

## NISTTech

### AUTOMATED STEEL CONSTRUCTION USING METAL-FILLED-MECHANICAL CONNECTIONS

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#### Abstract

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The new technical idea involves joining of load carrying elements of hot rolled steel sections (flanges and webs) using molten metal to fill a void between load transfer components. Holes, grooves, slots, etc. would be cut in these load transfer components so that the metal filler when cool would provide a mechanical interlock through shear transfer. The molten filler metal would be provided by the exothermic reaction of iron oxide and alumina (filler material) producing molten iron and aluminum oxide precipitate. This process involves no human intervention except the attachment and charging of a crucible. The filler material would be ignited at the end of a daily shift and the crucible removed the next morning leaving a completed joint.

#### Inventors

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#### References

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- US Patent No. 9,010,402

#### Status of Availability

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This invention is available for licensing exclusively or non-exclusively in any field of use.

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