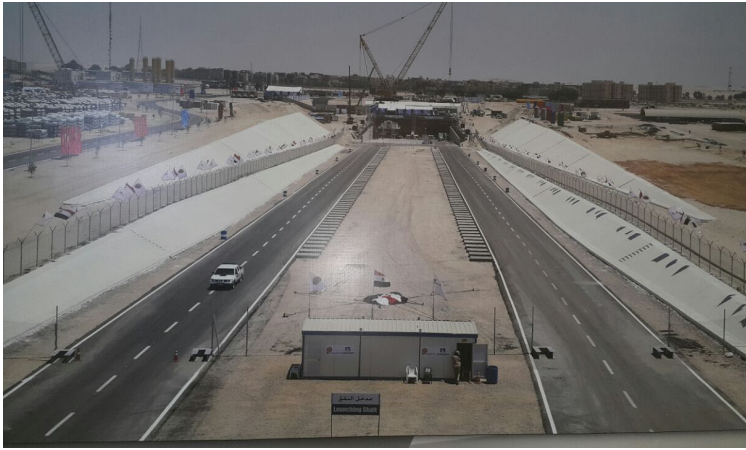




**Tunnels Under Suez Canal, Ismailia, Egypt**  
**EPDM membrane works**

**Project Name:** Tunnels Under Suez Canal  
**Scope:** EPDM membrane works for raft  
**City:** Ismailia  
**Country:** Egypt  
**Main Contractor:** Consortium Petrojet - Concord  
**Applicator:** Sodeco Specialties S.A.E  
**Period:** 2015 – 2018  
**Owner:** Ministry of Defense  
**Consultant:** Arcadis



❖ **Protection Material**

- Non-woven polypropylene geotextile layer & polyethylene sheets are protection felt used to protect the EPDM geomembrane from damage during the following works.

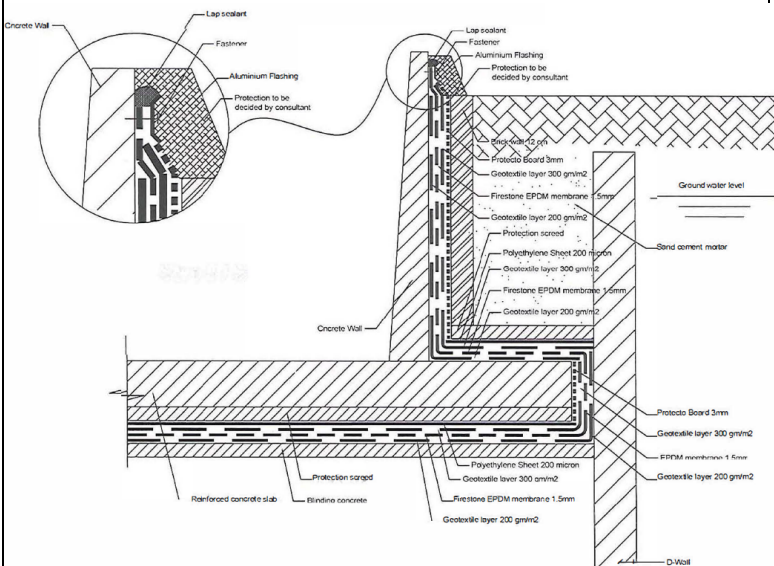
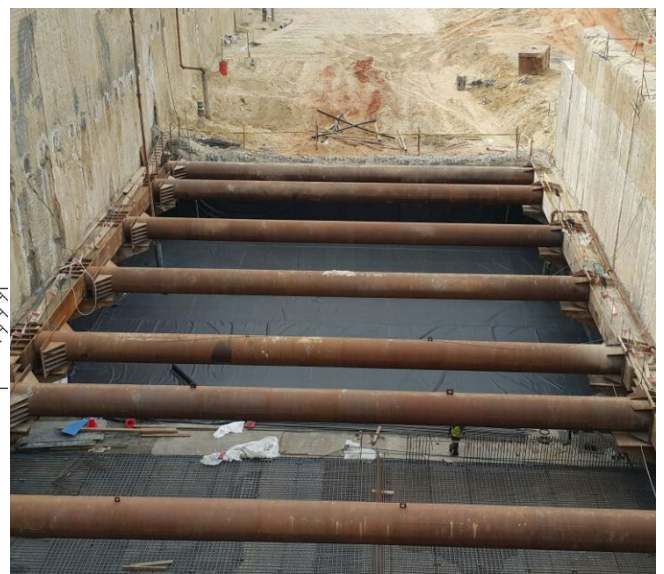
❖ **Firestone EPDM membrane**

- Used for horizontal & vertical concrete surface.
- Firestone System is composed of large EPDM panels, adhesive mastics, sealants, cleaning agents, fasteners, and a variety of other roofing related products constituting a single source homogeneous system.

**Technical Information**

**Products Used:** EPDM membrane  
 Geotextile + Polyethylene for  
 Protection

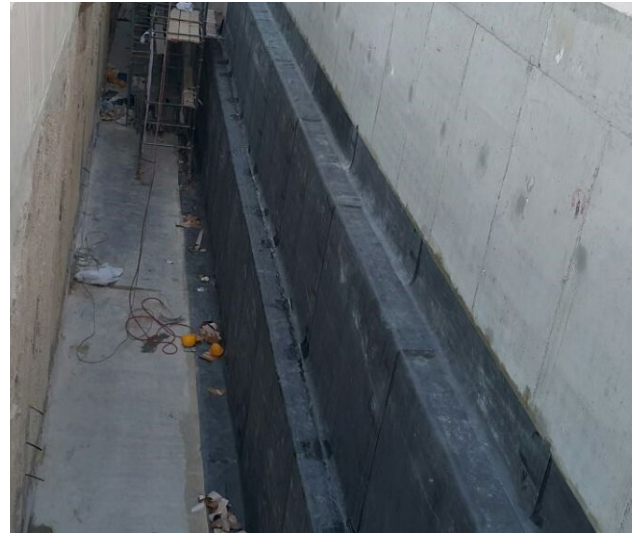
**Areas Treated:** 44,000m<sup>2</sup>



- **Method of statement:**

- **Raft:**

- The blinding concrete and the up stands (Dwalls or Concrete walls) must be leveled, clean, and dry, free of debris, water, and suitably prepared by removing all defects that might affect the quality of the application.
- Install 1 layer of Geotextille loose laid on the horizontal area and up to 50 cm height above raft top surface on the up stands (D.Wall).
- Install 1 layer of “Firestone RubberGard EPDM Membrane” 1.5 mm thick to be installed on the horizontal area and up to 60 cm height above raft top surface on the up stands to be temporary fixed with “Bonding Adhesive.”
- Install another protection layer of Geotextille using loose laid on the horizontal area and vertically to cover the EPDM membrane.
- Install 1 layer of polyethylene sheet above the Geotextille for the horizontal area.
- Install a protection board for the vertical areas in order to protect membrane during raft concrete casting and steel erection.
- Install a protection concrete layer for the horizontal area.
- Casting the reinforced concrete raft.



- **Retaining Walls:**

- Install 1 layer of Geotextille using loose laid on the horizontal area and vertically up to 50 cm above ground level.
- Install 1 layer of “Firestone RubberGard EPDM Membrane” 1.5 mm thick on the Reinforced Concrete Wall to be overlapped with the extra free part from (step 1) and vertically up to 50 cm above ground level.
- Install protection layer of Geotextille, loose laid on the Reinforced Concrete Wall, to be partially fixed from the top to the EPDM by glue.
- Install 1 layer of polyethylene sheet above the protection layer for the vertical area loose laid on the Reinforced Concrete Wall, to be partially fixed from the top to the Geotextille by glue.
- Apply Brick wall to protect the waterproofing layers from any probable debris.
- Fixed the end of the EPDM Membrane by Aluminum flashing pressed over "water – block sealant" and pointed with "lap sealant HS".
- Protection to be applied for the end of the EPDM membrane system.

