

Protection of Concrete in Harsh Saltwater Environments

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Overview

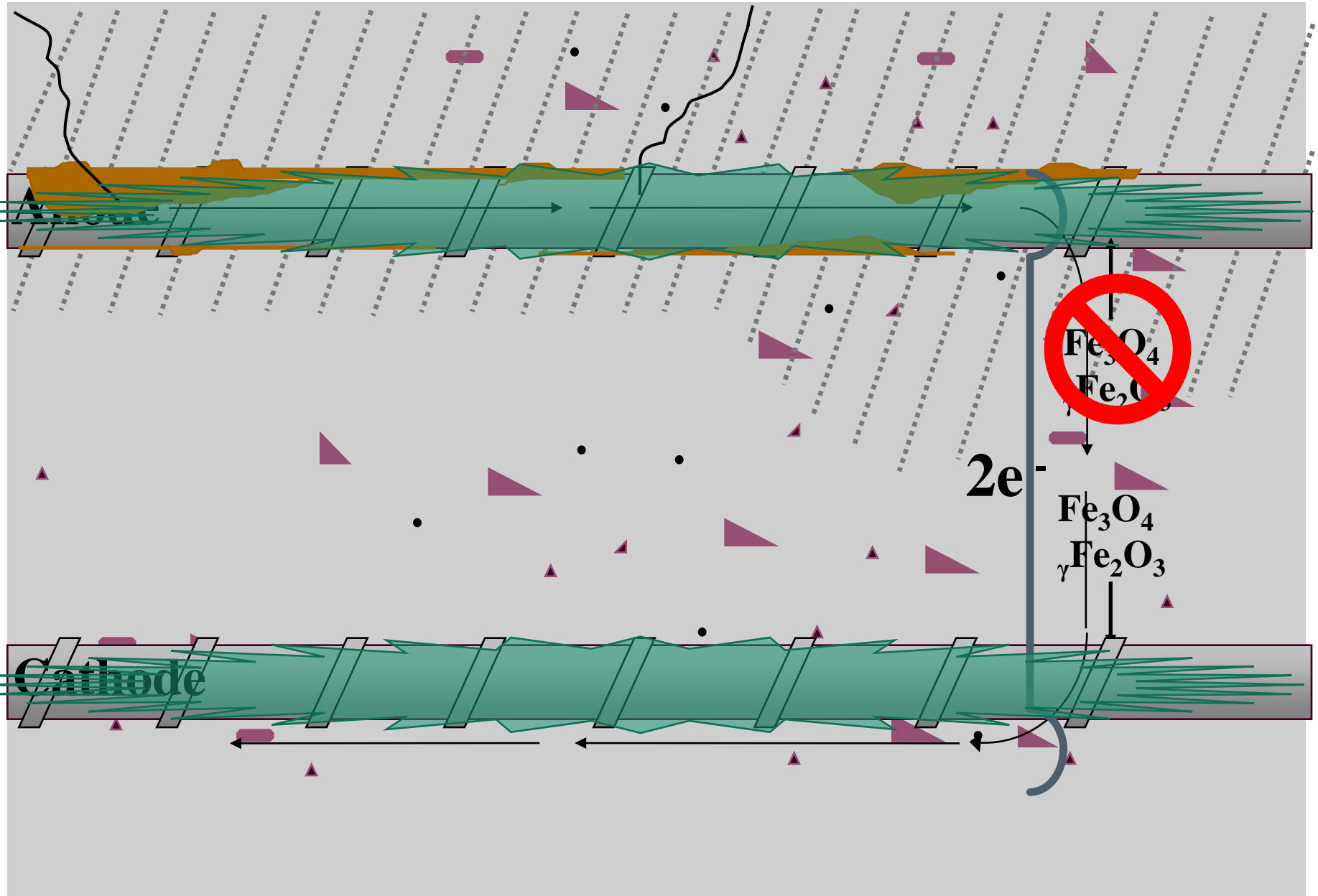
- Corrosion of Reinforced Concrete Substructures
- Different Elements of the Substructure
- Various Cathodic Protection Systems For Substructures

