

EVALUATION OF THE THICKNESS AND REINFORCING STRUCTURES OF CONCRETE TUNNEL LINING GROUND PROBING RADAR

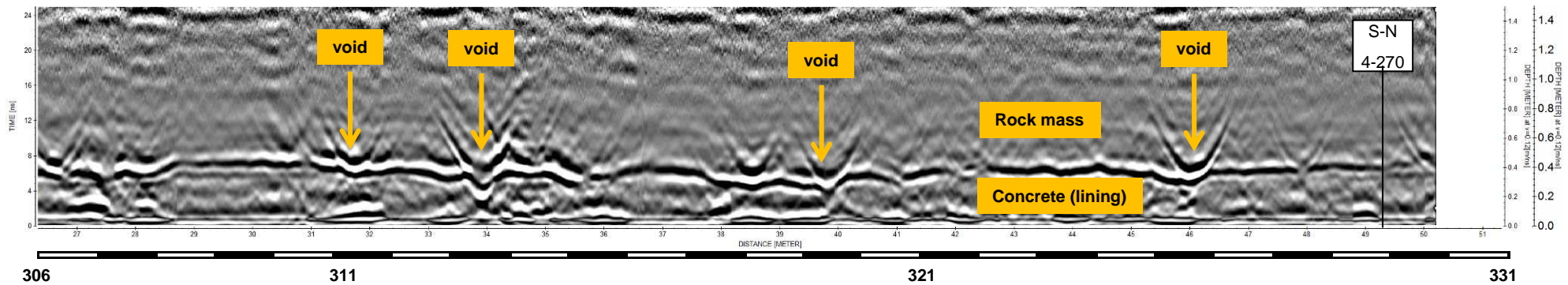
Project: design of the emergency tunnel between two twin tunnel (Switzerland, 2011)

The purpose of the survey: The survey was conducted to verify the characteristics of the lining of the tunnels in operation, in order to assess the effect of strain response from the excavation of the emergency tunnel

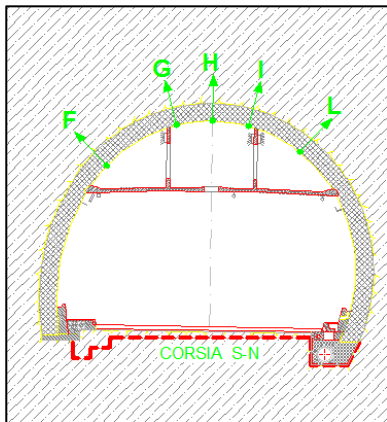
Design Survey: Five GPR lines aligned along the tunnel axis at different heights on both tunnels (about 18 km of GPR survey with the 400 MHz antenna)

Results: The survey has allowed to identify the sections with different types of reinforcement and support (ribs, reinforcing mesh etc..) and presence of void zones behind the lining.

GPR section – example of concrete without reinforcing elements



Tunnel section with location of the radar lines



Section L

Synoptic table with the results

	300	325	350	375	400	425	450	475
Progr. acquisizione georadar [m]	[Bar chart showing acquisition progress]							
Progr. da imbocco galleria [m]	331	356	381	406	431	456	481	506
Rete elettrosaldata				357	362	373	378	
Centine			[Bar chart showing centine locations]					
Tiranti								
Spritz Beton								