

# application note



## Application

AECOM's Fire and Risk Engineering team was appointed to carry out damage assessment of the steelwork in Kirkintilloch High School following a fire. An Equotip portable hardness tester was used to test the hardness values of the steel beams. Clearly damaged areas were examined in this way and the test data was validated, by carrying out similar tests on the undamaged areas in the mid-span and also at a distance of 200 mm from the support.

The test results indicated that the residual strength of steel beam retained its original design strength at  $275\text{N/mm}^2$  after the fire incident. The fire damage assessment with the Equotip hardness tester removed the uncertainty about the integrity of the steel. Replacement of the suspicious, fire affected steel beam was unnecessary, which meant that alterations to the structural requirements could be avoided and the construction schedule of the building was unaffected.

## Customer Quote

The Equotip is an invaluable tool that helps us to check a structure after a fire. Its portability makes these test possible. Other hardness testers could not deliver that.

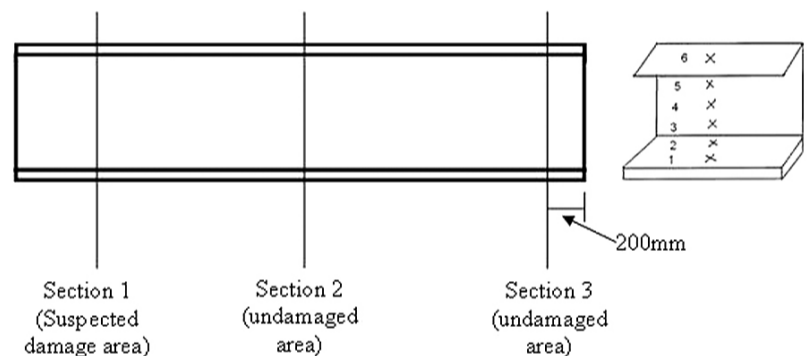
*Dr David Chan, Fire Engineer at AECOM  
- Proceq customer since 2009.*

## Steel Hardness Testing

# Fire Damage Assessment

## How does Proceq's Equotip help assess the structural safety of buildings after a fire?

On many occasions, a fire affected steel structure shows little or no distortion. This leads to much uncertainty about the integrity of the steel. This is particularly true in the situation when some parts of the structure exhibit little or no damage alongside areas with clearly visible damage and distortion. The most suitable approach to examine the strength of an existing steel structure is to obtain hardness values using a portable hardness tester. The Leeb hardness test can be used to examine the residual strength of structural steel after a fire incident without causing further damage.



## Profile

### Customer

AECOM is a global provider of professional technical and management support services to a broad range of markets, incl. transportation, environmental, energy, water and government. A Fortune 500 company, AECOM serves clients in more than 100 countries and had revenue of \$6.1 billion during 2009.

### Employees

Approximately 45,000 around the world.

### Requirements

- A hardness testing instrument for on-site measurements of a fire damaged steel structure
- Non destructive test.
- Ease of handling and portability.

### Proceq Product

Equotip with impact device D

### Benefits to the Customer

- Major savings if the building must not be torn down.
- Efficient assessment method.

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