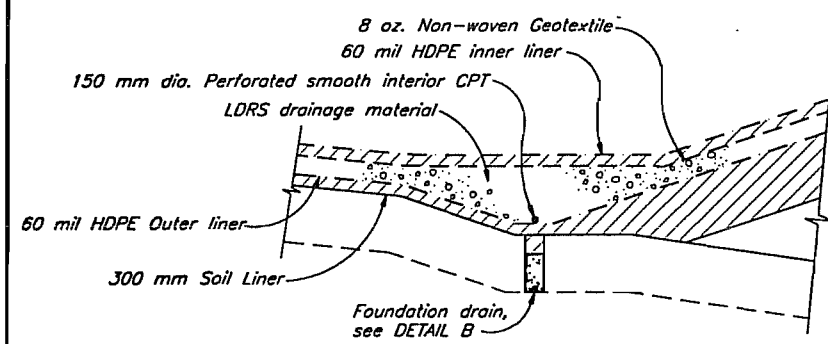
SECTION 1785.214
EVENTS POND EMBANKMENT SECTION
Scale A



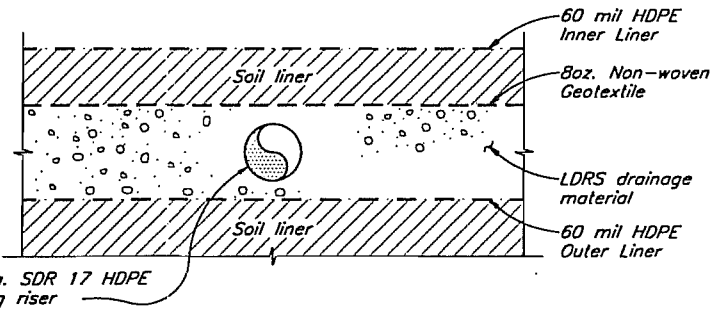
SECTION 1785.214
TYPICAL EVENTS POND PERIMETER ROAD
AND SURFACE RUNOFF COLLECTION DITCH
Scale B



DETAIL A
LEAK DETECTION AND RECOVERY SYSTEM (LDRS)
COLLECTION PIPE AND DITCH
Scale B



SECTION 1785.215
LEAK DETECTION AND RECOVERY SYSTEM (LDRS)
COLLECTION PIPE AND DITCH
WITHOUT LDRS SLOPING RISER
Scale B



SECTION 1
LDRS SLOPING RISER
NTS

NOT FOR CONSTRUCTION



NOTES

1. All elevations are in metres, and dimensions are in millimetres, unless otherwise noted.
2. All drawings are to be read in conjunction with the Updated Detailed Design Report, REF. NO. 1785/1.
3. S.O.L. - Setting out line.

1785.217	EVENTS POND - SECTIONS AND DETAILS - SHEET 2 OF 2
1785.215	EVENTS POND - FOUNDATION DRAINAGE AND GRADING PLAN
1785.214	EVENTS POND - GENERAL LAYOUT
DRG. NO.	DESCRIPTION
REFERENCE DRAWINGS	

REV.	DATE	DESCRIPTION	APPROVED
REVISIONS			

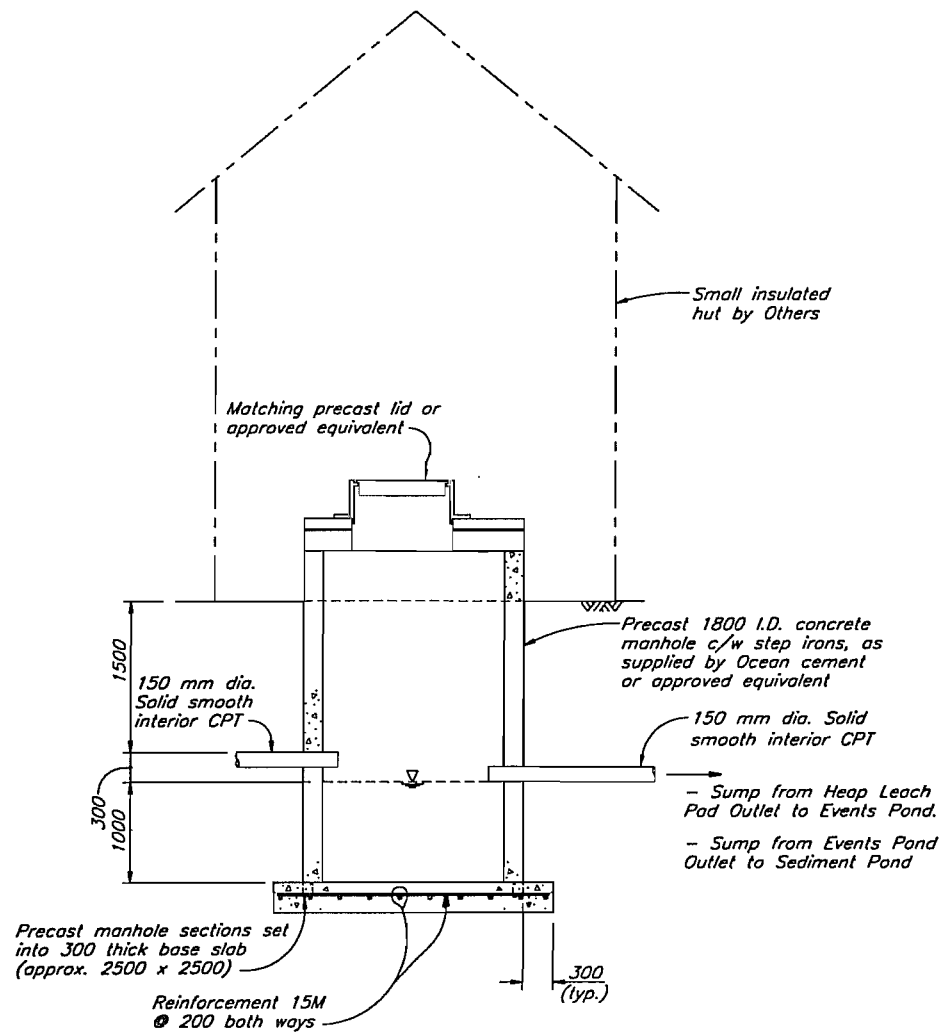
0	FEB. 21/97	ISSUED FOR DESIGN REPORT	
REV.	DATE	DESCRIPTION	APPROVED
REVISIONS			

KNIGHT PIESOLD LIMITED CONSULTING ENGINEERS - VANCOUVER, B.C.	
DESIGNED	BB/DAH
DRAWN	NSD/AW
CHECKED	
APPROVED	

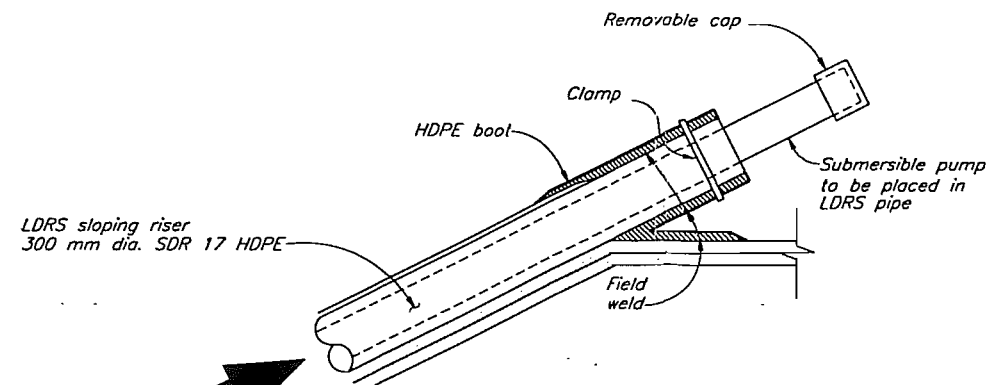
WESTERN COPPER HOLDINGS LIMITED	
CARMACKS COPPER PROJECT	
EVENTS POND	
SECTIONS AND DETAILS	
SHEET 1 OF 2	

DATE	FEB. 21, 1997	SCALE AS SHOWN	DRG. NO.	1785.216	REV.	0
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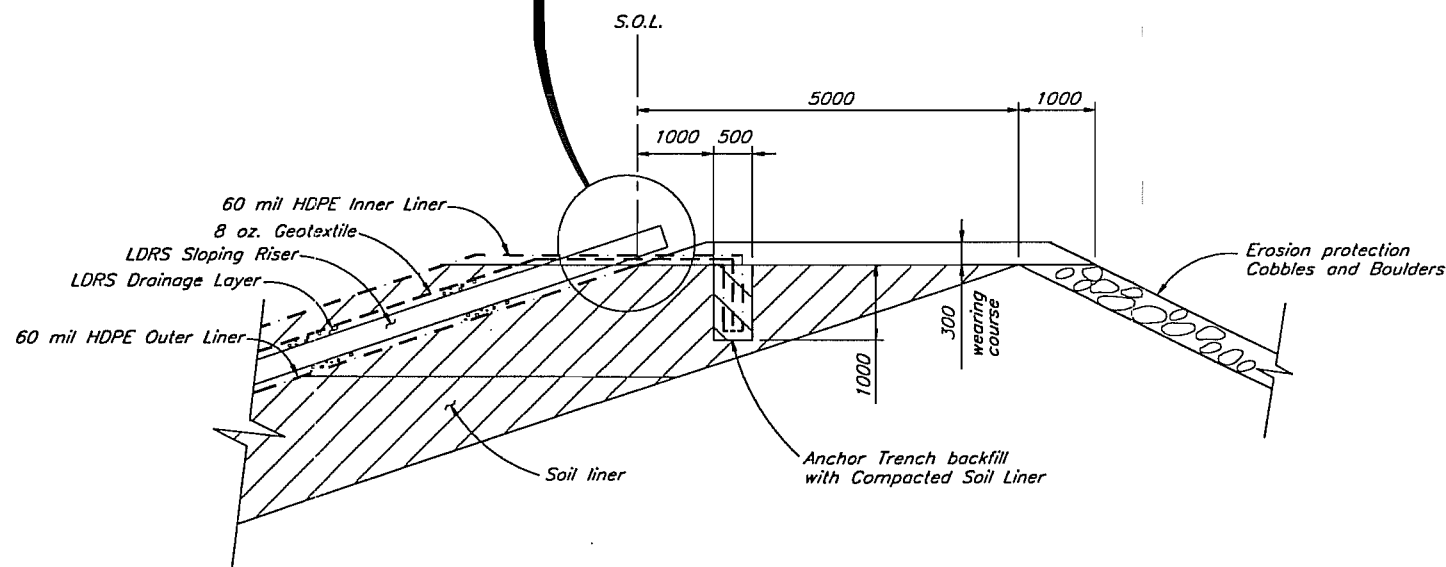
D:\DWG\1785\014\014_1200_P01_1-02.dwg, 12:00 PM, 23 APR 23, 1997



DETAIL $\frac{A}{1785.203}$, $\frac{A}{1785.215}$
TYPICAL FOUNDATION DRAINAGE SUMP
Scale A



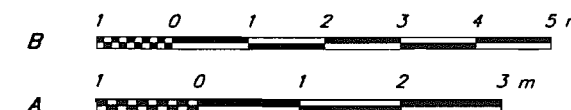
LDRS SLOPING RISER TERMINATION
NTS



DETAIL $\frac{B}{1785.216}$
EVENTS POND EMBANKMENT CREST
Scale B

NOTES

- All elevations are in metres, and dimensions are in millimetres, unless otherwise noted.
- All drawings are to be read in conjunction with the Updated Detailed Design Report, REF. NO. 1785/1.
- S.O.L. - Setting out line.



NOT FOR CONSTRUCTION

KNIGHT PIESOLD LIMITED
CONSULTING ENGINEERS - VANCOUVER, B.C.

WESTERN COPPER HOLDINGS LIMITED

CARMACKS COPPER PROJECT

DESIGNED BB/DAH

DRAWN AW

CHECKED

APPROVED

EVENTS POND
SECTIONS AND DETAILS
SHEET 2 OF 2

1785.216	EVENTS POND - SECTIONS AND DETAILS - SHEET 1 OF 2
1785.215	EVENTS POND - FOUNDATION DRAINAGE AND GRADING PLAN
1785.203	HEAP LEACH FACILITY - FOUNDATION DRAINAGE PLAN

DRG. NO.	DESCRIPTION	REV.	DATE	APPROVED
	REFERENCE DRAWINGS			

REV.	DATE	DESCRIPTION	APPROVED
		REVISIONS	

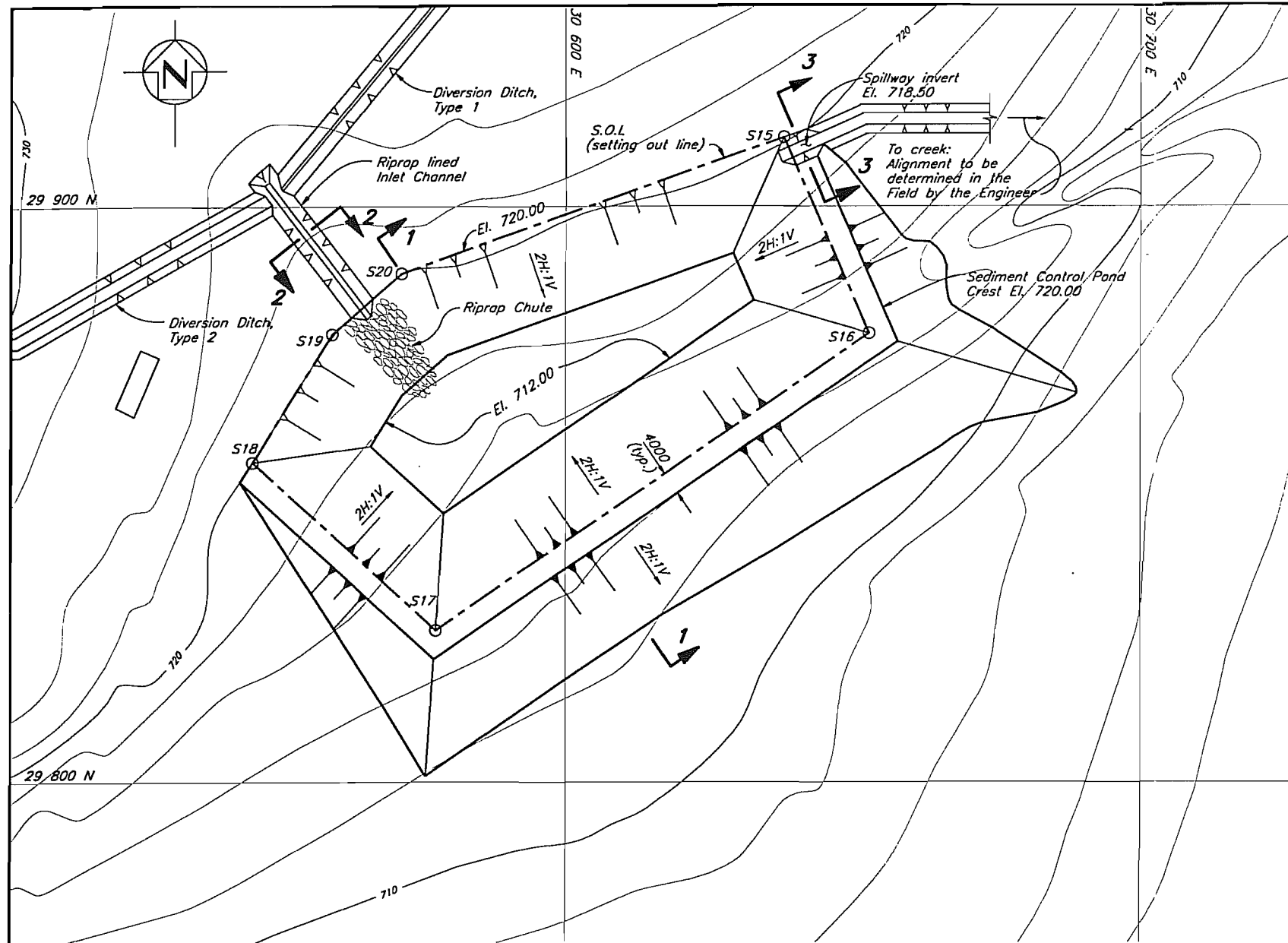
REV.	DATE	DESCRIPTION	APPROVED
0	FEB. 21/97	ISSUED FOR DESIGN REPORT	
		REVISIONS	

