f. Water stops shall have the physical properties given in Table 11-1 below.

Table 11-1- Water stops Physical Properties

Property	Test Method	Minimum Requirements
Tensile strength	ASTM D638	12N/mm^2
Ultimate elongation	ASTM D638	250%
Tear resistance	ASTM D624	50KN/m
Stiffness in flexure	ASTM D747	4N/mm^2
Hardness, shore A/15	ASTM D2240	70 to 80

4. Base slab expansion/movement joints shall incorporate external waterstops at least 230mm wide with a 25mm wide centre bulb which shall be flat to accept joint filler.
5. Base slab construction and contraction joints shall incorporate external waterstops at least 230 mm wide.
6. Wall and roof expansion/movement joints shall incorporate internal waterstops at least 230mm wide with four ribs, a centre bulb to accommodate movement with a web thickness of 10mm.
7. Wall and roof construction and contraction joints shall incorporate internal waterstops at least 230mm wide.

11.2.3 Injection Hose Water stop System

1. Injection hose shall be a flexible polyvinyl chloride compound with at least 3 continuous rows of release holes suitable for resin injection.
2. Resin used for injection shall be a water swelling vinylester suitable for use in saline ground water conditions.

11.2.4 Self Swelling Water bars

1. Self-swelling water bars shall be polymer based, be reactive with saline ground water (for which a typical analysis for Abu Dhabi is given in Division 1) and non-saline ground water and have the physical properties given in Table 11-2 below.

Table 11-2:– Self Swelling Water bars Physical Properties

Property	Test Method	Minimum Requirements
Elongation	ASTM D638	200%
Water migration at or through joint	-	None
Expansion in saline and non- saline ground water	-	20%

11.2.5 Joint Filler

1. Unless otherwise shown on the drawings joint filler shall be a proprietary type and shall be a firm, preformed compressible cellular, single thickness, non-rotting filler to ASTM D1751. For joints in water retaining structures and watertight structures the filler shall be non-absorbent.