

Modular Steel Bridge Restores Traffic Quickly

A modular steel bridge assembled and erected in four days got traffic moving again on a critical section of congested Interstate 95 in Bridgeport, CT. On Thursday, March 25, a fuel truck crashed, spilling home-heating oil onto a southbound overpass. The oil soon exploded and burned, causing the collapse of the bridge. But because of the quickly erected temporary bridge, southbound lanes were ready for traffic only one week after the accident.

Conn Abnee, Executive Director of the National Steel Bridge Alliance in Chicago, praised the fast action of AISC- and NSBA-member Acrow Corporation (Carlstadt, NJ), which makes the modular steel bridges. "This is a great example of the versatility of steel for stepping into emergency bridge situations of all kinds," he said.

The morning following the accident, Mark Joosten, vice president of Acrow, visited the crash site and talked with Connecticut officials about the company's modular steel bridges. Within a few hours he had an order for an 80'-long, three-lane vehicular bridge.

By 7 p.m., Friday, March 26 (the day after the accident), components for 60% of the bridge were at the accident site. All of the new steel bridge components were there by 6:00 a.m. Saturday. By 10:30 a.m. Sunday, workers finished assembling the 80' bridge, except for the deck, and at 8:30 p.m. Monday, cranes completed lifting the bridge into place onto new abutments.

The crews lifted the bridge without the deck to keep the weight down. "The steel deck, which consists of orthotropic steel plates, will take about two hours to put down," said Bill Killeen, president of Acrow. "Then crews will put a standard black asphalt wearing surface on the deck."

The modular bridge is made of high-strength grade 65 steel. "The higher strength steel lets us use smaller components to keep the bridges lighter," he said. "This version of the bridge will carry live loads of 40-ton vehicles going in one direction. A simple rocker bearing handles expansions and contractions caused by temperature variations."

Acrow is leasing the new I-95 bridge to Connecticut. When the southbound



A temporary highway bridge supplied by Acrow Corporation is lifted into place to restore traffic flow on I-95 in Bridgeport, CT.

bridge is rebuilt within the year, crews will disassemble the temporary bridge and return the parts to Acrow.

"Later the parts may be assembled into other bridges in increments of our 10' modular length," Kileen said. "We've supplied these modular bridges up to 300' long."

NSBA's Abnee notes that the steel bridge industry has stepped in many times in the past to hasten bridge repairs in emergencies. "It's times like these that we realize just how critical our highway infrastructure is to the general public welfare," he said. ★

Marsteller Named AISC's VP of Certification

Roberta (Bobbi) Marsteller, P.E., has been named Vice President of Certification for AISC. Previously, she was Director of AISC's Steel Solutions Center, a customer-focused subsidiary of AISC that both provides cost and scheduling information about steel projects and answers technical questions on steel design and construction. Her new responsibilities will include development of certification standards, the promotion of certification to fabricators, erectors, and the marketplace, and the day-to-day management of the Quality Management Company, the firm that conducts audits of certified fabricators and erectors.



tification standards and new programs more completely and at a more responsive rate."

Marsteller is a licensed professional engineer who joined AISC in 2000 after working as a project engineer at Halvorson Kaye in Chicago and as an associate structural engineer for Fluor Daniel in Greenville, SC. She holds an MS in Building Construction from the University of Florida and a BS in Civil Engineering from Carnegie Mellon University.

"Bobbi will be instrumental in AISC's efforts to educate the marketplace on the value of certification," said H. Louis Gurthet, P.E., President of AISC. "We will be able to develop cer-

AISC's Certification Program plays an important role in the advancement of steel design and construction and I'm excited to be part of that effort," Marsteller said. "As an engineer I know how important the program is to the design community, and my involvement with the Steel Solutions Center has given insight into its importance to the construction industry." ★

Proposals for Composite Floor Systems and Stiffened Plate Floor Decks Earn Prizes in Multi-Story Residential Competition

A proposal for developing a composite floor system incorporating structural steel and aerated concrete earned a \$10,000 prize in AISC's competition to develop innovative systems for multi-story residential construction.