DATE FEB. 21, 1997

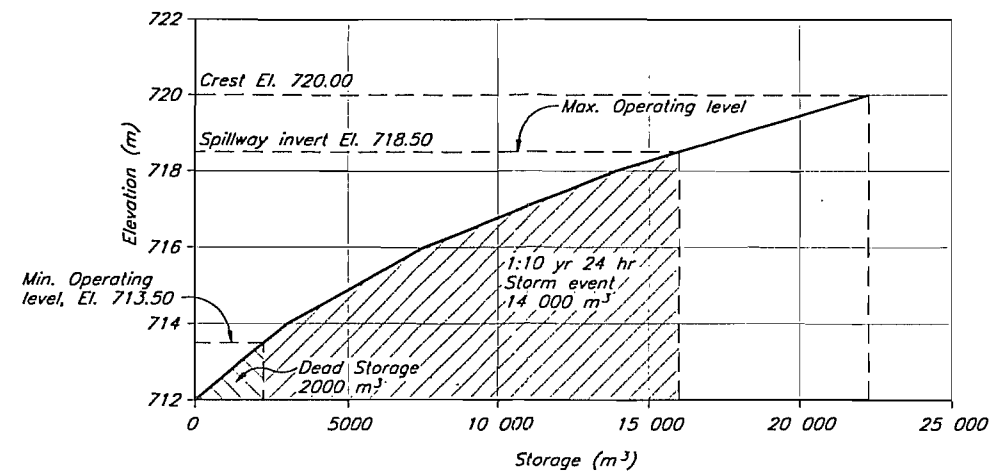
SCALE AS SHOWN

DRG. NO. 1785.217

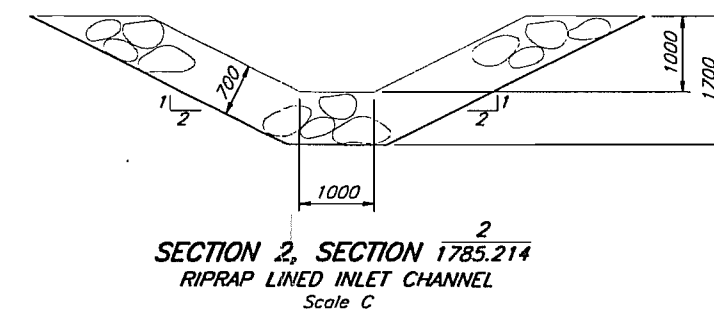
REV. 0



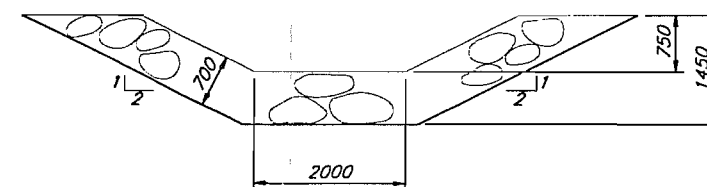
PLAN
Scale A



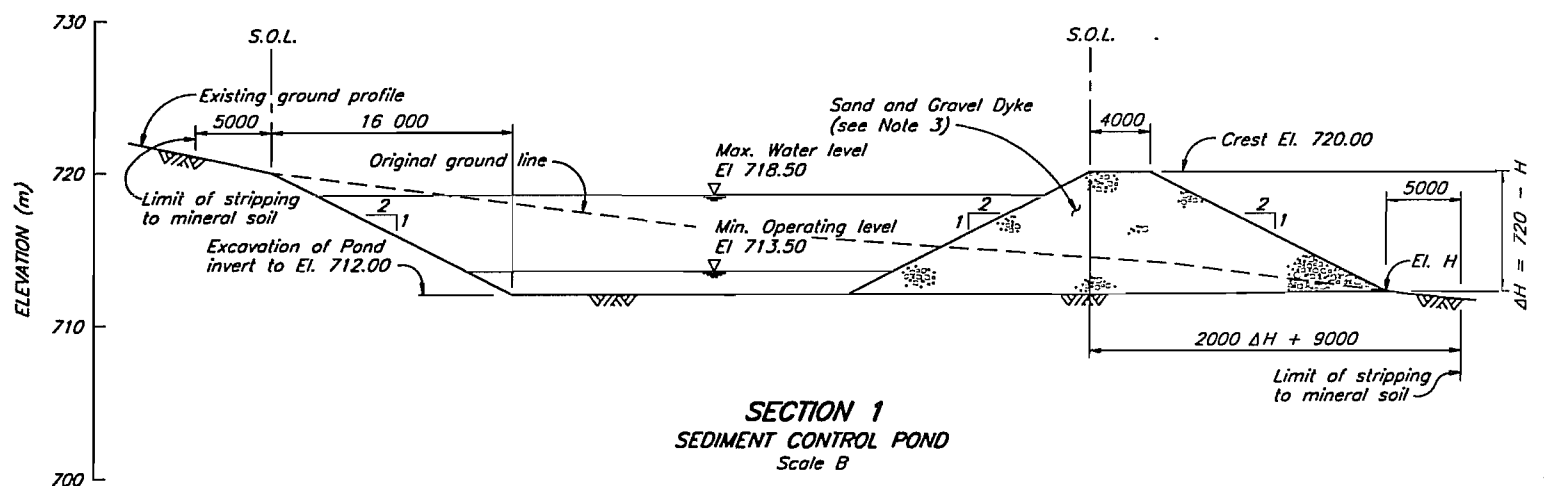
SEDIMENT CONTROL POND DEPTH/CAPACITY RELATIONSHIP



SECTION 2, SECTION 1785.214
RIPRAP LINED INLET CHANNEL
Scale C



SECTION 3
SPILLWAY
Scale C



SECTION 1
SEDIMENT CONTROL POND
Scale B

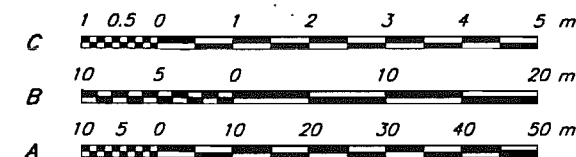
NOTES

- All elevations are in metres, and dimensions are in millimetres, unless otherwise noted.
- All drawings are to be read in conjunction with the Updated Detailed Design Report, REF. NO. 1785/1.
- Dyke to be constructed from locally derived granular sand and gravel or rockfill, raked towards the downstream slope in increasing lift thickness. Oversize particles to be moved downslope until less than 3/4 the lift thickness. Compaction with a vibratory smooth drum compactor.
- For Setting Out Point coordinates, see Drg. 1785.201.

LEGEND

- Setting Out Point (S.O.P.)
- S.O.L. Setting Out Line.

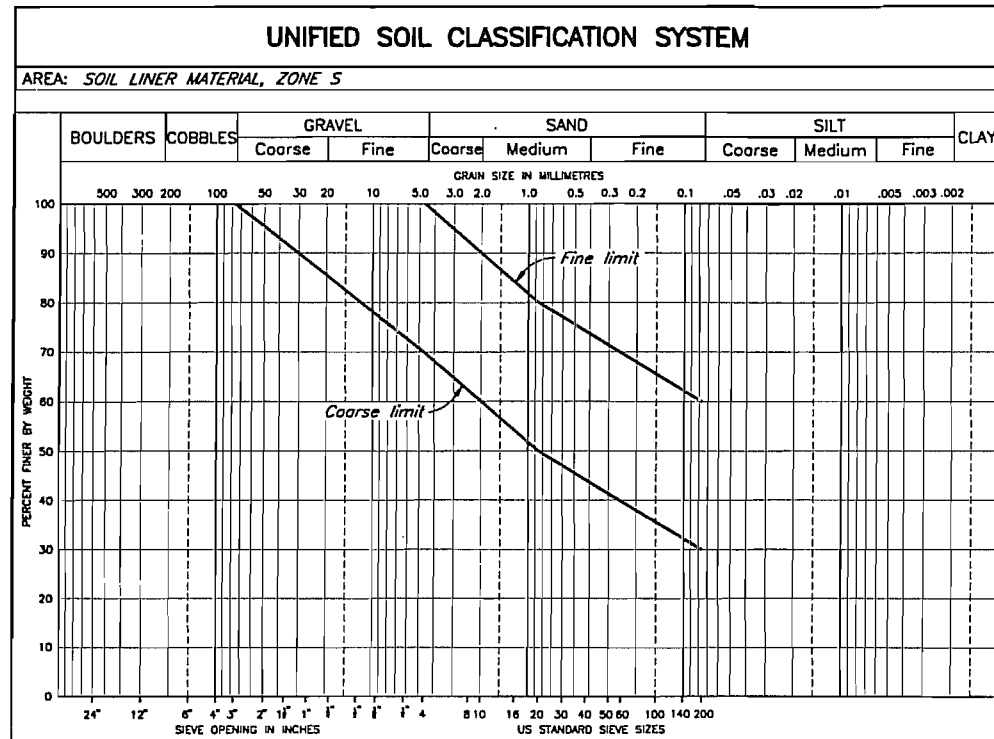
NOT FOR CONSTRUCTION



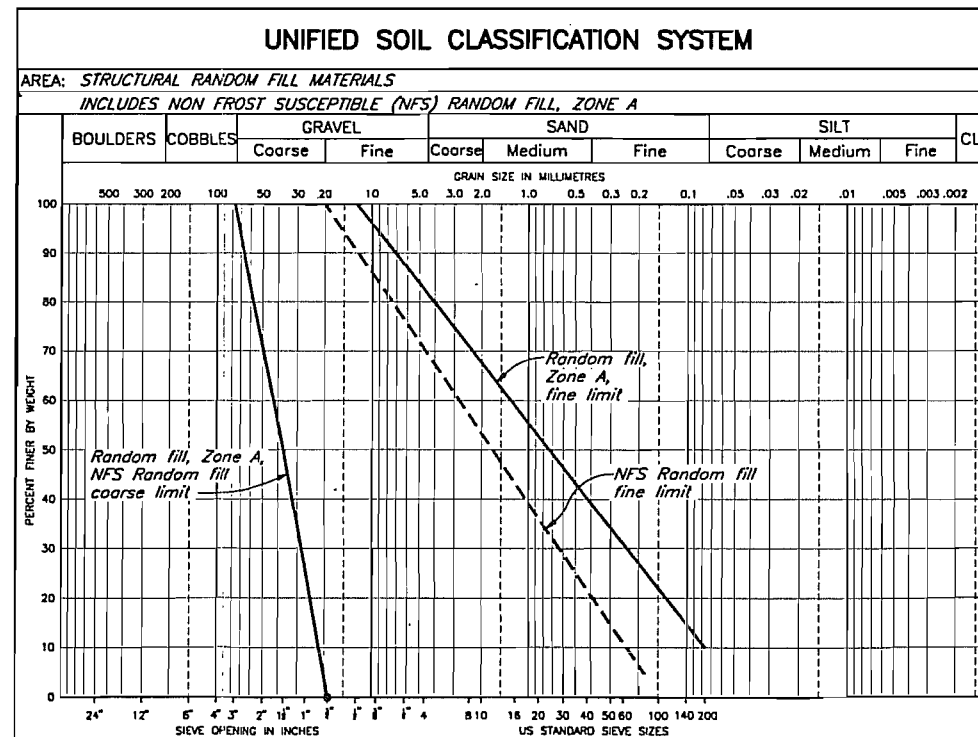
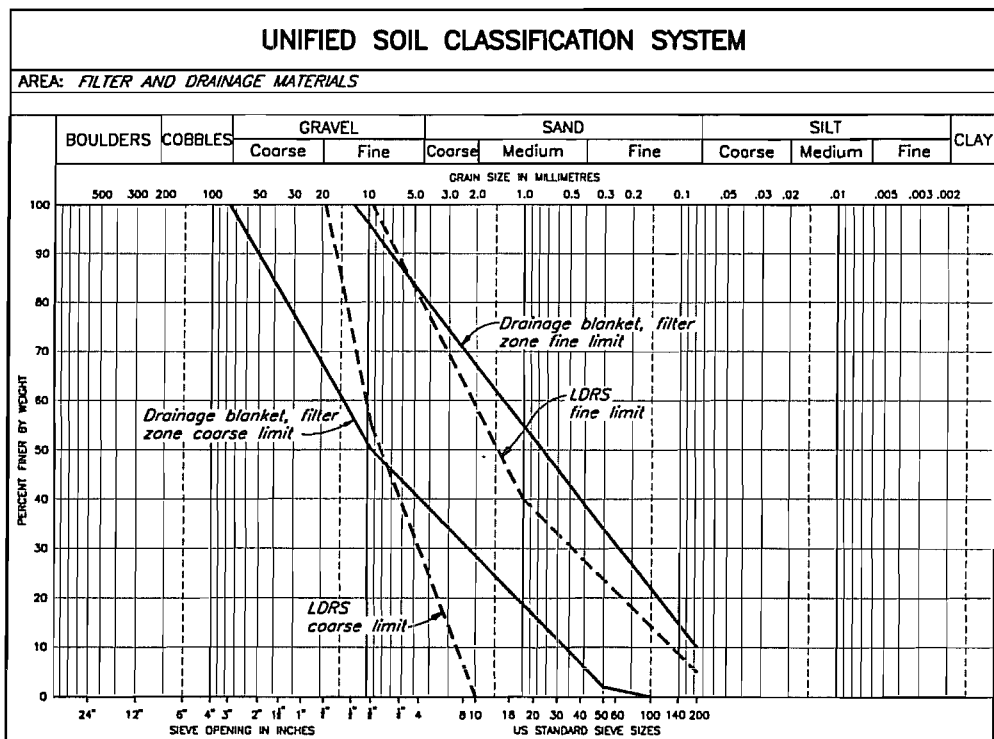
KNIGHT PIESOLD LIMITED CONSULTING ENGINEERS - VANCOUVER, B.C.		WESTERN COPPER HOLDINGS LIMITED CARMACKS COPPER PROJECT		
DESIGNED	BB/DAH	SEDIMENT CONTROL POND PLAN, SECTIONS AND DETAILS		
DRAWN	NAR/NSD			
CHECKED				
APPROVED				
DATE	FEB. 21, 1997	SCALE AS SHOWN	DRG. NO. 1785.218	REV. 0

ORG. NO.	DESCRIPTION	REV.	DATE	DESCRIPTION	APPROVED
	REFERENCE DRAWINGS				
				REVISIONS	
				REVISIONS	

CAG FILE: \1785\016\016 1:500 Pod 1-0.5 FEB. 21, 1997



ZONE	MATERIAL REQUIREMENTS	PLACEMENT AND COMPACTION
Soil Liner Zone S	Fine grained low permeability (minimum 1×10^{-6} cm/s) soil with a minimum 30% passing a #200 mesh screen size from designated borrow areas or excavations.	Placed in maximum 300mm lift thickness and compacted to a minimum 95% modified Proctor maximum dry density and 0 to +4% of optimum moisture content.
Drainage Blanket Filter Zone	Sand and gravel or rockfill from designated borrow areas or required excavations. Selected or processed material.	Placed in maximum 500mm lift thickness and compacted with a vibrating smooth drum roller.
Random Fill Zone A	Selected earthfill or rockfill from designated borrow areas, required excavations and/or from preproduction stripping of the ore body.	Placed in maximum 500mm lift thickness and compacted to a minimum 95% modified Proctor maximum dry density.
LDRS Drainage Layer	Sand and gravel from designated borrow areas or required excavations. Processed material.	Placed in one lift to a uniform density, free from excess voids.

