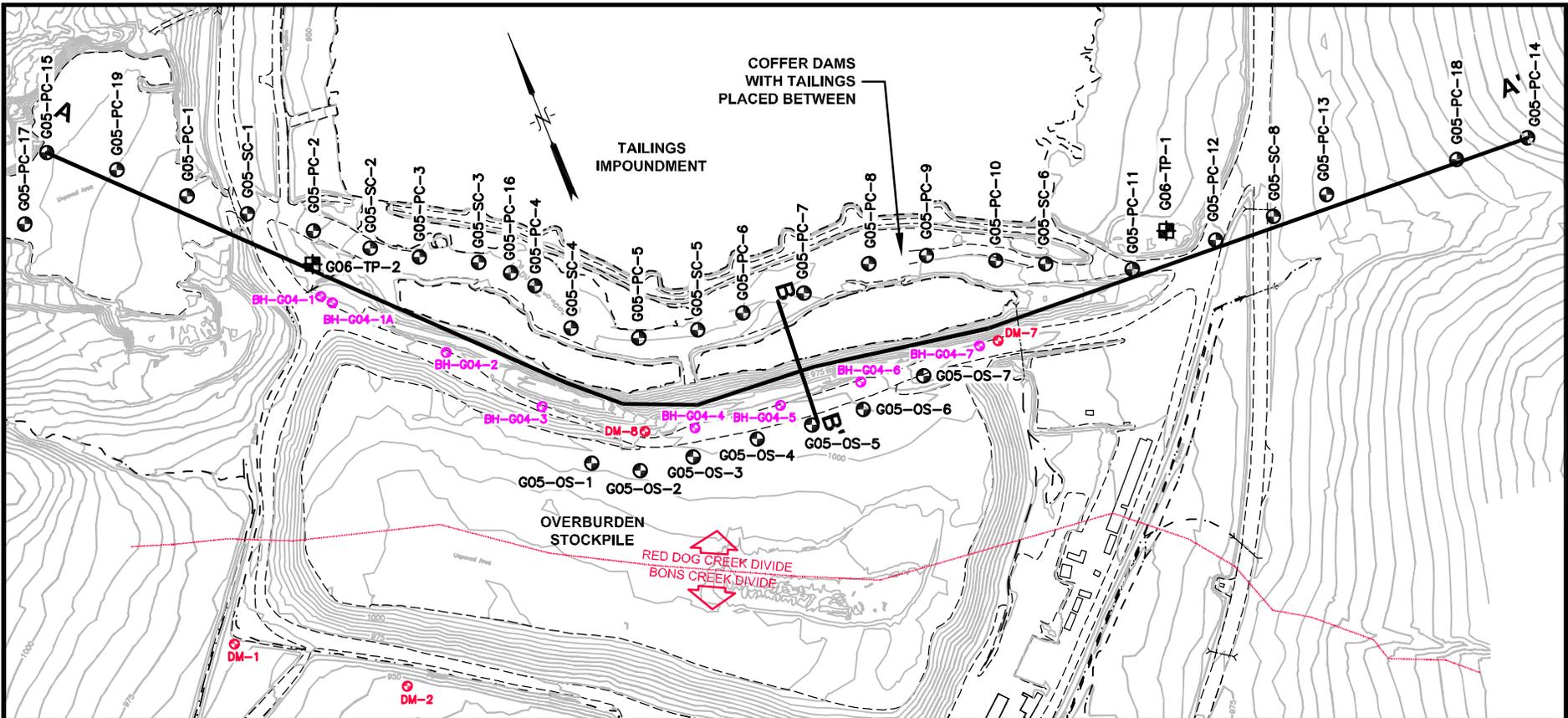


**Red Dog Mine
Closure and Reclamation Plan**

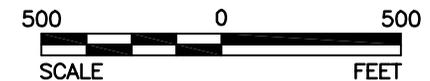
**SD C7: Drawings from Back Dam Investigation and Design
(Golder Associates 2006)**

Back Dam Investigation Drawings



LEGEND

-



NOTES

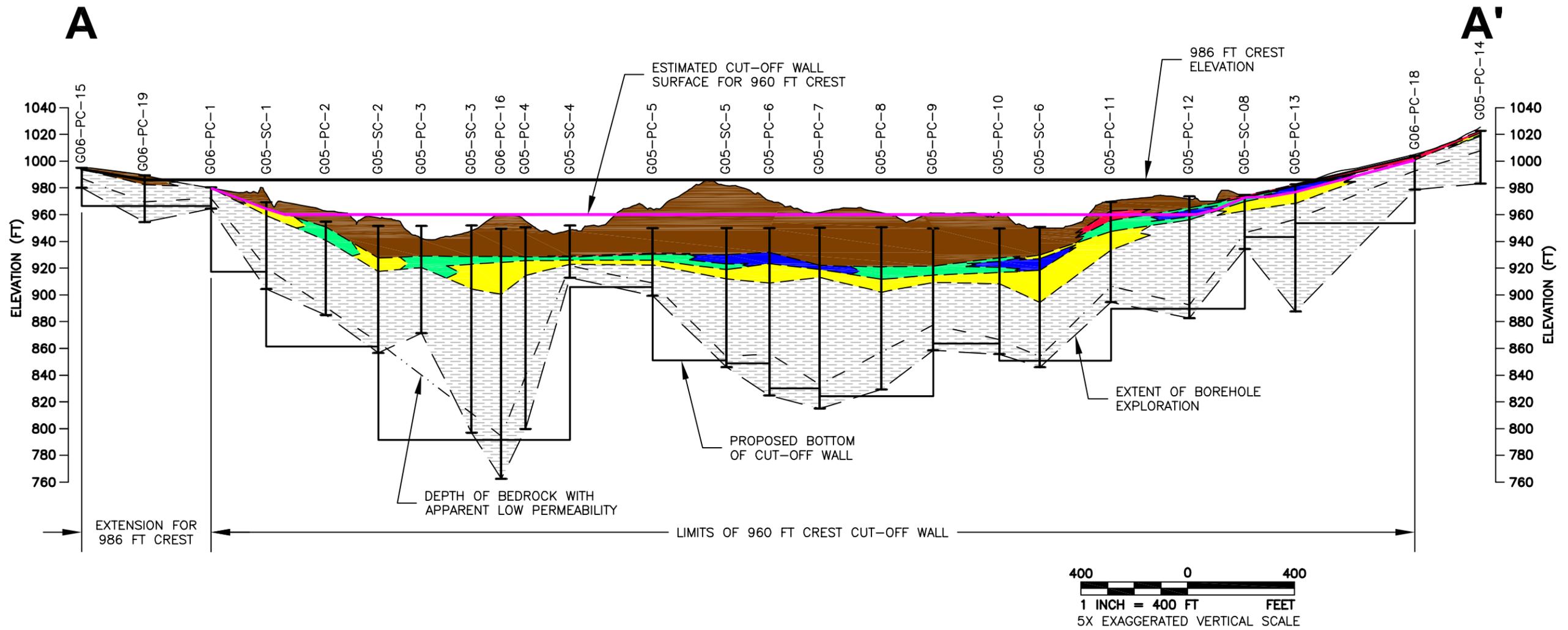
1. BOREHOLES GENERALLY DRILLED IN TWO PHASES AT TWO LOCATIONS WITH TWO SEPARATE DRILL RIGS. OVERBURDEN MATERIALS TYPICALLY DRILLED FIRST WITH AUGER RIG FOLLOWED BY ROCK DRILLING WITH CORE RIG. SEE REPORT TEXT AND BOREHOLE LOGS FOR DETAILS.

2. BOREHOLE LOCATIONS SHOWN REPRESENT ROCK CORING LOCATIONS. LOCATION OF OVERBURDEN BOREHOLES GENERALLY WITHIN 10 FT. EXACT LOCATION OF OVERBURDEN BOREHOLES SHOWN ON BOREHOLE LOG NOTES.

REFERENCE

BASE MAP SHOWING 2004 TOPOGRAPHY (RD200.DWG) PROVIDED BY TCAK.

PROJECT		TECK COMINCO ALASKA INC. CUT-OFF WALL GEOTECHNICAL INVESTIGATION RED DOG MINE, ALASKA	
TITLE			
BOREHOLE AND TEST PIT LOCATIONS			
 Golder Associates Anchorage, Alaska	PROJECT No. 063-5765.9000	FILE No. CW-BHOLES.DWG	Figure 1
	DESIGN SLA 02/14/06	SCALE AS SHOWN REV. 0	
	CADD WDB 02/14/06		
	CHECK SLA 02/14/06		
REVIEW TGK 02/24/06			



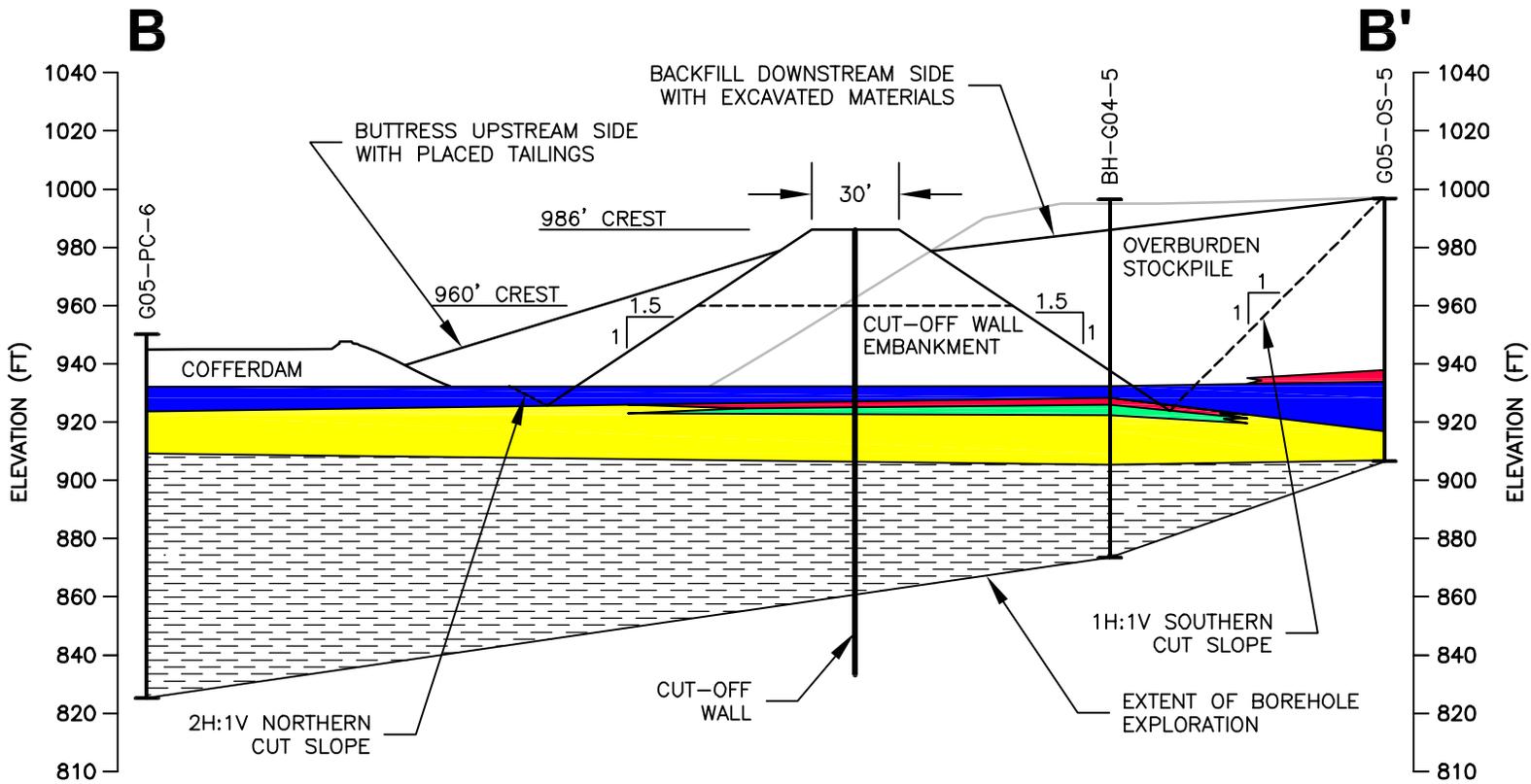
LEGEND

- | | |
|---|--|
|  WASTE ROCK FILL MATERIALS |  SILTY CLAYEY SOIL (ML, CL-ML) |
|  ORGANIC SOIL (PT, OL) |  SANDY AND GRAVELLY SOIL (SM, SP-SM, GP-GM, GP, GM) |
|  MASSIVE ICE AND ICE-RICH SOIL |  COMPLETELY WEATHERED TO FRESH SHALE (BEDROCK) |

NOTES

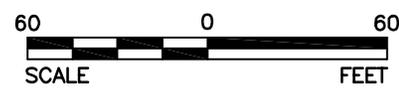
1. SUBSURFACE PROFILE BASED ON 2005/2006 BOREHOLE DATA EXTENDED PERPENDICULAR TO PROFILE ALIGNMENT. WATER DEPTHS AND FROZEN GROUND NOT SHOWN. LIMITS ARE ESTIMATED AND MAY DIFFER FROM ACTUAL CONDITIONS.
2. DEPTH OF BEDROCK WITH APPARENT LOW PERMEABILITY BASED ON VISUAL EXAMINATION OF ROCK CORE SAMPLES AS DESCRIBED IN THE REPORT TEXT.
3. ESTIMATED CUT-OFF WALL SURFACE FOR 960 FT CREST ELEVATION ASSUMES EXCAVATION OF ICE-RICH AND ORGANIC MATERIALS AND BACKFILL TO 960 FT ELEVATION.

