2007 Nova Award Nomination for ConXtech™ Space Frame Systems

Conxtech has developed and manufactures a pre-fabricated mass customized component based structural steel moment frame/space frame building system. Through innovation, and the adaptation and integration of existing automated manufacturing technologies, ConXtech has delivered a proven systemic change to the 5 to 12 story market, bringing benefits to all involved in the development and construction process - as well as to those who dwell in ConX structures.

Background: For decades - Inventor and Co-founder Robert J. Simmons envisioned a systems approach that would streamline traditional building processes and result in higher quality, more cost effective structures that could be built substantially faster than conventional methods. Serious efforts toward his vision began in the early nineteen-nineties and evolved into the conception of two innovative steel connections in 2001. In 2004, ConXtech incorporated, and moved from Simmons's barn – into a 122,000 sq ft. state-of-the-art manufacturing facility where most of the processes and fixtures were also custom designed by Simmons. Over a few very busy years, ConXtech has successfully implemented an end-to-end design to engineering to manufacturing to on-site construction Building Information Modeling (BIM) system that drastically streamlines the inherently complex building process.

System Description: ConX reduces the structural frame of a building to a "chassis" comprised of a finite set of systemized components; HSS columns, wide flange beams, and two patented interlocking joints; one which forms a moment connection (collar), and the other - a gravity connection. Both connections are simply assembled by lowering and locking them into place on-site, requiring virtually none of the "cut-and-fit" or welding that typically takes place in the field. ConX utilizes these connections to enable a rapid and safe progression of field assembly.

A ConXtech building frame structure results in a remarkably stable and capable frame, wherein all lateral loads transfer via compression multi-axially, and at distributed nodes, into the columns, and are born in a substantially evenly and uniformly distributed fashion throughout the entire frame structure. A typical ConXtech frame structure requires no bracing or shear walls.

Other integrated components of the ConX system are also fabricated in the factory. ConXStairs and ConXWall (exterior panel system) are designed and manufactured to precise specifications. These components are then sequentially delivered to the building site and assembled with virtually no on-site welding or waste, providing a dramatically safer construction environment. A mid-rise building comprised of structural frame, exit stairs, concrete filled corrugated metal deck, and exterior wall panels is constructed in vertical sections, enclosed, and ready for follow-on trades in weeks rather than months.

Why ConX is Innovative: ConXtech is a truly integrated system. The process starts with the architect designing on a standard CAD software platform such as AutoCAD. ConXtech receives those files, details the steel with ProSteel 3D, a third party parametric steel detailing software, and then imports the model into ConXCAD - an assembly of off-the-shelf as well as custom developed software applications that greatly automate the process of populating the architect's structural grid with intelligent parametric ConX components. The resulting collaboration supports interoperability with structural analysis programs as well. When the architectural and structural designs are finalized, ConXCAD converts data in those files to manufacturing code, removing the possibility of human error in the manufacturing process. ConXtech's state-of-the-art manufacturing equipment then cuts and drills HSS columns and wide flange beams to precise lengths complete with penetrations for MEP's and fire sprinklers. Robots then weld outer collar plates that form the moment connection to their respective beams. The gravity connection is comprised of HSS columns with welded double angle iron joints designed to simply receive ConX gravity beams. ConX Gravity beams are fabricated using state of the art CNC plasma cutting technology.

What it changed or replaced: With the ever growing focus on re-urbanization, multi-story wood-frame buildings are being pushed to their structural and code limits. In addition, cost competitive options for the construction of buildings in the 5 -12 story mid-to-high rise market has been challenging in many geographies. The ConX system reduces time, labor and overall project costs when compared to wood, conventional steel or concrete structures. ConX substantially accelerates the development schedule bringing a more rapid ROI. ConXtech also increases flexibility and feasibility for architects and urban planners enabling accelerated design and the delivery of higher quality urban projects.

Where ConX has been used: In 2002, the nearly complete residential core of the Santana Row development in San Jose, California, was devastated by a 13 alarm fire. Efforts to rebuild were stymied by the concerns of fire and city officials for this dense and demanding urban environment. After a rigorous review process, ConX was approved as the ideal system for rebuilding Santana Row in a fraction of the time and at a substantial cost savings. Since that point in time, ConXtech has designed and built nearly 2 million square feet of ConX, and is growing a substantial backlog for delivery into the foreseeable future.

The future: Conxtech continues to innovate and improve upon a system which inherently promotes systemic change in the construction process and lends itself to integration with new products such as mechanical, bathroom, and kitchen modules. The vision for the future is to encourage outside innovation which can be easily added to a precise steel building "chassis" called ConX. **www.conxtech.com**

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Left: close-up of outer collar plate that is machined to .006 in. - and then robotically welded (in the plant) to the end of a wide flange beam.

Right: inner collars welded to HSS columns ready for shipment.

Left: Robotic welding of the outer collar to the wide flange beam takes place in the factory resulting in superior weld quality accomplished in a fraction of the time when compared to field welding.

Right: outer collar after being robotically welded (in the plant) to the end of a wide flange beam.

Left: During field assembly – beams with outer collars lower and lock onto inner collars forming moment connection and resulting in an immediately stable structure.

Right: partial connection ready to receive two more beams.

Left: completed stable unbolted moment collar connection which forms a Node.

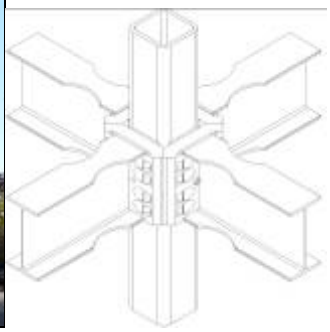
Right: after assembly, connections are bolted together with a hydraulic torque wrench.

Left: corrugated pan deck is installed ready for concrete.

Right: ConXWall exterior wall system being installed.

8 Orchids - August 7, 2006

8 Orchids - October 12, 2006



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