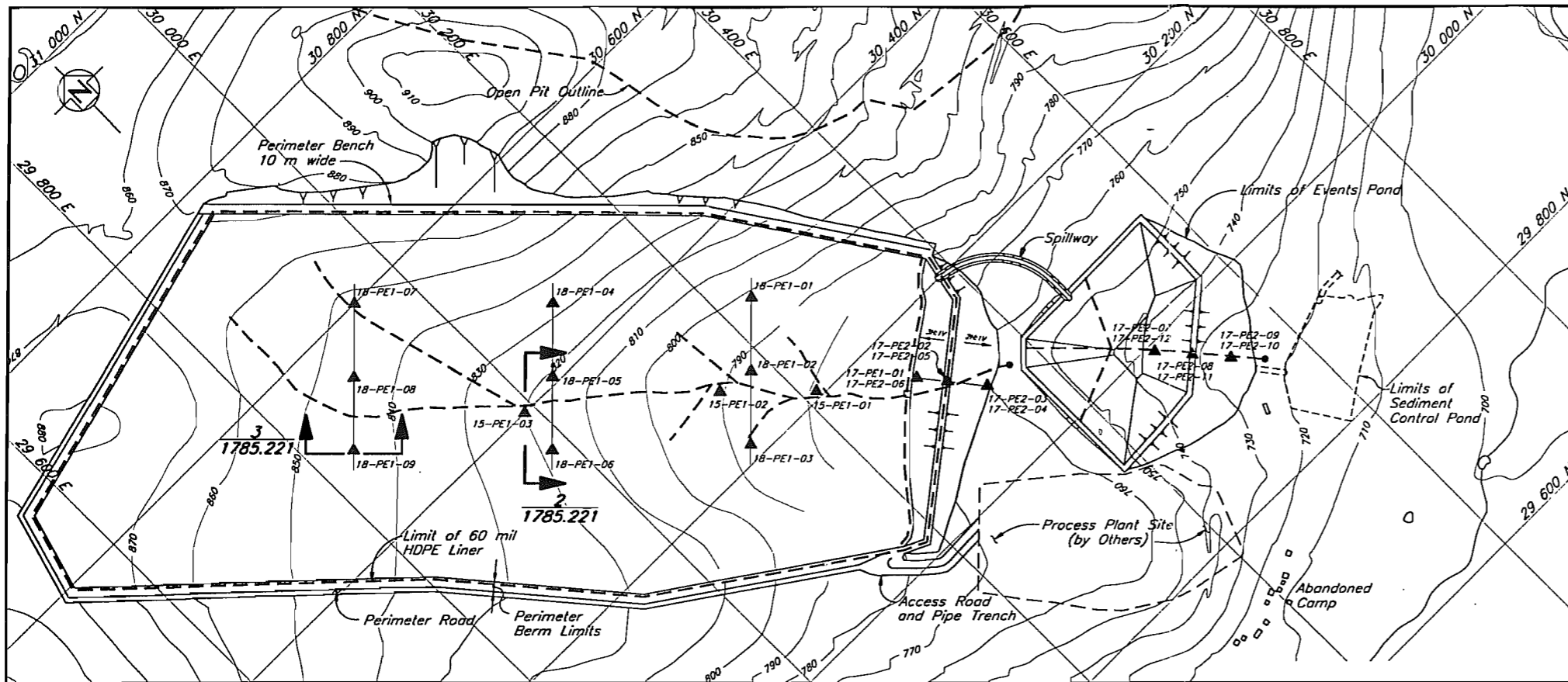


NOT FOR CONSTRUCTION

- NOTES**
- All drawings are to be read in conjunction with the Updated Detailed Design Report, REF. NO. 1785/1.

KNIGHT PIESOLD LIMITED CONSULTING ENGINEERS - VANCOUVER, B.C.		WESTERN COPPER CARMACKS LIMITED	
		CARMACKS COPPER PROJECT	
		SPECIFICATION FOR CONSTRUCTION MATERIALS	
DESIGNED	BB/DAH	DATE	FEB. 21, 1997
DRAWN	TAM	SCALE	AS SHOWN
CHECKED		DRG. NO.	1785.219
APPROVED		REV.	0

DRG. NO.	DESCRIPTION	REV.	DATE	DESCRIPTION	APPROVED	DATE	DESCRIPTION	APPROVED
	REFERENCE DRAWINGS					0	FEB. 21/97	ISSUED FOR DESIGN REPORT

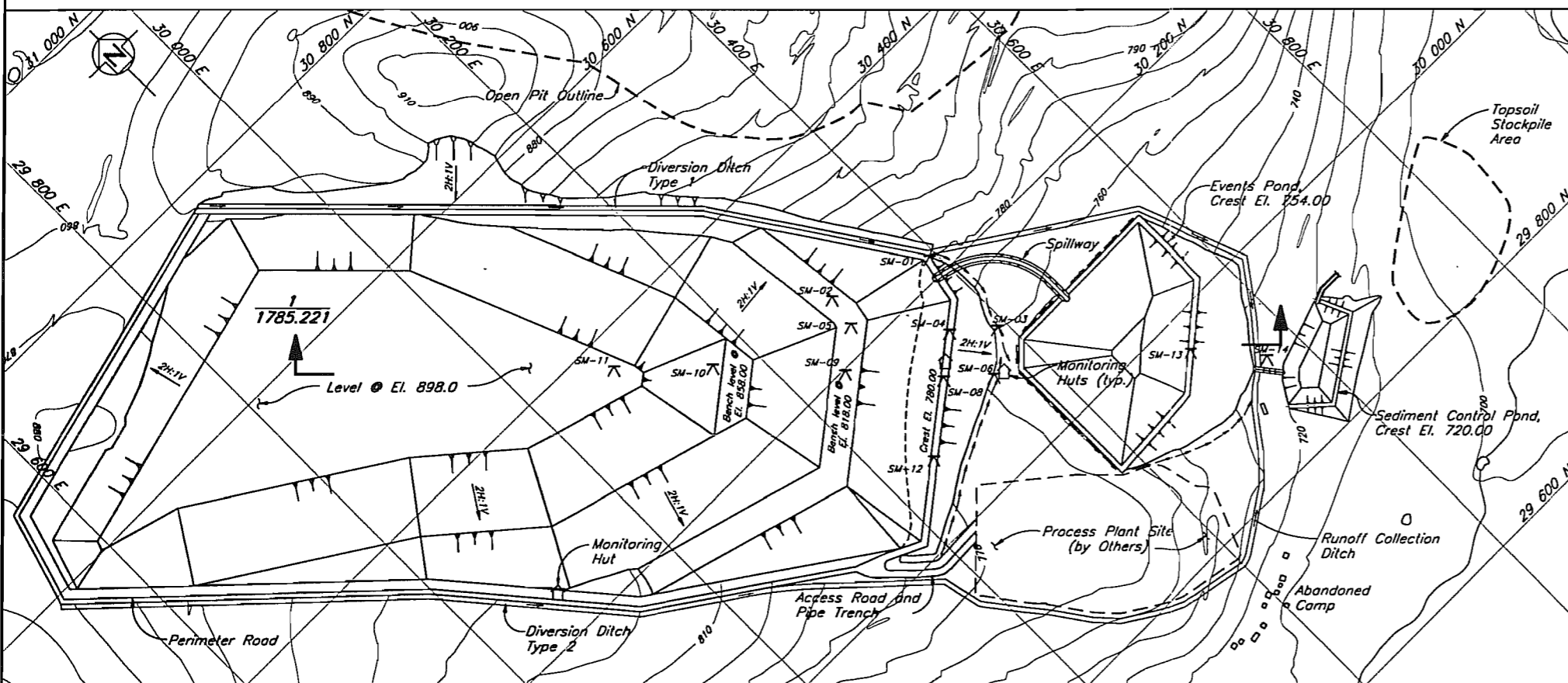


LEGEND

- Area (see below)
- 15-PE1-01—Number I.D.
- Type of Instrumentation (PE—Piezometer electric; 1 = Low, 2 = High vibrating wire type piezometer)
- 15-PE1-01 ▲ Drain Piezometer
- 17-PE2-01 ▲ Foundation Piezometer
- SM-01 ∇ Surface Movement Monument
- 15 = Foundation Drain Piezometers (3)
- 17 = Embankment Foundation Piezometers (12)
- 18 = Overliner Piezometers (9)
- PE = Vibrating Wire Piezometers (24 total)
- SM = Surface Monument (14)

NOTES

1. All elevations are in metres, and dimensions are in millimetres, unless otherwise noted.
2. All drawings are to be read in conjunction with the Updated Detailed Design Report, REF. NO. 1785/1.



NOT FOR CONSTRUCTION

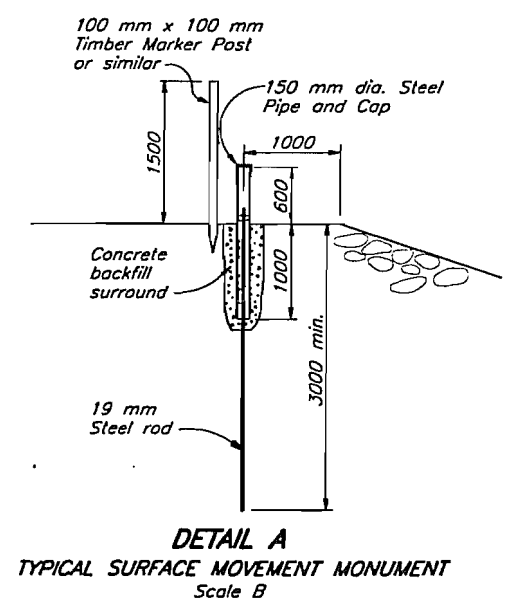
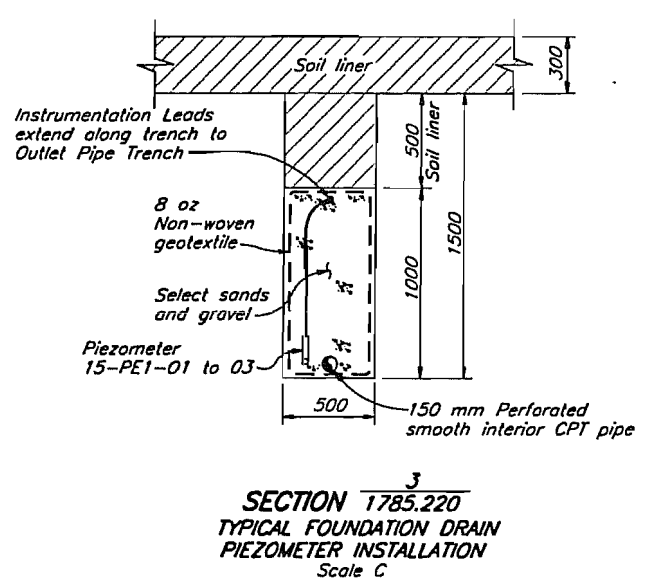
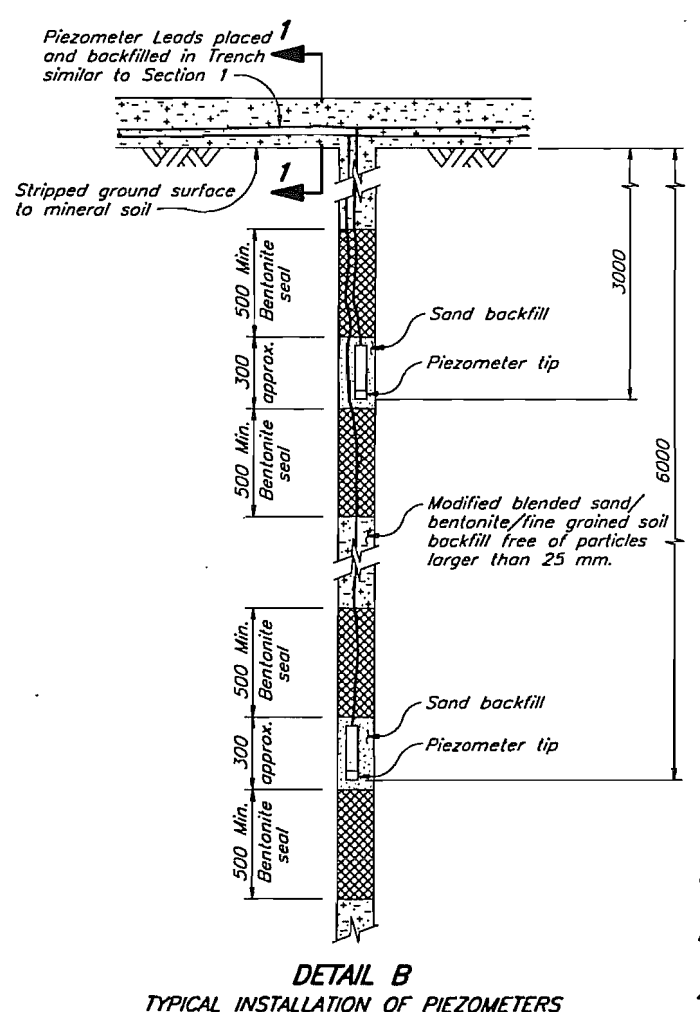
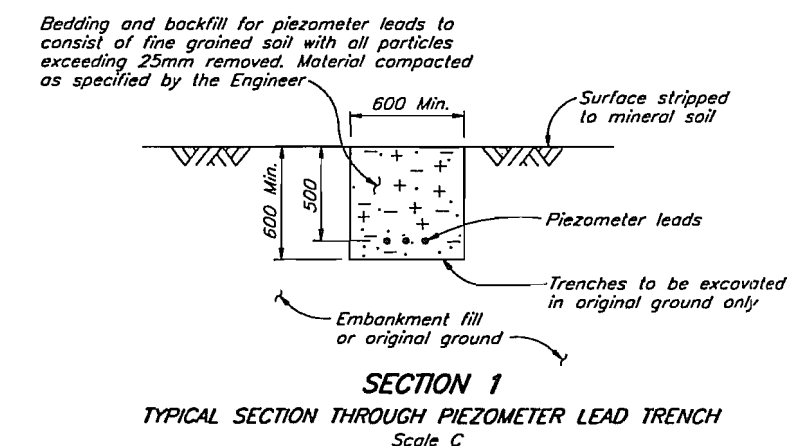
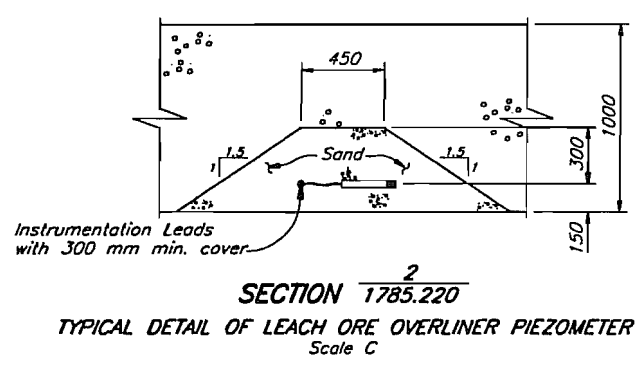
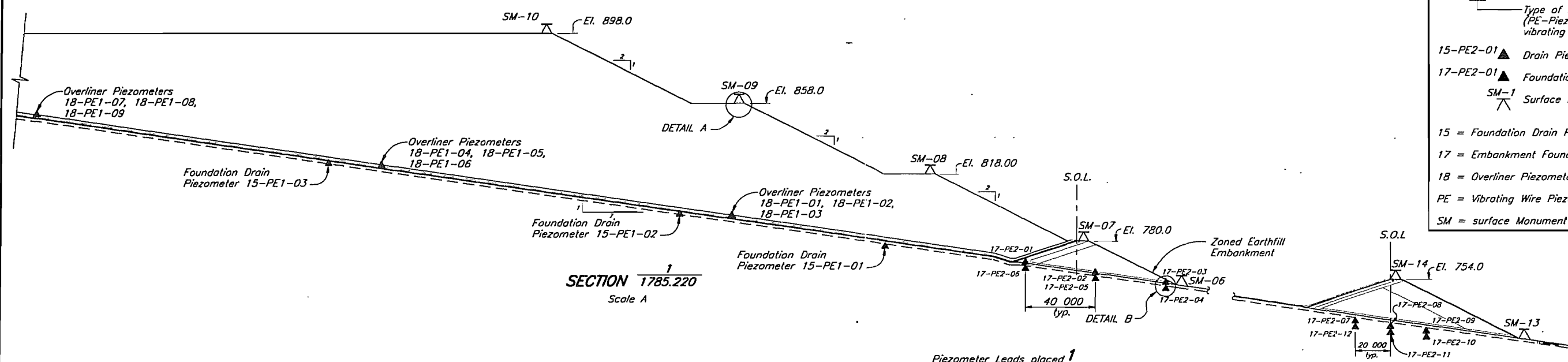


