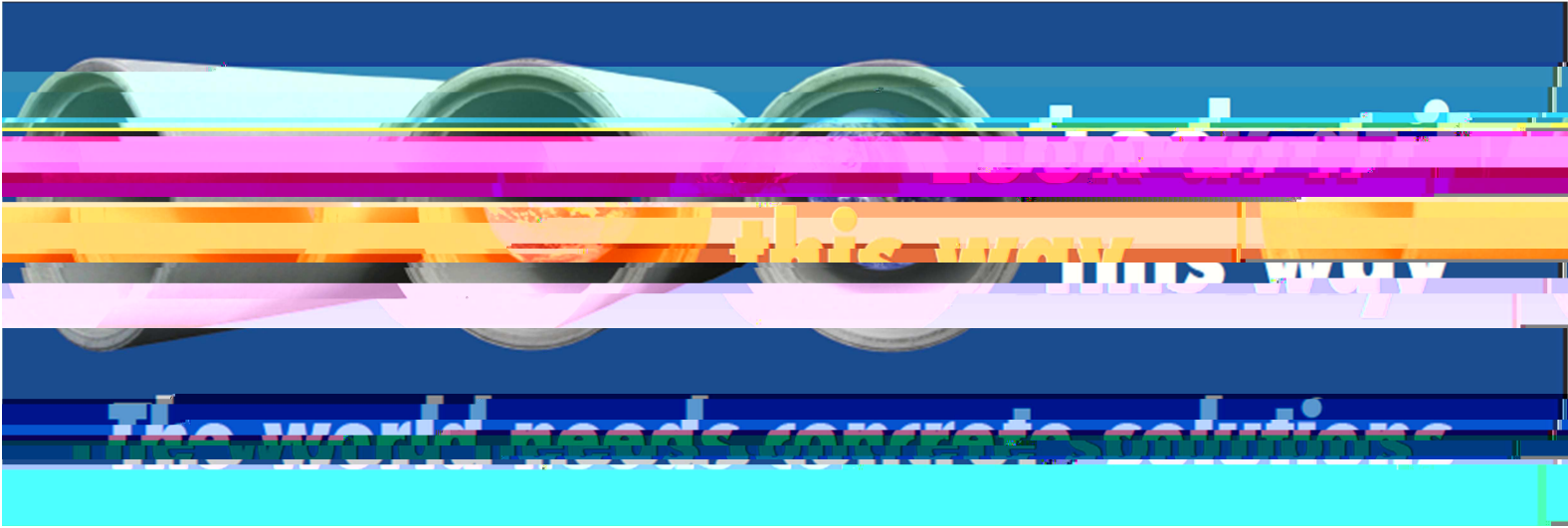




Project: Villeneuve Aggregate Pit Box Culverts

Location: Villeneuve, Alberta

Site Supervisor: Kevin Copes, EIT

Documented by: Tyson Dyck, EIT

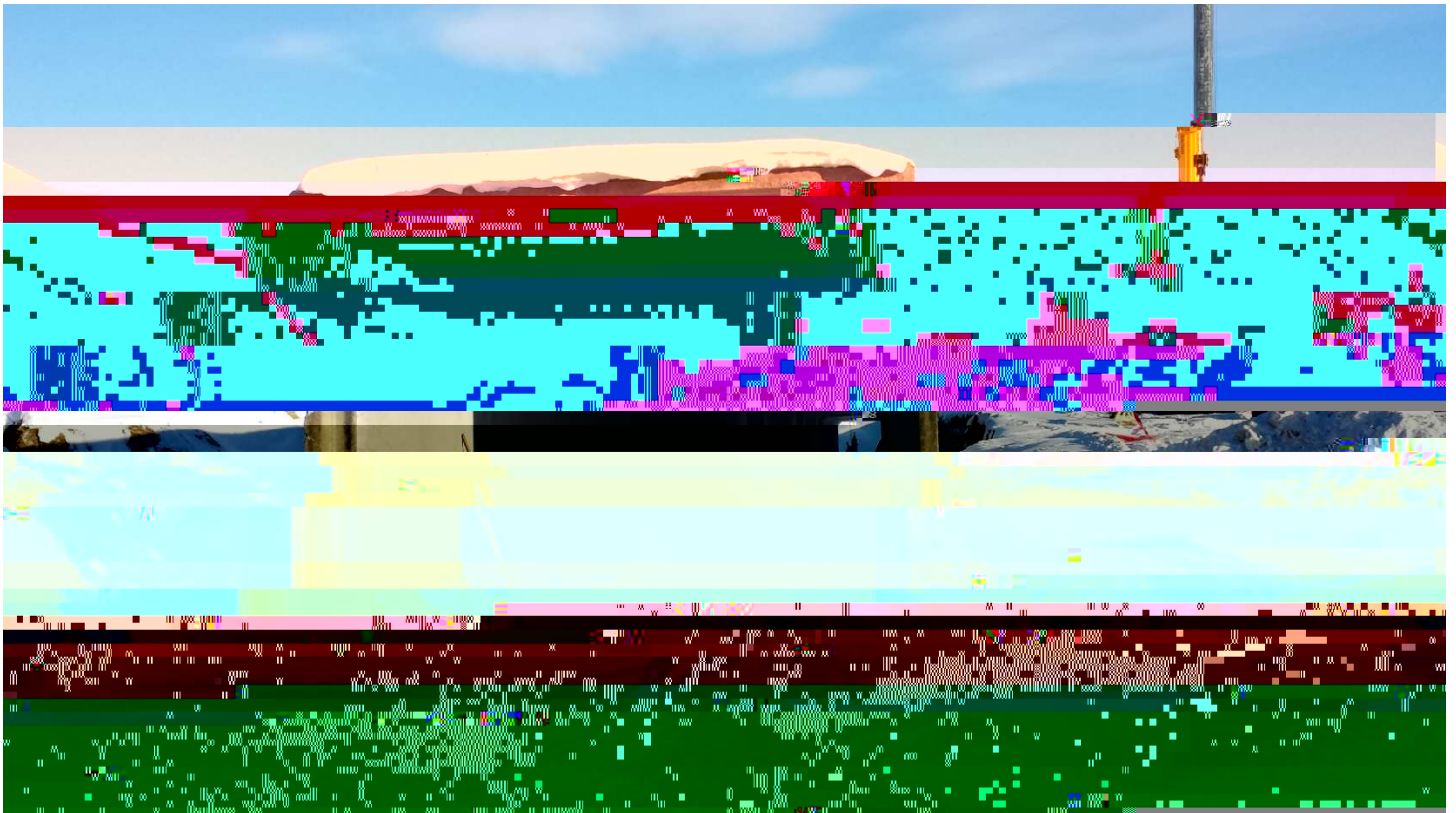




Figure 1: Previous CSP culvert

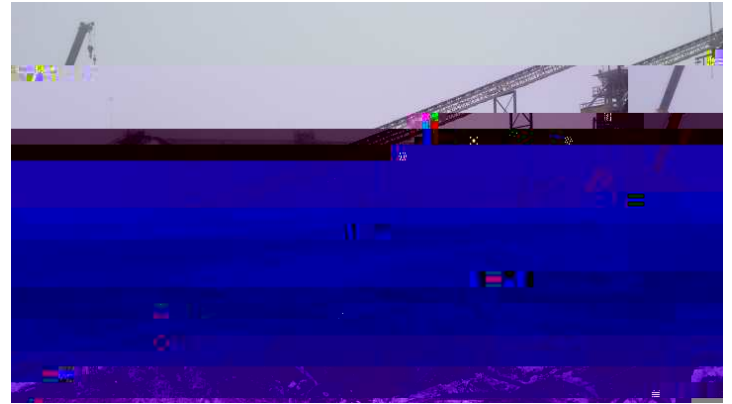


Figure 2: Wash plant conveyor

Both tunnels contained three evenly spaced steel bunkers; each of these bunkers house a mechanical hopper to enable aggregate to be conveyed at intermediate points along the tunnel. The bunkers have steel studs welded to the joints to mechanically bind to a grouted connection with the concrete box sections.

