



**When a major Oil and Gas producer wanted to develop a facility over an unstable subgrade, Contain Enviro Services Ltd provided the design solution to deal with the high degree of settlement experienced on the site.**

This site was developed during the winter months when the subgrade was frozen, highly stable and more easily accessible. While it was well known that the subgrade had a high moisture content, it was difficult to accurately determine the amount of settlement that the area might experience once the spring thaw arrived and the weight of the earthen pad began to squeeze the water out of the subgrade, causing the entire area to sink downwards.

Several piles had been installed on the site creating concern that once the ground began to move downwards, the attachment point between the geomembrane liner and the stationary piles would be put under tension potentially stretching and tearing the geomembrane. Traditional pipe boots simply provide a transition between the liner and the pile, when settlement occurs; the amount of downward movement allowed by the geomembrane is dependant on the material properties of the geomembrane selected, which in many cases is very low.

Contain Enviro Services Ltd suggested the use of Settlement Detection pipe boots for this facility to compensate for the anticipated settlement. A total of 28 Settlement Detection pipe boots were installed in the facility and, as expected, once the spring thaw arrived the site began to settle dramatically. The site was routinely monitored by the facility owner during the spring and summer months to ensure that none of the Settlement Detection pipe boots were allowed to stretch beyond their design limitations.



## Project Profile: Settlement Detection (SD) Pipe Boots

Once the subgrade stabilized and the owner felt that the vast majority of any settlement that the site would experience was over, Contain Enviro's trained installation and maintenance crews returned to site to quickly adjust and reband the Settlement Detection pipe boots at their new elevation. In some areas over 14 inches of settlement was experienced, with all the Settlement Detection pipe boots unique corrugated design performing exactly as per plan.



While the site had experienced greater than expected settlement, the use of Contain Enviro Services' Settlement Detection pipe boots ensured complete site containment and a greater peace of mind for our customer. The owner agreed that had inferior pipe boots been utilized in this location, there was a very high probability that the geomembrane liner would have failed and site containment would have been compromised. In addition, it was a fairly easy task for our crews to adjust the Settlement Detection pipe boots, compared to the costly and difficult geomembrane liner repair and testing that would have been otherwise been required.

Our customer now insists that all their new sites utilize Settlement Detection pipe boots to provide them with a greater level of assurance at no greater cost. Settlement Detection pipe boots are manufactured By Contain Enviro and incorporate a patented design that requires no more material or labor to produce or install. They are simply an improvement over standard pipe boot designs and available exclusively from Contain Enviro Services Ltd.

Contain Enviro Services Ltd. is the leader in the supply and installation of corrugated steel containment systems for use as primary or secondary containment in a wide variety of challenging applications, and can provide you with the design support to deal with your most demanding application.

**For More Information, Please Visit Our Website [www.contain.ca](http://www.contain.ca)**