

High Steel Fabricates 17,290 Tons of Steel for I-95/I-91/Route 34 Interchange

In one of the Connecticut Department of Transportation's most ambitious transportation improvements, the I-95 New Haven Harbor Crossing (NHHC) Corridor Improvement Program is underway to accommodate traffic along the heavily traveled Interstate 95 in the greater New Haven area. The complex project, which is estimated at a total cost of nearly \$2 billion, includes eight different contracts, as well as improvements to the wharf and harbor.

The program will replace the existing Pearl Harbor Memorial Bridge which carries I-95 over the New Haven Harbor. The new bridge, known locally as the Q Bridge since it crosses the Quinnipiac River, will be expanded to 10 lanes, five on each of the north and south bound sides.



High Steel Structures Inc. is involved in Contract E of the comprehensive project, providing 17,290 tons of fabricated steel to the general contracting team of O & G Industries, Inc. and Tutor Perini Corp. The contract involves reconstruction of the I-95/I-91/Route 34 Interchange to accommodate lanes from the new Pearl Harbor Memorial Bridge.

According to Dean Bagdasarian, P.E., Senior Liaison Engineer for the project's design consultant H.W. Lochner, Inc., Contract E is regarded as one of the more complex projects of the I-95 New Haven Harbor Crossing Corridor Improvement Program.

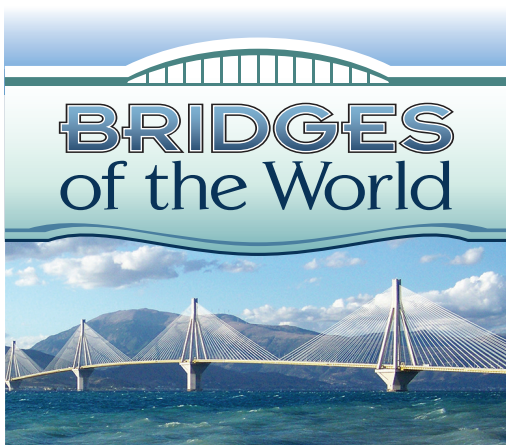
"The replacement/reconstruction of 21 bridge structures presents quite the constructibility challenge while maintaining 140,000 vehicles a day through the tangled array of ramps and local roads of the existing interchange," explains Bagdasarian. "As the design progressed, the project presented Lochner with several significant bridge-related challenges with respect to structure layout and constructibility. Taking advantage of the flexibility of structural steel proved critical to the successful replacement of these structures."

The very restrictive site conditions presented Lochner's engineers with a significant challenge when developing material alternatives for the interchange bridges. The use of structural steel expanded the aesthetic guidelines of the project while providing needed flexibility in addressing span configuration limitations, restrictive structure depth requirements, and poor foundation conditions.

Structural steel also offered several advantages in that conventional erection equipment could be used, thus mitigating several site constraints. Staged bridge construction could easily be handled via conventional construction methods, and the speed of steel erection significantly reduces road closure durations, thus minimizing disruptions to the traveling public.

There are several "signature" structures within the interchange. Bridge 172 carries mainline I-95 over several interchange ramps and a local road and consists of 1,375 foot long parallel northbound and southbound curved structures. The northbound bridge is comprised of two three-span continuous units and the southbound bridge is comprised

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Rion-Antirrio Bridge, Greece

Spanning the western end of the Gulf of Corinth, the Charilaos Trikoupis Bridge is named after a 19th century Greek prime minister. Completed in 2004, it is better known as the Rion-Antirrio Bridge, and is one of the world's longest multi-span cable-stayed bridge at 9,448 feet. The piers rest on a leveled bed of gravel, so they can move laterally during an earthquake.

Message from the President Jeffrey L. Sterner, P.E.

Dare We Be hopeful?

Most of us in the transportation construction industry would characterize the past few years as lack-luster at best. For the first couple of years into this economic malaise that started in 2008 or so, there was ample backlog and some stimulus spending to help things along. Perhaps if this recession were more like some of the others during the past 50 years, we would all be back in strong growth mode again. But this has indeed been a longer ride on the slow-growth bottom than previous cycles in recent history. Each year the economic forecasters seem to push the predicted recovery farther and farther out, so it just never quite gets within reach.