PROJECT		TECK COMINCO ALASKA INC. CUT-OFF WALL GEOTECHNICAL INVESTIGATION RED DOG MINE, ALASKA	
TITLE		SUBSURFACE PROFILE ALONG ALIGNMENT A-A'	
	PROJECT No. 063-5765.9000	FILE No. CW-PROFILE_R1.DWG	
	DESIGN SLA 2/16/06	SCALE AS SHOWN	REV. 1
	CADD SLA 03/23/06		
	CHECK SLA 03/23/06		
REVIEW TKG 03/23/06			
			Figure 2



LEGEND

WASTE ROCK FILL MATERIALS	MASSIVE ICE AND ICE-RICH SOIL	SANDY AND GRAVELLY SOIL (SM, SP-SM, GP-GM, GP, GM)
ORGANIC SOIL (PT, OL)	SILTY CLAYEY SOIL (ML, CL-ML)	BEDROCK



NOTES

- SUBSURFACE PROFILE BASED ON BOREHOLE DATA. ACTUAL CONDITIONS BETWEEN BOREHOLES MAY VARY FROM WHAT IS SHOWN.
- PROPOSED CUT-OFF WALL EMBANKMENT CONSTRUCTED OVER APPROVED SUBGRADE FOLLOWING EXCAVATION OF ICE, ICE-RICH SOIL AND ORGANICS.
- UPSTREAM AND DOWNSTREAM SIDES OF PROPOSED CUT-OFF WALL EMBANKMENT BUTTRESSED WITH TAILINGS AND EXCAVATED OVERBURDEN MATERIALS, RESPECTIVELY, TO PROVIDE SEISMIC STABILITY. BUTTRESS SLOPES MAY BE INCREASED TO 3H:1V BEYOND TAILINGS IMPOUNDMENT AND OVERBURDEN STOCKPILE.

PROJECT		TECK COMINCO ALASKA INC. CUT-OFF WALL GEOTECHNICAL INVESTIGATION RED DOG MINE, ALASKA	
TITLE		PROPOSED CUT-OFF WALL SECTION	
 Anchorage, Alaska	PROJECT No. 063-5765.9000	FILE No. CW-SECTION_R1.DWG	
	DESIGN SLA 02/20/06	SCALE AS SHOWN	REV. 1
	CADD SLA 03/23/06		
	CHECK SLA 03/23/06		
REVIEW TGK 03/23/06			

Figure 3

Back Dam Design Drawings

TECK COMINCO ALASKA INC. BACK DAM CUT-OFF WALL CONSTRUCTION



DRAWING INDEX		
DRAWING NO.	DRAWING SHEET TITLE	REVISION NO.
5762-01	TITLE SHEET	2
5762-02	PLAN OF OVERBURDEN STOCKPILE	1
5762-03	GEOLOGICAL SECTIONS (EAST-WEST)	1
5762-04	GEOLOGICAL SECTIONS (NORTH-SOUTH)	1
5762-05	CUT-OFF WALL EXCAVATION PLAN AND EMBANKMENT PROFILE	4
5762-06	FILL SECTIONS AND BENCH DETAIL	4
5762-07	EST. CUT-OFF WALL EMBANKMENT SECTIONS - STA. 1+50 TO 24+00	2
5762-08	EST. CUT-OFF WALL EMBANKMENT SECTIONS - STA. 25+50 TO 48+00	2
5762-09	CUT-OFF WALL EMBANKMENT PLAN AND TARGET ELEVATIONS	3
5762-10	STAGED BENCH DETAIL AND FINISHED INSULATED SECTION	3
5762-11	INSTRUMENTATION	0
5762-12	RAISE TO 986 FT ELEVATION PLAN AND PROFILE	2

SPECIFICATION INDEX		
SPECIFICATION	TITLE	REVISION NO.
100	SCOPE OF WORK	0
200	CARE OF WATER	0
300	EXCAVATION	0
400	FILL PLACEMENT	0
500	CUT-OFF WALL	0
600	INSTRUMENTATION	0

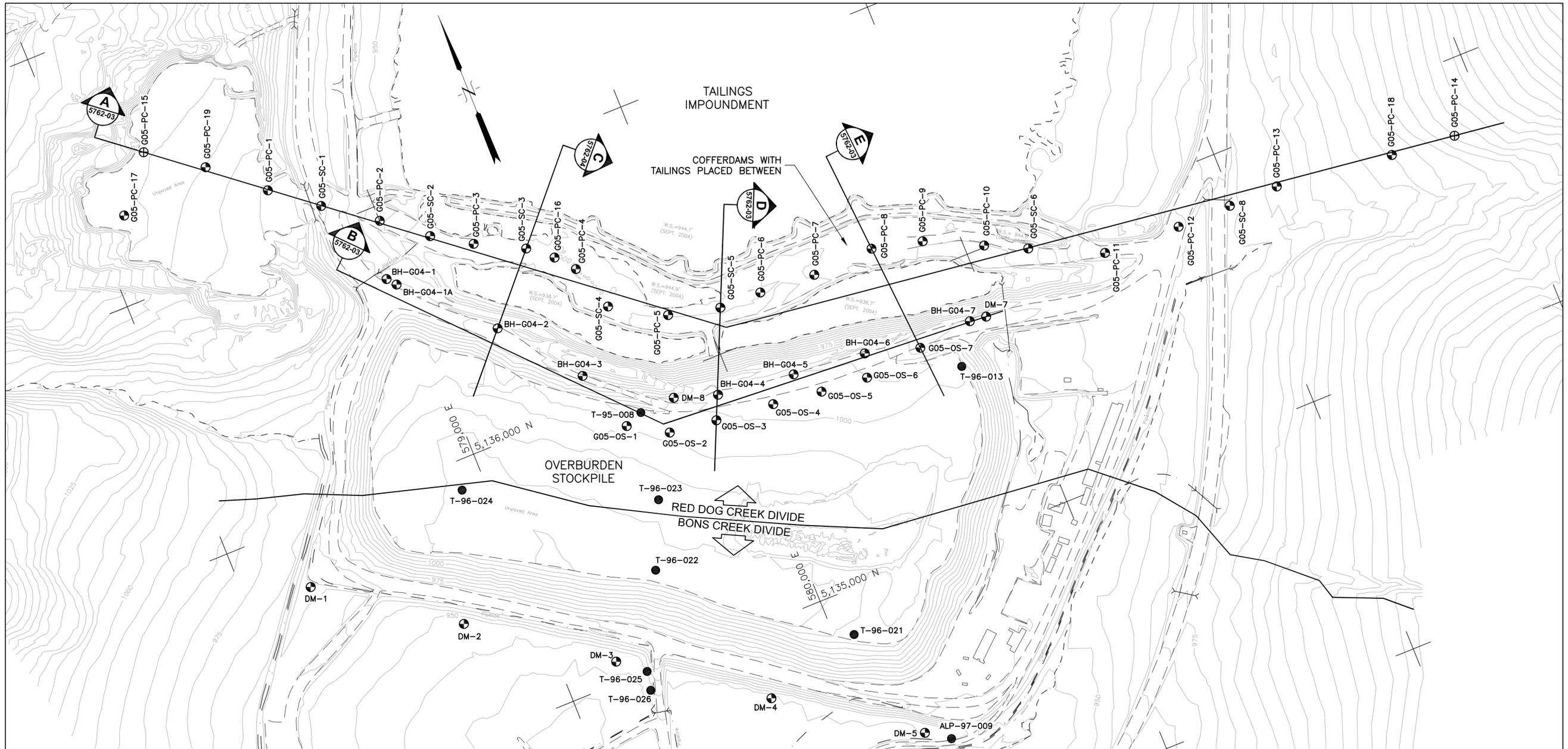
NOTES

1. BASE MAP SHOWING 2004 TOPOGRAPHY (RD200.DWG) PROVIDED BY TECK COMINCO ALASKA INC. (TCAK)
2. NORTHINGS AND EASTINGS ARE IN FEET REFERENCED TO UTM GRID.
3. ELEVATIONS ARE IN FEET AND ARE REFERENCED TO GEODETIC DATUM.
4. AERIAL PHOTOGRAPH TAKEN SEPT. 2004.



**ISSUED FOR
CONSTRUCTION**

4/11/07	SLA	ADDED INSTRUMENTATION DWG AND SPEC, IFC	SLA	TGK	SLA
11/15/06	SLA	REVISED DRAWINGS AND SPECS FOR TRENCH CUTTER	SLA	TGK	SLA
REV	DATE	DES	REVISION DESCRIPTION		
PROJECT			CADD	CHK	RW
TECK COMINCO ALASKA INC. BACK DAM CUT-OFF WALL CONSTRUCTION RED DOG MINE, ALASKA					
TITLE SHEET					
PROJECT No. 063-5762.3000		FILE No. 5762-1R2.DWG			
DESIGN	SLA	6/5/06	SCALE	NTS	REV. 0
CADD	SLA	6/5/06	5762-01		
CHECK	TGK	8/10/06			
REVIEW	TGK	4/13/07			



LEGEND

- BOREHOLE LOCATION
- ⊕ BOREHOLE AND THERMISTOR STRING LOCATION
- THERMISTOR STRING LOCATION

NOTES

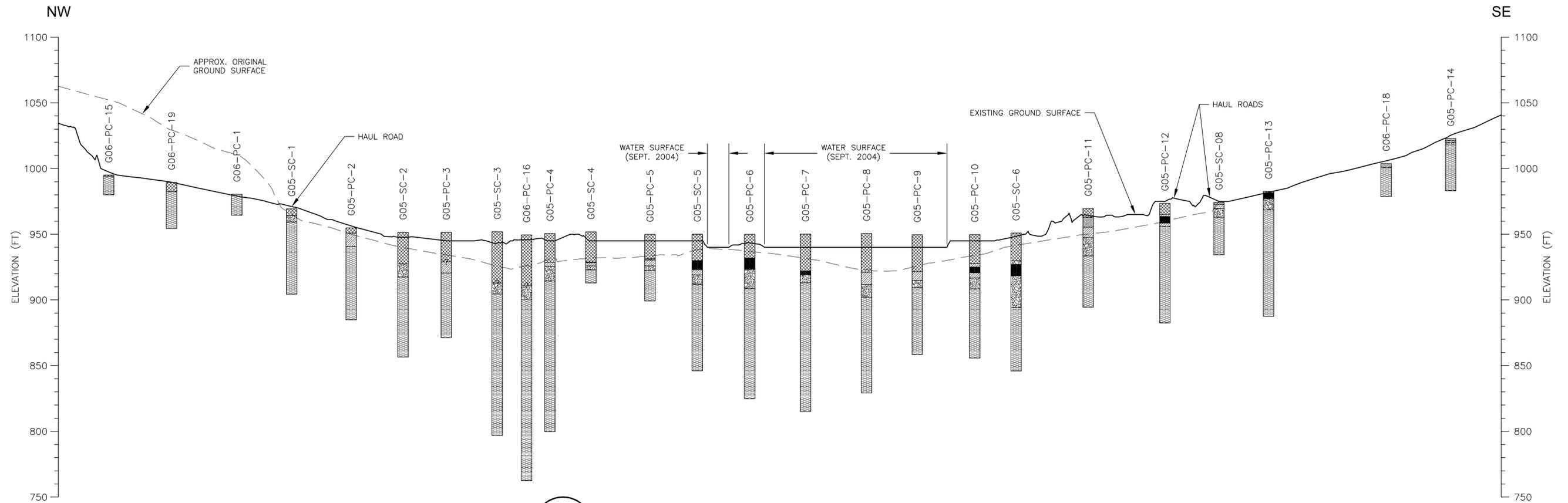
1. BASE MAP SHOWING 2004 TOPOGRAPHY (RD200.DWG) PROVIDED BY TCAK.
2. NORTHINGS AND EASTINGS ARE IN FEET REFERENCED TO UTM GRID.
3. ELEVATIONS ARE IN FEET AND ARE REFERENCED TO GEODETIC DATUM.