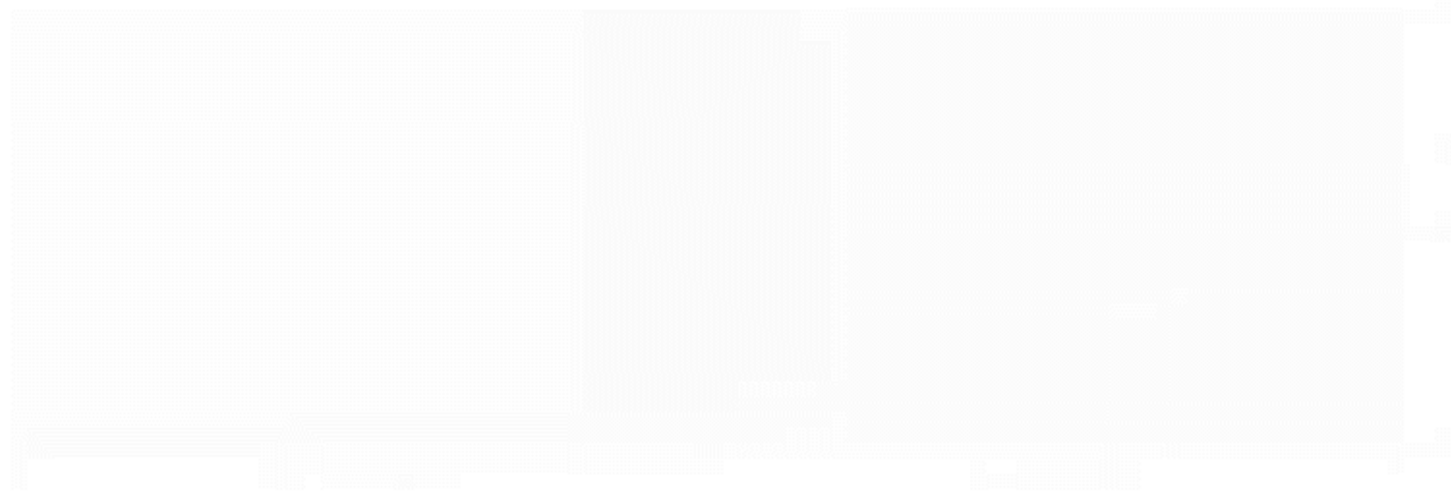


What Is A Corrosion Cell Reinforced Concrete



Corrosion Cell in Concrete

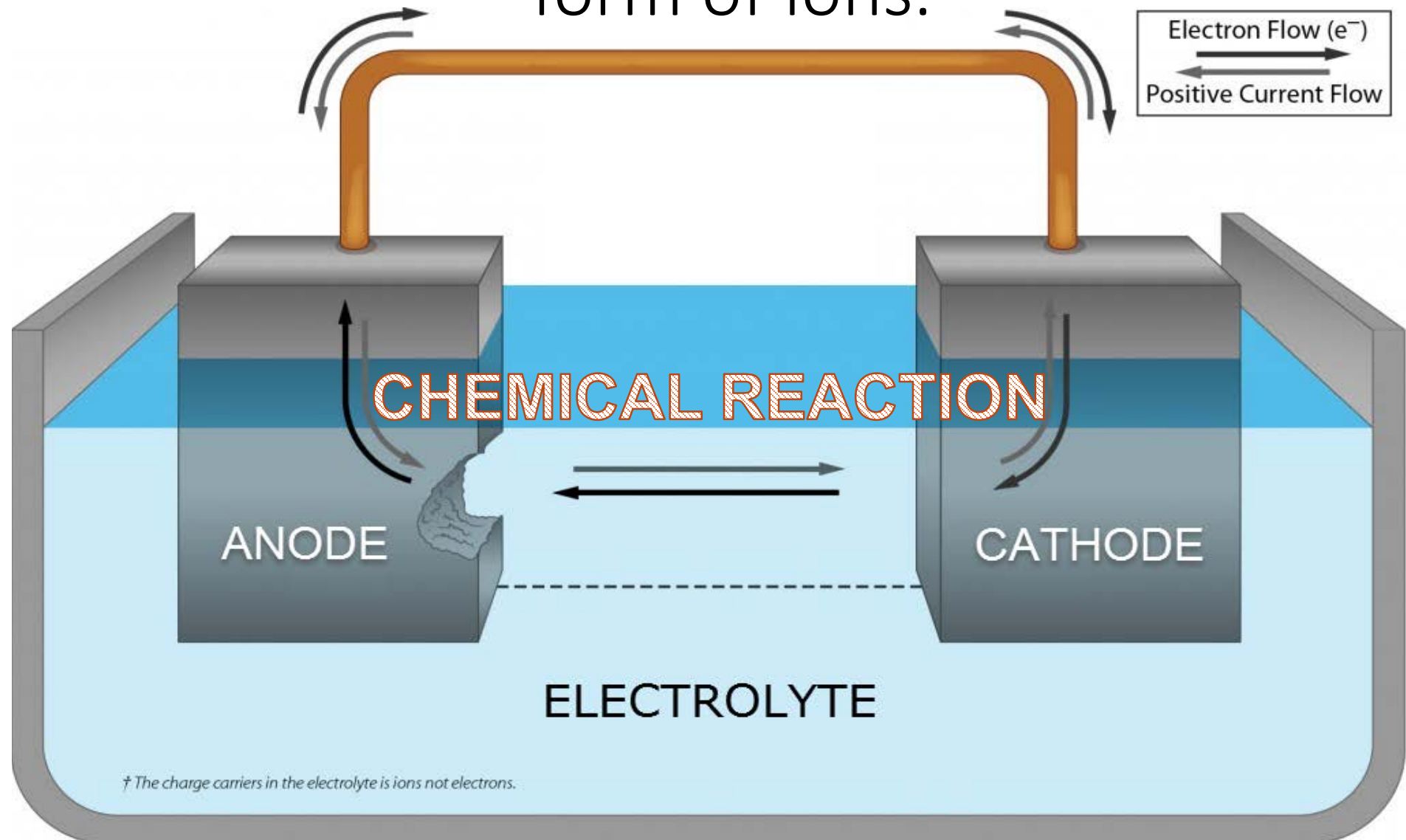




