

Structural Steel Project Profile

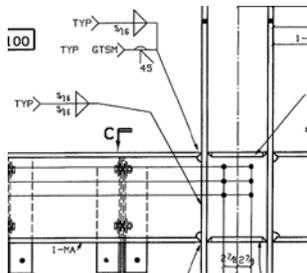
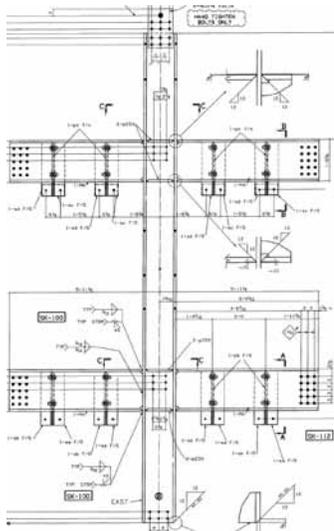
Institutional Building Frames



Harvard Graduate Student Housing • Cambridge, MA

This structure was a new 18 story residence for graduate students at Harvard University in Cambridge, MA. The 250,000 sq. ft. project was a single building, formed by a low-rise segment and a tower. It has over 250 apartments, as well as a 3-story, below-grade parking garage.

Designed by the architectural firm of Machado and Silvetti and Associates of Boston, this project featured unique moment resisting frames that were separated into 172 'tree' - shaped pieces, as opposed to a traditional beam and column arrangement. The trees were formed by splicing the beams at the center and connecting half of the beam within the frame bay on either side directly to the column. These half-beams are referred to as 'outriggers' and extend approximately 6'-0" out from the face of the column. This specific configuration was chosen so that the 6000 pounds of weld required could be performed in the shop rather than in the field. As a result, significant savings in time and money were achieved on the overall project.



One of the initial fabrication concerns was minimizing distortion at the ends of the cantilevered outriggers. Since the ends of the outriggers were bolted together in the field, they had to be aligned in both their horizontal and vertical planes. This would be challenging considering the significant amount of weld required at the base of the outrigger. The solution was simple teamwork. By having two welders working simultaneously on the same joint, the distortion from the heat of the weld was counter-balanced and the trees maintained their vertical and horizontal alignment.

Tonnage: 3100
Customer: Bond Brothers
Owner: Harvard University
Structural Engineer: Machada & Silvetti
Year: 2001



CORP. OFFICE & NB PLANT #1:
400 Chesley Drive • Saint John, NB
Canada • E2K 5L6
Phone: 506-632-2600
Fax: 506-632-7689

NB PLANT #2:
550 Wilsey Road • Fredericton, NB
Canada • E3B 7K2
Phone: 506-444-7989
Fax: 506-444-7978

NEW ENGLAND SALES OFFICE:
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Burlington, MA, USA • 01803
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USA • 13748
Phone: 607-584-7500
Fax: 607-722-7445

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e-mail: sales@oceansteel.com • www.oceansteel.com