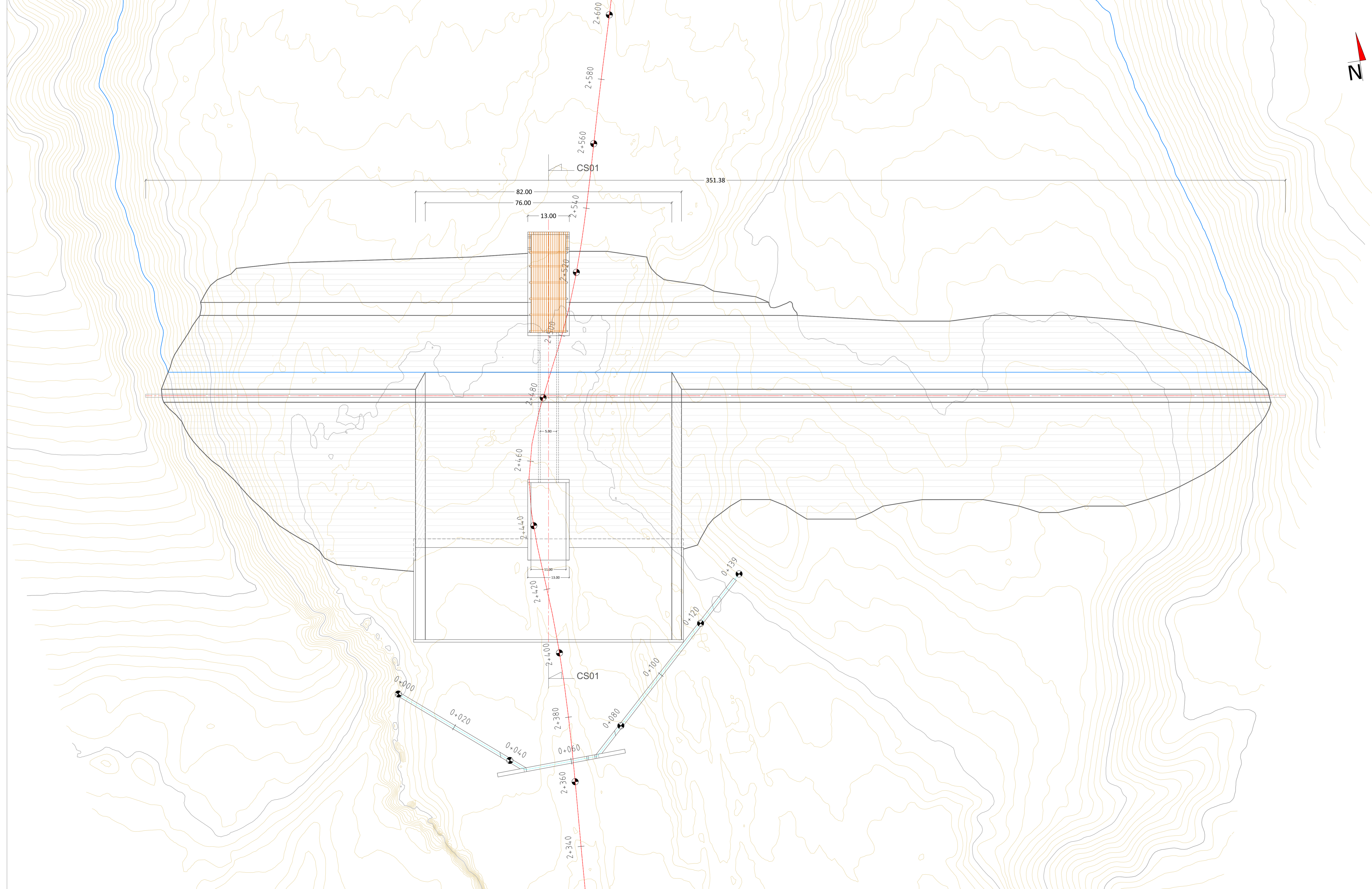


Flood Mitigation Measures
Cougar Creek

OPTION ANALYSIS

PROJECT:				Flood Hazard Mitigation Measures - Cougar Creek	
Town:		Town of Canmore		Province: Alberta	
CONTENT:			ENGINEERING:		
Overview Map Option B			 SALZBURG - INNSBRUCK - WIEN		
DRAWING/MAP NR.:		SCALE:			
16494-OPT.B-001		1:1 000			
WORKED OUT BY	SIGN.	ISSUE/REVISION			
DRAWING:	Powell	2014/07/29	PROJECT MANAGER:		
DESIGN:	Scheikl	2014/07	ATTACHMENT:		
CHECKED:	Henle	2014/07/31	DATE/SIGNATURE: Esarte Andy DW-01		



