

SEMI - RIGID CONNECTIONS
ANALYSIS AND DESIGN

by
NORZAN MOHD. YUSOF

A Thesis

presented to the Graduate Committee of
Lehigh University in candidacy for the Degree of
Master of Science

in
Civil Engineering

LEHIGH UNIVERSITY
1986

SEMI-RIGID CONNECTIONS

Analysis and Design

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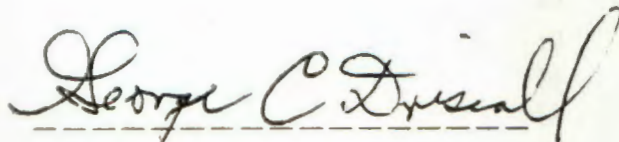
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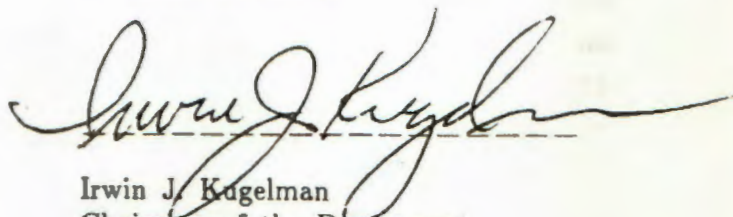
This thesis is accepted and approved in partial fulfilment of the requirements for the degree of Master of Science.

13 May 1986

date

A handwritten signature in cursive script, reading "George C. Driscoll", written over a horizontal dashed line.

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ABSTRACT

Semi-rigid connections are used in continuous frame construction, primarily for lateral load resistance in office or apartment buildings of moderate height. The concept of semi-rigid connections is to achieve economy in design without sacrificing the safety of the structure in question. At the same time the actual behaviour of the structure, particularly at the joint, can be accurately predicted. A theoretical analysis of the behavior of a top and seat angle connection is carried out by varying the angle size, beam size and column size. Altogether seven cases are analysed. Particular attention will be focussed on the partial restraint afforded by the top and seat angle type of connections. This paper will demonstrate a rigorous analysis of top and seat angle connections using STRUCTR, an application program. The results obtained are compared to an experimental results carried out in 1940's thus verifying the validity of this analysis. Results show that this method underestimate the maximum moment and maximum load obtained through experimental results but is in close agreement with the plastic mechanism method.