KNIGHT PIESOLD LIMITED CONSULTING ENGINEERS - VANCOUVER, B.C.		WESTERN COPPER HOLDINGS LIMITED CARMACKS COPPER PROJECT	
DESIGNED	BB	HEAP LEACH FACILITY INSTRUMENTATION PLAN	
DRAWN	NSD/DSR		
CHECKED			
APPROVED		DATE	FEB. 21, 1997
DATE	FEB. 21, 1997	SCALE AS SHOWN	DRG. NO. 1785.220
REV. 0	FEB. 21/97	ISSUED FOR DESIGN REPORT	REV. 0

DRG. NO.	DESCRIPTION	REV.	DATE	DESCRIPTION	APPROVED	REV.	DATE	DESCRIPTION	APPROVED
1785.221	HEAP LEACH FACILITY - INSTRUMENTATION - SECTIONS & DETAILS					0	FEB. 21/97	ISSUED FOR DESIGN REPORT	
REFERENCE DRAWINGS		REVISIONS		REVISIONS		REVISIONS		REVISIONS	

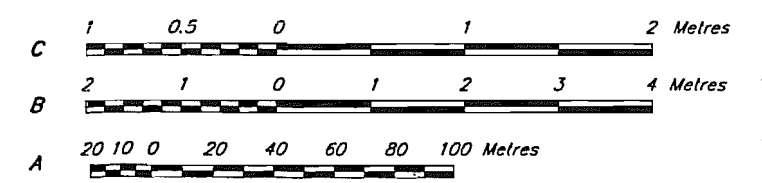
CAD FILE: 1785\018\018.DWG 1:3000 Plot 1-3 APR. 23. 1997

- LEGEND**
- Area (see below)
 - 15-PE1-01—Number I.D.
 - Type of Instrumentation (PE—Piezometer electric; 1—Low, 2—High vibrating wire type piezometer)
 - 15-PE2-01▲ Drain Piezometer
 - 17-PE2-01▲ Foundation Piezometer
 - SM-1▲ Surface Movement Monument
- 15 = Foundation Drain Piezometers (3)
 17 = Embankment Foundation Piezometers (12)
 18 = Overliner Piezometers (9)
 PE = Vibrating Wire Piezometers (24 total)
 SM = surface Monument (14)



- NOTES**
1. All elevations are in metres, and dimensions are in millimetres, unless otherwise noted.
 2. All drawings are to be read in conjunction with the Updated Detailed Design Report, REF. NO. 1785/1.
 3. The Technical Specification shall be read in conjunction with this Drawing.
 4. Trenches to be excavated in compacted fill or in original ground only.
 5. Bedding and backfill for piezometer leads trenches to comprise fine grained soil designated by the Engineer with all particles exceeding 25 mm removed.
 6. Surface movement monument installed as lifts are completed.

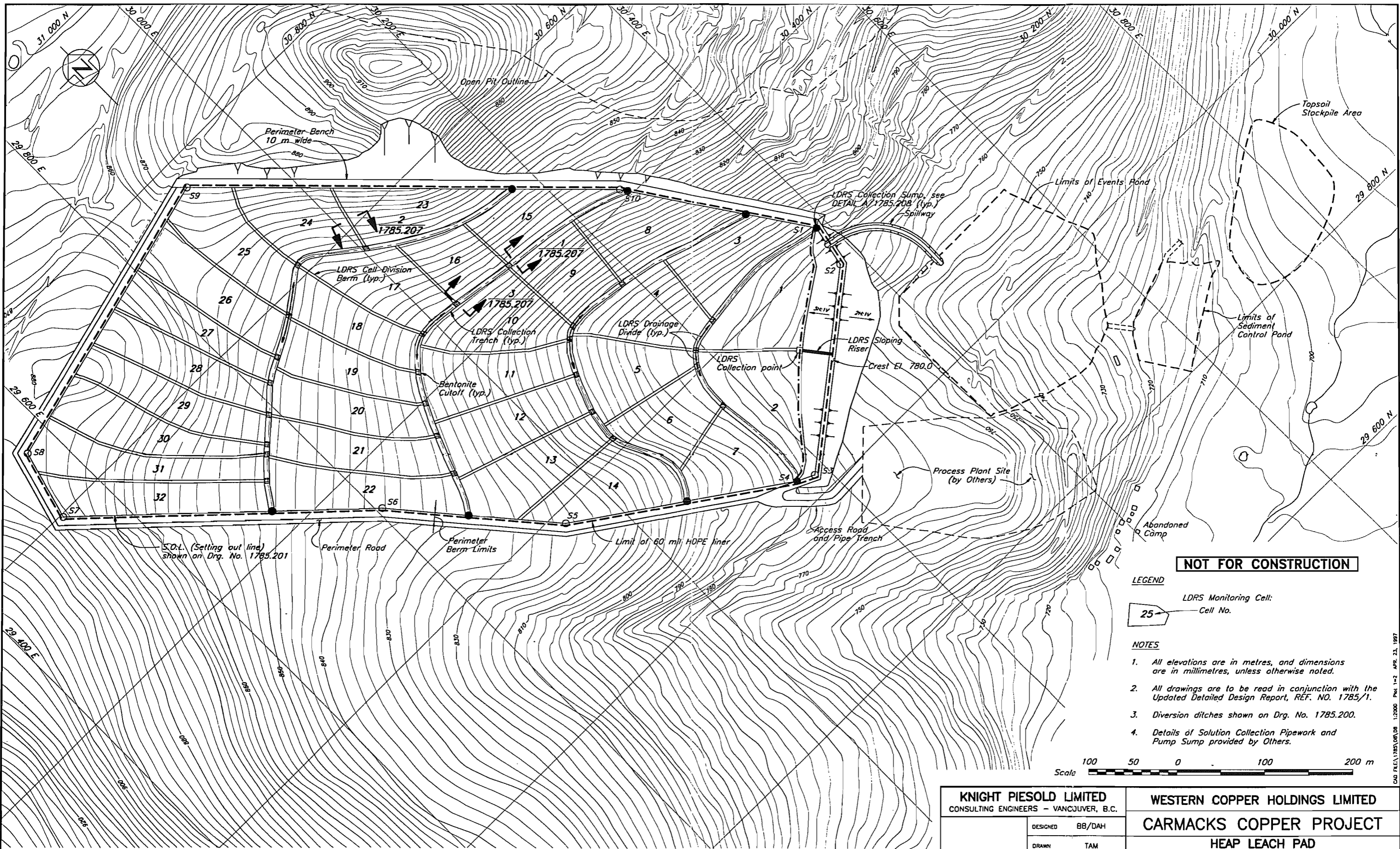
NOT FOR CONSTRUCTION



KNIGHT PIESOLD LIMITED CONSULTING ENGINEERS - VANCOUVER, B.C.		WESTERN COPPER HOLDINGS LIMITED	
DESIGNED	BB/DAH	CARMACKS COPPER PROJECT	
DRAWN	NSD/DSR	HEAP LEACH FACILITY INSTRUMENTATION SECTIONS AND DETAILS	
CHECKED			
APPROVED			
DATE	FEB. 21, 1997	SCALE	AS SHOWN
DRG. NO.	1785.221	REV.	0

1785.220	HEAP LEACH FACILITY - INSTRUMENTATION PLAN	REV.	DATE	DESCRIPTION	APPROVED	0	FEB. 21/97	ISSUED FOR DESIGN REPORT	APPROVED
DRG. NO.	DESCRIPTION	REV.	DATE	DESCRIPTION	APPROVED	REV.	DATE	DESCRIPTION	APPROVED
REFERENCE DRAWINGS		REVISIONS		REVISIONS		REVISIONS		REVISIONS	

C:\P\1785\019\019 1:1250 Plg 1-1.25 FEB. 24, 1997



NOT FOR CONSTRUCTION

LEGEND

LDRS Monitoring Cell:
 25 Cell No.

NOTES

- All elevations are in metres, and dimensions are in millimetres, unless otherwise noted.
- All drawings are to be read in conjunction with the Updated Detailed Design Report, REF. NO. 1785/1.
- Diversion ditches shown on Drg. No. 1785.200.
- Details of Solution Collection Pipework and Pump Sump provided by Others.



1785.206	HEAP LEACH PAD - SECTIONS AND DETAILS - SHEET 2 OF 2
1785.201	HEAP LEACH FACILITY - GENERAL LAYOUT
1785.200	HEAP LEACH FACILITY - GENERAL ARRANGEMENT
DRG. NO.	DESCRIPTION
REFERENCE DRAWINGS	

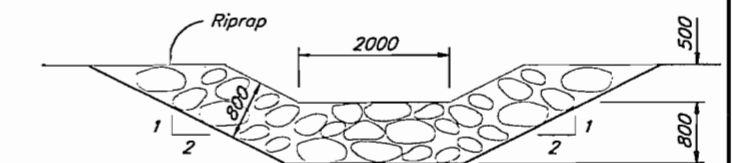
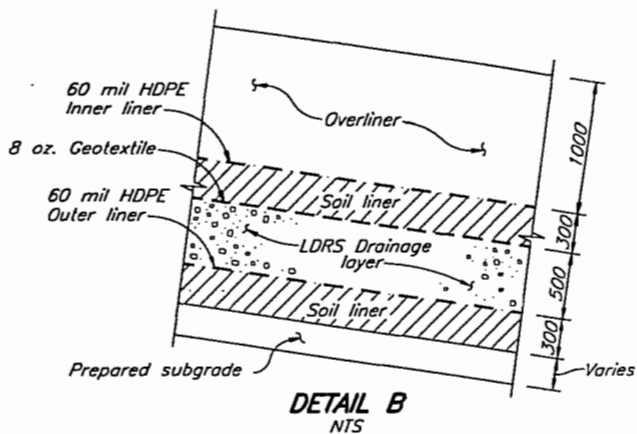
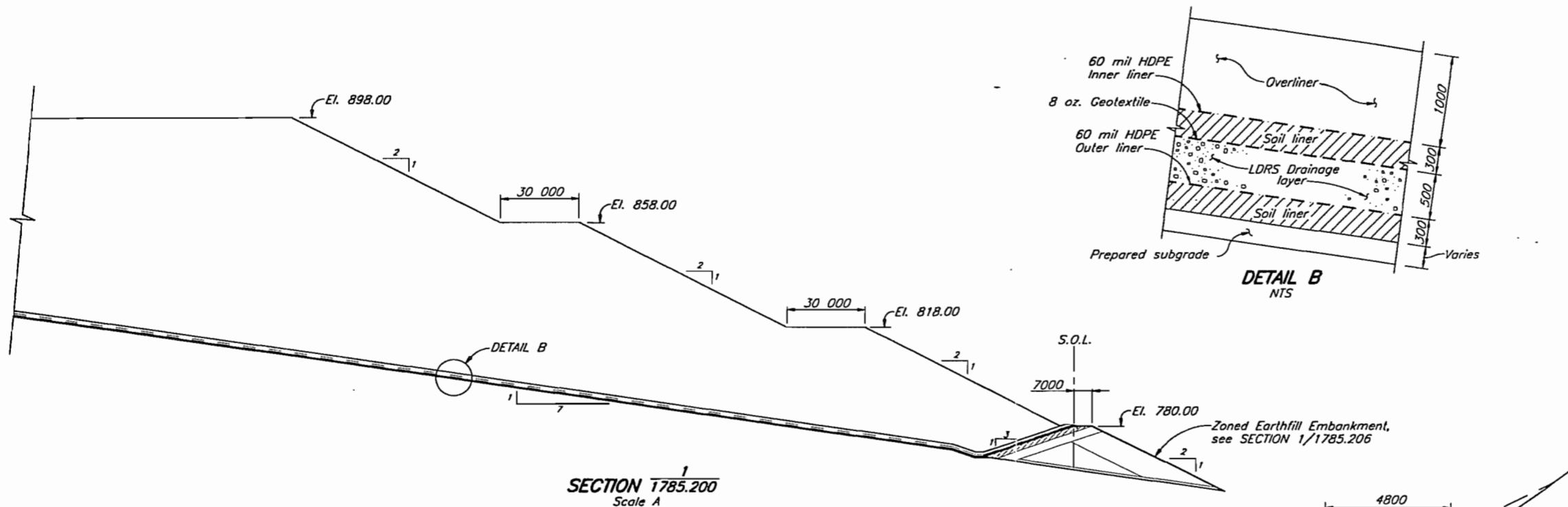
REV.	DATE	DESCRIPTION	APPROVED
REVISIONS			

