



CASE STUDY

Project name:	RAF Northolt Paving Trial
Client:	The Royal Airforce
Contractor:	Tolly Paving / ACM Pavseel / QSS UK
Site:	Main aircraft apron - RAF Northolt West London
Project:	63,000m ² area. Supply, lay and seal 80m ² of interlocking concrete block paving/joint material to MOD Spec 035
Product/s used:	QSet (ACM Pavseel)
Date/s:	Original area 1994 Trial area 2004



Background:

RAF Northolt is at the vanguard of our air force infrastructure. Military projects are regularly centred around the facility and in addition it provides air transportation to the Royal Family and other political and military dignitaries on a regular basis.

A very active facility and its performance is seen as highly important in all respects. The world regularly looks in on Northholt.



History:

In 1994 63,000m² of main apron was treated in 1994 with ACM Pavseel. This formulation was developed and created by John Emery, at that time a highly renowned engineer and paving consultant. The predicted 5 year life material was designed specifically to stabilise the jointing material employed in block paving so as to fully comply with MOD FOD safety and resistance to Aircraft related liquid penetration requirements.

In 2004 some 10 years later John Emery designed a revolutionary interlocking block system and it was agreed that an 80m² area was to be converted to this new system so as to determine benefits and performance levels in service.

In September 04 the revised paving was laid by Tolly Paving. QSS applied the final joint sand and then treated the area with QSET (ACM Pavseel).

The timing and the trial was seen as highly appropriate as initial signs of surface deterioration and localised sinkage were beginning to appear. The joint deterioration was expected as it had been in service for over 10 years.

Whilst on site in 2004 QSS tested the effectiveness of the 10-year old joint stabilisation material and found it to be showing clear signs of deterioration - unsurprising given the recommended life of the material used being 5 years.

Some 4 years later in October 2008 QSS and John Emery (now a retained technical consultant to QSS) were invited to view the reflective sinkage problems which were now evident across many parts of the facility.



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In addition, the performance of the new interlocking block system laid in 2004 was to be reviewed and compared to the 1994 surface regarding any evidence of surface deterioration. In particular how the combination of the interlocking blocks and its related joint stabilisation was standing up to the reflective failure problem after 4 years of deliberately encouraged tougher than average in service usage.

Results:

The 80m² trial area appeared to be in excellent condition with no evidence of surface failure. This was in direct contrast to the balance of the apron which continues to deteriorate at an ever accelerating rate.

To date minimal, short term repairs have been instituted but the risk of failure grows year by year with potentially alarming consequences.

Lessons to be learned:

- The new block system works and should ideally be employed across the whole facility.
- Despite being advised back in 1994 that the surface was only built to last unmaintained for 5 years no budgetary provision had been made to upgrade and retreat the apron. Instead it had been left largely untouched for 15 years and there is now considerable risk of surface failure.
- A surface inspection programme should always be agreed at the time of the initial project being done so that problems can be dealt with at lowest cost and on a phased basis. The cost of complete surface replacement could now be in excess of £3 million and even a lift, repair and retreat programme would cost over £2m! Clearly a phased approach is required to recover the situation progressively.
- Surfaces must be sold in with future maintenance needs in mind. New surfaces are not maintenance free ,but if managed properly they are a cost effective and long life option.
- These observations need to be recognised in all major, high traffic, safety oriented environments and QSS will continue to raise the profile of such issues.