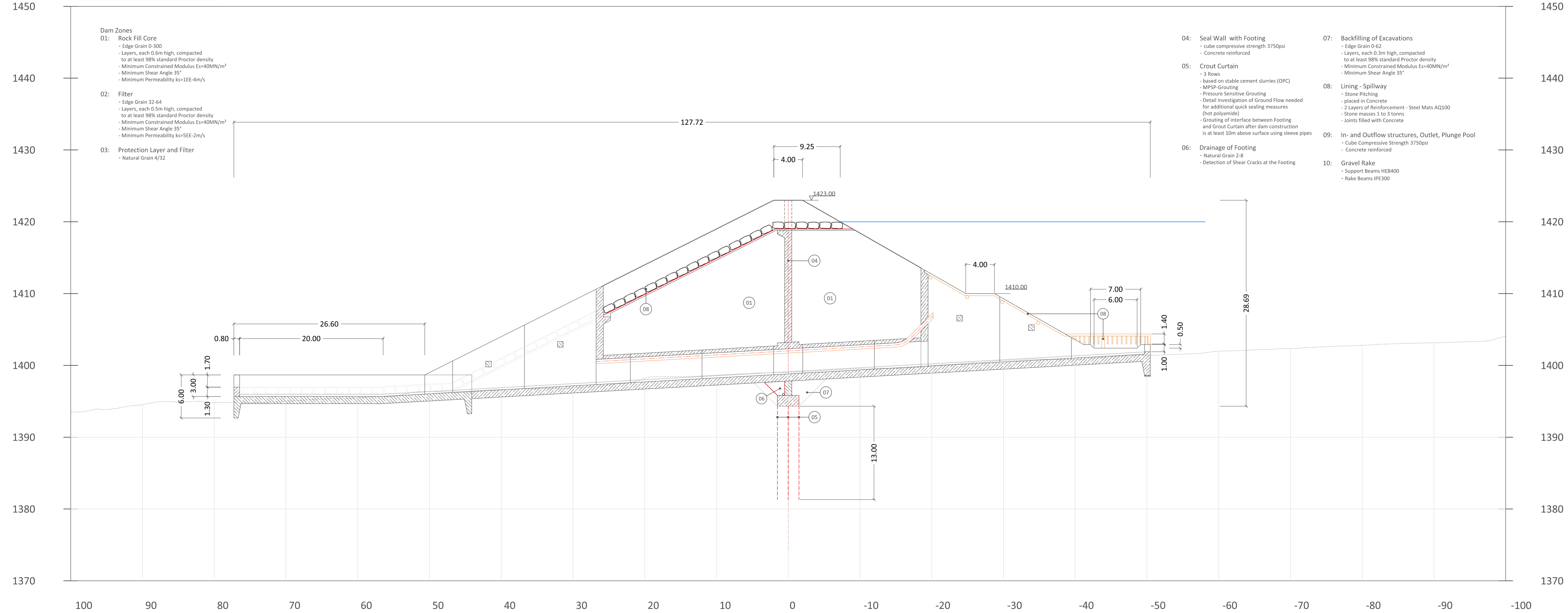
Flood Mitigation Measures
Cougar Creek

OPTION ANALYSIS

PROJECT: Flood Hazard Mitigation Measures - Cougar Creek			
Town: Town of Canmore		Province: Alberta	
CONTENT: Site Map		ENGINEERING:	
DRAWING/MAP NR.: 16494-OPT.B-010		SCALE: 1:500	
WORKED OUT BY:	SIGN:	ISSUE/REVISION:	
DRAWING: Powell		2014/07/31	
DESIGN: Scheiki		2014/07/31	
CHECKED: Scheiki		2014/07/31	
PROJECT MANAGER:		ATTACH. NR.:	
DATE/SIGNATURE		DW-OPT.B-010	



Cross Section 01



- Dam Zones**
- 01: Rock Fill Core**
 - Edge Grain 0-300
 - Layers, each 0.6m high, compacted to at least 98% standard Proctor density
 - Minimum Constrained Modulus $E_s=40MN/m^2$
 - Minimum Shear Angle 35°
 - Minimum Permeability $k_s=1EE-4m/s$
 - 02: Filter**
 - Edge Grain 32.64
 - Layers, each 0.5m high, compacted to at least 98% standard Proctor density
 - Minimum Constrained Modulus $E_s=40MN/m^2$
 - Minimum Shear Angle 35°
 - Minimum Permeability $k_s=5EE-2m/s$
 - 03: Protection Layer and Filter**
 - Natural Grain 4/32