What Is An Electrolyte

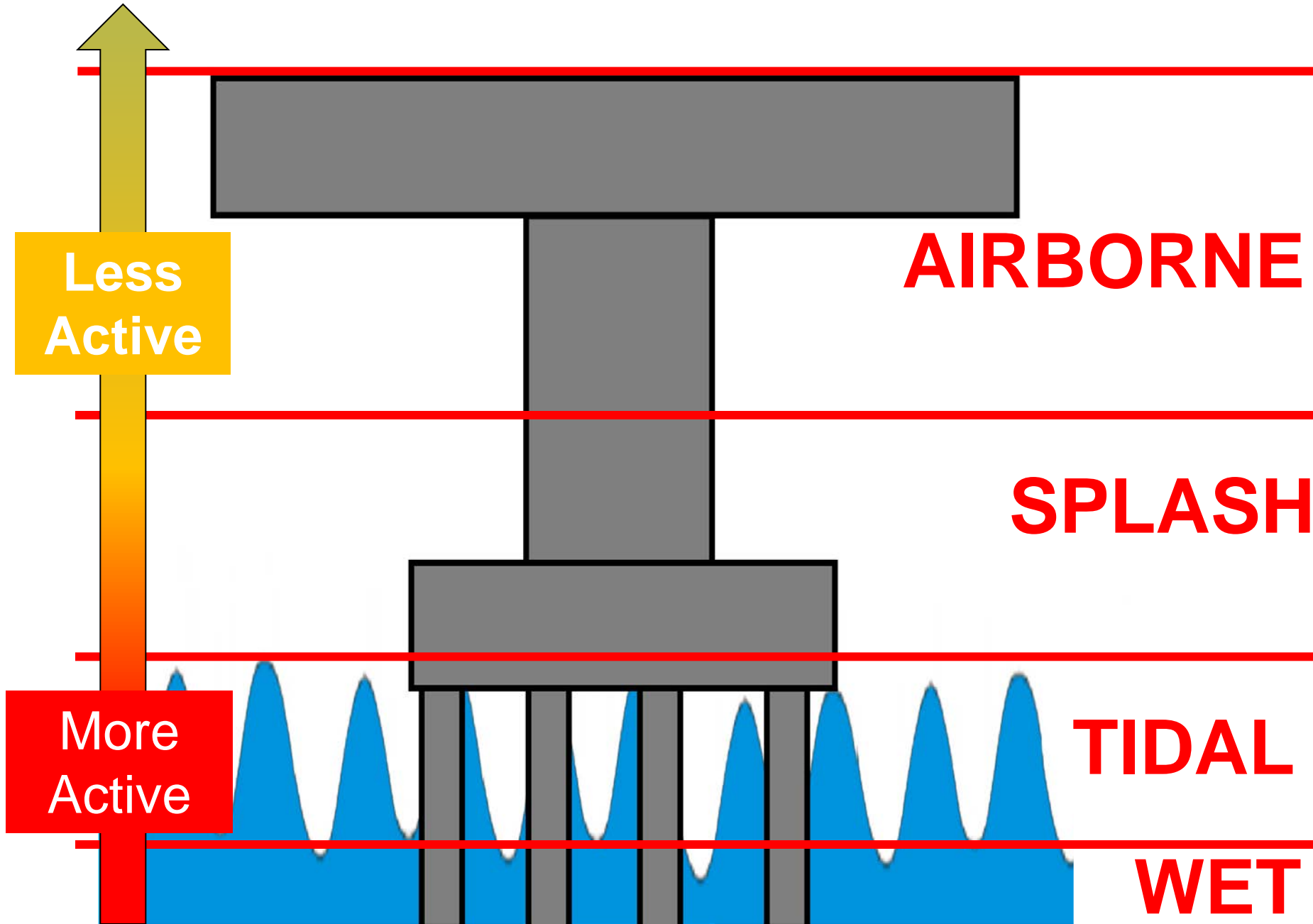


Conducting medium in which the flow of current with the movement of matter in the form of ions.

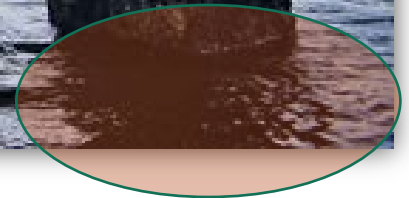
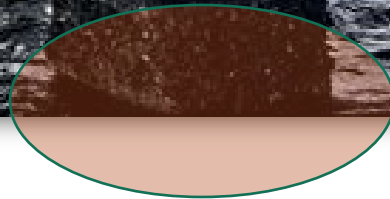


† The charge carriers in the electrolyte is ions not electrons.

