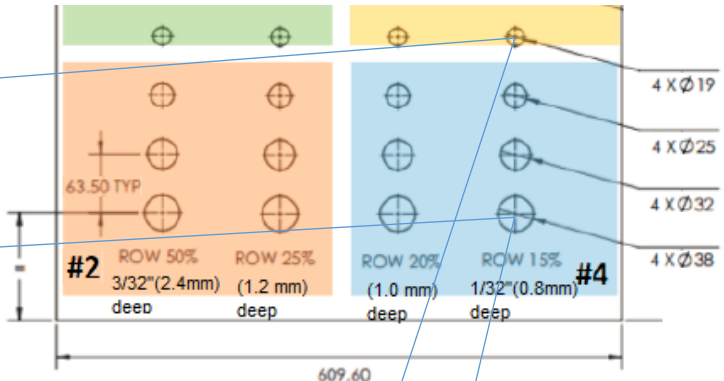
Case Study: Non-Destructive Testing (NDT) of steel slab corrosion under bituminous underlay and vinyl tiles

Key words: Infrared Thermography, Steel Slab Corrosion Detection, bituminous underlay, Vinyl Tiles, Seamless Non-Skid Layer, Ceramic Tiles, One-Sided Inspection, Linescan (C Scan), Long Band Inspection, Band Stitching, Annual Inspection Monitoring, NDT NDE, Navy

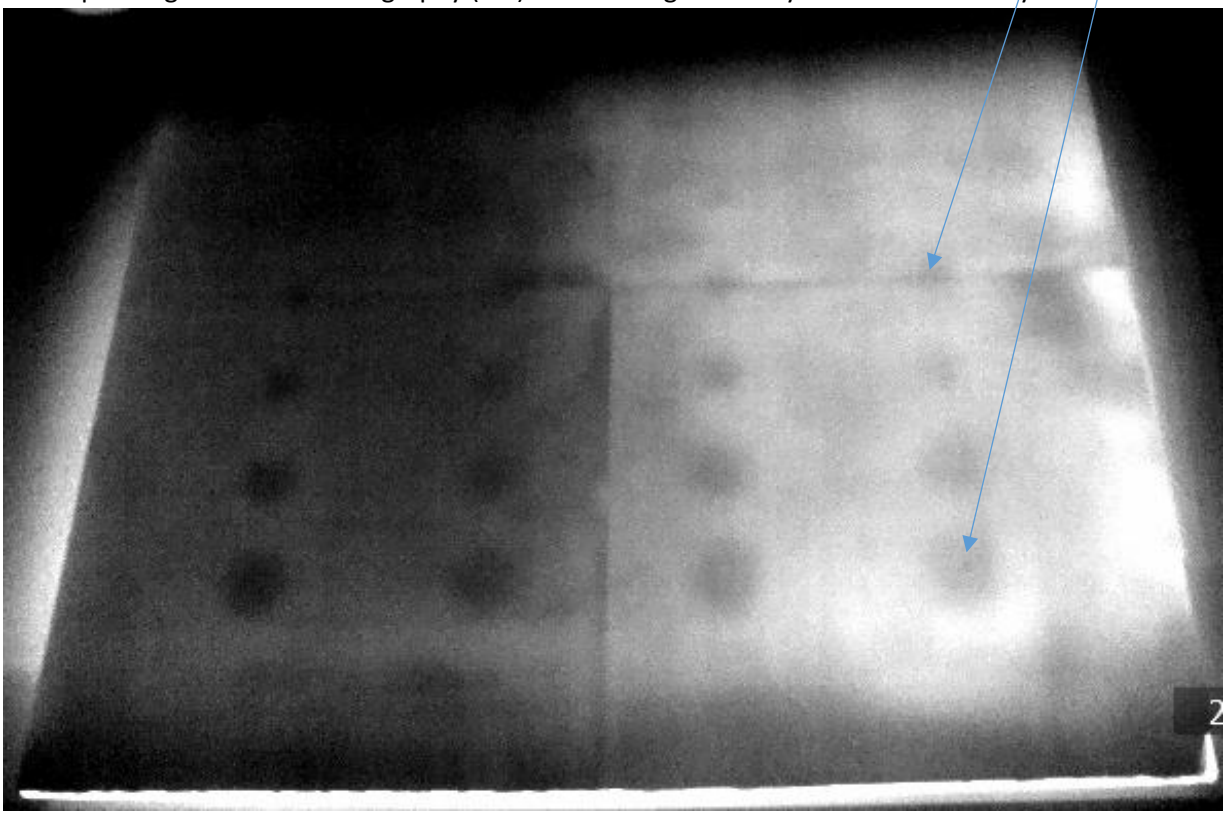
Example 1 : Steel Slab Inspection from the Vinyl Tiles side. The inspection targets flat bottom holes that simulate the reduction of steel due to corrosion **between** the underlay and the steel slab. These holes have varying internal diameters, ranging from 1.5'' (38mm) down to 3/4'' (19mm). The thickness of the steel removed to simulate corrosion ranges from 3/32'' (2.4mm), representing 50% corrosion, down to 1/32'' (0.8mm), indicating 15% corrosion of the original 3/16'' (4.8mm) thick steel slab. The overall thickness of the bituminous underlay and vinyl tiles varies between 3/8'' (9.5mm) and 5/8'' (15.9mm):

