

DINCEL STRUCTURAL WALLING

ACID SULPHATE SOIL DAMAGES

Acid sulphate soil is the common name given to soils and sediments containing iron sulphites. When exposed to air due to drainage or disturbance, iron sulphites oxidises and produces sulphuric acid, hence the name acid sulphate soils.

DAMAGES TO STRUCTURES

When acid sulphate soils are exposed to air (by drainage, excavation or excessive pumping of groundwater) it causes the ground to heave which results in floor, wall cracking and window/door damaging of the building. Materials of a brittle nature such as masonry (brick/block) will be more susceptible to damages.

If the sulphuric acid from the acid sulphate soil is in contact with buildings, bridges, water pipes and flood gates it will destroy concrete and corrode steel, iron and certain aluminium alloys.

Dincel Construction System is tested against 98% of sulphuric acid concentration and no effect on Dincel is reported.

Dincel-Walls being ductile and non-brittle will not crack under the heaving soil condition. In fact the non-cracking and monolithic Dincel-Walls can stiffen the floors of buildings infinitely to eliminate cracking due to ground heave.

DAMAGES TO WATER QUALITY, AGRICULTURAL LAND AND AQUATIC LIFE

The increased level of sulphuric acid may also dissolve and other heavy metal or minerals that are available in nature, reduces the PH level in the land and water. The combined effects of acid sulphate soils influences humans and animals ill health caused by polluted water, decreased productivity of agricultural land, cropping, grazing and dairying. Fishing, oyster growing, aquatic life and hence tourism, can suffer because of water pollution.

The recommended solutions to combat the problem include:

1. Use liming to neutralise sulphuric acid – too expensive for large areas.
2. Re-flooding the affected areas – a significant amount of water is required which is not practical for large areas.
3. Planting trees will grow in acid sulphate soils.
4. Shallow drainage channels – allows surface water to drain quickly from the surface of low lying land without exposing the iron sulphide layer beneath the soil. This does not work if the topography is flat, loss of water quantity due to evaporation and ground soakage will be significant.

The solution is deep narrow drains to provide fall to the drains and avoid water evaporation. The deep and narrow drains made out of Dincel would prevent the sulphuric acid leaking into the waterways. In coastal river beds, Dincel can be embedded into the ground for the total elimination of sulphuric acid leaking into the waterways and aquatic life.