The system, proposed by Keith Itzler of Goodkind & O'Dea in New York City, is a combination of structural steel and autoclaved aerated concrete (AAC). The system proposed has a high potential for development, meets the evaluation criteria and should be beneficial to promoting the use of both steel and AAC in multi-story residential buildings. A \$5,000 second prize was awarded to Patrick M. Hassett, S.E., of Hassett Engineering in Castro Valley, CA, for his proposal for a "stiffened plate floor deck." The proposed system use a relatively thin deck plate stiffened by "closed" ribs similar to a deck system used in orthotropic steel bridge decks. Unlike bridge construction, this "Stiffened Plate Floor Deck" (SPFD) does not require fracture-critical steel or high-quality control welding since the deck design is controlled primarily by deflection criteria.

"Multi-story residential is one of the fastest growing segments of the construction industry," explained Tom Schlafly, AISC's Director of Research. "Traditionally, much of this construction has utilized pre-cast concrete, in large part due to the desire of developers to minimize floor-to-floor heights. Recently, several steel systems have been gaining acceptance, including Girder-Slab™, staggered truss, stub girder, and precast plank construction. However, additional innovative steel systems are still needed to support AISC's mission of making structural steel the material of choice for construction."

The competition was the second part of a project to create innovation in the design and construction of steel multi-story residential projects. For the first

stage, AISC funded a four-year Faculty Fellowship Award, which was presented to Amit H. Varma, Ph.D., of Michigan State University. Varma is working on the development of innovative long-span floor systems for multi-story residential applications. The project includes the conceptualization, development, detailed analysis, design, and experimental evaluation of several candidates for long-span floor systems. Several performance criteria including behavior for construction loads, service loads, ultimate loads, fire resistance, and floor vibration are being optimized.

The second part was the competition, won by Itzler and Hassett, brought entries from architects, students, builders, inventors, and engineers. A panel of consultants and contractors judged the contest submissions. Evaluation criteria included economic viability, contribution to the goal in terms of useful span and system depth, constructability, serviceability and durability. Submissions included a variety of concepts. For example: innovative framing schemes to help achieve the minimum floor-to-floor height requirements in residential construction, use of new and innovative materials to provide lighter and shallower floor systems, combination of newer and traditional construction materials to develop effective floor systems, structurally efficient floor systems fabricated using traditional hot-rolled and cold-formed structural shapes, and use of prestressing to provide additional stiffness and reduce the depth of the floor system.

The competition jury included Rod Gervais, of Waterford Development, Hartford, CT; David Grieves, of Chavez-Grieves Consulting Engineers, Inc., Albuquerque, NM; William Milek, retired; Paul Rouis, of Ryan-Biggs Associates, P.C., Troy, NY; and Chris Simonson, of Zalk Josephs, Stoughton, WI. ★

Correction

The jury listing for the Engineering Awards of Excellence in the April 2004 issue of *Modern Steel Construction* incorrectly listed Robert McNamara as a jury member this year. The list omitted juror James O'Callaghan,

engineering director for Dewhurst Macfarlane and Partners, New York. We regret any confusion caused by the error, which has been corrected in the online version of the article at www.modernsteel.com. ★

NASCC 2004 Features Steel Industry Experts

This year's North American Steel Construction Conference (NASCC) brought more than 2,000 steel industry professionals from around the world to Long Beach, CA to participate in four days of seminars, workshops and state-of-the-art presentations. Industry experts focused on topics ranging from field fixes to complex design, three-dimensional modeling to interactive data exchange, and parking structures to high-rise seismic loads.

"It's interesting to see field examples, and to be in touch with people from the whole range of the industry, from fabrication to erection," said Dagowin la Poutre, from Eindhoven University of Technology, the Netherlands.

Plenary speaker J.Y. Richard Liew opened the conference with a discussion of constructability issues in multi-story and large-span structures. Liew, of the National University of Singapore, spoke about international variations in steel design and construction, focusing on recent innovation in Asia.

Plenary session 2, on the second day of the conference, featured Thomas D. Wosser of Degenkolb Engineers and a panel discussion on the new CASE guideline for the coordination and completeness of structural construction documents. "The purpose [of the document] is to assist the structural engineer and team to achieve quality documents, address obstacles, and improve the design and build process," Wosser said.

The lively panel discussion stressed the importance of sharing the CASE document with the entire design and construction community. "The CASE Document has the potential to help solve some of the problems in the industry," said panelist Jim Stori, president of STS Steel and AISC Chairman. "The owners will save money overall. We need to get owners and architects to pay attention. That's the audience we're trying to reach."