ISSUED FOR CONSTRUCTION

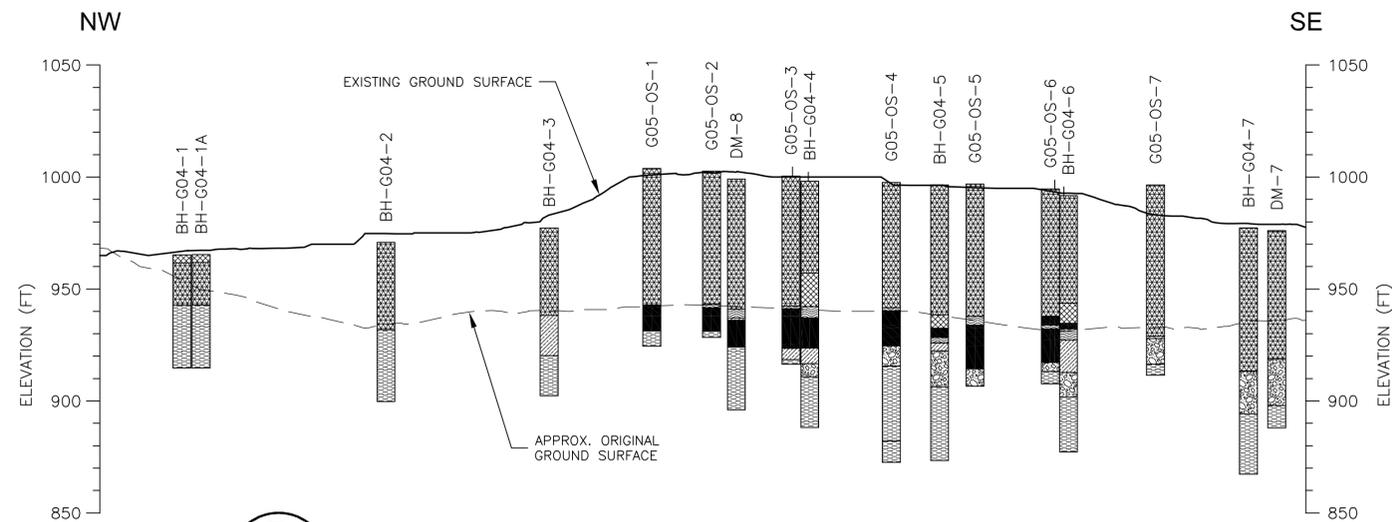
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4/2/07	SLA		ISSUED FOR CONSTRUCTION	SLA	TGK	SLA
PROJECT TECK COMINCO ALASKA INC. BACK DAM CUT-OFF WALL CONSTRUCTION RED DOG MINE, ALASKA						
TITLE PLAN OF OVERBURDEN STOCKPILE						
PROJECT No. 063-5762.3000			FILE No. 5762-234.DWG			
DESIGN	SLA	4/13/06	SCALE	AS SHOWN	REV.	0
CADD	SLA	4/13/06	5762-02			
CHECK	TGK	4/21/06				
REVIEW	TGK	4/13/07				





A SECTION THROUGH SOUTH COFFERDAM
5762-02

HORIZONTAL
1 INCH = 200 FEET
VERTICAL
1 INCH = 40 FEET



B SECTION THROUGH OVERBURDEN STOCKPILE
5762-02

HORIZONTAL
1 INCH = 200 FEET
VERTICAL
1 INCH = 40 FEET

- LEGEND**
- KIVALINA WASTE ROCK (KWR) FILL MATERIALS (ML, SM, SC-SM, GM, GP-GM)
 - OTHER FILL MATERIALS (GM, CL-ML, SC, KWR+ML)
 - ORGANIC SOIL (PT, OL)
 - MASSIVE ICE AND ICE-RICH SOIL
 - SILTY CLAYEY SOIL (ML, CL-ML, CL)
 - SANDY AND GRAVELLY SOIL (SM, SC, SW, SP-SM, GP-GM, GC-GM, GP, GM)
 - BEDROCK (TYPICALLY SHALE)
 - ESTIMATED SOIL LAYER TRANSITION

NOTES

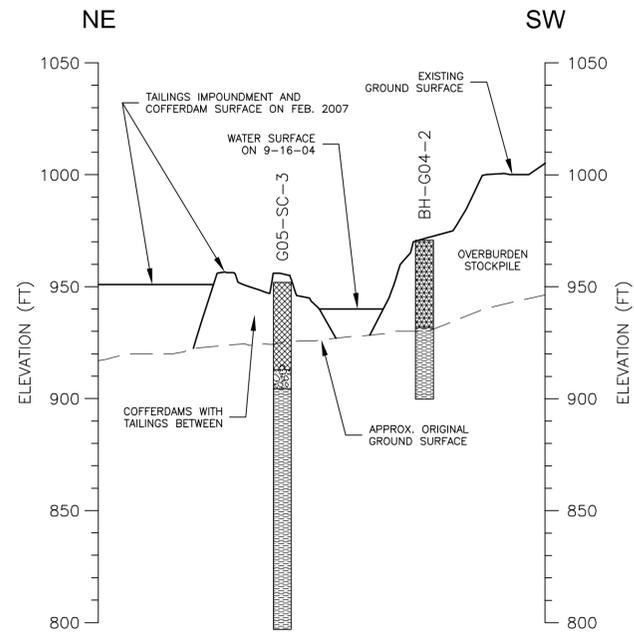
1. EXISTING GROUND SURFACE PROFILE BASED ON 2004 TOPOGRAPHY DRAWING. EXISTING AND ORIGINAL GROUND SURFACE DRAWINGS PROVIDED BY TCAK. PROFILE ELEVATIONS SHOULD BE CONSIDERED APPROXIMATE.

2. EXCEPT FOR DAMES AND MOORE (DM) BOREHOLES, ELEVATIONS ARE BASED ON FIELD SURVEY MEASUREMENTS. ELEVATION OF DAMES AND MOORE BOREHOLES BASED ON EXISTING GROUND TOPOGRAPHY DRAWING.

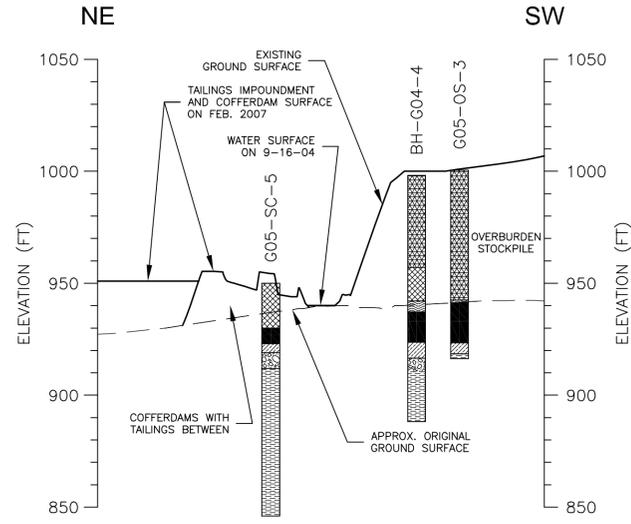


ISSUED FOR CONSTRUCTION

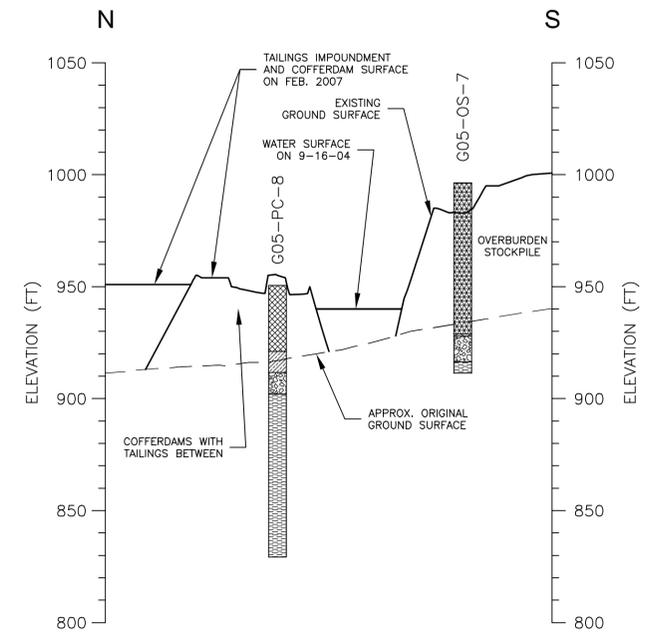
REV	DATE	DES	ISSUED FOR CONSTRUCTION	SLA	TGK	SLA
			REVISION DESCRIPTION	CADD	CHK	RW
PROJECT TECK COMINCO ALASKA INC. BACK DAM CUT-OFF WALL CONSTRUCTION RED DOG MINE, ALASKA						
TITLE GEOLOGICAL SECTIONS (WEST-EAST)						
PROJECT No. 063-5762.3000			FILE No. 5762-234R1.DWG			
DESIGN	SLA	4/13/06	SCALE	AS SHOWN	REV.	0
CADD	SLA	4/13/06	5762-03			
CHECK	TGK	4/21/06				
REVIEW	TGK	4/13/07				
Golder Associates Anchorage, Alaska						



C WESTERN SECTION
 5762-02
 200 0 200 400 HORIZONTAL
 1 INCH = 200 FEET FEET
 40 0 40 80 VERTICAL
 1 INCH = 40 FEET FEET



D CENTRAL SECTION
 5762-02
 200 0 200 400 HORIZONTAL
 1 INCH = 200 FEET FEET
 40 0 40 80 VERTICAL
 1 INCH = 40 FEET FEET



E EASTERN SECTION
 5762-02
 200 0 200 400 HORIZONTAL
 1 INCH = 200 FEET FEET
 40 0 40 80 VERTICAL
 1 INCH = 40 FEET FEET

- LEGEND**
- KIVALINA WASTE ROCK (KWR) FILL MATERIALS (ML, SM, SC-SM, GM, GP-GM)
 - OTHER FILL MATERIALS (GM, CL-ML, SC, KWR+ML)
 - ORGANIC SOIL (PT, OL)
 - MASSIVE ICE AND ICE-RICH SOIL
 - SILTY CLAYEY SOIL (ML, CL-ML, CL)
 - SANDY AND GRAVELLY SOIL (SM, SC, SW, SP-SM, GP-GM, GC-GM, GP, GM)
 - BEDROCK (TYPICALLY SHALE)
 - ?- ESTIMATED SOIL LAYER TRANSITION

NOTES

1. EXISTING GROUND SURFACE PROFILE BASED ON 2004 TOPOGRAPHY DRAWING. EXISTING AND ORIGINAL GROUND SURFACE DRAWINGS PROVIDED BY TCAK. PROFILE ELEVATIONS SHOULD BE CONSIDERED APPROXIMATE. ELEVATION OF COFFERDAMS AND IMPOUNDMENT WATERS UPDATED FROM FEBRUARY 2007 SURVEY DATA AND MAY BE HIGHER THAN SHOWN DURING CONSTRUCTION.

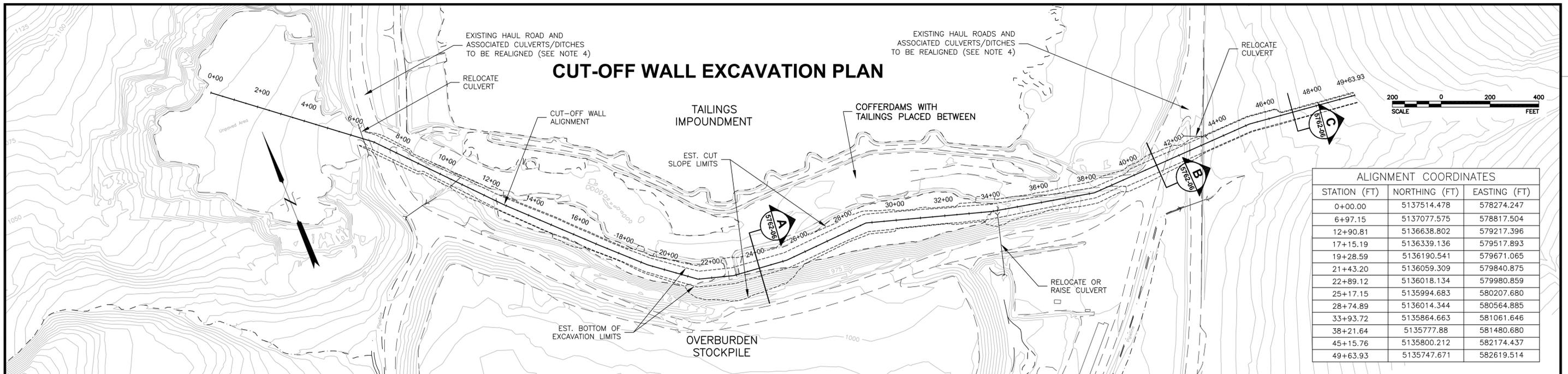
2. EXCEPT FOR DAMES AND MOORE (DM) BOREHOLES, ELEVATIONS ARE BASED ON FIELD SURVEY MEASUREMENTS. ELEVATION OF DAMES AND MOORE BOREHOLES BASED ON EXISTING GROUND TOPOGRAPHY DRAWING.



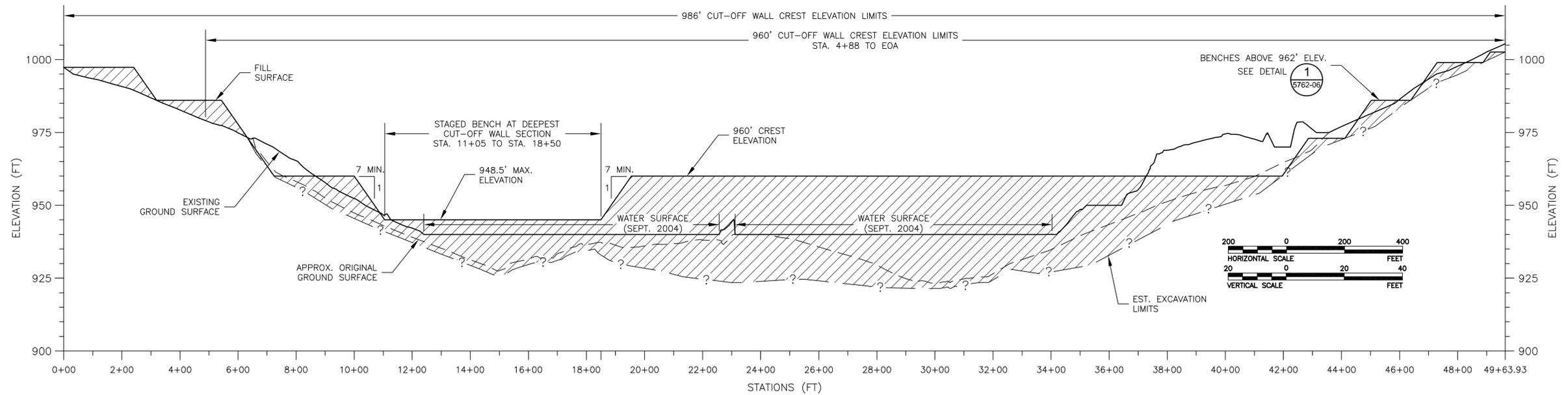
ISSUED FOR CONSTRUCTION

REV	DATE	DES	SLA	UPDATED COFFERDAM AND IMPOUNDMENT ELEVATIONS, IFC	SLA	TGK	SLA	
			REVISION DESCRIPTION			CADD	CHK	RW
PROJECT								
TECK COMINCO ALASKA INC. BACK DAM CUT-OFF WALL CONSTRUCTION RED DOG MINE, ALASKA								
TITLE								
GEOLOGICAL SECTIONS (NORTH-SOUTH)								
PROJECT No. 063-5762.3000				FILE No. 5672-234R1.DWG				
DESIGN	SLA	4/13/06	SCALE	AS SHOWN	REV.	0		
CADD	SLA	4/13/06						
CHECK	TGK	4/21/06						
REVIEW	TGK	4/13/07						
						5762-04		





CUT-OFF WALL EMBANKMENT PROFILE - PRIMARY STAGE



NOTES

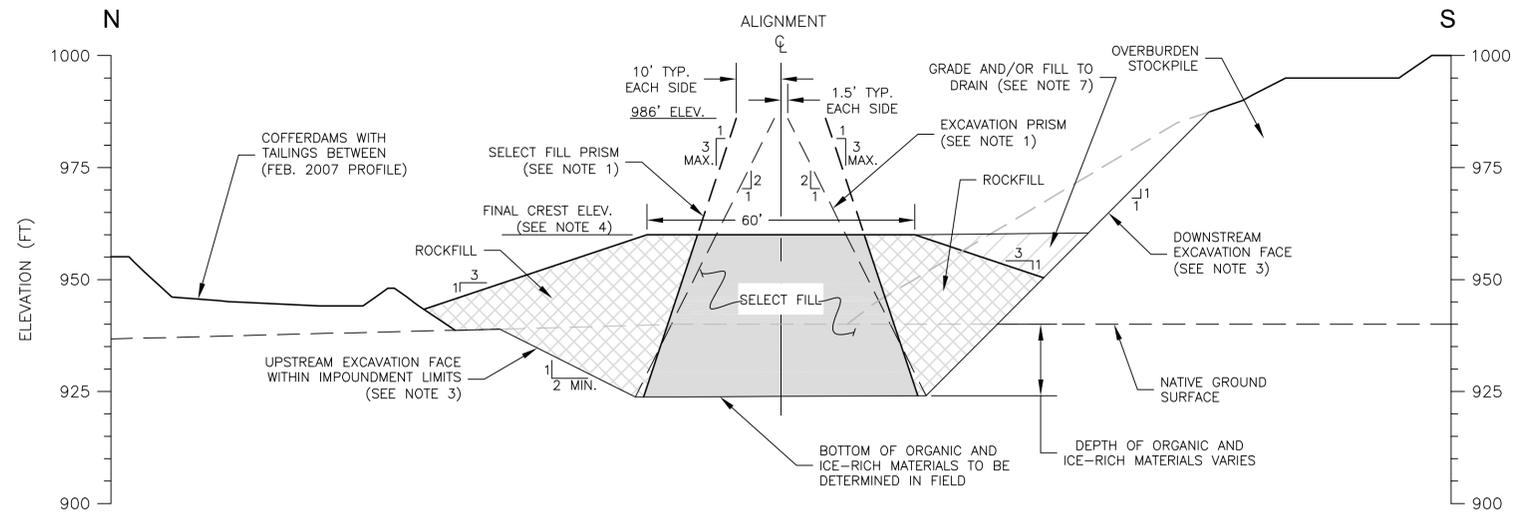
1. BASE MAP SHOWING 2004 TOPOGRAPHY (RD200.DWG) PROVIDED BY TCAK.
2. NORTHINGS AND EASTINGS ARE IN FEET REFERENCED TO UTM GRID.
3. ELEVATIONS ARE IN FEET AND ARE REFERENCED TO GEODETIC DATUM.
4. HAUL ROAD REALIGNMENT SHOULD CONSIDER STAGED CROSSING FROM STA. 4+50 TO STA 5+50 AND FROM STA. 42+00 TO STA. 44+00 TO ALLOW TRAFFIC ACCESS DURING CONSTRUCTION. REALIGNED ACCESS TO OVERBURDEN STOCKPILE SHOULD PROBABLY OCCUR ON SOUTH SIDE OF ALIGNMENT TO MINIMIZE CONFLICTS.



**ISSUED FOR
CONSTRUCTION**

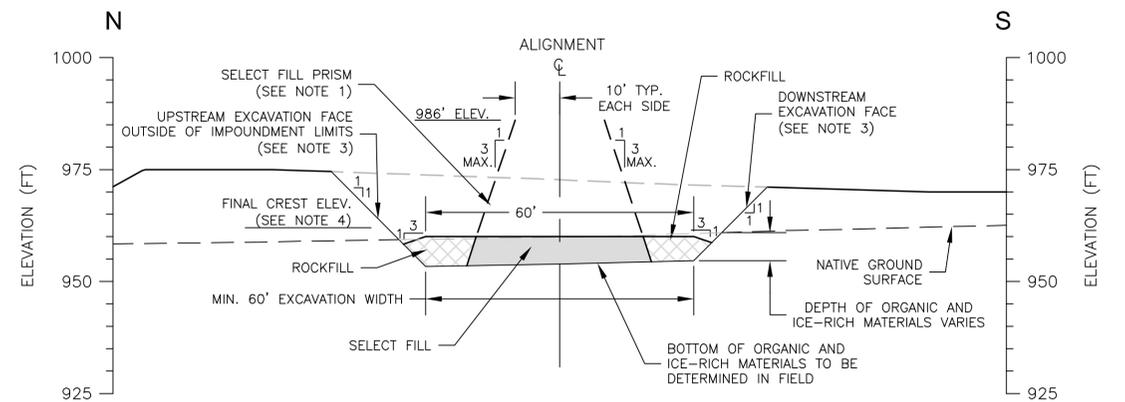
REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RW
△	4/7/07	SLA	ISSUED FOR CONSTRUCTION	SLA	TGK	SLA
△	10/26/06	SLA	REVISE EMBANKMENT FOR TRENCH CUTTER	SLA	TGK	SLA
△	5/11/06	SLA	UPDATE DRAWING FOR DESIGN WITH RAISE	SLA	TGK	SLA
△	5/1/06	SLA	CULVERT AND HAUL ROAD RELOCATION	SLA	TGK	SLA
PROJECT						
TECK COMINCO ALASKA INC. BACK DAM CUT-OFF WALL CONSTRUCTION RED DOG MINE, ALASKA						
TITLE						
CUT-OFF WALL EXCAVATION PLAN AND EMBANKMENT PROFILE						
PROJECT No. 063-5762.3000			FILE No. 5762-56R4.DWG			
DESIGN	SLA	4/3/06	SCALE	AS SHOWN	REV.	0
CADD	SLA	4/19/06	5762-05			
CHECK	TGK	4/21/06				
REVIEW	TGK	4/13/07				





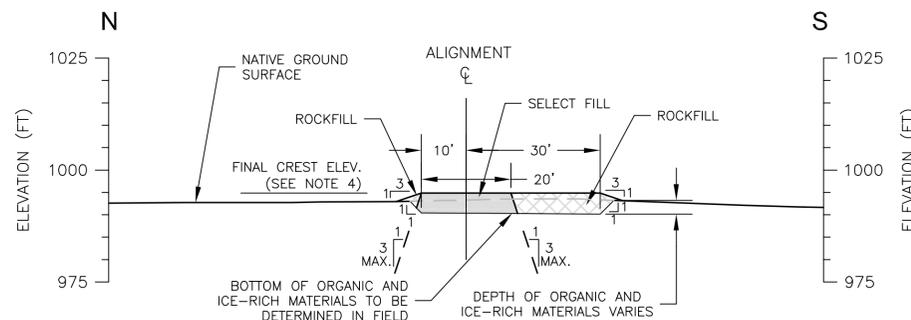
A
TYP. SECTION WHEN BOTTOM OF EXCAVATION BELOW 950 FT ELEVATION

5762-05



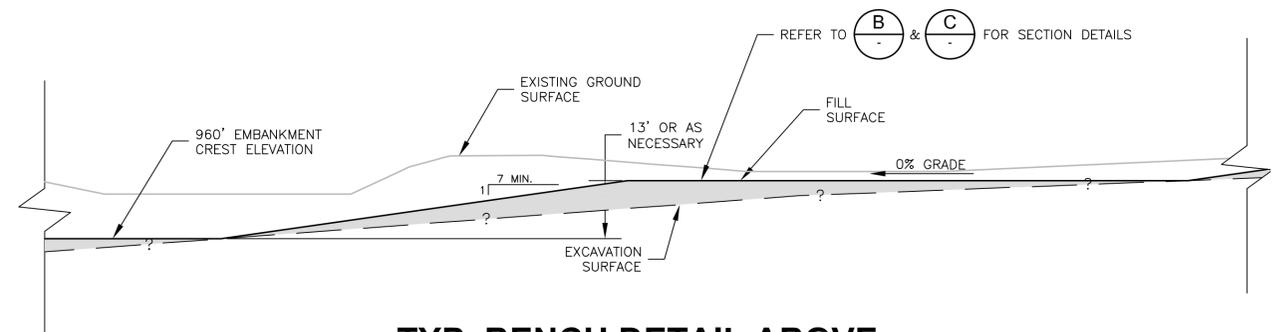
B
TYP. SECTION WHEN BOTTOM OF EXCAVATION BELOW 986 FT ELEVATION AND ABOVE 950 FT ELEVATION