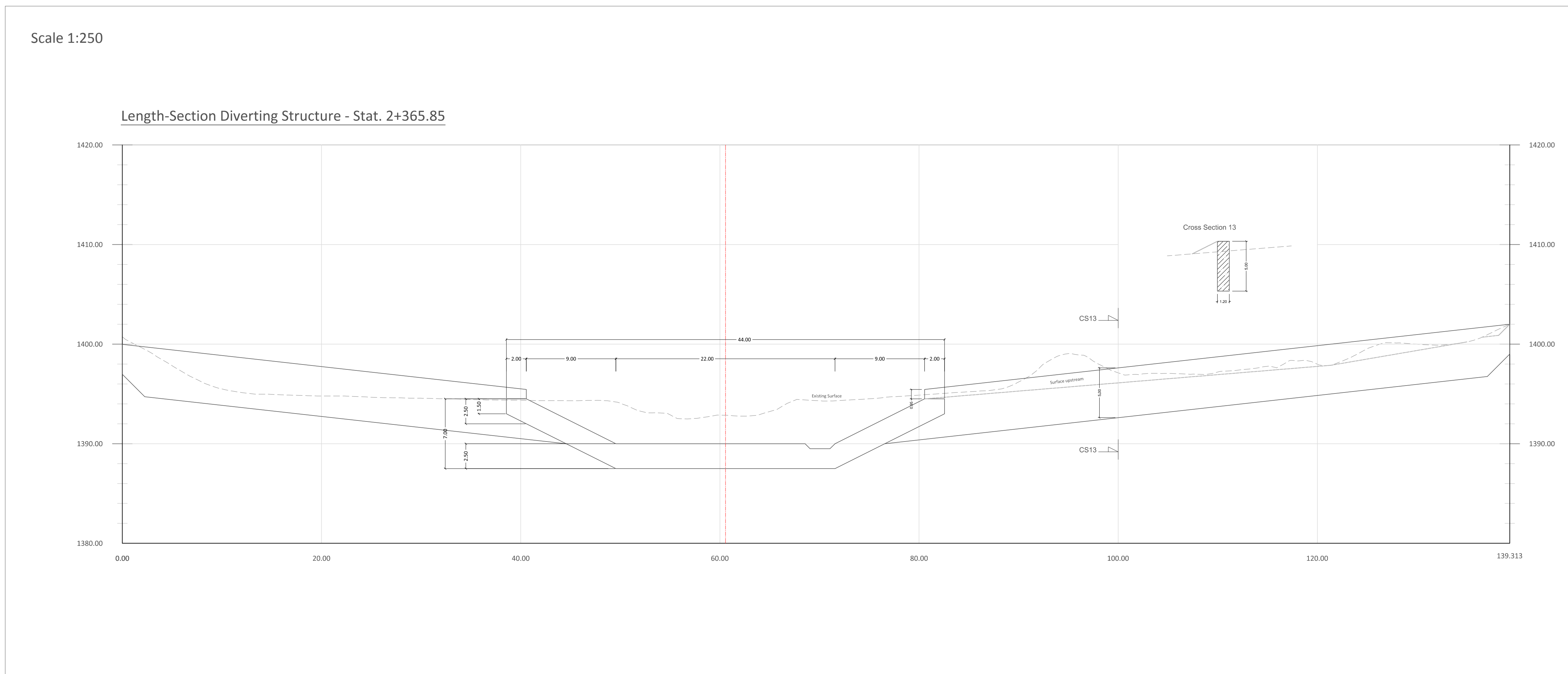
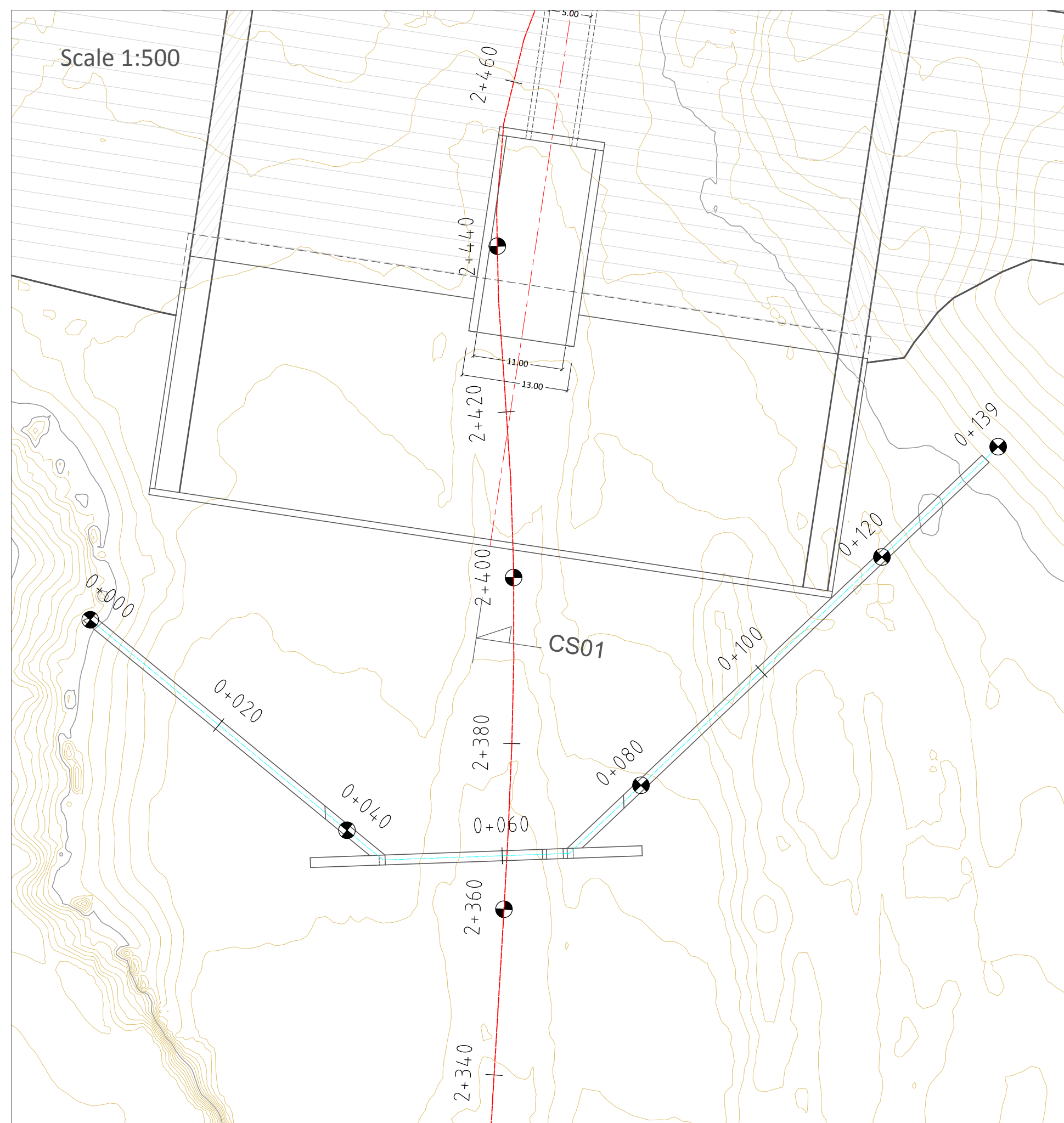
- 04: Seal Wall with Footing**
 - cube compressive strength 3750psi
 - Concrete reinforced
- 05: Crout Curtain**
 - 3 Rows
 - based on stable cement slurries (OPC)
 - MPSP-Grouting
 - Pressure Sensitive Grouting
 - Detail Investigation of Ground Flow needed for additional quick sealing measures (hot polyamide)
 - Grouting of interface between Footing and Grout Curtain after dam construction is at least 10m above surface using sleeve pipes
- 06: Drainage of Footing**
 - Natural Grain 2-8
 - Detection of Shear Cracks at the Footing
- 07: Backfilling of Excavations**
 - Edge Grain 0-62
 - Layers, each 0.3m high, compacted to at least 98% standard Proctor density
 - Minimum Constrained Modulus $E_s=40MN/m^2$
 - Minimum Shear Angle 35°
- 08: Lining - Spillway**
 - Stone Pitching
 - placed in Concrete
 - 2 Layers of Reinforcement - Steel Mats AQ100
 - Stone masses 1 to 3 tonnes
 - Joints filled with Concrete
- 09: In- and Outflow structures, Outlet, Plunge Pool**
 - Cube Compressive Strength 3750psi
 - Concrete reinforced
- 10: Gravel Rake**
 - Support Beams HE8400
 - Rake Beams IPE300