Side view: steel, underlay, vinyl tiles slab

Top view CAD showing the FBH in the steel :



Corresponding Infrared Thermography (IRT) View through the Vinyl Tiles and Underlay:



Example 2: real case of corrosion detected on a 3/16'' (4.8mm) thick steel slab. The corrosion was observed through approximately 1/2" (12.7mm) of bituminous underlay and vinyl tiles:

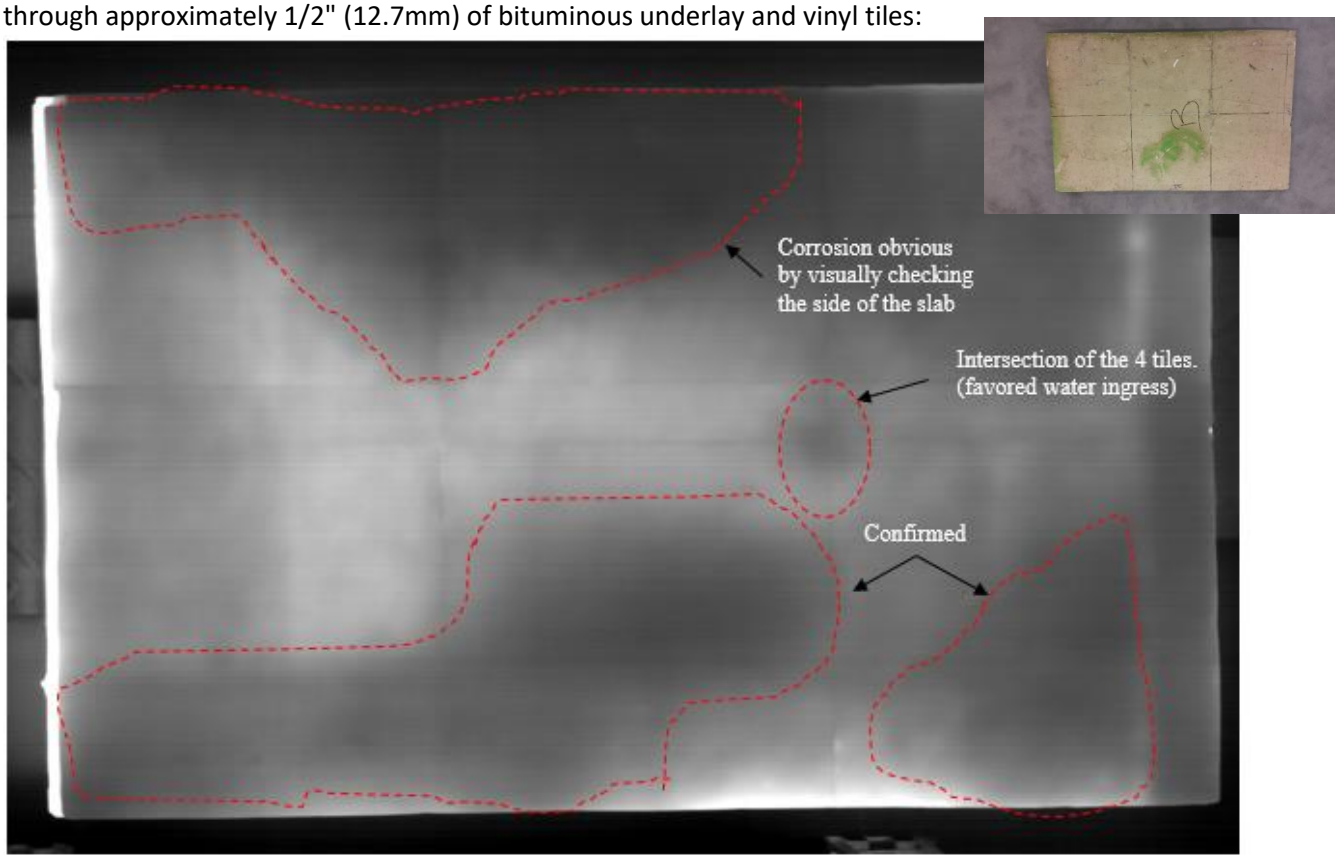


Image with improved contrast below, the black areas indicate loss of steel material or corrosion: