

## **Designing Durability into Steel Sheet Piling Structures**

The Durability of steel has changed significantly over the last 50 years largely due to new methods of steel making and subsequent changes in metallurgical structure. Modern manufacturing processes no longer produce to specific chemical composition but combine grain refinement and addition of alloys to achieve required mechanical properties. Many of these alloys contain corrosion inhibitors that extend durability to levels that were not attainable in the past. The factors that contribute to corrosion occurring and the rate that it develops will be examined and various steps to control or inhibit corrosion will be outlined. A comparison will be made between the breakdown of steel and concrete over time. An example will be provided showing the various options open to the designer to inhibit or improve steel durability along with their associated costs. Resistivity will be examined as it currently leads the engineer into specifying excessive corrosion protection and the areas of concern highlighted. Recommendations will be given to provide design based durability of driven piling systems.