Flood Mitigation Measures Cougar Creek

OPTION ANALYSIS

PROJECT: Flood Hazard Mitigation Measures - Cougar Creek			
Town: Town of Canmore		Province: Alberta	
CONTENT: Cross Section 01 Flood Retention 2+500		ENGINEERING: alpinfra SALZBURG - INNSBRUCK - WIEN	
DRAWING/MAP NR.: 16494-OPT.B-011		SCALE: 1:250	
WORKED OUT BY:	SIGN.	ISSUE/REVISION	
DRAWING: Powell		2014/07/29	
DESIGN: Scheikl		2014/07	
CHECKED: Henle		2014/07/31	
PROJECT MANAGER:		ATTACH. NR.: DW-OPT.B-011	
DATE/SIGNATURE		Issue Andy	



Flood Mitigation Measures
Cougar Creek

OPTION ANALYSIS

PROJECT:		Flood Hazard Mitigation Measures - Cougar Creek	
Town:	Town of Canmore	Province:	Alberta
CONTENT:		ENGINEERING:	
Option B - Diverting Structure		 SALZBURG - INNSBRUCK - WIEN	
DRAWING/MAP NR.:	SCALE:		
16494-OPT.B-013	1:250 (500)	PROJECT MANAGER:	
WORKED OUT BY:	SIGN.	ISSUE/REVISION	ATTACH. NR.:
DRAWING: Powell		2014/07/29	DW-OPT.B-013
DESIGN: Scheikl		2014/07	
CHECKED: Henle		2014/07/31	
DATE/SIGNATURE		Esarte Andy	