Substructure 4 Environments



Protection For "Wet" Zones Piles Below Water



Protection For "Wet" Zones

- Submerged Area
- Chlorides
- Lower Levels Oxygen



Protection For "Wet" Zones

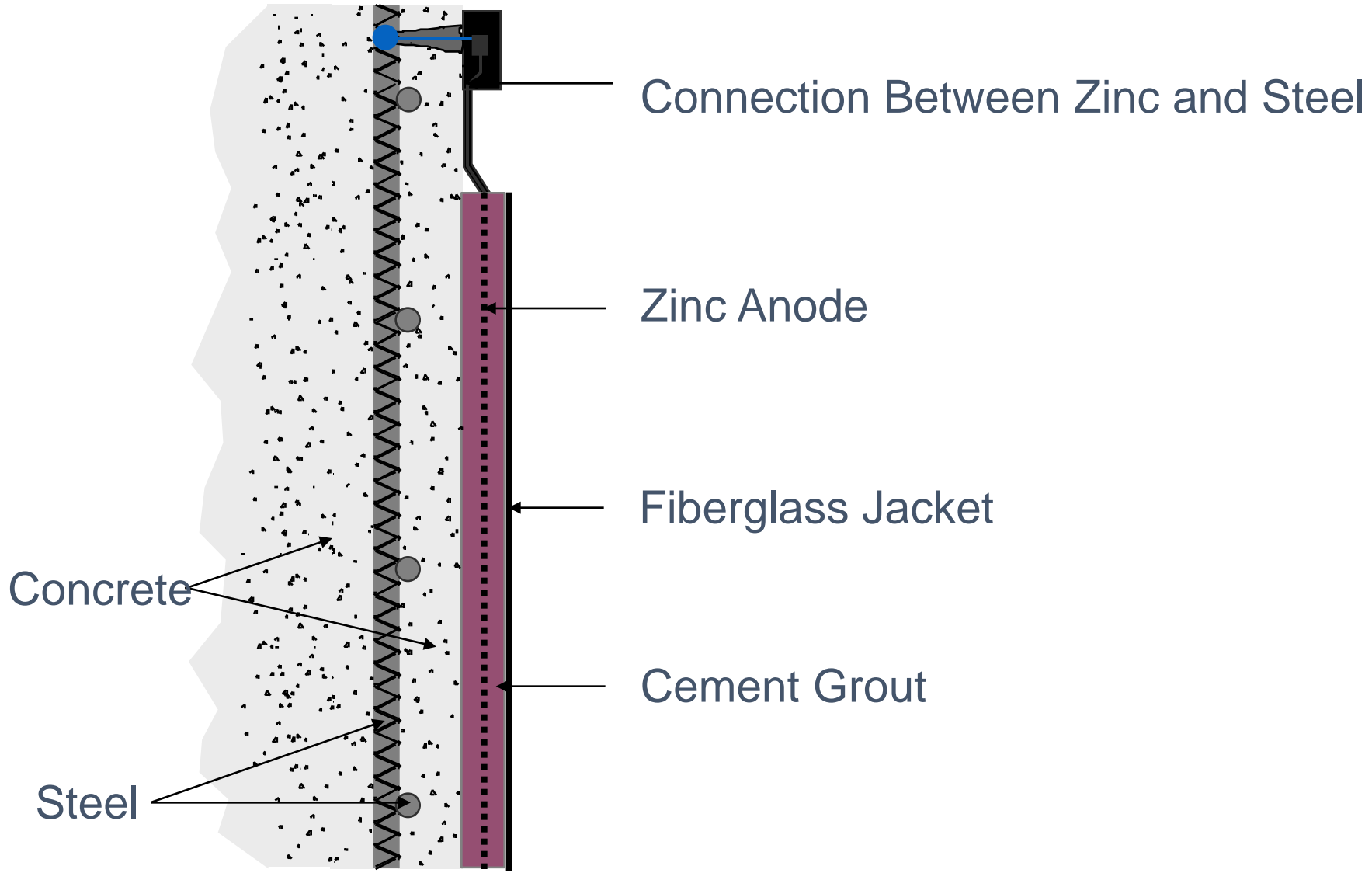


Protection For “Tidal” Zones

- Tidal Fluctuation
- Wet / Dry
- Lots of Oxygen
- Moisture
- Chlorides



Galvanic Jacket Pile Protection



Galvanic Jacket Pile Protection Bare Zinc Anode



Zinc is Sea Water Activate

Galvanic Jacket Pile Protection



Galvanic Jacket Pile Protection



Galvanic Jacket Pile Protection



Protection For “Splash” Zones

- Intermittently Wet
- Oxygen
- Moisture
- Chlorides



Protection For “Splash” Zones

- Self Activate
- Salt Water Not Required
- Brackish Water
- Strip Anodes / Pannel Systems
- Customizable