5762-05



C
TYP. SECTION WHEN BOTTOM OF EXCAVATION ABOVE 986 FT ELEVATION

5762-05



1
TYP. BENCH DETAIL ABOVE 960 FT CREST ELEVATION

5762-05



NOTES

1. WHEN BOTTOM OF EXCAVATION SURFACE IS BELOW AN ELEVATION OF 950', THE EXCAVATION LIMITS SHALL BE DETERMINED BY PROJECTING A 1H:2V LINE 1.5' OUT FROM ALIGNMENT CENTERLINE FROM AN ELEVATION OF 986' AS SHOWN.
2. EXCAVATION OF ORGANIC AND ICE-RICH MATERIALS SHALL BE CONFIRMED BY ENGINEER PRIOR TO BACKFILL.
3. UPSTREAM (NORTHERN) SLOPES SHALL BE EXCAVATED TO 2H:1V WITHIN THE IMPOUNDMENT LIMITS. DOWNSTREAM (SOUTHERN) SLOPES AND UPSTREAM SLOPES OUTSIDE OF THE IMPOUNDMENT LIMITS SHALL BE EXCAVATED TO 1H:1V OR FLATTER AS DIRECTED BY ENGINEER. CUT SLOPES SHALL BE FINISHED TO 1.5H:1V OR FLATTER WHEN THE TOE OF THE CUT SLOPE IS NEAR THE FILL EMBANKMENT CREST AND IS 20' OR HIGHER THAN FILL EMBANKMENT CREST.
4. SELECT FILL SHALL HAVE A MINIMUM WIDTH OF 20' AT CREST ELEVATIONS OF 986' AND HIGHER. THE SELECT FILL WIDTH BELOW A 986' ELEVATION SHALL BE DETERMINED BY PROJECTING A 1H:3V LINE 10' OUT FROM THE ALIGNMENT CENTERLINE AS SHOWN, INCLUDING ALL STAGED BENCHES AS SHOWN IN SHEETS 5762-10 AND 5762-11.
5. SELECT FILL AND ROCKFILL SHALL BE PLACED AND COMPACTED AS DESCRIBED IN THE SPECIFICATIONS, OR AS DIRECTED BY ENGINEER.
6. MAINTAIN DRAINAGE GRADES TOWARD DEWATERING SUMP ON NORTH SIDE OF FILL SECTION.
7. GRADE AND/OR FILL LOW AREAS ADJACENT TO CUT-OFF WALL EMBANKMENT TO PROMOTE DRAINAGE AND PREVENT PONDING. GRADING WILL LIKELY BE REQUIRED TO TOP OF INSULATED CREST (SEE SECTION C, SHEET 5762-10), WHICH IS NOT SHOWN ON ABOVE SECTIONS. INSTALL CULVERTS AS NECESSARY. DRAINAGE OFF OVERBURDEN STOCKPILE SHOULD BE DIRECTED TOWARD TAILINGS IMPOUNDMENT OR SEEPAGE COLLECTION SYSTEM.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	R/W
△	4/7/07	SLA	ADD GRADE/FILL LOW AREAS, IFC	SLA	TGK	SLA
△	10/26/06	SLA	REVISE EMBANKMENT SECTIONS FOR TRENCH CUTTER	SLA	TGK	SLA
△	5/11/06	SLA	UPDATE DRAWING FOR DESIGN WITH RAISE	SLA	TGK	SLA
△	5/1/06	SLA	ADD NOTE 6	SLA	TGK	SLA

PROJECT
TECK COMINCO ALASKA INC.
BACK DAM CUT-OFF WALL CONSTRUCTION
RED DOG MINE, ALASKA

TITLE
FILL SECTIONS AND BENCH DETAIL

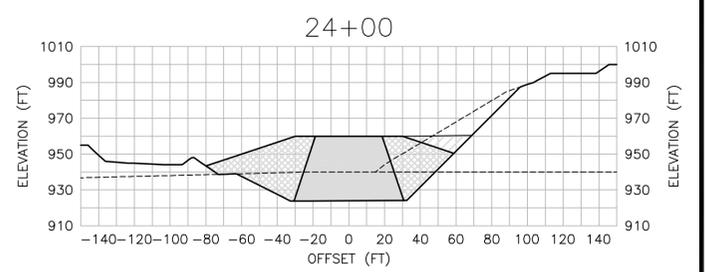
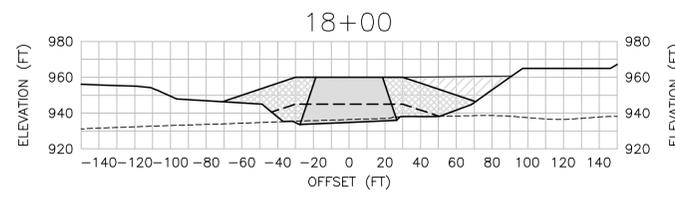
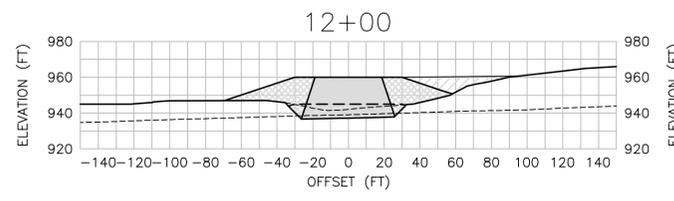
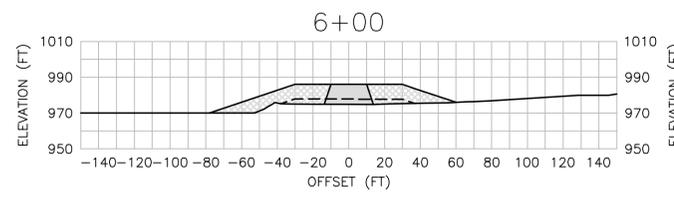
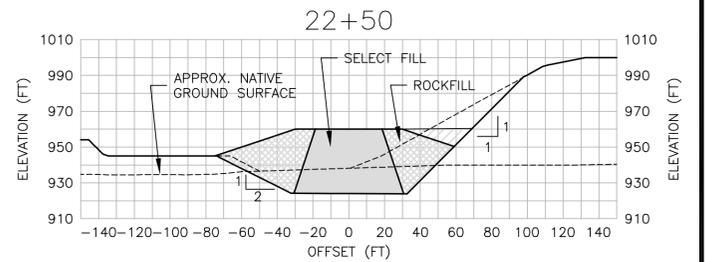
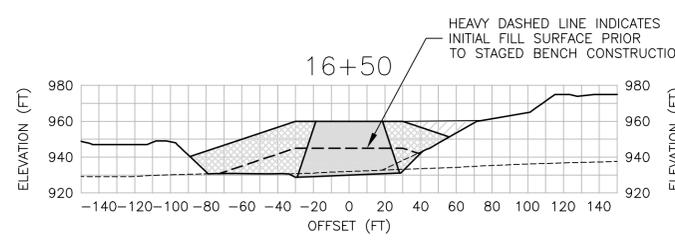
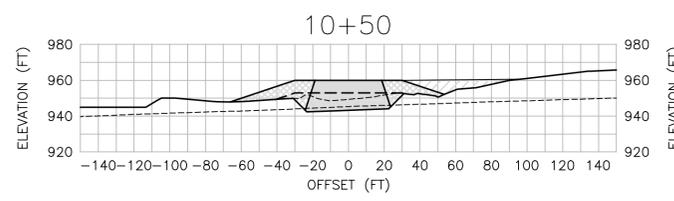
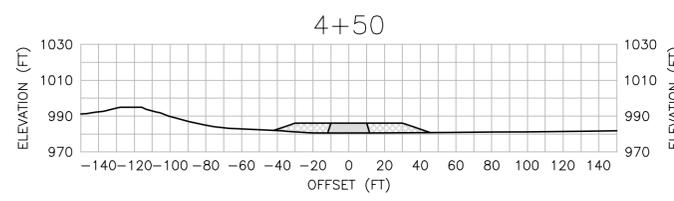
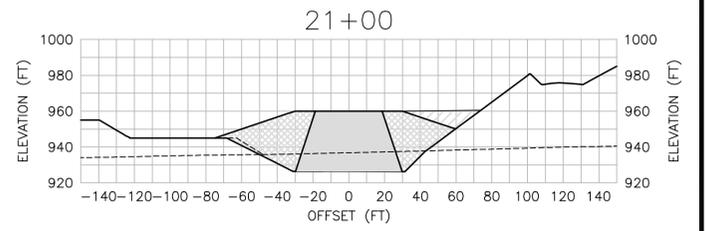
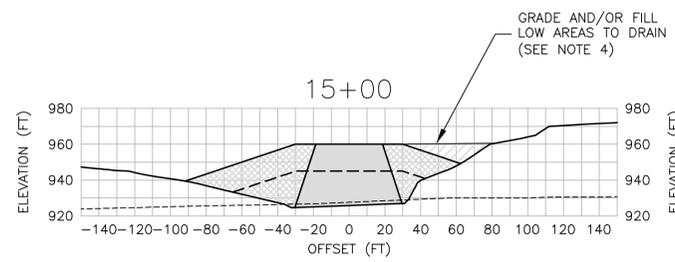
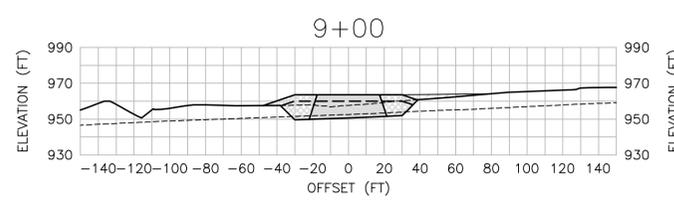
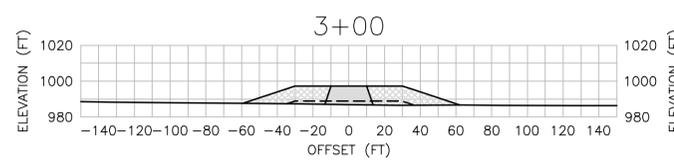
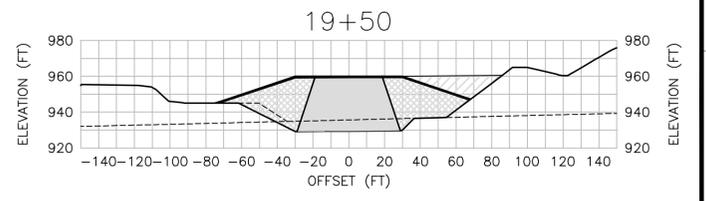
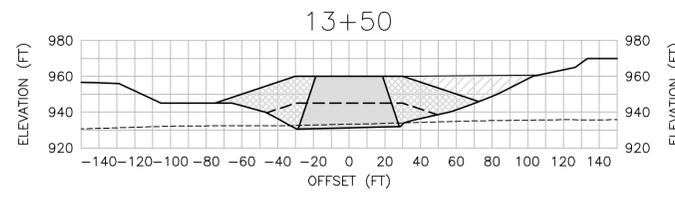
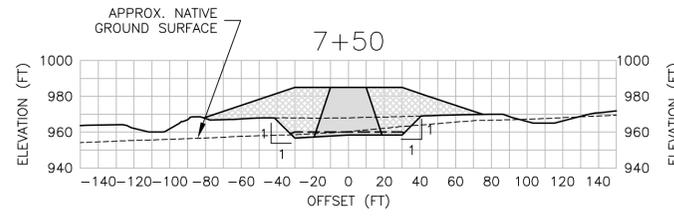
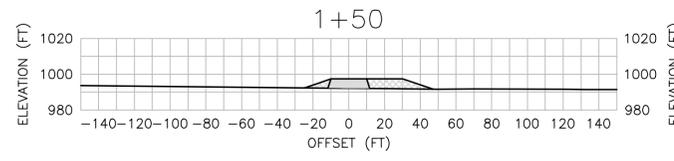


ISSUED FOR CONSTRUCTION



PROJECT No. 063-5762.3000	FILE No. 5762-56R4.DWG
DESIGN SLA 4/3/06	SCALE AS SHOWN REV. 0
CADD SLA 4/19/06	
CHECK TGK 4/21/06	
REVIEW TGK 4/13/07	

5762-06



NOTES

1. ESTIMATED EXCAVATION DEPTHS BASED ON BOREHOLE DATA. ACTUAL EXCAVATION DEPTHS EXPECTED TO VARY FROM WHAT IS SHOWN.
2. NATIVE GROUND SURFACE BASED ON ORIGINAL GROUND DATA PROVIDED BY TCAK. COFFERDAM SURFACE UPDATED BASED ON FEB. 2007 SURVEY PROVIDED BY TCAK.
3. REFER TO SHEET 5736-03 FOR EXCAVATION AND FILL SECTION DETAILS.
4. GRADE AND/OR FILL LOW AREAS ADJACENT TO CUT-OFF WALL EMBANKMENT TO PROMOTE DRAINAGE AND PREVENT PONDING. GRADING WILL LIKELY BE REQUIRED TO TOP OF INSULATED CREST (SEE SECTION C, SHEET 5762-10), WHICH IS NOT SHOWN ON ABOVE SECTIONS. INSTALL CULVERTS AS NECESSARY. DRAINAGE OFF OVERBURDEN STOCKPILE SHOULD BE DIRECTED TOWARD TAILINGS IMPOUNDMENT OR SEEPAGE COLLECTION SYSTEM.