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REV.	DATE	DESCRIPTION	APPROVED
REVISIONS			

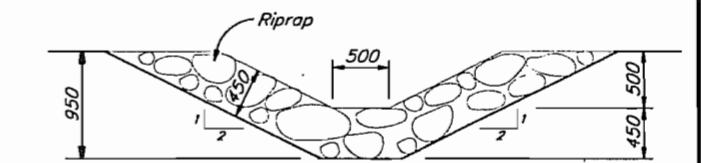
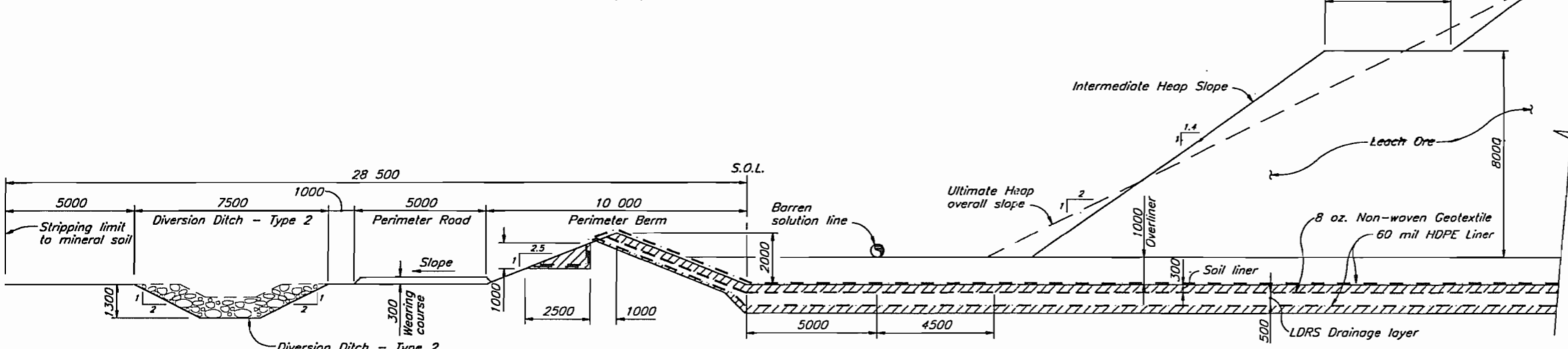
KNIGHT PIESOLD LIMITED CONSULTING ENGINEERS - VANCOUVER, B.C.	
DESIGNED	BB/DAH
DRAWN	TAM
CHECKED	
APPROVED	
DATE	FEB. 21, 1997

WESTERN COPPER HOLDINGS LIMITED	
CARMACKS COPPER PROJECT	
HEAP LEACH PAD	
LINER AND LEAK DETECTION AND RECOVERY SYSTEM (LDRS)	
PLAN	
SCALE AS SHOWN	DRG. NO. 1785.204
DATE	REV. 0

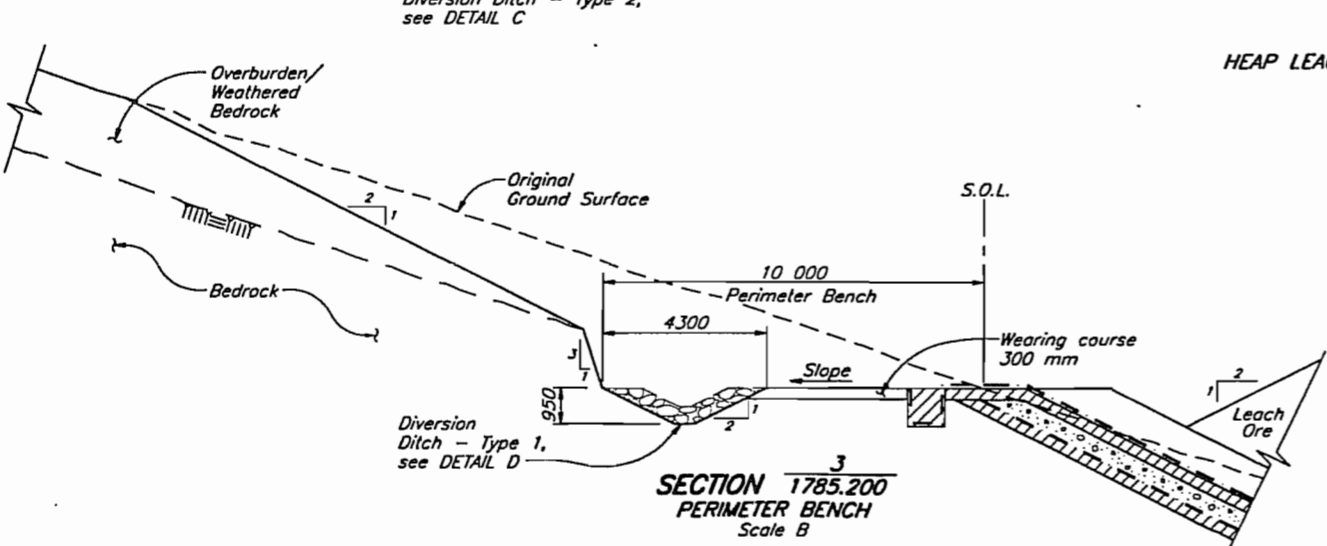
CAD FILE: 1785.04.DWG 1:2000 Plot 1-2 APR. 23, 1997



DETAIL C
DIVERSION DITCH - TYPE 2
NTS

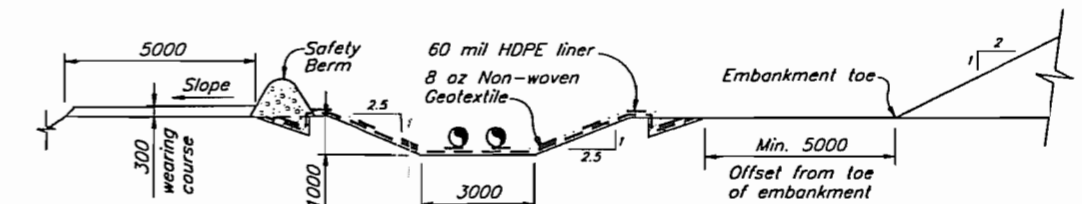


DETAIL D
DIVERSION DITCH - TYPE 1
NTS



SECTION 1785.200
HEAP LEACH PAD PERIMETER BERM SECTION
Scale B

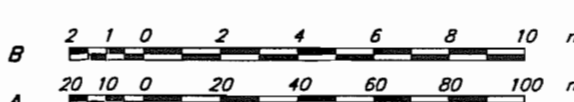
SECTION 1785.200
PERIMETER BENCH
Scale B



SECTION 1785.200
TYPICAL PIPE TRENCH
Scale B

NOT FOR CONSTRUCTION

- NOTES**
1. All elevations are in metres, and dimensions are in millimetres, unless otherwise noted.
 2. S.O.L. - Setting out line.
 3. All drawings are to be read in conjunction with the Updated Detailed Design Report, REF. NO. 1785/1.



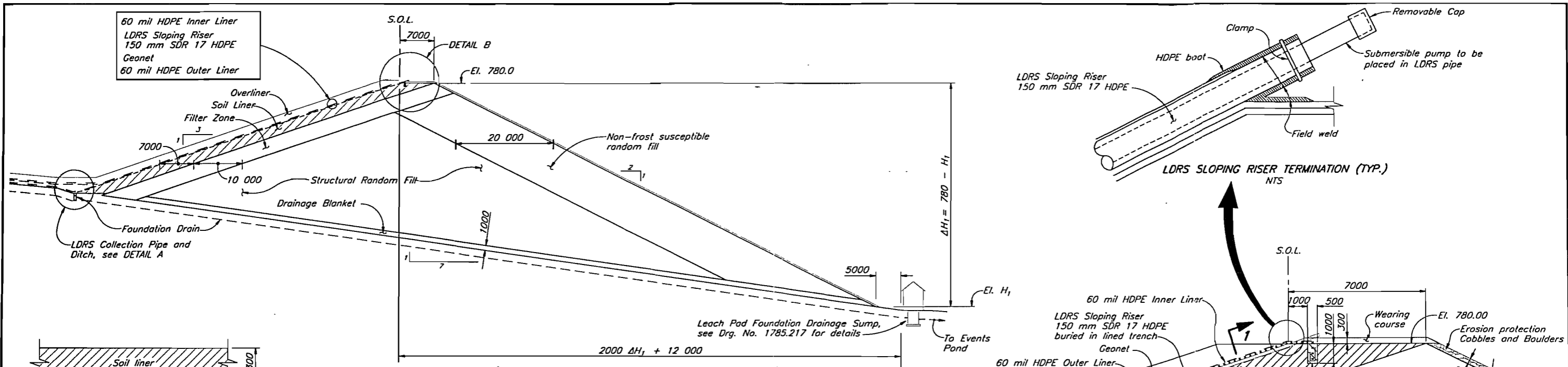
1785.214	EVENTS POND - GENERAL LAYOUT
1785.206	HEAP LEACH PAD - SECTIONS AND DETAILS - SHEET 2 OF 2
1785.200	HEAP LEACH FACILITY - GENERAL ARRANGEMENT
DRG. NO.	DESCRIPTION
REFERENCE DRAWINGS	

REV.	DATE	DESCRIPTION	APPROVED
REVISIONS			

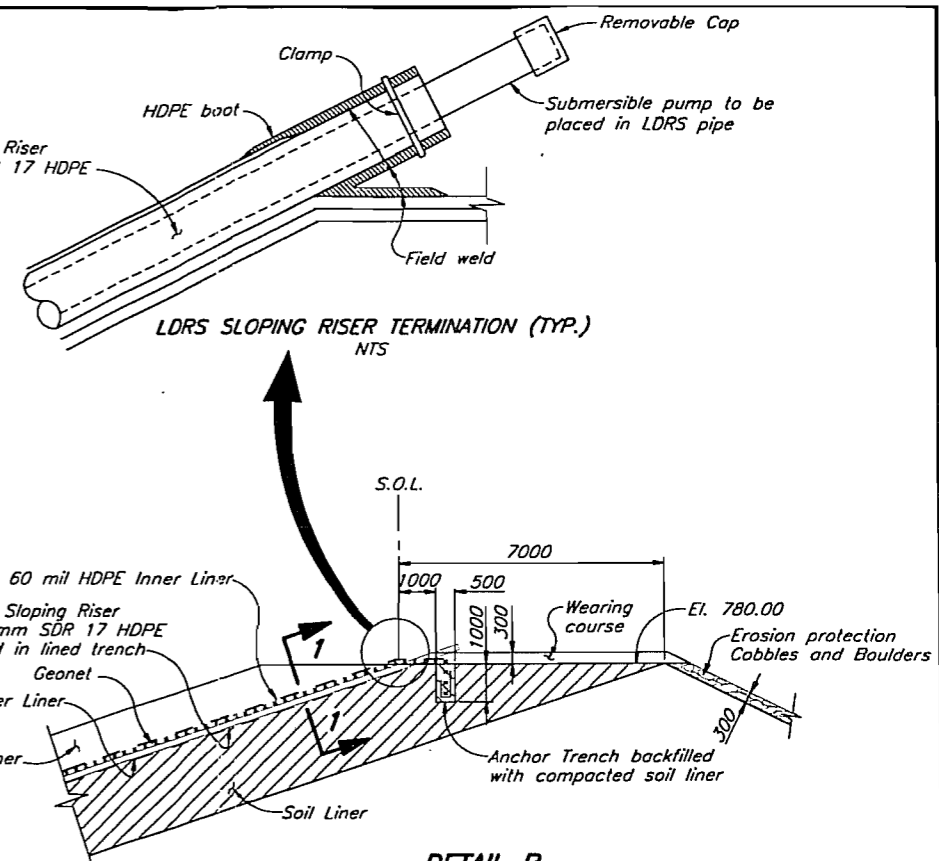
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REVISIONS			

KNIGHT PIESOLD LIMITED CONSULTING ENGINEERS - VANCOUVER, B.C.		WESTERN COPPER HOLDINGS LIMITED	
DESIGNED	BB/DAH	CARMACKS COPPER PROJECT	
DRAWN	NSD/WAL		
CHECKED			
APPROVED			
DATE FEB. 21, 1997		SCALE AS SHOWN	DRG. NO. 1785.205
			REV. 0

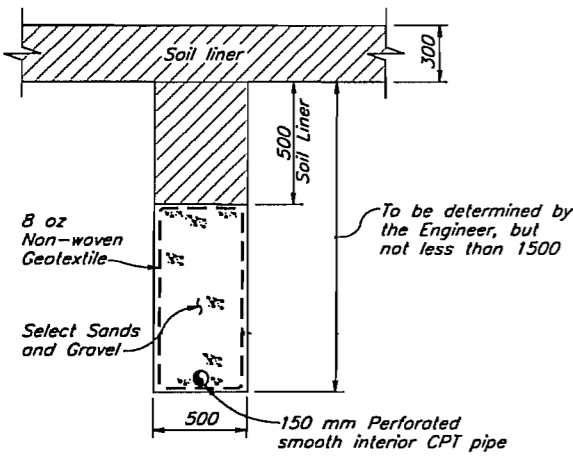
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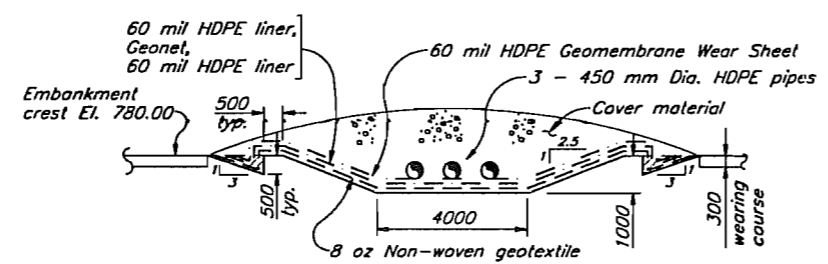
SECTION 1785.205
LEACH PAD CONFINING EMBANKMENT SECTION
Scale A



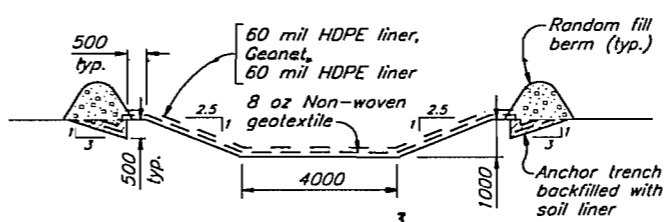
DETAIL B
LEACH PAD CONFINING EMBANKMENT CREST
Scale B



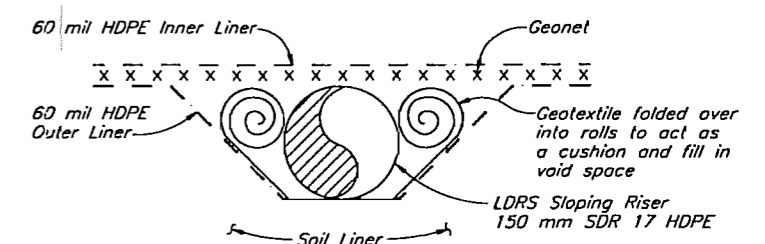
DETAIL C, SECTION 1785.203
TYPICAL FOUNDATION DRAIN
NTS



