

A raging fire, now suspected to be the result of an act or arson, led to the most used bridge in Atlanta collapsing on Thursday, March 31, 2017. The fire erupted in a storage area beneath the I-85 Bridge where a variety of construction equipment was being held. The ensuing collapsed bridge then severed a highway that carries up to 250,000 vehicles in a single day. The damage that ensued from the flames acts as a reminder of just how damaging intense heat can be to structures made of concrete and steel!

According to Andy Herrmann who had in the past served as the president of the American Society of Civil Engineers, this damage to the concrete and steel greatly affects the strength of the structure and can lead to unexpected structural breakdowns.

At 500 degrees, concrete cracks. At 1000 degrees it begins to turn purplish grey and suffer severe cracking and at 2,500 it will begin to melt.

Not only can intense fire cause serious damage to the concrete that makes up the road deck and support piers, it also affects the steel that reinforces the concrete! After cooling down following an intense fire, steel reinforcing structures such as beams lose 50 per cent of their strength. Adding concrete weight loaded on top of the steel subsequently leads to failure and collapse.

Even if the bridge doesn't collapse, it is still scarred with crumbling concrete and warped steel reinforcements.

Bridges are given sufficiency ratings and following I-85s last inspection in 2015, this bridge scored an impressive 94.6 out of 100. Even with such a high sufficiency rating, the bridge was no match to the effects of this fire which casts a large shadow of concern on the nearly 56,000 bridges across the United states that are considered to be structurally deficient. If even our best rated bridges cannot stand up to the heat, then how are we allowing so many categorically deficient structures to exist with such inflated risks?

Source:

<https://www.usatoday.com/story/news/2017/03/31/atlanta-bridge-collapse-shows-how-fire-defeats-concrete-steel/99877148/>