ISSUED FOR CONSTRUCTION

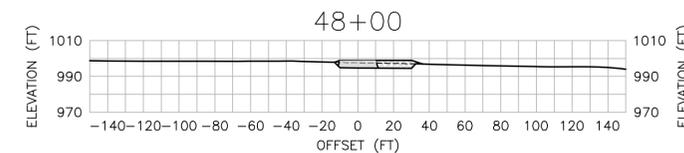
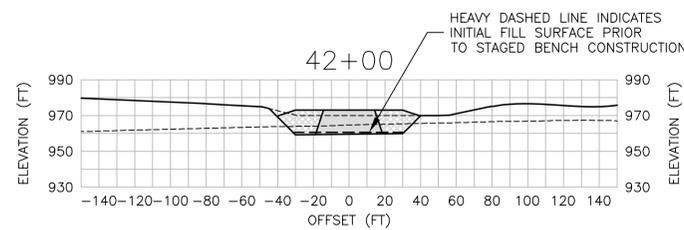
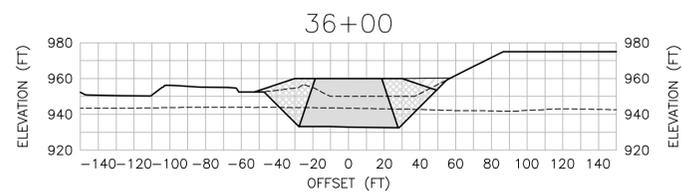
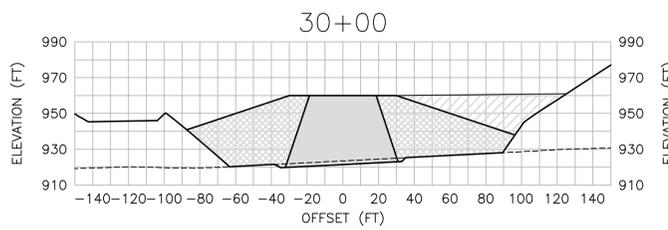
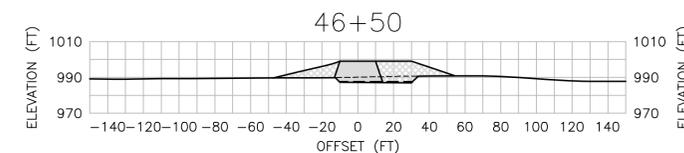
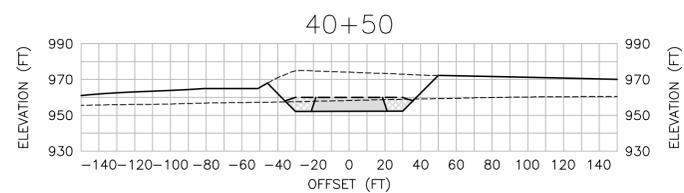
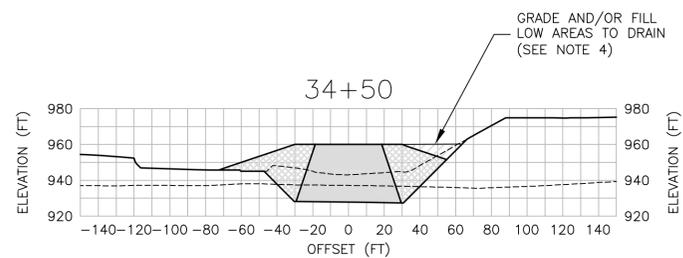
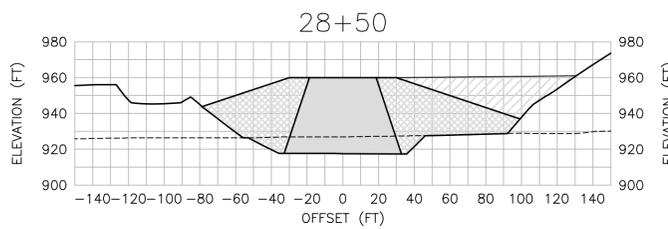
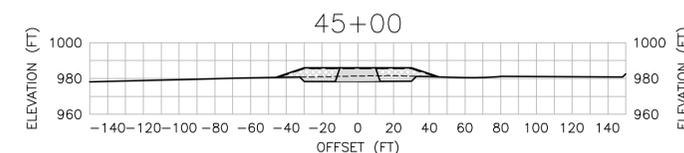
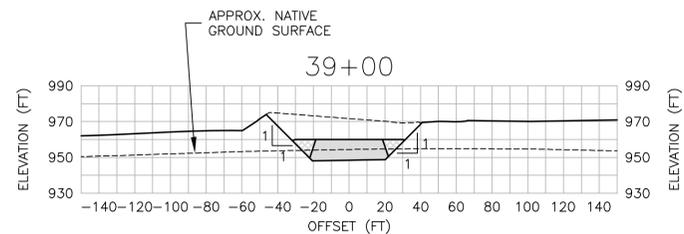
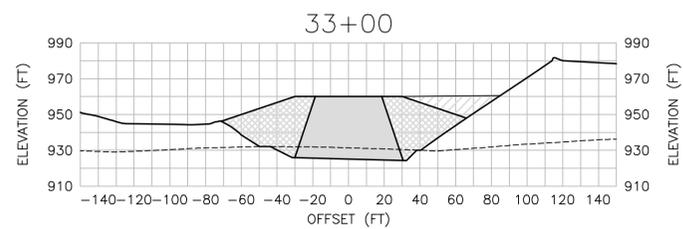
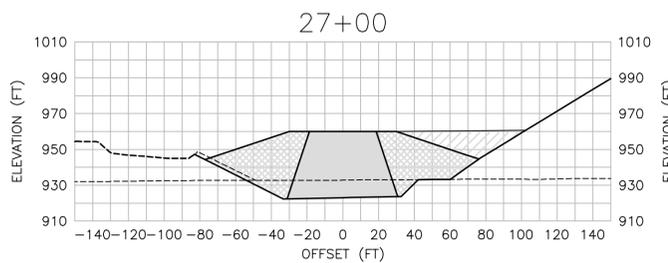
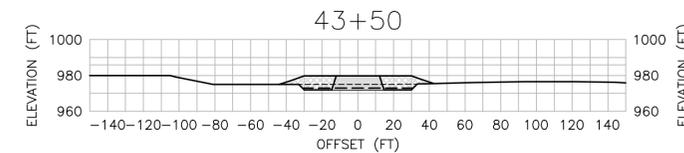
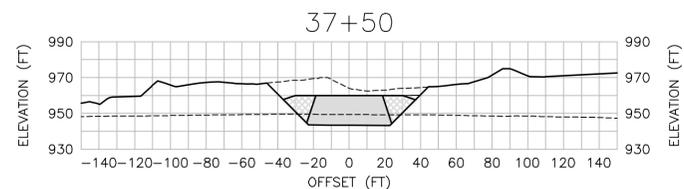
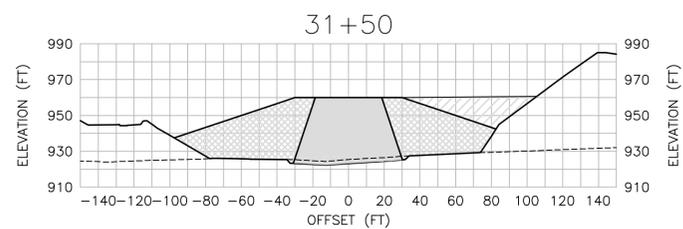
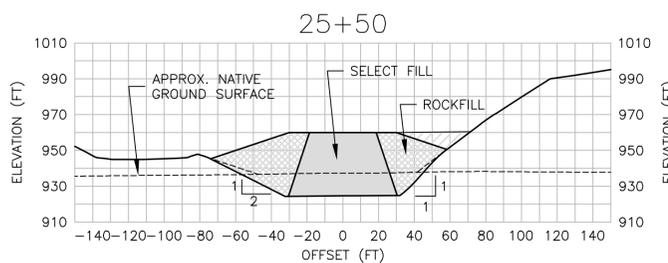
REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RW
△	4/2/07	SLA	GRADE AND/OR FILL LOW AREAS, UPDATE COFFERDAM SURFACE, IFC	SLA	TGK	SLA
△	10/26/06	SLA	REVISED SECTIONS FOR TRENCH CUTTER	SLA	TGK	SLA

PROJECT
**TECK COMINCO ALASKA INC.
 BACK DAM CUT-OFF WALL CONSTRUCTION
 RED DOG MINE, ALASKA**

TITLE
**ESTIMATED CUT-OFF WALL EMBANKMENT
 SECTIONS - STATION 1+50 TO 24+00**

PROJECT No. 063-5762.3000	FILE No. 5762-78R2.DWG
DESIGN SLA 4/3/06	SCALE AS SHOWN REV. 0
CADD SLA 5/4/06	5762-07
CHECK TGK 8/10/06	
REVIEW TGK 4/13/07	





NOTES

1. ESTIMATED EXCAVATION DEPTHS BASED ON BOREHOLE DATA. ACTUAL EXCAVATION DEPTHS EXPECTED TO VARY FROM WHAT IS SHOWN.
2. NATIVE GROUND SURFACE BASED ON ORIGINAL GROUND DATA PROVIDED BY TCAK. COFFERDAM SURFACE UPDATED BASED ON FEB. 2007 SURVEY PROVIDED BY TCAK.
3. REFER TO SHEET 5736-03 FOR EXCAVATION AND FILL SECTION DETAILS.
4. GRADE AND/OR FILL LOW AREAS ADJACENT TO CUT-OFF WALL EMBANKMENT TO PROMOTE DRAINAGE AND PREVENT PONDING. GRADING WILL LIKELY BE REQUIRED TO TOP OF INSULATED CREST (SEE SECTION C, SHEET 5762-10), WHICH IS NOT SHOWN ON ABOVE SECTIONS. INSTALL CULVERTS AS NECESSARY. DRAINAGE OFF OVERBURDEN STOCKPILE SHOULD BE DIRECTED TOWARD TAILINGS IMPOUNDMENT OR SEEPAGE COLLECTION SYSTEM.



ISSUED FOR CONSTRUCTION

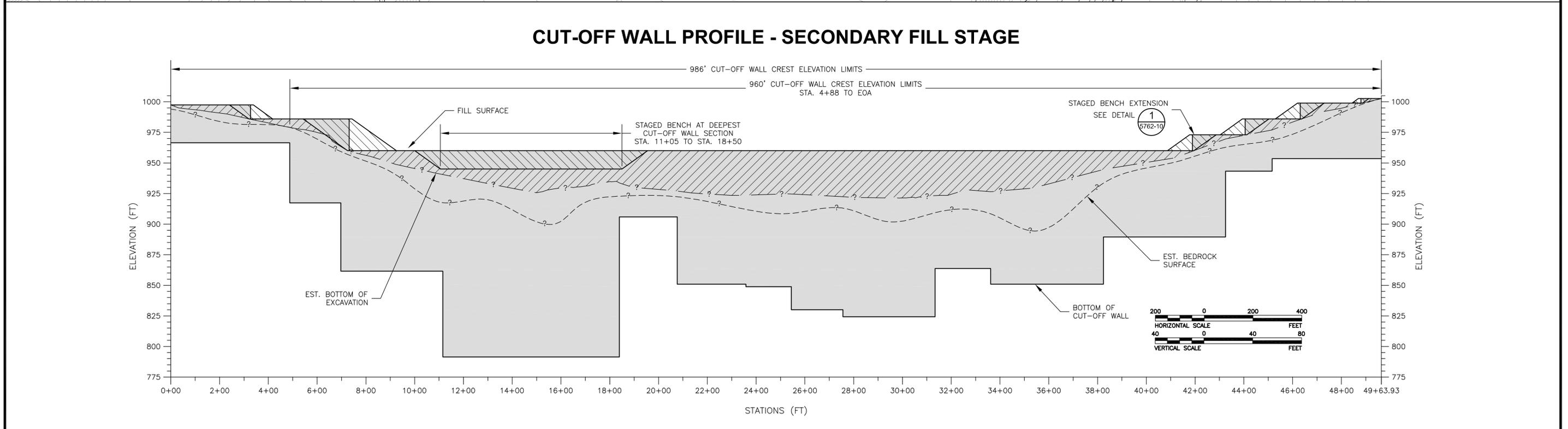
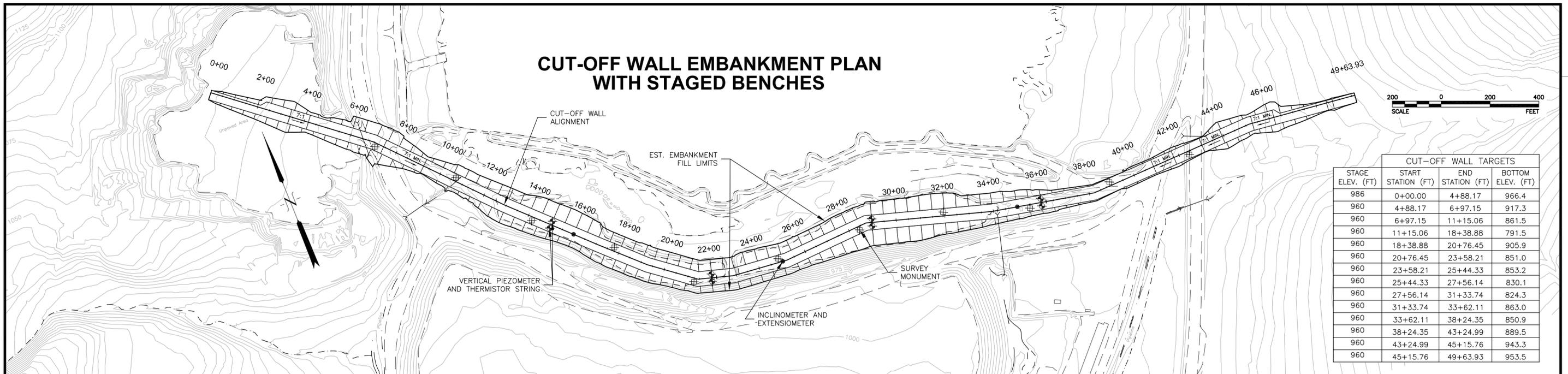
REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	R/W
△	4/2/07	SLA	GRADE AND/OR FILL LOW AREAS, IFC	SLA	TGK	SLA
△	10/26/06	SLA	REVISED SECTIONS FOR TRENCH CUTTER	SLA	TGK	SLA