Now, specifically for the steel bridge industry, we are again becoming hopeful. There has been no increase in federal transportation funding to drive growth, but a few states have done some things to improve their own ability to complete projects through bond issuances or other new revenue generators. There is also a growing list of projects that are coming close to fruition through the use of public private partnerships, tolling, or other types of non-standard funding. Some of the major bridges at our port cities on the east coast are now slated for replacement

to accommodate the new, larger, Panamax cargo ships.

We will not count any unhatched chickens, but it is indeed encouraging. Some of these jobs will be delayed and others might fall apart altogether, but I don't think the wave of major projects can be held back for long. At High Steel Structures, we are daring to be hopeful—hopeful for the opportunity to grow our business as we work on replacing more of our country's crumbling bridge infrastructure.

Many of our customers apparently see this coming as well. We have been getting more calls and comments from contractors who are wondering if the steel bridge industry can deal with the potential increased demand for its products.

Can High Steel Structures, even with its size and capability, still handle YOUR job if some of these other jobs finally come to pass? The short answer is YES. A recent survey conducted by the National Steel Bridge Alliance in 2011 found that the industry overall is operating at approximately 67 percent capacity in the currently-operating physical plants. That should not come as a big surprise. This country is simply not constructing new infrastructure at the rate it did a couple of decades ago. But those plants are still there, and

for many of us, those same plants are now more automated with higher capacity for output.

But as I often explain to our customers, plants do not build steel bridges... People do! As the prospect of more steel bridge demand becomes reality, we will increase the number of men and women that we hire and train to be High coworkers, and that is what increases our capacity. And at any level of production, you can count on High Steel Structures do give you delivery dates that you can rely on. That reliability factor is what differentiates High Steel Structures through all economic cycles!



A handwritten signature in black ink that reads "Jeffrey L. Sterner".

Jeffrey L. Sterner, P.E.
President and Chief Operating Officer
High Industries Inc.

The Answer May be State Funding...

by **Steve Bussanmas**, Senior Vice President of Sales & Marketing

With the passage of the Federal Transportation Bill, MAP-21 last July, it became apparent that our transportation funding shortfalls were not going to be solved at the Federal level. MAP-21 insured funding at levels at or near the levels experienced under TEA-LU for two additional years, not the six-year duration most transportation legislation enjoys. Further, word out of Washington indicates that we will not see a White Knight riding out of there when MAP-21 is up either.

Given this dynamic, the only place that transportation infrastructure funding can be fixed is at the state level. Is there any hope of this happening? Well, maybe... As the problem gets bigger, there are leaders at the state level that realize they must act. In Pennsylvania, for instance, the challenge is bigger than most states. With the largest number of structurally deficient

(approximately 6,000) and functionally obsolete (approximately 4,000) bridges in the United States, Pennsylvania is seeing the deteriorating transportation infrastructure negatively affect its economy.

In his Address to the State, promoting his 2013 proposed state budget, Governor Tom Corbett (R) laid out a five-year plan designed to infuse an additional \$1.8 billion per year of funding by year five. Combined with newly passed Public Private Partnership (PPP) legislation, this plan will potentially fund selected large projects and provide cost cutting measures that deliver money back into the coffers (such as changes in license plate and drivers license renewal terms). Governor Corbett, in his address, correctly pointed out that "Transportation is the bloodstream of our economy. If it fails, our economy fails."

Corbett's usual critics, legislative Democrats, seem poised to make this a bi-partisan effort with one of the House

Democratic leaders calling for at least \$2.5 Billion per year in additional funding versus \$1.8 Billion. That was the minimum amount needed according to a report by the Transportation Funding Advisory Commission (TFAC), a 40-member committee of transportation experts formed by the Governor when he came into office to define funding needs and alternatives. If anything, the loyal opposition will push the funding number higher rather than being in total opposition.

Will Pennsylvania be the exception to the rule, or will this be a trend? Maybe...



Mohawk Casino Completes Expansion

When the Akwesasne Mohawk Casino opened back in 1999, they were taking a bit of a gamble.

That gamble paid off— and has since provided significant funding to help the health, education and other programs of the Akwesasne Mohawk Tribe in Northern New York State. The casino has helped the tribe provide many important services for men, women, children and senior citizens.

With the success of the Akwesasne Mohawk Casino in Hogansburg, N.Y., the need to create a complete vacation and entertainment experience became apparent. They needed a hotel for guests in the remote New York State area bordering Canada, as well as expanded buffet and dining services. Oh, yes, and a spa would be nice, not to mention an expanded gaming floor.

