

A PROPOSAL OF DESIGN FIRE CURVES FOR I-GIRDER BRIDGES. APPLICATION TO AN OVERPASS ON U.S. ROUTE 1 IN TRENTON, NEW JERSEY, USA.

ESCUELA TÉCNICA SUPERIOR
DE INGENIEROS DE CAMINOS,
CANALES Y PUERTOS



UNIVERSITAT
POLITÀCNICA
DE VALÈNCIA

ETSICCP, UPV. MÁSTER EN INGENIERÍA DE CAMINOS CANALES Y PUERTOS, 2018-2019.

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OBJECTIVE OF THE MASTER'S THESIS

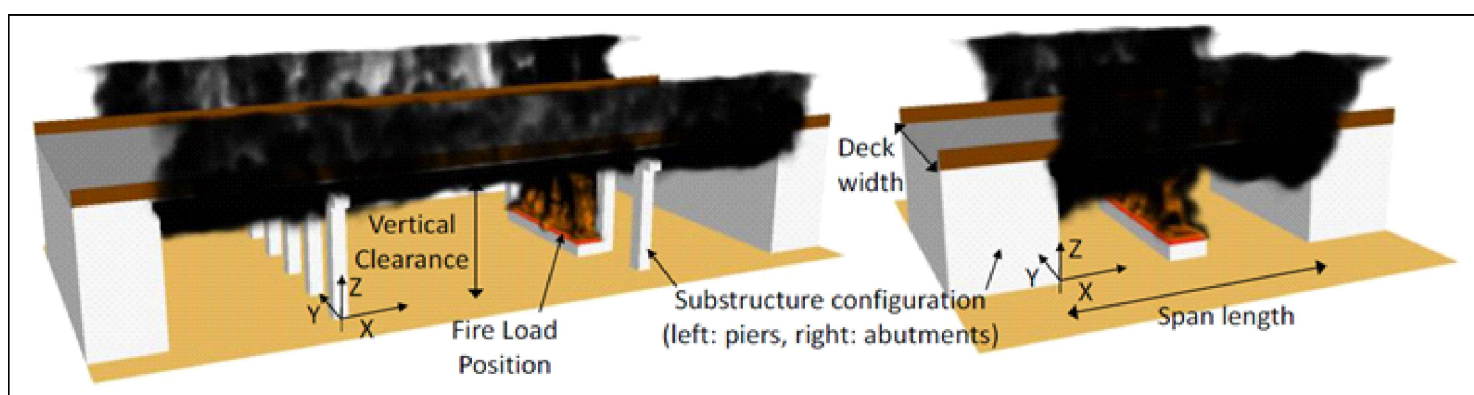
The main objective of this Master's Thesis is the development of design fire curves for I-girder bridges, which will enable the estimation of adiabatic temperatures based on the bridges geometry and the fires characteristics.

The parameters included in the statistical analysis for the development of the fire curves are the following:

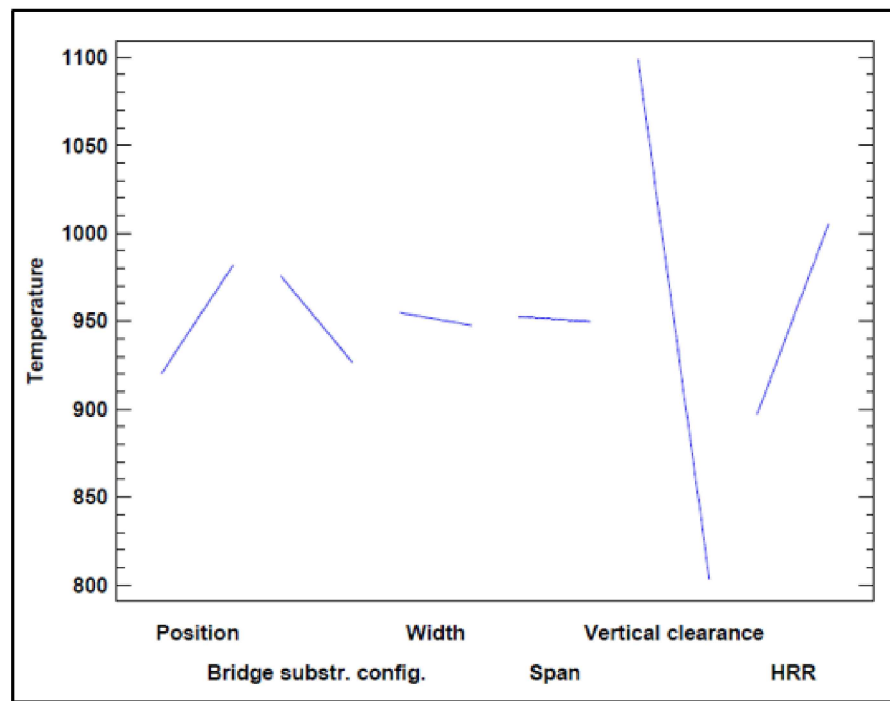
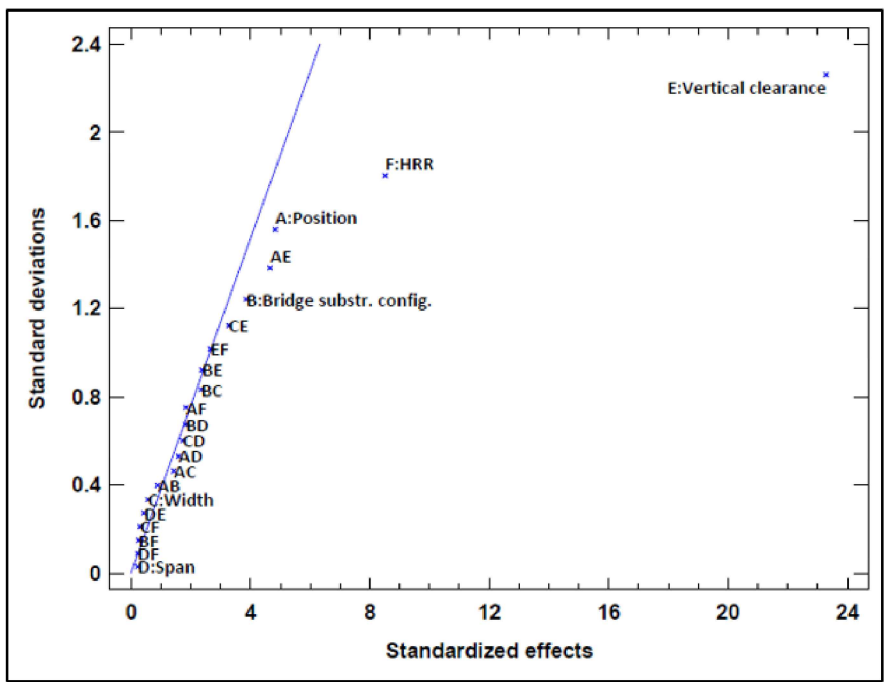
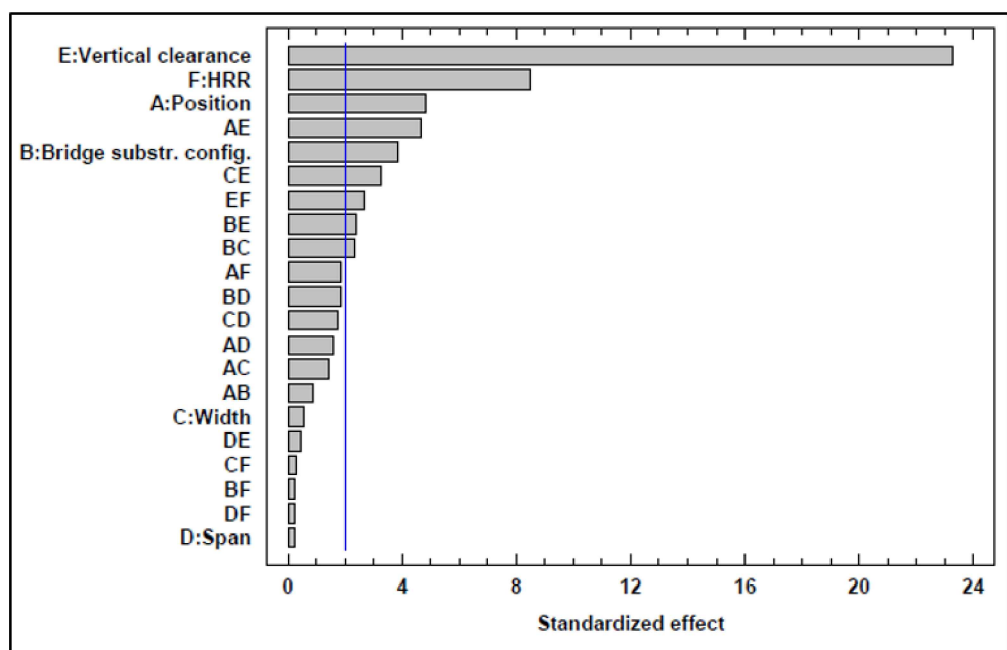
- Fire location
- Fire Heat Release Ratio (HRR)
- Bridge substructure configuration (abutments or piers)
- Bridge vertical clearance
- Bridge width
- Bridge span