PROJECT
**TECK COMINCO ALASKA INC.
 BACK DAM CUT-OFF WALL CONSTRUCTION
 RED DOG MINE, ALASKA**

TITLE
**ESTIMATED CUT-OFF WALL EMBANKMENT
 SECTIONS - STATIONS 25+50 TO 48+00**

PROJECT No. 063-5762.3000		FILE No. 5762-78R2.DWG	
DESIGN	SLA	4/3/06	SCALE AS SHOWN
CADD	SLA	5/4/06	REV. 0
CHECK	TGK	8/10/06	5762-08
REVIEW	TGK	4/13/07	





NOTES

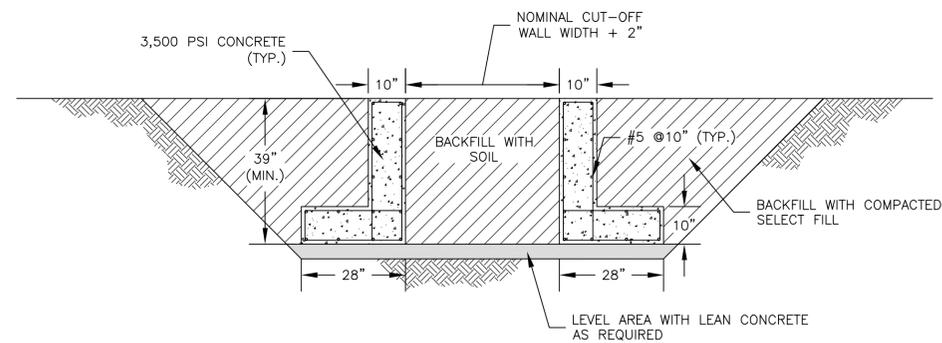
1. BASE MAP SHOWING 2004 TOPOGRAPHY (RD200.DWG) PROVIDED BY TCAK.
2. NORTHINGS AND EASTINGS ARE IN FEET REFERENCED TO UTM GRID.
3. ELEVATIONS ARE IN FEET AND ARE REFERENCED TO GEODETIC DATUM.
4. INSTRUMENTATION LOCATIONS SHOWN ARE APPROXIMATE. FINAL LOCATIONS TO BE DETERMINED DURING CONSTRUCTION. ADDITIONAL INSTRUMENTATION MAY BE INSTALLED DURING OR FOLLOWING CONSTRUCTION AS DETERMINED BY ENGINEER AND APPROVED BY OWNER.



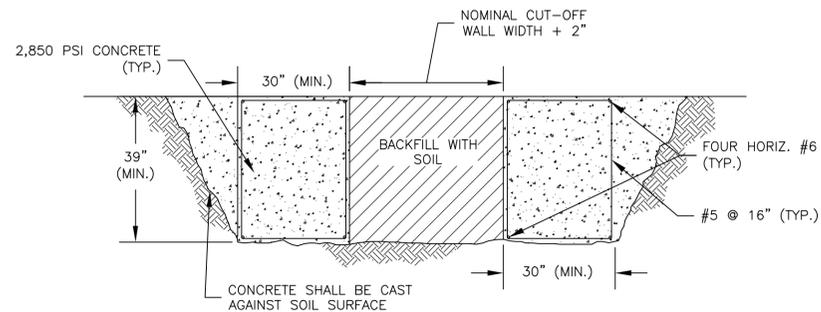
ISSUED FOR CONSTRUCTION

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RW
△	4/8/07	SLA	ADD INCLINOMETERS AND EXTENSIOEMTERS, IFC	SLA	TGK	SLA
△	10/26/06	SLA	EMBANKMENT REVISED FOR TRENCH CUTTER	SLA	TGK	SLA
PROJECT						
TECK COMINCO ALASKA INC. BACK DAM CUT-OFF WALL CONSTRUCTION RED DOG MINE, ALASKA						
TITLE						
CUT-OFF WALL EMBANKMENT PLAN AND TARGET ELEVATIONS						
PROJECT No. 063-5762.3000			FILE No. 5762-910R1.DWG			
DESIGN	SLA	4/3/06	SCALE	AS SHOWN	REV.	0
CADD	SLA	5/12/06	5762-09			
CHECK	TGK	8/10/06				
REVIEW	TGK	4/13/07				





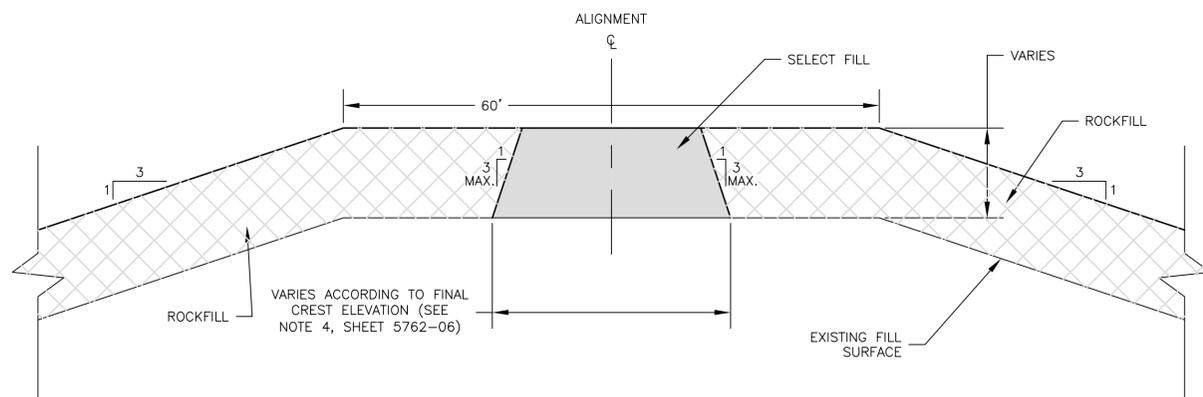
PRECAST OPTION



CAST-IN-PLACE OPTION

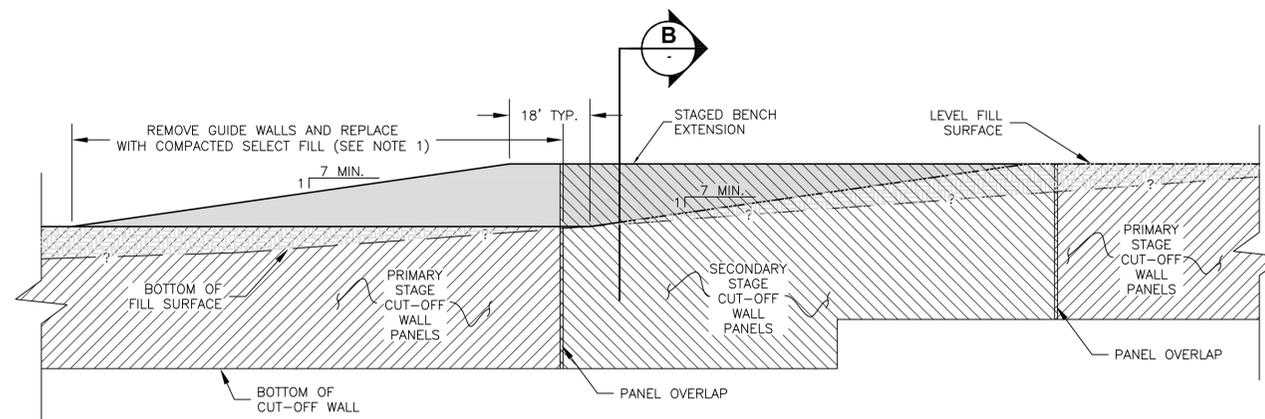
A TYPICAL GUIDE WALL DETAILS

NOT TO SCALE



B TYPICAL STAGED BENCH FILL SECTION

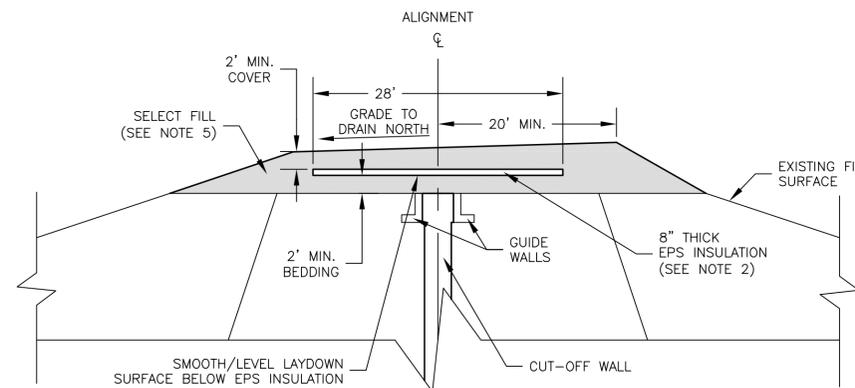
NOT TO SCALE



1 TYPICAL STAGED BENCH EXTENSION DETAIL

5762-09

NOT TO SCALE



C FINISHED INSULATED FILL SECTION

NOT TO SCALE

NOTES

1. THE GUIDE WALLS SHALL BE CONSTRUCTED WITH JOINTS TO FACILITATE EXTRACTION AT ALL STAGED BENCH LOCATIONS. MINIMUM JOINT SPACING SHALL ALLOW FOR EXTRACTION WITH LOCAL CONSTRUCTION EQUIPMENT.
2. EXPANDED POLYSTYRENE (EPS) INSULATION SHALL HAVE MINIMUM DENSITY OF 1.35 PCF AND SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS AND APPROVED BY THE ENGINEER. EPS INSULATION WITH MINIMUM 40 PSI COMPRESSIVE STRENGTH SHALL BE USED AT HAUL ROAD CROSSINGS.
5. THE CUT-OFF WALL SHALL HAVE ACHIEVED THE MINIMUM DESIGN STRENGTH PRIOR TO SELECT FILL PLACEMENT. THE SELECT FILL SHALL BE PLACED IN 2' LIFTS AND THE FIRST LIFT SHALL BE COMPACTED WITH SIX (6) STATIC PASSES OF A 10-TON ROLLER. FILL PLACED OVER THE INSULATION SHALL NOT BE COMPACTED EXCEPT AT THE HAUL ROAD CROSSINGS.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	R/W
△	4/8/07	SLA	GRADE/FILL LOW AREAS, MOVED INSTR. TO NEW SHEET, IFC	SLA	TGK	SLA
△	11/10/06	SLA	REVISED INSULATED FILL SECTION DETAIL	SLA	TGK	SLA
△	10/30/06	SLA	REVISED FOR TRENCH CUTTER	SLA	TGK	SLA



ISSUED FOR CONSTRUCTION

PROJECT
**TECK COMINCO ALASKA INC.
 BACK DAM CUT-OFF WALL CONSTRUCTION
 RED DOG MINE, ALASKA**

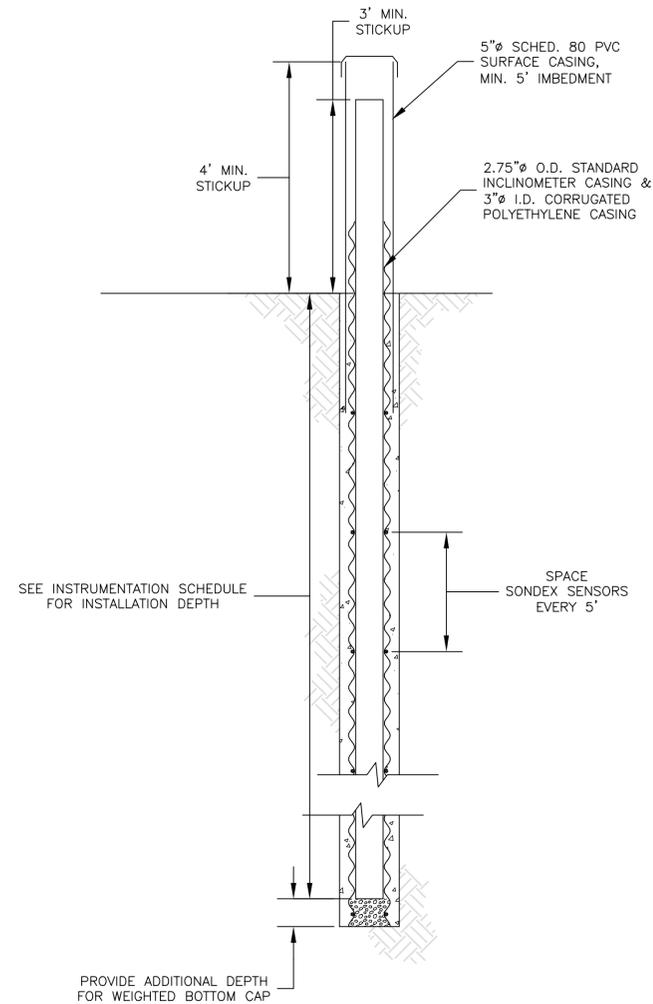
TITLE
STAGED BENCH DETAIL AND FINISHED INSULATED SECTION

PROJECT No. 063-5762.3000	FILE No. 5762-910R3.DWG
DESIGN SLA 5/2/06	SCALE AS SHOWN REV. 0
CADD SLA 5/12/06	5762-10
CHECK TGK 8/10/06	
REVIEW TGK 4/13/07	