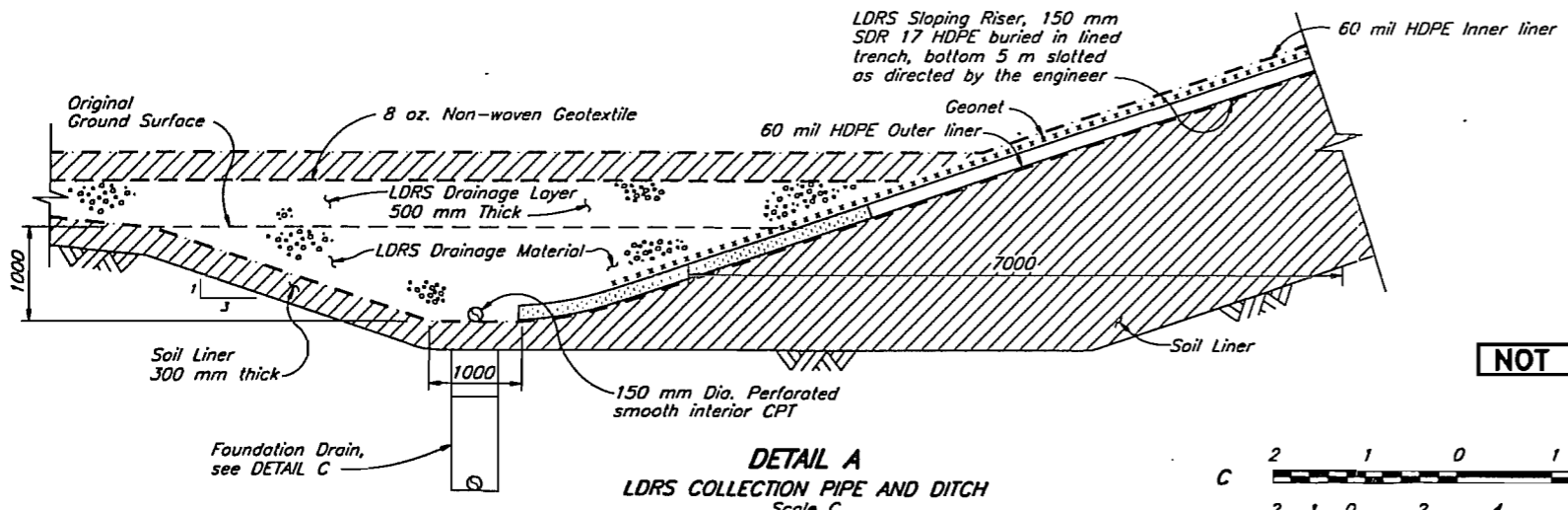
SECTION 1785.200
TYPICAL SPILLWAY THROUGH EMBANKMENT CREST
Scale B



SECTION 1785.200
SPILLWAY INTO EVENTS POND
Scale B

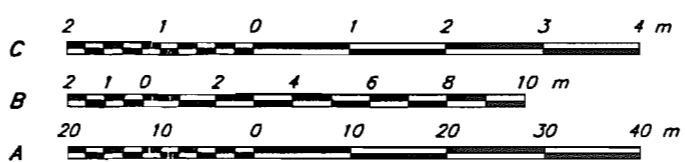


SECTION 1
LDRS SLOPING RISER (TYP.)
NTS



DETAIL A
LDRS COLLECTION PIPE AND DITCH
Scale C

NOT FOR CONSTRUCTION



1785.217	EVENTS POND - SECTIONS AND DETAILS - SHEET 2 OF 2
1785.205	HEAP LEACH PAD - SECTIONS AND DETAILS - SHEET 1 OF 2
1785.204	HEAP LEACH FACILITY - LINER AND LDRS PLAN
1785.203	HEAP LEACH FACILITY - OVERALL FOUNDATION DRAINAGE PLAN
1785.200	HEAP LEACH FACILITY - GENERAL ARRANGEMENT
DRG. NO.	DESCRIPTION

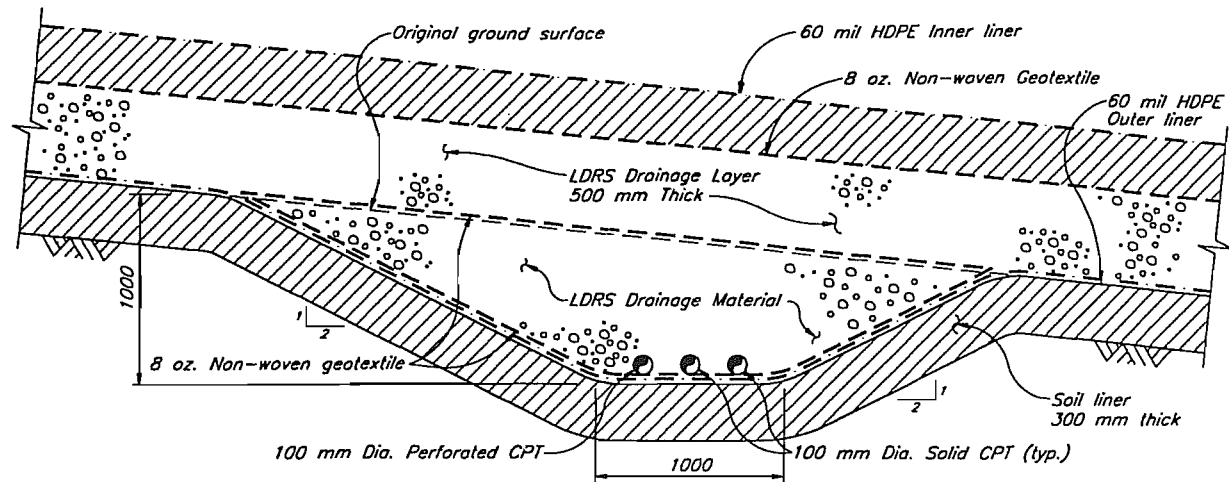
REV.	DATE	DESCRIPTION	APPROVED
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0	FEB. 21/97	ISSUED FOR DESIGN REPORT	

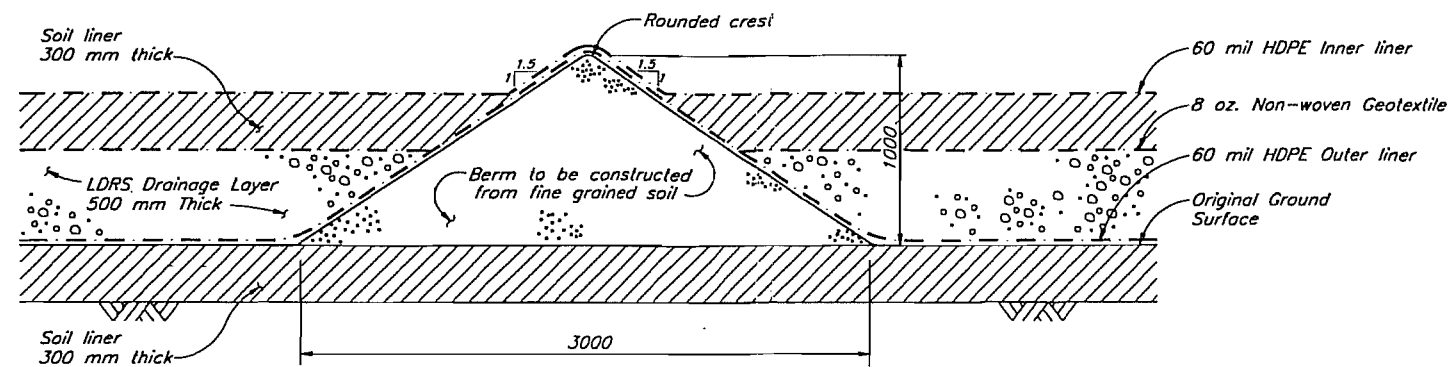
KNIGHT PIESOLD LIMITED CONSULTING ENGINEERS - VANCOUVER, B.C.	
DESIGNED	BB/DAH
DRAWN	TAM
CHECKED	
APPROVED	
DATE FEB. 21, 1997	

WESTERN COPPER HOLDINGS LIMITED	
CARMACKS COPPER PROJECT	
HEAP LEACH PAD LINER AND LEAK DETECTION AND RECOVERY SYSTEM (LDRS)	
SECTIONS AND DETAILS - SHEET 1 OF 2	
SCALE AS SHOWN	DRG. NO. 1785.206
DATE FEB. 21, 1997	REV. 0

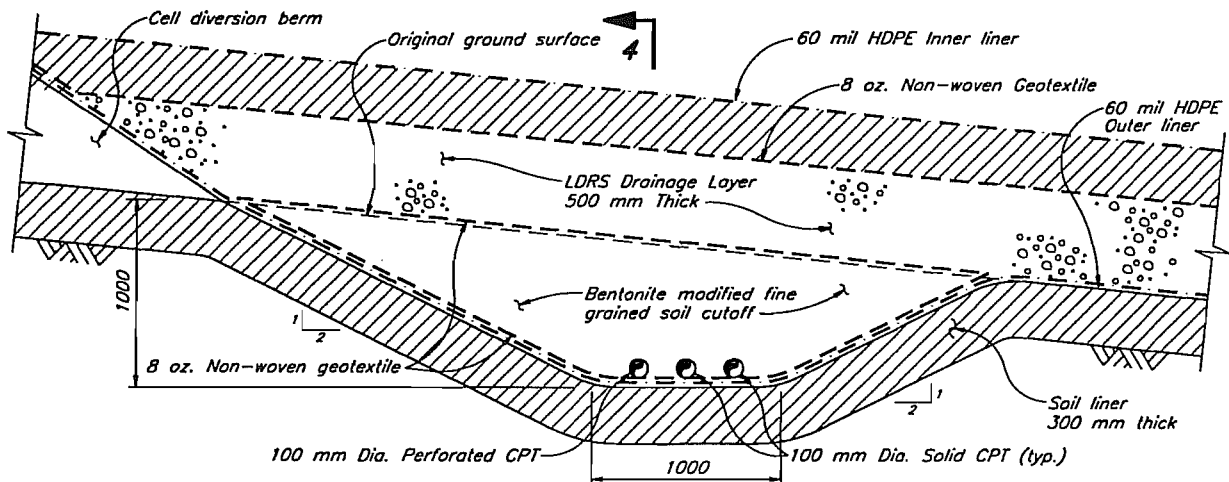
CAD FILE: 1785/04/06 1:200 Plot 1-0-2 APR. 23, 1997



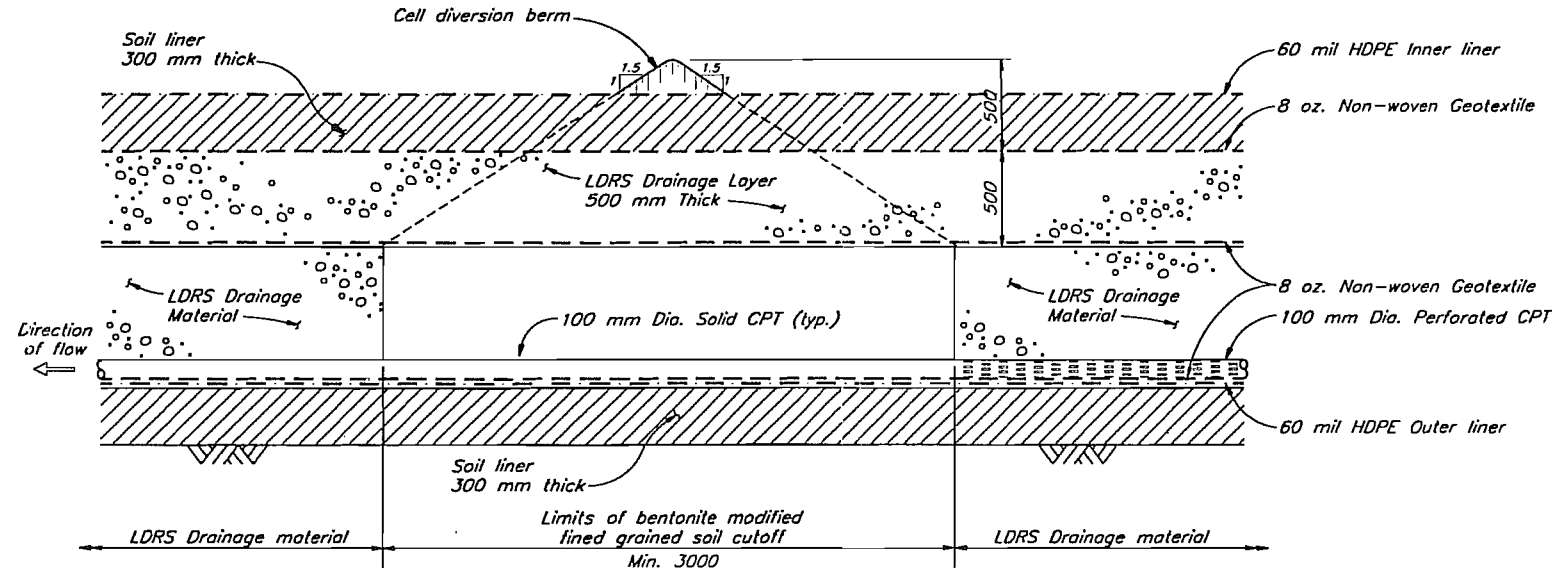
SECTION 1
SECTION 1785.204
LDRS COLLECTION DITCH
 Scale B



SECTION 2
SECTION 1785.204
CELL DIVISION BERM
 Scale B



SECTION 3
SECTION 1785.204
BENTONITE CUTOFF AND BERM
 Scale B

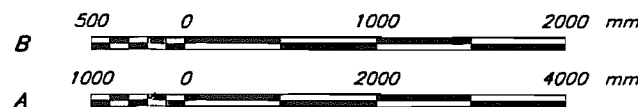


SECTION 4
 Scale B

NOTE

- All elevations are in metres, and dimensions are in millimetres, unless otherwise noted.

