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Pathologies on ferroconcrete constructions in marine environments – Vitoria Island

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According to Brazilian Institute of Geography and Statistics (IBGE), majority of Brazilian population reside in the coastal zone. This phenomenon descends from a historical tendency, due European colonization initiated around ports and another prone area of landing for Portuguese vessels. Consequently, now a days six of each ten Brazilians live in a maximum of sixty kilometers from sea coast. The agglomeration of people leads to big economical investments, so the urban, economical and culture centers are located seaside, and are subjected to marine atmosphere. It means that, every day, all those constructions are exposed to salt spray, what makes the coastline a hostile environment to ferroconcrete and steel constructions. According to a worldwide panorama, the need of longer lasting and quick construction buildings enlarged the use of ferroconcrete structures seaside since the 20th century, when they were used only as auxiliary elements for wooden construction. To reduce repair costs, demolitions and new buildings, it is relevant to study aggressions and pathologies on ferroconcrete structures, main Brazilian building system, to develop most resistant, last longer and higher cost-benefit constructions. The problematic that embraces marine environments are the pathologies generated by the chemical aggressive conditions and, on this basis, ferroconcrete constructions on Vitoria island, located in Brazilian southwest region, were analyzed to quantify and classify the damage caused by the salt spray. The main processes observed were identified, and its causes were researched. The pointed causes were deeply studied, and damages were mapped. Therefore, it was concluded that the damage prevention on seaside ferroconcrete structures depends not only of the quality of the material used, but also of the construction geometry. Those elements must be combined to obtain heavy-duty and safe buildings.