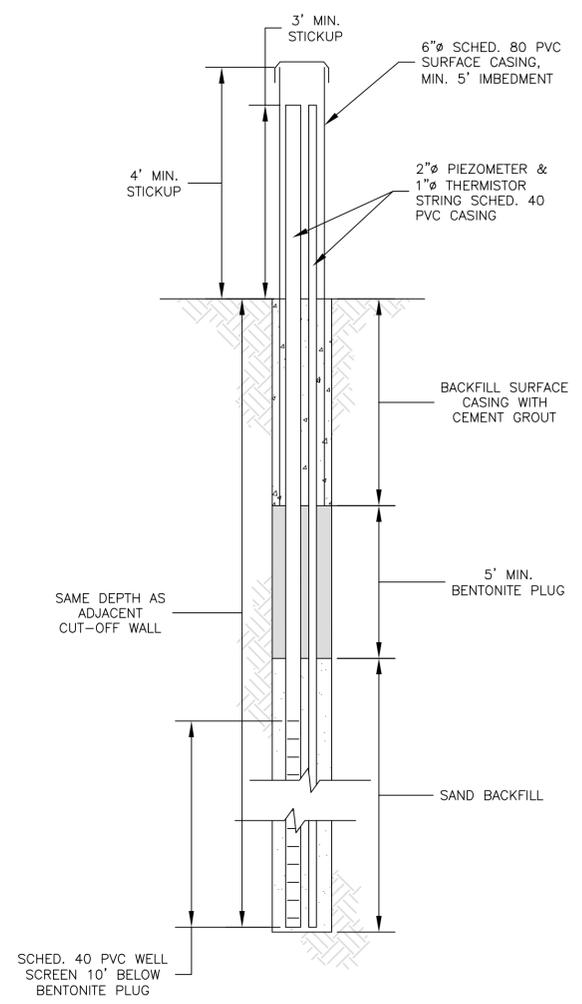


INSTRUMENTATION SCHEDULE			
STATION (FT)	OFFSET (FT)	DEPTH (FT)	INSTRUMENT
7+10	15 RT	20	SM
10.65	15 LT	20	SM
14+20	15 RT	20	SM
15+00	15 RT	168.5	P/T
15+00	15 LT	168.5	P/T
16+00	0	75	E/I
17+75	15 LT	20	SM
21+30	15 RT	20	SM
22+00	15 RT	109	P/T
22+00	15 LT	109	P/T
24+85	15 LT	20	SM
25+00	0	100	E/I
28+40	15 RT	20	SM
29+00	15 RT	135.7	P/T
29+00	15 LT	135.7	P/T
31+95	15 LT	20	SM
35+00	0	80	E/I
35+50	15 RT	20	SM
36+00	15 RT	109.1	P/T
36+00	15 LT	109.1	P/T
38+95	15 LT	20	SM
42+40	15 RT	20	SM

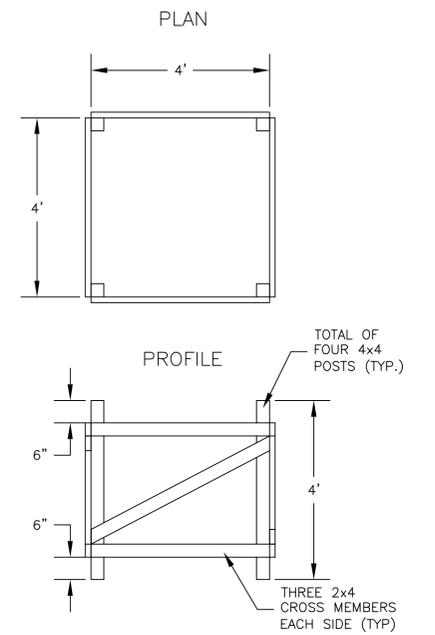
SM = SURVEY MONUMENT
P/T = COMBINATION PIEZOMETER/THERMISTOR SYSTEM
E/I = COMBINATION EXTENSOMETER/INCLINOMETER SYSTEM



E COMBINATION EXTENSOMETER / INCLINOMETER SYSTEM DETAIL
NOT TO SCALE



F COMBINATION PIEZOMETER / THERMISTOR SYSTEM DETAIL
NOT TO SCALE



G INSTRUMENT QUAD PROTECTION
NOT TO SCALE

NOTES

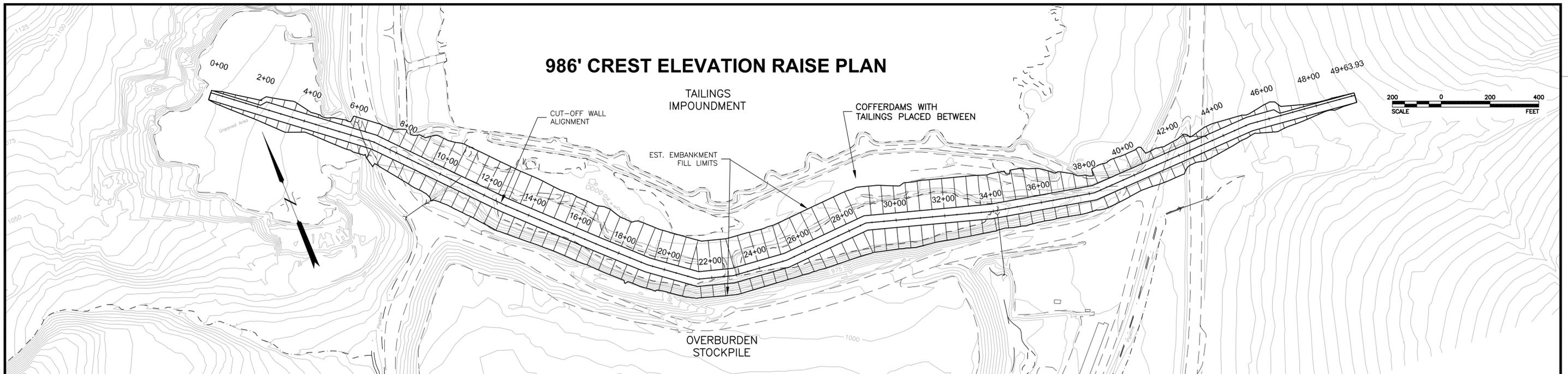
- ALL MONITORING INSTRUMENTATION SHALL BE INSTALLED FOLLOWING INSTALLATION OF INSULATION AND SELECT FILL COVER.
- SURVEY MONUMENT SHALL CONSIST OF VERTICAL #8 REBAR WITH 3" STICKUP ABOVE FINISHED SURFACE AND GROUTED MIN. 20' INTO SELECT FILL.
- WEIGH BOTTOM CAP OF CORRUGATED POLYETHYLENE PIPE WITH GRAVEL OR APPROVED EQUIVALENT TO OVERCOME BOUYANCY DURING PLACEMENT OR WHILE GROUTING.
- PROTECTIVE SURFACE CASING AND INSTRUMENT QUAD SHALL BE COATED WITH ORANGE PAINT OR EQUIVALENT TO IMPROVE VISIBILITY DURING WINTER.
- INSTRUMENT QUADS TO BE PLACED AROUND COMBINED PIEZOMETER/THERMISTOR AND EXTENSOMETER/INCLINOMETER SYSTEMS FOR PROTECTION AND INCREASED VISIBILITY.



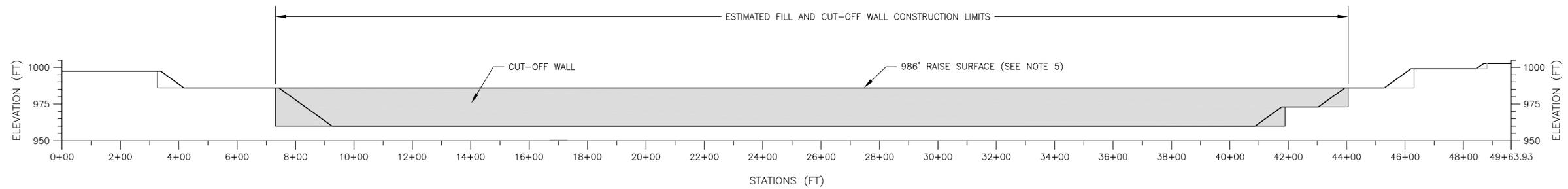
ISSUED FOR CONSTRUCTION

PROJECT		TECK COMINCO ALASKA INC. BACK DAM CUT-OFF WALL CONSTRUCTION RED DOG MINE, ALASKA	
TITLE		INSTRUMENTATION	
PROJECT No. 063-5762.3000	FILE No.	5762-11.DWG	
DESIGN SLA	4/5/07	SCALE	AS SHOWN REV. 0
CADD SLA	4/5/07	5762-11	
CHECK TGK	4/13/07		
REVIEW TGK	4/13/07		





CUT-OFF WALL RAISE PROFILE TO 986' CREST ELEVATION



NOTES

1. BASE MAP SHOWING 2004 TOPOGRAPHY (RD200.DWG) PROVIDED BY TCAK.
2. NORTHINGS AND EASTINGS ARE IN FEET REFERENCED TO UTM GRID.
3. ELEVATIONS ARE IN FEET AND ARE REFERENCED TO GEODETIC DATUM.
4. REMOVE EXISTING GUIDE WALLS WITHIN FILL AND CUT-OFF WALL CONSTRUCTION LIMITS TO FACILITATE KEYING INTO THE EXISTING CUT-OFF WALL. BACKFILL WITH COMPACTED SELECT FILL ACCORDING TO THE SPECIFICATIONS.
5. ABANDON COMBINED PIEZOMETER/THERMISTOR AND EXTENSOMETER/INCLINOMETER SYSTEMS AND BACKFILL WITH SPECIFIED GROUT.
6. IF OVERBURDEN STOCKPILE WILL BE REMOVED AT A FUTURE DATE, REMOVE GRADED KIVALINA SHALE MATERIALS USED TO FILL IN LOW AREAS ON RIGHT SIDE OF ALIGNMENT AND REPLACE WITH SPECIFIED ROCKFILL.
7. FILL SECTION OF EMBANKMENT RAISE TO 986' CREST ELEVATION SHALL BE PERFORMED ACCORDING TO SHEET 5762-06, SECTIONS A & B. INCREASE WIDTH OF SELECT FILL ACCORDINGLY FOR FUTURE RAISES ABOVE 986' ELEVATION. FILL ELEVATION SHALL BE INCREASED A MINIMUM OF 2' IF CUTTER SOIL MIXER (CSM) IS USED TO ALLOW FOR MIXING TRENCH.
8. INSULATED SURFACE SHOULD CONSIDER USING EITHER 17' OF FILL OR EXTRUDED POLYSTYRENE (XPS) INSULATION THAT HAS LOW WATER ABSORPTION CHARACTERISTICS TO THERMALLY PROTECT CUT-OFF WALL FOR CLOSURE CONDITIONS. IF XPS INSULATION IS USED REFER TO SHEET 5762-10, DETAIL C.
9. REPLACE INSTRUMENTATION AND ADJUST INSTALLATION DEPTHS ACCORDING TO ADDED FILL THICKNESS.



**ISSUED FOR
CONSTRUCTION**

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	R/W
△	4/6/07	SLA	REVISED NOTES, CHANGED SHEET AND FILE NUMBER, IFC	SLA	TGK	SLA
△	10/31/06	SLA	REVISED FOR VERTICAL RAISE	SLA	TGK	SLA

PROJECT: **TECK COMINCO ALASKA INC.
BACK DAM CUT-OFF WALL CONSTRUCTION
RED DOG MINE, ALASKA**

TITLE: **LINER RAISE TO 986 FT ELEVATION
PLAN AND PROFILE**

PROJECT No. 063-5762.3000	FILE No. 5762-12R2.DWG
DESIGN SLA 5/8/06	SCALE AS SHOWN REV. 0
CADD SLA 5/9/06	5762-12
CHECK TGK 8/10/06	
REVIEW TGK 4/13/07	