"We as engineers should meet with our architectural clients and local AIA chapters at grass roots levels, and work on face-to-face contracts," said audience-member David Grieves, of Chavez-Grieves Consulting Engineers.

The third plenary session featured Lawrence A. Kloiber, P.E., the winner of the 2004 AISC T.R. Higgins Lectureship



Exhibit hall visitors found more than 130 helpful exhibitors who explained their new products, technology and services. Many offered computer tutorials and machine demonstrations.

Award. He presented his paper, "Orthogonal and Skewed Shear Connections: Design and Detailing Requirements," which provides guidelines to aid consultants in developing shear connections.

Another highlight of the conference was Omer Blodgett's "Lessons I've Learned in my Lifetime" session. Blodgett, Sc.D., P.E., 86, is a senior

design consultant for The Lincoln Electric Co., where he has worked since 1945. He is recognized worldwide for his excellence as a welder, educator and engineer. Blodgett also is the author of *Design of Weldments* and *Design of Welded Structures*. While sharing tales and anecdotes of his life and work, he presented 18 life lessons for designers and welders to keep in mind (see sidebar, right).

NASCC Highlights Steel Pricing: What Can You Do?

A special session on "Steel Pricing: What Can You Do?" at the NASCC was a reminder to specialty steel contractors not to focus on the differences between current steel prices and last year's prices, but instead to compare steel prices with those of competing systems.

"I would like to suggest that each of us asks ourselves a question: What value do I as a professional in the structural steel marketplace bring to a project, even in these volatile times?" said John Cross, Vice President of AISC Marketing LLC.

Even though steel prices are up, there is no shortage of material, and material price increases have only a minimal impact on the overall project cost. "On a typical project, the cost of the fabricated and erected steel frame represents 10% to 12% of the overall project cost," Cross said. "Of that

steel frame package, mill material accounts for only 20% to 25% of the cost. This means that mill material accounts for only 2% to 3% of the project cost. A 40% increase in mill cost would equate to an increase of one percent in project cost."

For Cross's full comments, visit www.aisc.org/pricingcomments.

And there are some signs of good news: "The increase in the surcharge is getting smaller," said AISC Board of Directors Chairman James Stori. "Service centers are not building their stocks, and must be perceiving that things are leveling out. Mills are not piling up their scrap, probably for the same reason."

Also, companies like Nucor-Yamato are actively researching and testing efficient substitutes for steel scrap to help lower the costs of steel production. ★

NASCC Highlights

Omer Blodgett's "Lessons I've Learned"



Omer Blodgett, of the Lincoln Electric Co., delivers his seminar, "Lessons I've Learned."

Blodgett's talk was touching, educational and entertaining, and brought audience members to their feet for a standing ovation. A plaque commemorating his past membership in Ironworkers Local #563 of Duluth, MN was presented to him on behalf of the International Association of Bridge, Structural, Ornamental and Reinforcing Ironworkers by Len Middleton of Middleton Engineering Associates, also a past member of Local #563.

"It was great, he's a legend in our office," said Shane McCormick, of SOM. "They speak about him in mythological terms. I was really impressed with how clearly he spoke, and how clear his ideas were. The whole conference too—it's the first one I've attended. The quality of speakers is high, the subjects are good, and I've been impressed."

This year's NASCC also included the 2004 Pacific Structural Steel Conference, which featured speakers and research from Pacific Rim countries. "I liked some of the Pacific Rim sessions, so you could learn other ways to design connections," said detailer Sandra Dillon. "What I found fascinating was the huge variation in the ways people design the exact same thing."

Other conference highlights were sessions on blast design and progressive collapse by experts Ron Hamburger of Simpson Gumpertz & Heger, Stephanie

"I wish my parents could be here to see me. I'm 86 years old, in relatively good health, I'm still working, and I have a reason to get up in the morning. I was born in 1917, in Duluth, MN. My father was a civil engineer and worked on a boat harbor. Welding was a lot simpler then. My brothers, dad and I welded, and mom kept the books.