As part of the expansion of the Mohawk Akwesasne Casino, High Steel Structures Inc. worked with Jeffords Steel and Engineering Company in Plattsburgh, N.Y.

High Steel fabricated two large trusses, which exceeded 100,000 pounds each, for the project.

As Rich Truxel of High Steel explains, Jeffords Steel and Engineering had a contract for the fabrication and erection of structural steel for the casino expansion. Due to the tight schedule for the project, Jeffords needed to find a shop that could fabricate two large trusses, and do it very quickly.

“High Steel was able to locate raw



High Steel completed trusses for the Mohawk Casino in New York State.

material at local warehouses and begin fabrication within weeks of receiving the go-ahead from Jeffords, and the job was completed on time and to everyone’s satisfaction,” says Truxel.

The hotel is set to open this spring, and will have deluxe suites and three multi-purpose meeting rooms, which can convert to one large banquet space. The Mohawk Bingo Palace will also make its move into the former Cascades area, along with an expansion of the gaming

area, a center bar including fire places and an entertainment area with the potential of featuring live entertainment.

“This is a very exciting project for the Akwesasne Mohawk Casino, and it will benefit many people,” says Benjamin Herne, public relations director for the casino.

With completion of the expansion, the Akwesasne Mohawk Casino will have about 900 employees, making it one of the largest employers in the North Country.

Employee Spotlight:

Ken Glidden, Senior Project Manager

Ken’s career with High Steel began in 1986 when he joined the engineering department as an apprentice drafter. Ken gained extensive knowledge of the structural steel fabrication business from an engineering perspective, including how to detail and check drawings. In 1994, Ken assumed the role of Engineering Technician, entering data into High Steel’s coordinate geometry bridge calculation program.

In 2000, he was promoted to Senior Engineering Technician, where he oversaw a squad of seven engineering

technicians and was responsible for the preparation of shop drawings for the Arthur Ravenel Jr. Bridge in Charleston, South Carolina and the Maryland approaches of the Woodrow Wilson Bridge, outside of Washington, D.C. In 2006, Ken joined the Project Management team, and he was promoted to Senior Project Manager in 2008. His major recent assignments have been for the I-495 HOT Lanes project in Virginia, and the Cleveland Innerbelt project in Cleveland, Ohio.

Ken received his Associate’s Degree in Business Administration from

Elizabethtown College in 2011, and is currently on track to earn his Bachelor’s Degree in 2014. Ken grew up in Quarryville, in southern Lancaster County, and currently lives in West Lampeter Township with his wife Hope, and daughter Jessica. When not working or studying, Ken and Hope enjoy traveling, and he is an avid reader of historical and science fiction books.



Proper Planning Enables Smooth Steel Delivery

by **Mike Murry**, Director, High Transit LLC

If you have had an occasion recently to drive in or around any large metropolitan area, you have experienced first-hand the challenges that exist in safely maneuvering a vehicle through congested areas. This challenge grows exponentially when delivering structural steel fabricated for large bridge projects.

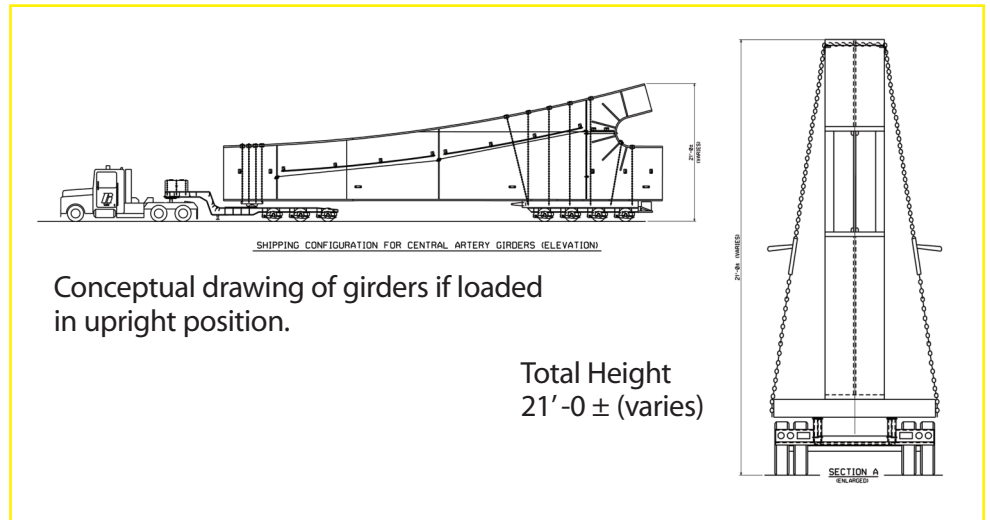
Heavy hauling company High Transit LLC is in the midst of delivering 19,000 tons of steel for the Innerbelt Bridge project on Interstate 90 in Cleveland, Ohio. But months before the steel was ready to ship, High Transit had to plan for the safe delivery of the project's massive steel girders from High Steel's plant in Williamsport, Pa. to Cleveland. Insight into this process may



