

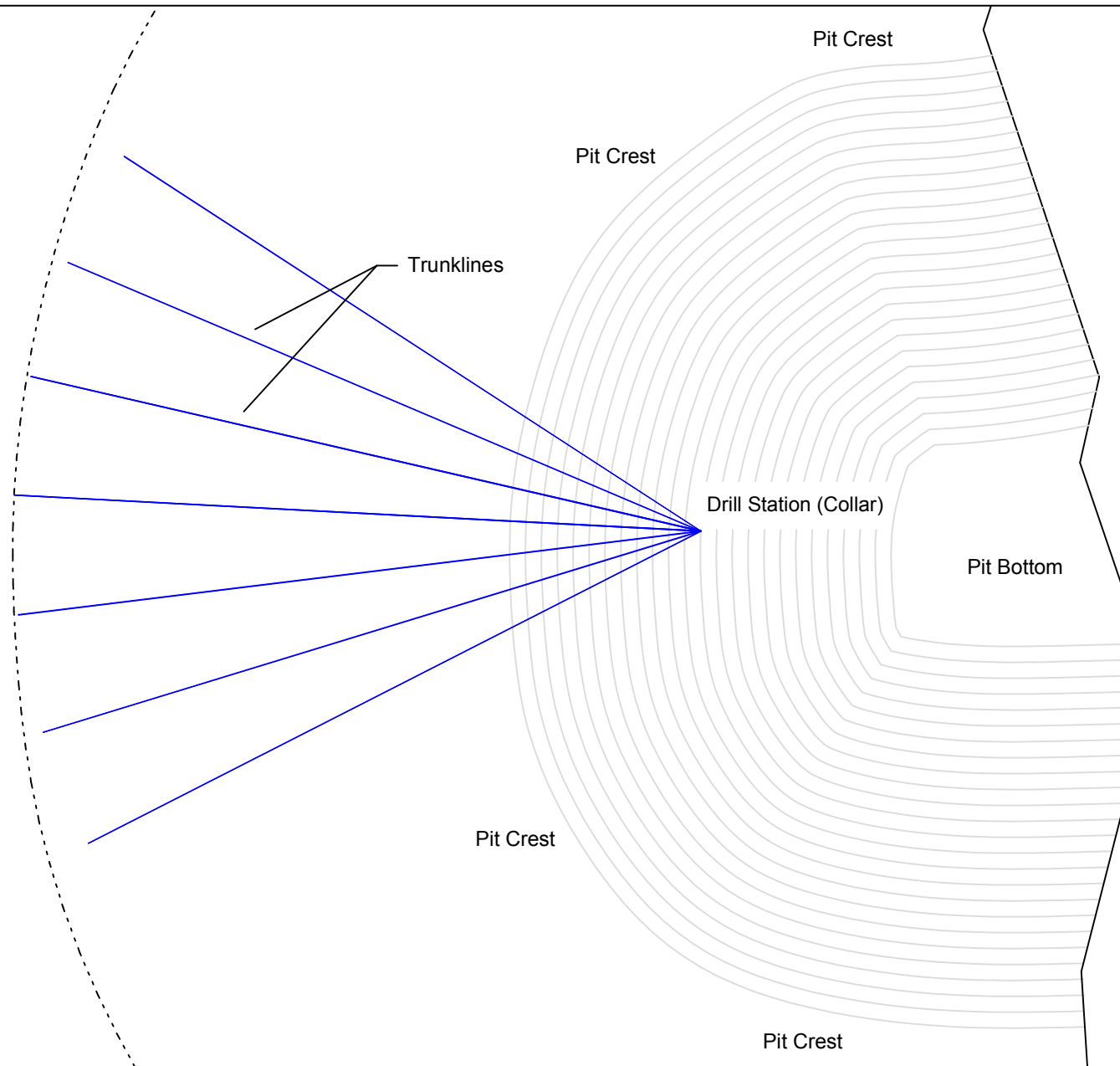
Highwall Depressurization with Directional Drilling and Vertical Well Intercepts

REI Drilling, Inc.