1. **Nothing beats hands-on experience.** In 1937, I welded an 8" pipeline across the top of the Duluth Aerial Bridge. I was paid as an ironworker/welder. My dad paid for the rental of the welding machine. I could walk a beam without a problem.
2. **You'll never know it all, so become a life-long student.** I feel sorry for kids who get into college and their parents tell them what to study. I had to struggle and fight to get to college. I went to Duluth junior college for two years, and I got two years of engineering, but I never stopped learning. I took correspondence classes on differential equations and other topics. I went to a welding engineering seminar in 1939 at the University of Minnesota. It was a three-day course on welding given by Leon C. Bubber, chief welder for U.S. Steel. I was floating on air.

I was determined to get back to school if it killed me. I enrolled in University. I ate in a co-op for \$5 a week. My expenses did not exceed \$500 a year. I would sign up for any course I could get into, even graduate courses, since I never knew when my money would run out.

3. **Solutions to real world problems seldom appear in the classroom.** I graduated in 1941 with a Bachelor of Metallurgical Engineering. It was World War II. There were many ships to be welded. The U.S. maritime decision was to weld to save 20% of the weight of the boats. It was one-piece construction. It also takes less time to train a good welder than a riveter. I began working in Globe Shipbuilding Co. yard in Superior, MN. But Hitler was destroying boats faster than we could build them. I was frustrated because I wasn't able to use the information I learned in school in the shipyard. Because of the extremely low temperatures, there was more cracking in winter than in the summer. Welder turnover was 85% per year, and most workers had never welded before. We took them as fast as we could get them.

Whether you are studying welding or music, you should start slow, and go fast. The things you learn in one welding position helped you in another. Electrode shipments were unreliable, and we had to use whatever was at hand to get the job done. It was 30 degrees below zero in daytime, and during working hours. Welds and plates cracked, the welded members were distorted. College had not taught me to solve these problems!

4. **Sometime great gems learned at a young age and ignored for years never loose their sparkle.** An example is the book "The Strength of Metals Under Combined Stresses" by Maxwell Gensamer. I began working for The Lincoln Electric Co. in October 1945. I worked in sales in Chicago, and covered Rockford, IL, which at the time was the machine tools center of America.
5. **You've got to have the courage of your convictions.**
6. **Honesty is always the best policy.**
7. **Codes are not always clear as to their intent and purpose.**
8. **Codes always lag industry.** Innovation comes from people who roll their sleeves up and get busy.
9. **Welding is not a fastener, it is a method of design.** Don't weld something unless it's designed for welding.
10. **Don't hold back on accepting new ideas, or you may be left behind.**
11. **Don't design with your heart.** You can't pick you want, you have to take the whole package.
12. **Learn from other industries**
13. **Never be afraid to ask questions**
14. **Don't panic!**
15. **Don't put welds in bending**
16. **The centerline of the flange is critical for ductility**
17. **A good picture is worth 1,000 words**
18. **We stand on the shoulders of giants.** I have worked with some of the finest engineers in our field, and learned important lessons from them. ★



Clockwise from top right: The Long Beach Convention Center; The Pacific Structural Steel Conference (PSSC) sponsored several poster sessions in the exhibit hall for all conference attendees; Lou Geschwindner, AISC's Vice President of Engineering and Research, presents Lawrence A. Kloiber with the T.R. Higgins Award; and the NASCC's educator sessions focused on using computer technology in the classroom.

King of Weidlinger Associates, Jon Magnusson of Magnusson Klemencic Associates, and R. Shankar Nair of Teng & Associates.

The steel conference included tutorials and short courses, and workshops for fabricators and educators. Also popular were sessions on composite floor design, wind loads, stair design and detailing, parking structures, video conferencing, fall protection, and crane operation. Concurrent to the steel conference was the Structural Stability Research Council's (SSRC) Annual Stability Conference, featuring sessions on the latest stability research in structural steel design.

The exhibit floor at the steel conference featured more than 130 exhibitors showcasing their products and services to conference attendees. The show featured dozens of software, machinery and tool demonstrations, and a computerized crane simulator, where you could try your hand at virtual steel erection. AISC's CIS-2 Interactive! booth provided tutorials in 3-D modeling and electronic data interchange.

"The NASCC is where I meet people, and run into people from the past," said exhibitor James Long, of AISC-member detailing firm J.B. Long, Inc. "It's a place to cement those relationships. I wouldn't miss this!"

The Thursday night conference dinner at the Aquarium of the Pacific gave conference attendees a chance to relax

with friends and colleagues, and experience the Aquarium's incredible marine wildlife.