be valuable to designers, contractors and project owners, as complex shipping issues lead to increased project costs if they are not considered and addressed effectively.

Our team at High Transit begins planning the shipping process by reviewing detail drawings to clearly understand the exact weight, width and depth of each piece. Our engineering group then configures the girder on to the appropriate type of equipment. The girders on the Innerbelt project that most piqued our attention were in two different dimensional configurations. The first configuration is straight, long and heavy (119 feet long and 190,000 lbs to be exact). The second configuration, described as a "Knuckle" girder, is especially deep (18.5 ft. deep, 163,000 lbs and over 85 ft. long).

The engineering task is to calculate stress in the girders during transportation, to avoid damage to the piece. We also must calculate total gross weight and length of the combined equipment and girder, ensuring that axle weights will not exceed Department of Transportation requirements. In the case of these two configurations, the straight girders with



Conceptual drawing of girders if loaded in upright position.

Total Height
21'-0" ± (varies)

equipment have a gross weight of 285,000 lbs and the overall vehicle length exceeds 160 feet. The knuckle girders combined with equipment weigh in at 180,000 lbs., 100 feet long and would have been 21 feet high on the trailer. As we evaluated these sizes, it became clear that the 18.5-ft deep girders on this project were not shippable in an upright position. As we must also ensure that the shipping load will remain stable, the only other option was to ship these pieces in the "lay-down" position, which then raised the challenge of transporting a piece that is 19.2 feet wide.

After engineering completes the equipment assignment, piece configuration, and stress and stability calculations, our permitting and routing group takes over. Their first task is to establish a route that can be used to ship a 19.2-foot wide load. In this case, the most direct route from Williamsport Pa. to Cleveland, OH is I-80 west through Pennsylvania to I-77 North in Ohio to the job, a 287 mile trip.

This was the first route submitted to the states of Pennsylvania and Ohio for approval, but it was rejected because of construction on I-80 with a 16 foot maximum width restriction. Our permitting staff then submitted several other routes which were all rejected for bridge weight restrictions or width restrictions. But finally a route came back approved. It began north on Pennsylvania US 15 out of Williamsport, then crossed the New York line to meander west along several roadways across the bottom of the state, before returning to Pennsylvania on I-86 West, then bypassed Erie along I-90 West to I-79 South and finally returned to I- 80

West into Ohio and finished the trip on to I-77 North to the jobsite.

The approved 438 mile route added 151 miles to the trip, plus a DOT safety inspection and police escort through New York. The additional mileage and logistics associated with the scheduling of police escort, plus the inspections process, increased the duration of the trip another day. With 80 knuckle girders and 10 drop-in girders, the 90 super loads became a scheduling challenge. Each load became four scheduled super loads with police escort per trip (one for each segment of the route - PA - NY - PA - OH).

As of the first week in February we had successfully shipped 46 of the knuckle girders with no show-stopping issues. Although each job has its own unique hurdles, planning properly and addressing each potential issue one at a time reduces a seemingly impossible mountain to climb into a small bump in the road.

Designer's Checklist to Avoid Potential Shipping Problems:

1. **Research potential height, length, and weight restrictions that your steel shipper will face en route to the project's jobsite.** For example, had the project site been in New England, the knuckle girders on this project may have been impossible to ship by road because of width limitations at the toll gates on the older toll ways in that area.
2. **Don't rely on the preliminary schedule when it comes to avoiding shipping limitations due to seasonal**

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Tech Talk - Proper Planning Enables Smooth Steel Delivery for even the Largest Girders

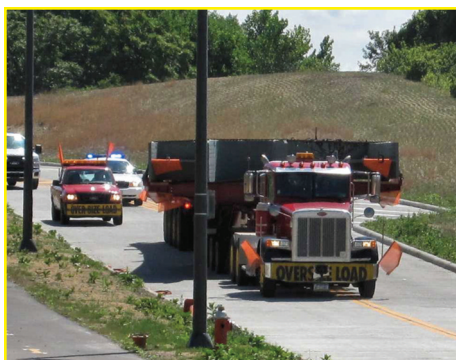
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construction along the route. Project delivery schedules can and do often change. Be sure that the pieces to be shipped have alternative accessible routes to the jobsite.