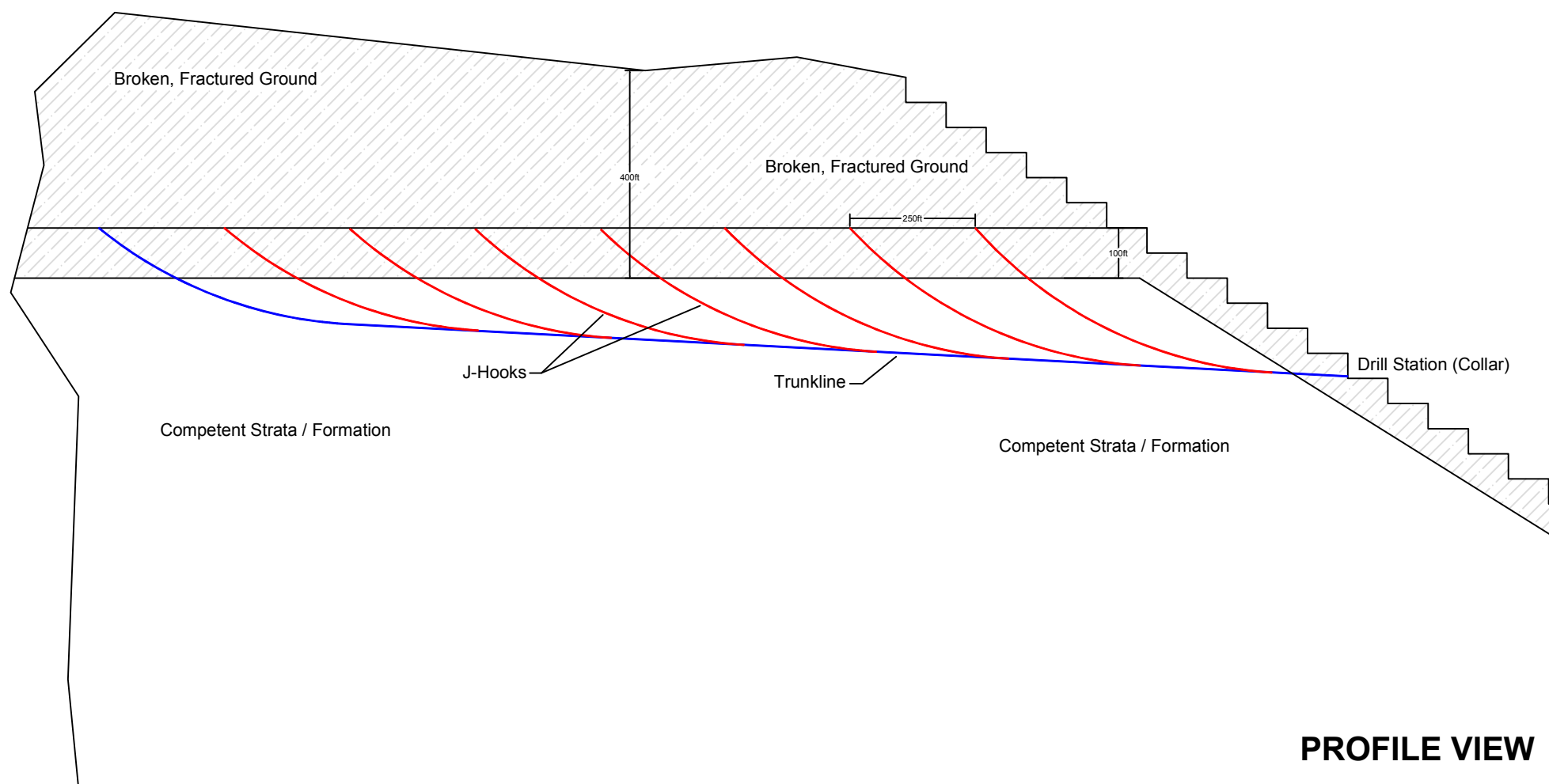
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REI Drilling, Inc. has the ability and experience to utilize magnetic ranging technology to intercept existing vertical & lateral wellbores and or very small targets (as small as 5 inches) on any range of borehole lengths. This technique can be used to intercept vertical wells with boreholes directionally drilled from the base of an open pit mine for the purpose of reducing pore pressure in highwalls. Boreholes are directionally steered and can be developed with tangential branches that bisect natural fractures. Laterals are drilled down-grade to gravity drain water to adjacent vertical wells, existing or completed for this purpose. Boreholes are drilled from a single location to intercept several vertical wells or from several locations with varying associated elevations to intercept a single vertical well.



PLAN VIEW



PROFILE VIEW

Highwall Drainage and Depressurization using Directional Drilling



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REI has the capability to drain/depressurize a highwall using directional drilling techniques conducted from a bench within the mine. From the bench, a collar is drilled through fractured rock and into competent underlying rock. For highwall drainage, REI grouts and pressure tests the collar to at least 1.5 times the expected head (~250 psi in the case illustrated above). With a successful pressure test, a trunk line is drilled into the rock at an incline. Near the end of the trunk line, the hole is directionally steered up into the high permeability, overlying fractured rock to form a "j-hook". While tripping out of the trunk line, several other j-hooks may be drilled into the overlying rock to increase flow of water from the formation and into the trunkline. A plurality of these trunklines with j-hooks may be drilled from the same location in a fan-like pattern to increase drainage.