Over the last few years, the steel conference has visited the Atlantic and Pacific coasts—now it's time to get ready for next year's adventure, in Montreal! Au revoir! ★

NASCC Highlights Award Winners Honored

Lifetime Achievement Awards

John A. Martin, S.E.
Joseph A. Yura, Ph.D.

Special Achievement Award

Jerome F. Hajjar, Ph.D.

Lynn Beedle Award

Yushi Fukimoto

T.R. Higgins Lectureship Award

Lawrence A. Kloiber, P.E.



The 2004 Engineering Awards of Excellence (EAE) were presented at the steel conference, and were on display in the exhibit hall. For a list of winners, visit www.aisc.org/awards, or see the April 2004 issue of *Modern Steel Construction* at www.modernsteel.com.

In Memoriam

George Edward Klingelhofer II

George Edward Klingelhofer II, the former president of PBI Industries of Rochester, PA who created an AISC scholarship fund, passed away on March 13, 2004. He was 78.

Klingelhofer earned a bachelor of science degree from Yale University in 1949, and a master of education degree from the University of Pittsburgh in 1974. He served in the U.S. Army from 1943 to 1946. He was assigned to the 88th Infantry Division in the Italian Theater of Operations, and was awarded a Bronze Star. He continued to serve from 1950 until 1954 as a second lieutenant in the Officers' Reserve Corps.

Klingelhofer was president of PBI Industries in Beaver County, PA, a specialty steel company owned by his family from 1890 until it was sold in 1985. In addition to his work in the

steel industry, he also devoted his time towards humanitarian and charitable causes. He created the BridgeBuilders Foundation in 1951, which helps at-risk children throughout the country.

In 1987, he established an annual AISC fellowship for civil and architectural engineering students in the Pacific Northwest. Since then, the funds have helped about 17 students complete their engineering education. Memorial contributions may be made to:

AISC Klingelhofer Scholarship Fund
American Institute of Steel Construction
One E. Wacker Drive, Ste. 3100
Chicago, IL, 60601 ★

Len Lewandowski

Len Lewandowski, vice president and principal of Computerized Structural Design (CSD), past away on April 7, after a short bout with cancer. He was 56.

Mr. Lewandowski graduated from the University of Wisconsin-Milwaukee with a Masters Degree in Structural Engineering in June 1973. After graduation Len joined INRYCO Buildings in Milwaukee and became Chief Engineer in 1981. Len left INRYCO in 1986 to join CSD, where he became vice president and principal in 1999. Len was devoted his energies at CSD to managing the AISC Metal Buildings Certification Program. Len also was an avid hunter and fisherman. He is greatly missed by his friends and co-workers. Memorial contributions can be made to the American Cancer Society. ★

AISC Solicits Research Proposal on Columns Under High Axial Loads and Rotation Demands

Current codes and specifications offer little guidance on the design of braced-frame columns under high axial loads and rotation. Designers instead utilize provisions of FEMA 356 for fully restrained moment frames for columns under moderately high axial load in combination with inelastic rotation demand. However, these provisions could be unnecessarily conservative when applied to braced frames.

AISC is soliciting research proposals to simulate a fixed base column in a buckling restrained braced frame under specific conditions.

For more information on this program, and to obtain information on submitting a research proposal, please visit www.aisc.org/rfp. ★

Correction: Steel Galvanizer Listing

The steel galvanizer listing in the April 2004 issue of *Modern Steel Construction* incorrectly omitted some AGA-member galvanizers. We regret any confusion caused by the error, and it has been corrected in the online version of the article at www.modernsteel.com. The dimensions after the name of the galvanizer refer to the largest kettle size at that location. The following galvanizers were omitted:

Metalplate Galvanizing LP

Birmingham #1
22' x 4'4" x 5'6"
Birmingham, AL 35212
☎ 205.595.1106
www.metalplate.com

Rohn Industries

51' x 6'6" x 7'6"
Peoria, IL
☎ 309.697.4400
www.rohnnet.com

S&C Electric Company

12' x 3' x 6'
Chicago, IL
☎ 773.338.1000
www.sandc.com

V&S Galvanizers, Inc.