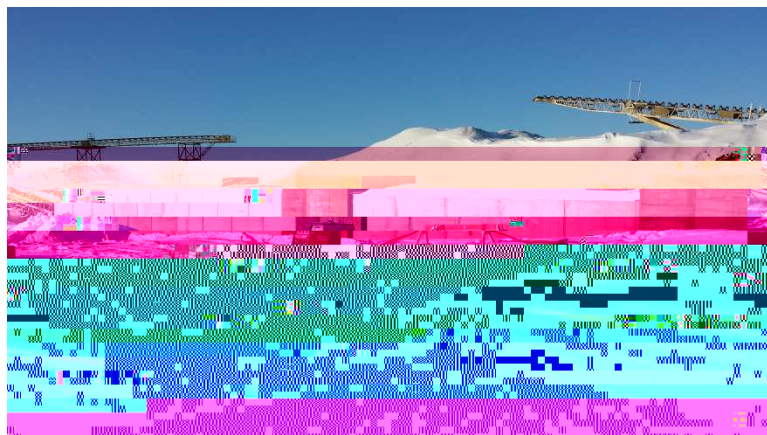


Figure 5: Tunnel with steel bunkers installed.

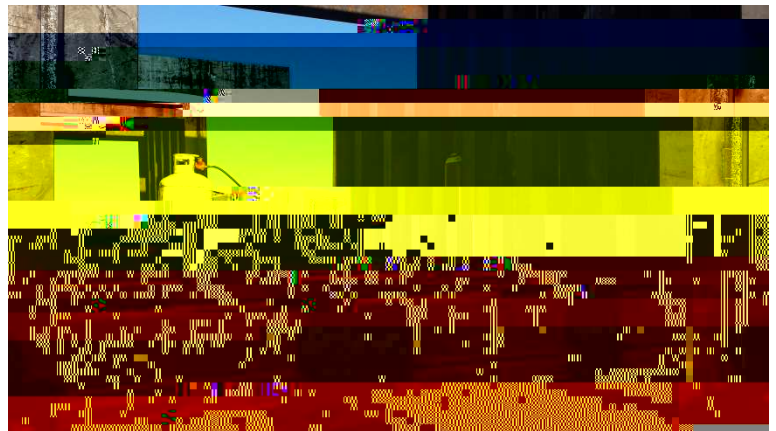
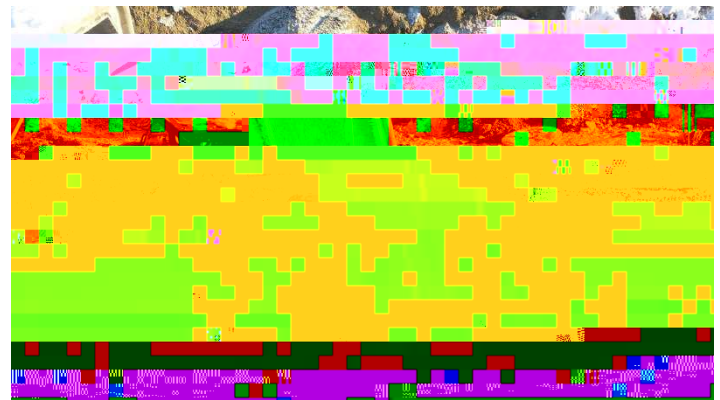


Figure 6: Welded studs to bind with concrete box sections.

Installation was conducted by JDB Venture Ltd over the month of November, 2014. During this time in Northern Alberta, temperatures dropped below minus 30 degrees Celsius. This added a great level of difficulty to curing the joints, welding the bunkers, and achieving an optimal final grade. Under these extreme environmental conditions, use of pre-cast concrete was the only viable option compared to a cast-in-place option or the use of any other material.



Figure 7: A site w07(A)2.685389re hrio5: e sste l sids i





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