Structural fire engineering: investigation of gurun fire test (UTM, Perwaja Steel, Malaysian Structural Steel Association)

Synopsis:

This handbook describes a full–scale fire test conducted on a 36m × 12m four-storey steel–framed school building on the premise of Perwaja Steel Sdn. Bhd., Gurun, Kedah in May 8, 2001. No fire protection was applied on the structural steel. The primary objective of the fire test was to study the behaviour of structural steel in real fire.

During the fire, even though the room temperature in the fire compartment measuring 15m × 9m reached more than 900°C, the steel temperature barely reached 700°C. Despite the elevated room temperature, the steel structure maintained its stability and integrity due to restraining effect of unheated steel members.

The test demonstrated the inherent fire resistance of unprotected hot–rolled steel framed building to justify the use of unprotected steel. Many fire engineers have agreed to include performance based concept in the construction industry as it has significant effect in reducing cost.

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