Protection For “Splash” Zones



Protection For “Splash” Zones



Protection For “Splash” Zones



Protection For “Splash” Zones





Protection For “Splash” Zones



Protection For “Splash” Zones



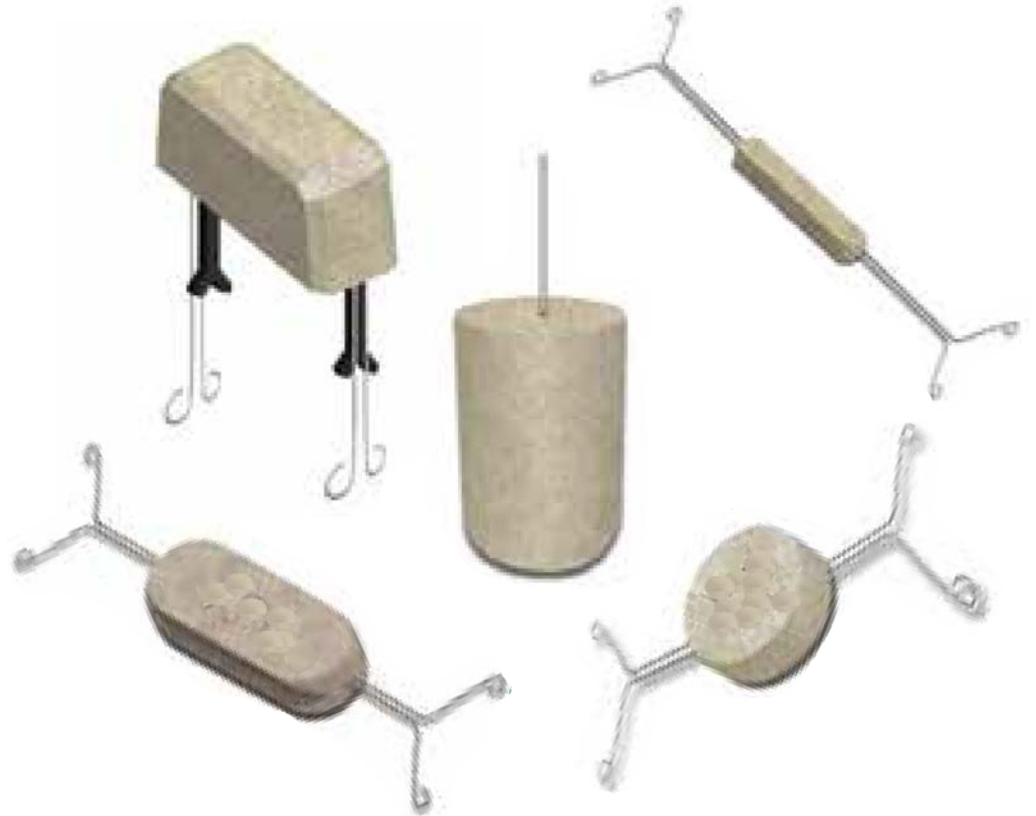
Protection For “Airborne” Zones

- Airborne Chlorides
- Outside the “Wet” Zone



Airborne Environment Discrete Anodes

- Sacrificial Discrete
- Installed in Patch
- Localized Protection



Airborne Zone - Discrete Anodes



Airborne Zone Metalizing Spray