FDS MODELS

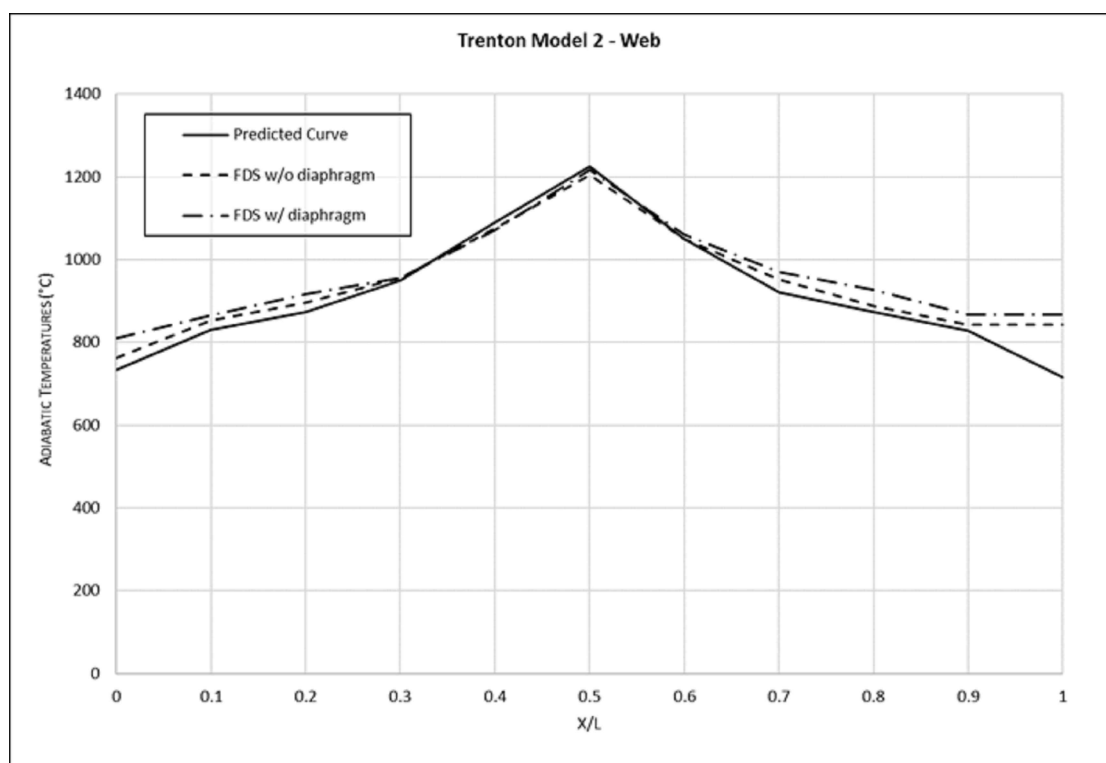
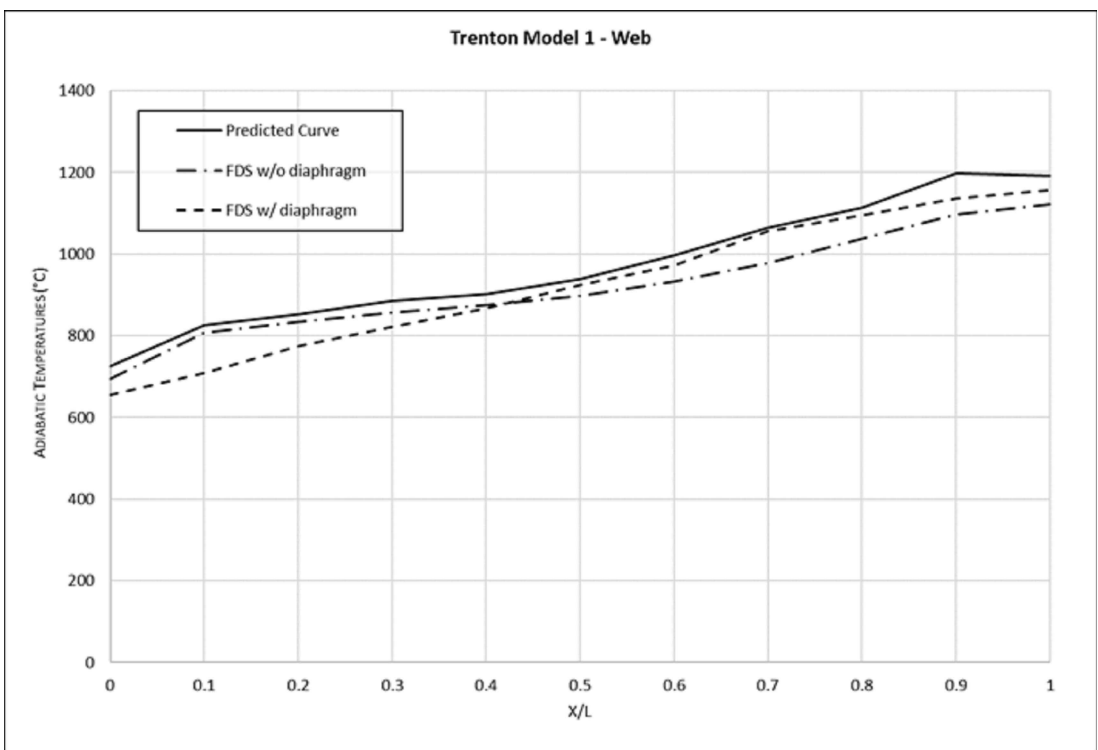
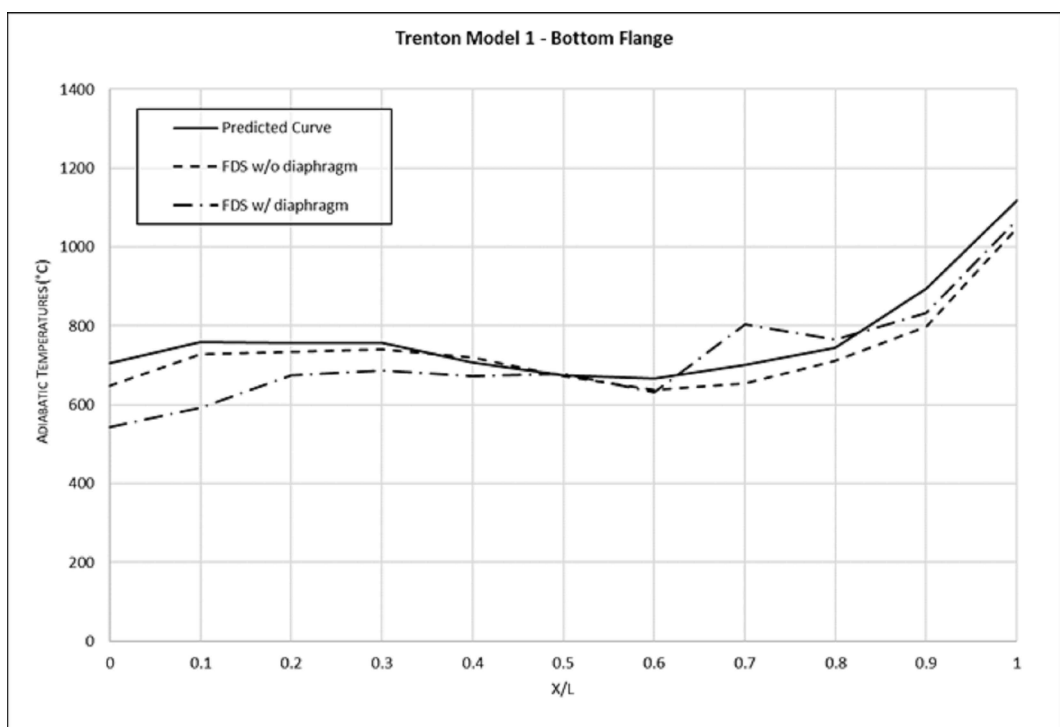
A total of sixty-four FDS models were run in order to develop the design fire curves, with a further 11 models run to validate them.



ANOVA



DESIGN FIRE CURVES



THERMOMECHANICAL ANALYSIS - FIRE CURVE VALIDATION