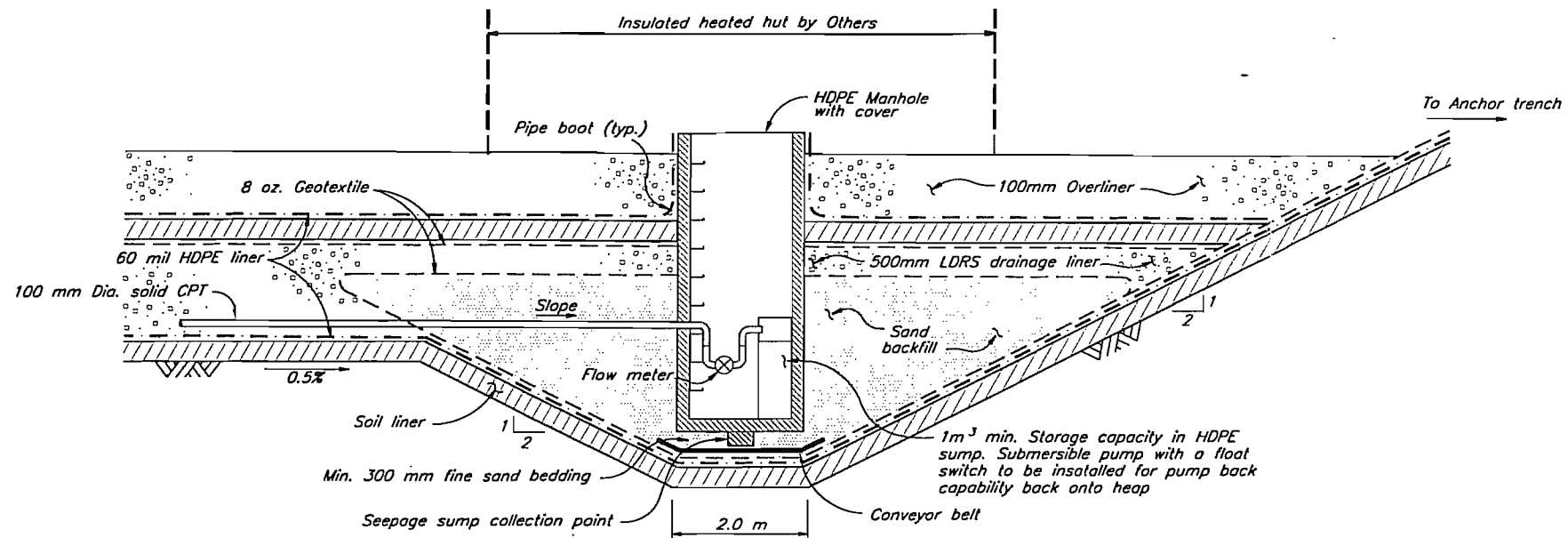
NOT FOR CONSTRUCTION



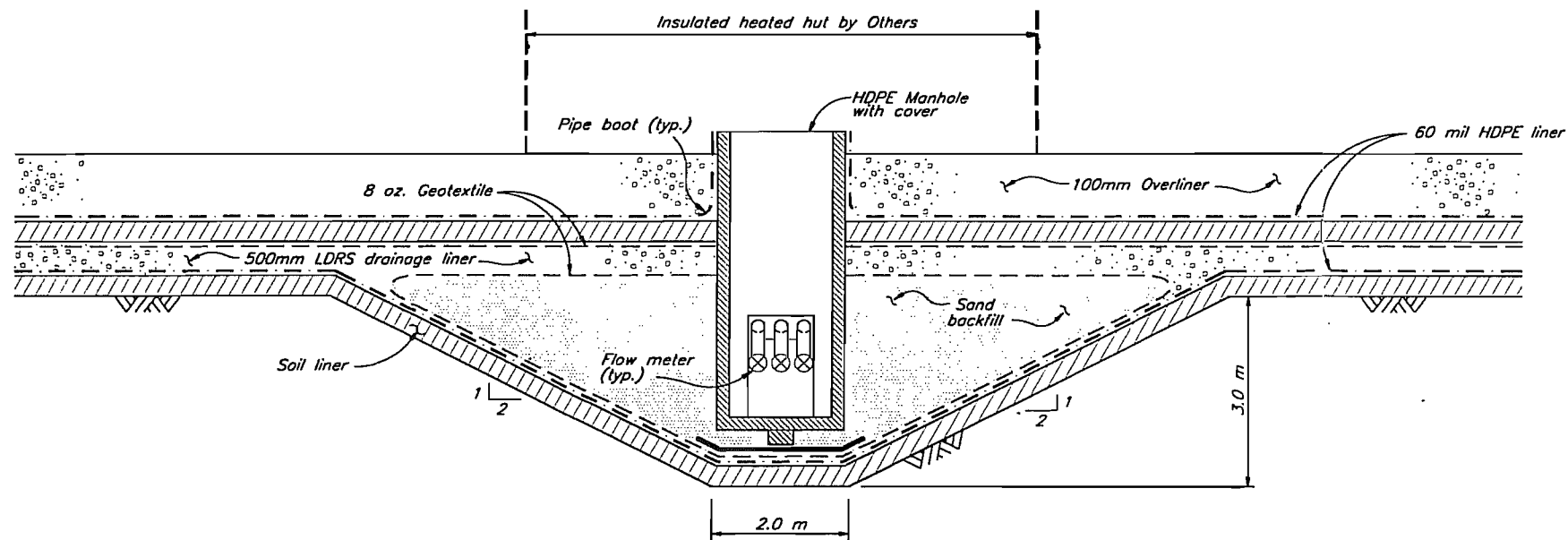
KNIGHT PIESOLD LIMITED CONSULTING ENGINEERS - VANCOUVER, B.C.		WESTERN COPPER HOLDINGS LIMITED	
DESIGNED	BB/DAH	CARMACKS COPPER PROJECT	
DRAWN	NSD/WAL	HEAP LEACH PAD LINER AND LEAK DETECTION AND RECOVERY SYSTEM (LDRS)	
CHECKED		SECTIONS AND DETAILS - SHEET 2 OF 2	
APPROVED		DATE	FEB. 21, 1997
		SCALE AS SHOWN	DRG. NO. 1785.207
		REV. 0	

DRG. NO.	DESCRIPTION	REV.	DATE	DESCRIPTION	APPROVED
	REFERENCE DRAWINGS			REVISIONS	

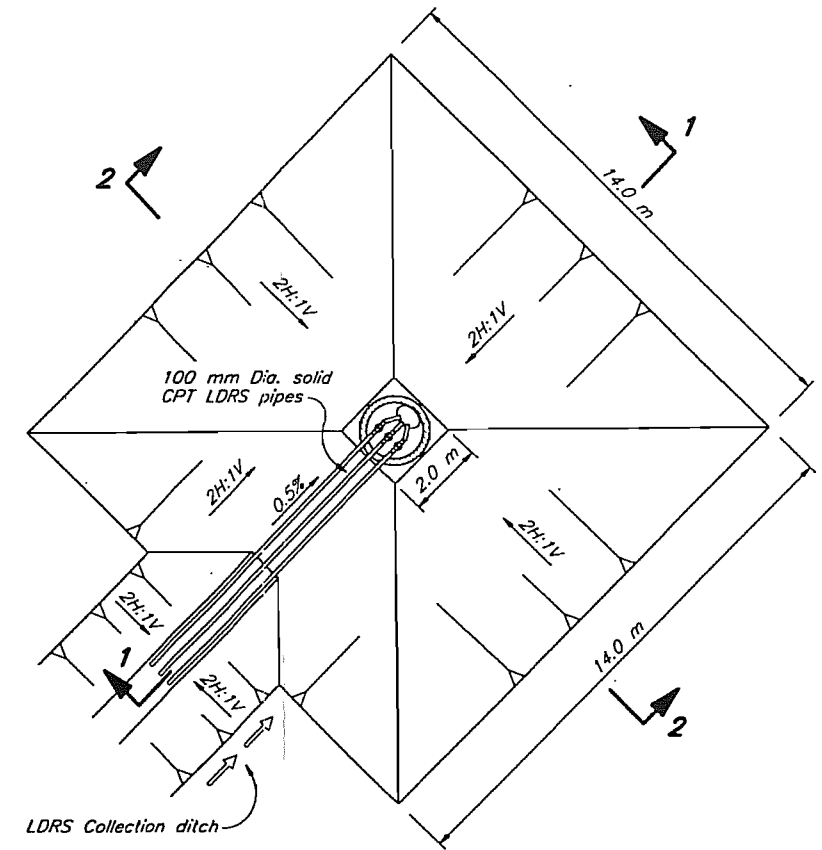
COP FILE: \1785\1785.204 1:40 P&I 1-004 Feb. 21, 1997



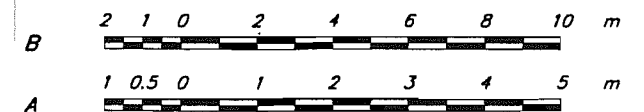
SECTION 1
Scale A



SECTION 2
Scale A



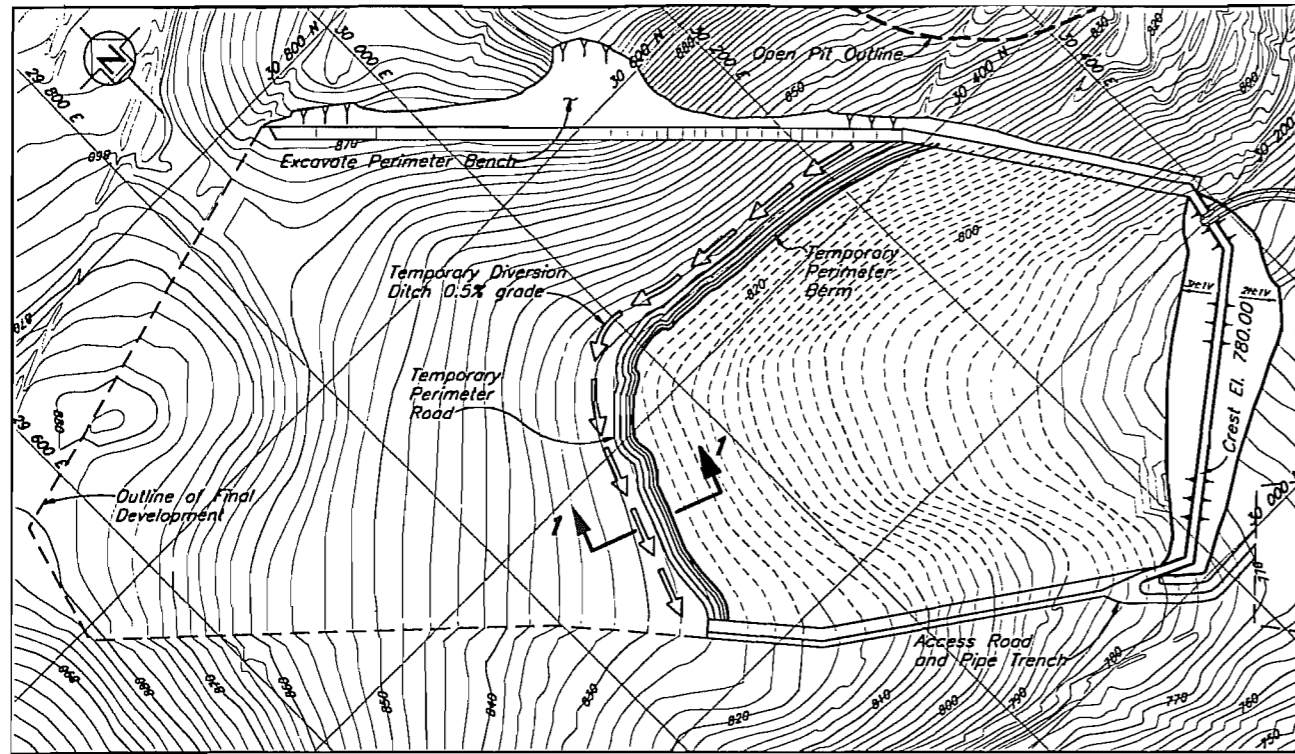
DETAIL A
1785.204
Scale B



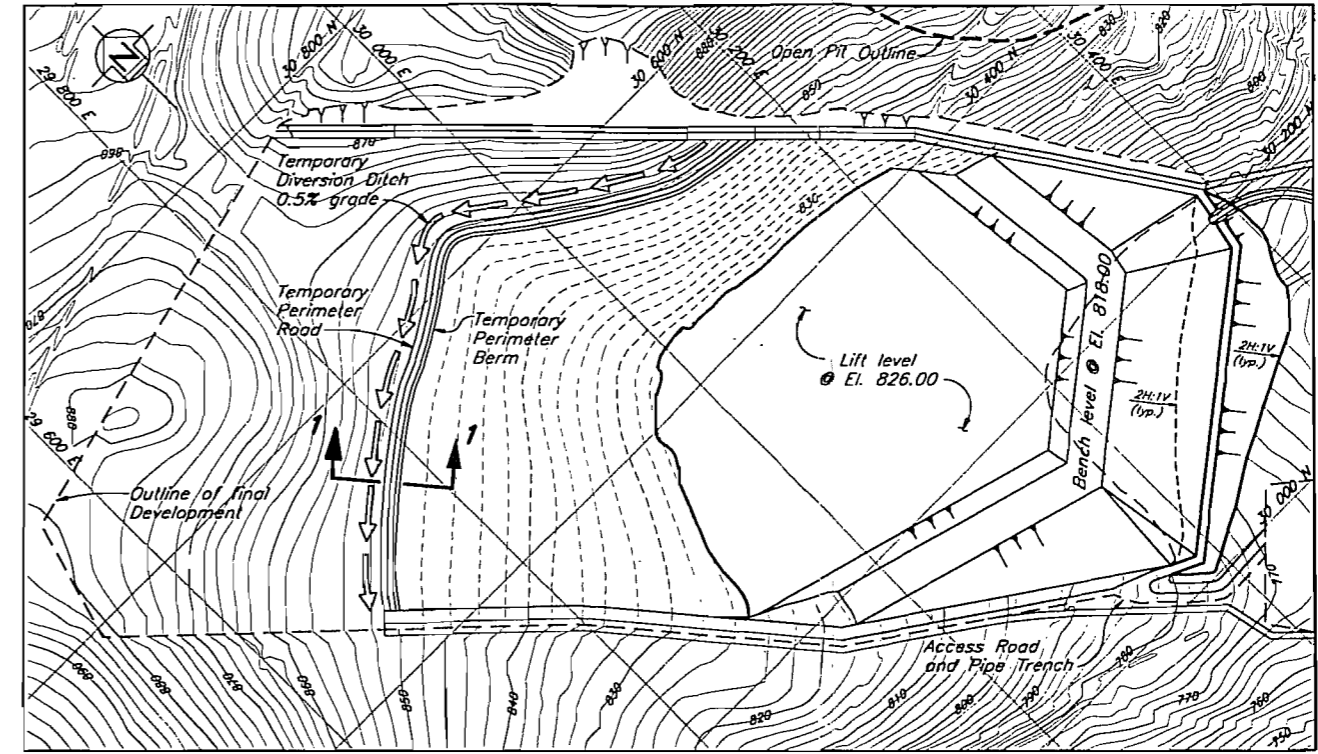
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	REFERENCE DRAWINGS			REVISIONS				REVISIONS	

KNIGHT PIESOLD LIMITED CONSULTING ENGINEERS - VANCOUVER, B.C.		WESTERN COPPER HOLDINGS LIMITED	
DESIGNED	BB	CARMACKS COPPER PROJECT	
DRAWN	VY	HEAP LEACH PAD LDRS COLLECTION SUMP PLAN, SECTIONS AND DETAIL	
CHECKED			
APPROVED			
DATE	APR. 18, 1997	SCALE AS SHOWN	DRG. NO. 1785.208
			REV. 0