- Surface Applied
- Molten Zinc
- No Power Source
- Localized or Global



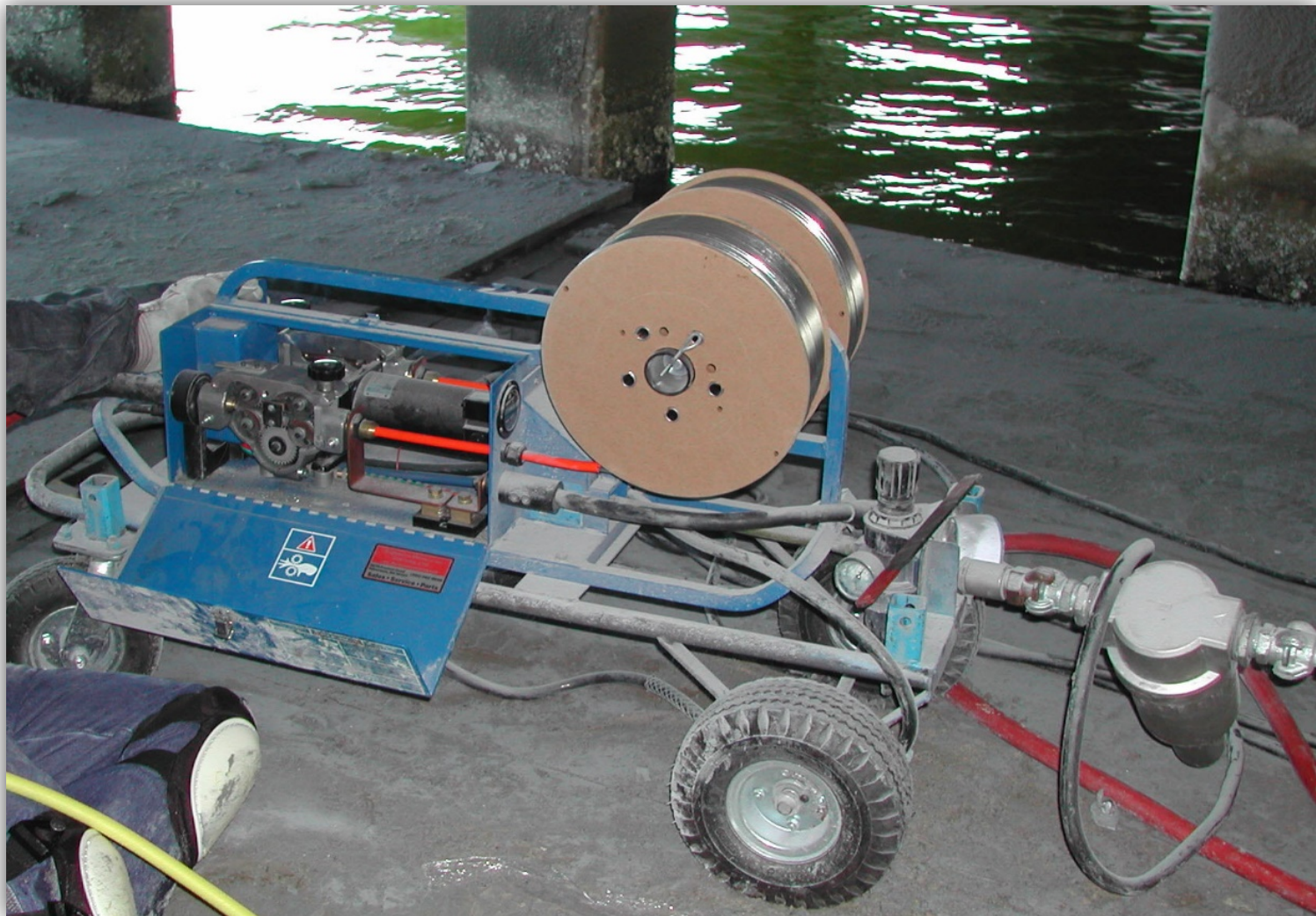
Airborne Zone - Discrete Anodes



Airborne Zone - Discrete Anodes



Metalizing Equipment



Metalizing – Airborne Environment



Summary

- Galvanic or Impressed Current Systems
- Various Zones On Structure
- Various CP Systems
- Global or Local Protection



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QUESTIONS

Thank You

Jason Chodachek