42' x 6' x 8'6"
Redford, MI
☎ 313.535.2600
www.hotdipgalvanizing.com
redford@hotdipgalvanizing.com

V&S Amboy Galvanizing LLC

25' x 6' x 10'
Perth Amboy, NJ
☎ 732.442.7555
www.hotdipgalvanizing.com
amboy@hotdipgalvanizing.com

V&S Bristol Galvanizing LLC

24' x 5' x 6'6"
Bristol, VA
☎ 276.466.5558
www.hotdipgalvanizing.com
bristolgalv@aol.com

V&S Columbus Galvanizing LLC

46'6" x 5'9" x 9' and 12' x 3' x 3'6"
Columbus, OH
☎ 614.443.4621
www.hotdipgalvanizing.com
columbus@hotdipgalvanizing.com

V&S Lebanon Galvanizing LLC

56' x 7'2" x 10'9"
Lebanon, PA
☎ 717.861.7777
www.hotdipgalvanizing.com
lebanon@hotdipgalvanizing.com

V&S Pilot Galvanizing LLC

15' x 4' x 4'
Poca, WV
☎ 304.755.2949
www.hotdipgalvanizing.com
poca@hotdipgalvanizing.com

V&S Philadelphia Galvanizing LLC

34' x 5' x 7' and 11' x 2'10" x 4'
Philadelphia
☎ 215.739.8911
www.hotdipgalvanizing.com
philly@hotdipgalvanizing.com

V&S Taunton Galvanizing LLC

29' x 6' x 10'
Taunton, MA
☎ 508.828.9499
www.hotdipgalvanizing.com
taunton@hotdipgalvanizing.com

Valmont Coatings

CalWest Galvanizing
60' x 6' x 10'
Long Beach, CA
☎ 888.225.9378 or 310.549.2200
www.valmont.com

Valmont Coatings

Empire Galvanizing
52' x 4'8" x 6' and 26' x 5' x 7'
Franklin Park, IL
☎ 847.455.0884
www.empiregalv.com
www.valmont.com

Valmont Coatings

Intermountain Galvanizing
46' x 6' x 6'
Lindon, UT
☎ 801.785.7200
www.valmont.com

Valmont Coatings

McCook, NE
☎ 308.345.2223
www.valmont.com

Valmont Coatings

Oklahoma Galvanizing
60' x 6' x 7'6" and 58' x 7'6" x 10'
Claremore, OK
☎ 918.266.2800
www.valmont.com

Valmont Coatings

Pacific States Galvanizing
44' x 5'3" x 8'9"
Tualatin, OR
☎ 503.692.8888
www.valmont.com

Valmont Coatings

Siouxland Galvanizing
31' x 6' x 5'
Sioux City, IA
☎ 712.252.4101
www.valmont.com

Valmont Coatings

58' x 7'2" x 8'6"
Valley, NE
☎ 402.359.2201
www.valmont.com

Valmont Coatings

30' x 8'6" x 10'
West Point, NE
☎ 402.372.3706
www.valmont.com

Victaulic Company of America

21' x 3' x 4'6"
Stewartsville, NJ
☎ 908.859.0085
www.victaulic.com

Virginia Galvanizing Corp.

42' x 5'5" x 8'6"
Ashland, VA
☎ 804.798.3257
www.ctg.net/vagalvanizing.com

Wheatland Tube Company

26' x 5' x 5' and 24' x 5' x 5'
Little Rock, AR
☎ 501.490.1900
www.wheatland.com

Wheatland Tube Company

26' x 5' x 5' and 24' x 5' x 5'
Sharon, PA
☎ 724.347.7771
www.wheatland.com

Wheatland Tube Company

26' x 5' x 5' and 24' x 5' x 5'
Wheatland, PA
☎ 724.346.7255
www.wheatland.com

Witt Galvanizing

28' x 4'4" x 7'
Cincinnati, OH
☎ 513.979.3128
www.witt.com

Witt Galvanizing

42' x 5'6" x 7' and 12' x 4'4" x 6'
Muncie, IN
☎ 765.289.3427
www.witt.com

Witt Galvanizing

45' x 6' x 8'
Plymouth, IN
☎ 574.935.4500
www.witt.com

Young Galvanizing, Inc.

48' x 5' x 8'6" and 24' x 5' x 6'
Pulaski, PA
☎ 724.658.1666
www.young-galvanizing.com
galvanize@nconnect.net

Zalk Steel and Supply Co.

25' x 4'6" x 6'
Minneapolis
☎ 612.781.6801