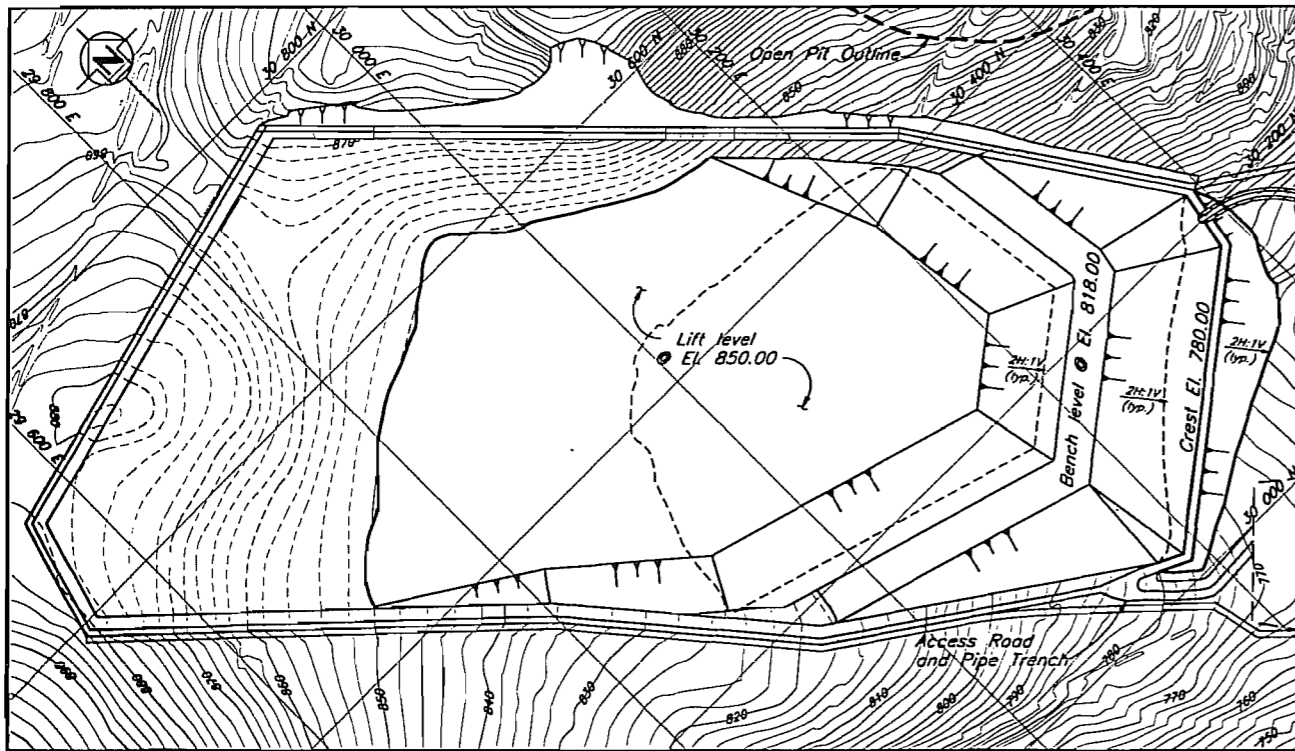
CAD FILE: PROJECT 1785.DWG, 022 1:1000 Plot 1=1 APR. 23. 1997



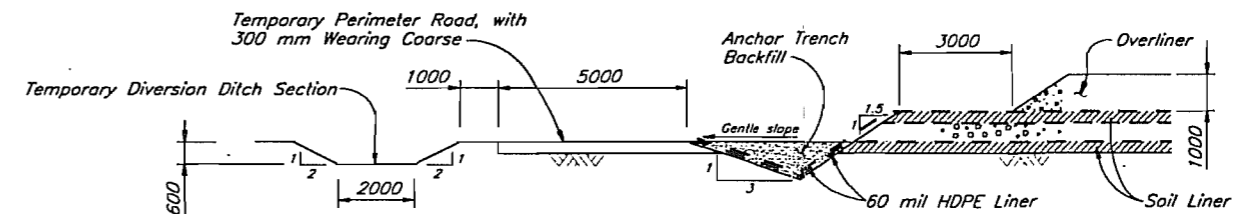
PREPRODUCTION STAGED CONSTRUCTION
Scale A



YEAR 2 STAGED CONSTRUCTION
Scale A



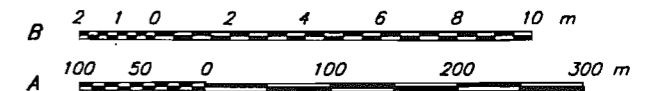
YEAR 4 STAGED CONSTRUCTION - FINAL DEVELOPMENT
Scale A



SECTION 1
TEMPORARY PERIMETER SECTION
Scale B

NOTE

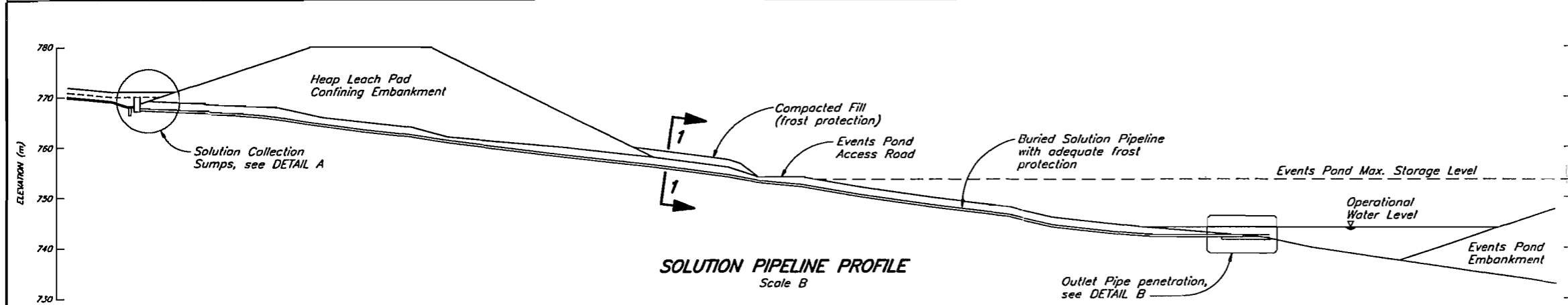
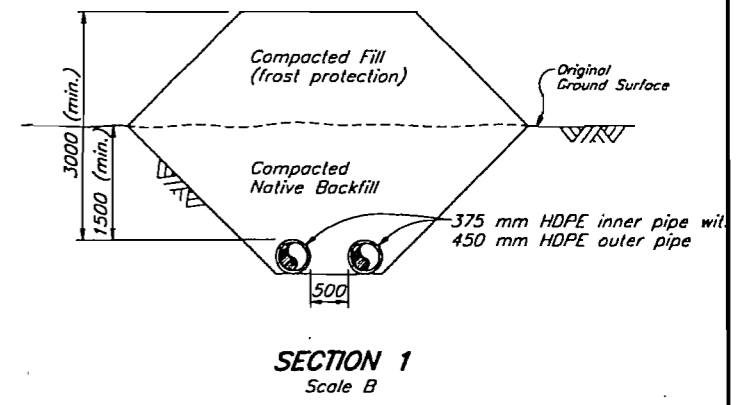
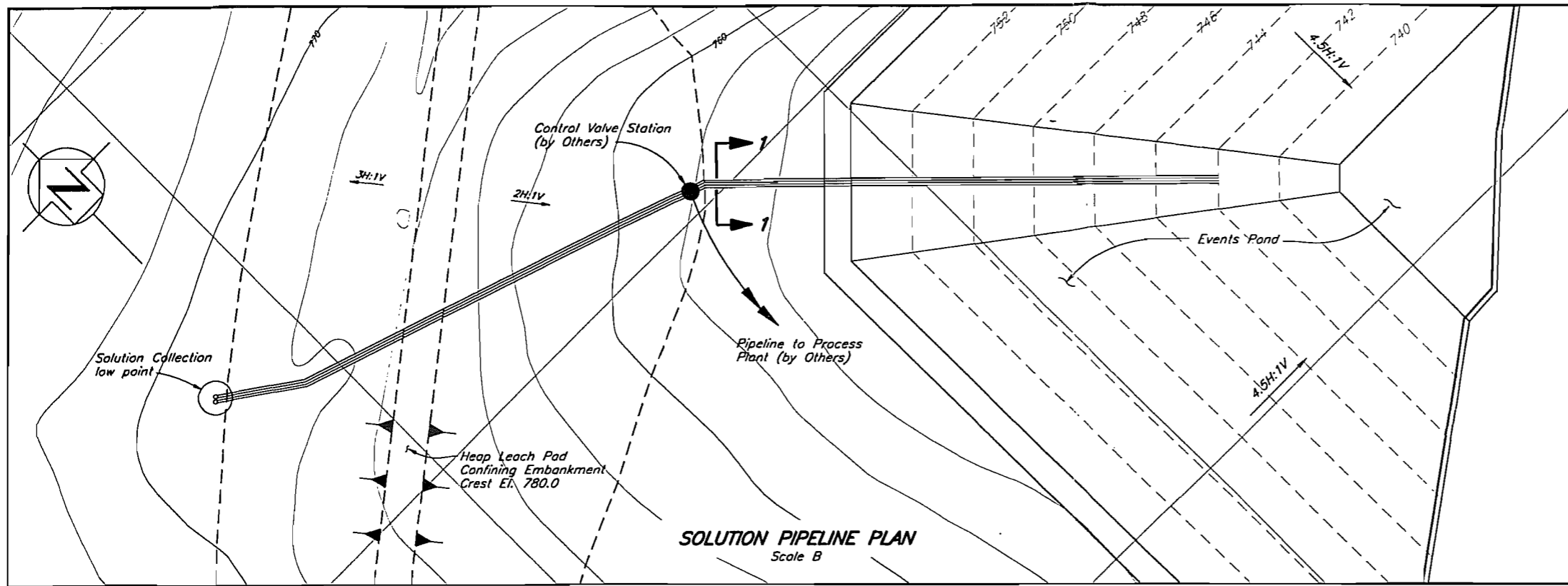
1. All elevations are in metres, and dimensions are in millimetres, unless otherwise noted.
2. All drawings are to be read in conjunction with the Updated Detailed Design Report, REF. NO. 1785/1.



NOT FOR CONSTRUCTION

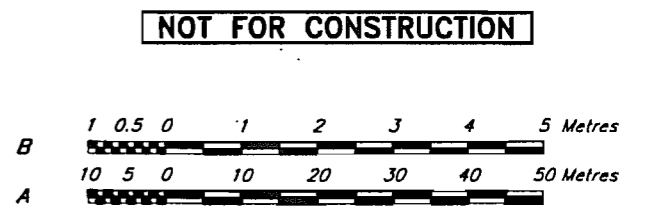
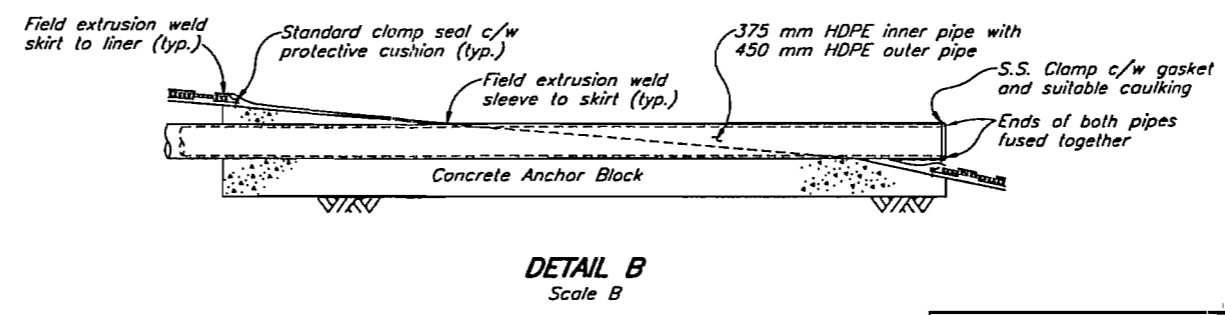
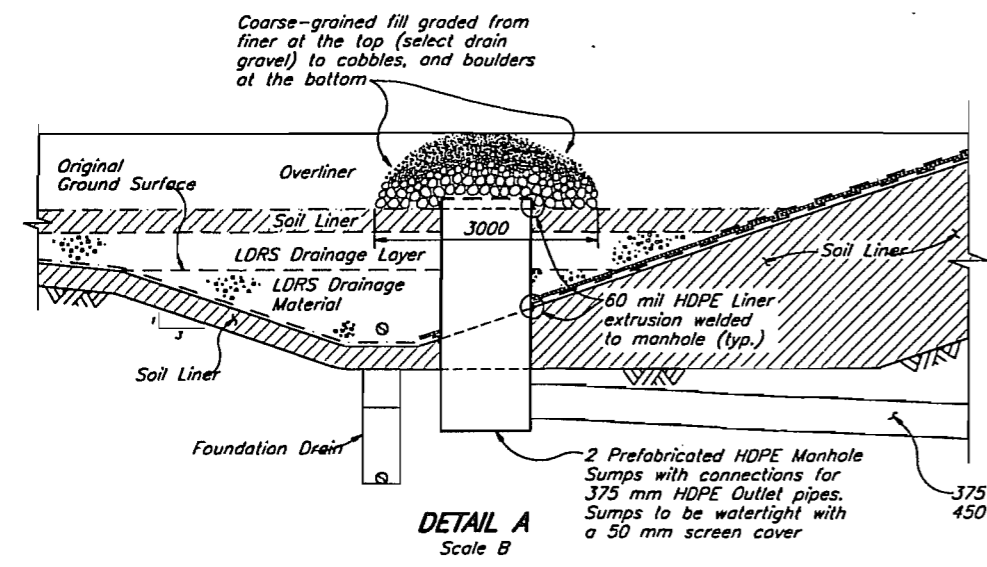
KNIGHT PIESOLD LIMITED CONSULTING ENGINEERS - VANCOUVER, B.C.		WESTERN COPPER HOLDINGS LIMITED	
DESIGNED	BB/DAH	CARMACKS COPPER PROJECT	
DRAWN	TAM	HEAP LEACH FACILITY STAGED CONSTRUCTION PLAN	
CHECKED			
APPROVED			
DATE	FEB. 21, 1997	SCALE	AS SHOWN
DRG. NO.	1785.209	REV.	0

DRG. NO.	DESCRIPTION	REV.	DATE	DESCRIPTION	APPROVED
	REFERENCE DRAWINGS			REVISIONS	
				REVISIONS	



NOTE

- All elevations are in metres, and dimensions are in millimetres, unless otherwise noted.
- All drawings are to be read in conjunction with the Updated Detailed Design Report, REF. NO. 1785/1.



ORG. NO.	DESCRIPTION	REV.	DATE	DESCRIPTION	APPROVED
	REFERENCE DRAWINGS				
	REVISIONS				
		0	FEB. 21/97	ISSUED FOR DESIGN REPORT	

KNIGHT PIESOLD LIMITED CONSULTING ENGINEERS - VANCOUVER, B.C.		WESTERN COPPER HOLDINGS LIMITED	
DESIGNED	BB/DH	CARMACKS COPPER PROJECT	
DRAWN	TAM		
CHECKED			
APPROVED			
DATE FEB. 21, 1997		SCALE AS SHOWN	ORG. NO. 1785.222
			REV. 0

CAD FILE: \1785\021\021_1500_P01_15-05_APR 21, 1997