3. For particularly challenging site conditions, get erector input. Certain jobsites are fine transportation-wise until they reach the front door to the job site (staged interstate construction, mountainous terrain and environmentally sensitive under-bridge areas to name a few). Erectors may have insight as to simple access features (temporary ramps, shoulder widening, and causeways) that can readily be coordinated with highway design / detour plans at the pre-PS&E stage.

4. Shorter isn't always better. In the case of denser loads such as box girders and knuckle-type arch/frame sub-assemblies, a longer (even if slightly heavier) piece can sometimes result in improved ratings when traversing load-restrictive bridges en route. This is because we can fit more axles underneath longer loads. More axles can improve load distribution to the bridge superstructure, while reducing the load per axle.

5. When in doubt, contact us for input. High Steel offers a free shipping calculator tool in the Technical Resources section of our website at www.highsteel.com. We will look over your specifications and alert you to any possible challenges.



The Cleveland Innerbelt Bridge has some highly extraordinary loads. We are proud of our High Transit team members who have moved this steel safely and effectively thus far, even through a rather nasty winter. Things are going well, but the project certainly illustrates the challenges that arise and provides good food for thought for designers, contractors, and project owners.

High Steel Fabricates 17,290 Tons of Steel for I-95/I-91/Route 34 Interchange continued from page 1

of a three-span and four-span continuous structure. Each bridge consists of a multi-girder structural steel superstructure utilizing 10' deep plate girders and a composite concrete deck.

Bridge 173 carries ramp traffic from I-95 SB to Route 34 WB over several interchange ramps and a local road. It consists of a 1086' long six-span continuous structure with distinctive reverse horizontal curve geometry. The bridge is comprised of a multi-girder structural steel superstructure utilizing 9' deep plate girders with high performance grade HPS 70W steel flanges within select negative moment regions.

Bridge 6609 carries ramp traffic from I-95 NB to I-91 NB over an interchange ramp. It is comprised of a 246' long single span structure making it one of the longest single span plate girder bridges in the State of Connecticut. The bridge is comprised of



Courtesy of H.W. Lochner Inc.

a multi-girder structural steel superstructure utilizing 9' deep plate girders and a composite concrete deck.

Steel shipping for the Bridge 172 northbound structure has just begun, while shipments for the Bridge 172 southbound structure and Bridge 6609 structure are complete. The steel for the Bridge 173 southbound structure will begin shipping in November of this year.

High Steel has completed about thirty percent of the fabrication and delivery of the steel for the project, with the last deliveries on the project scheduled for second quarter 2015, according to High Steel Project Manager John Flaud. In total, the large amount of structural steel for the project requires 750 tractor-trailer trips to the jobsite, accompanied by 1,080 escort vehicle trips.

According to the project's website, www.i95NewHaven.com, the 7.2 mile stretch of highway that encompasses the I-95 New Haven Harbor Crossing Corridor Improvement Program was first constructed in the late 1950s, and is one of the most heavily traveled portions of the northeast corridor between New York and Boston. Originally intended to handle traffic of some 40,000 vehicles a day, traffic volumes have swelled to more than 140,000 vehicles a day. The project is slated for completion in 2018.

PROJECT TEAM

Project:	Contract E, I-95/I-91/Route 34 Interchange
Location:	I-95 in the area of the Pearl Harbor Memorial Bridge, New Haven, CT
Steel Tonnage:	17,290 tons
Type:	Straight and Curved Plate Girders, A572 Grade 50 and Grade HPS 70W
Project Owner:	Connecticut Department of Transportation
Contractor:	O & G Industries, Inc. and Tutor Perini Corporation
Designer:	H.W. Lochner, Inc.
Construction Inspection:	Ammann & Whitney / AECOM
Program Manager:	Parsons Brinckerhoff
Steel Fabricator:	High Steel Structures Inc.

Recent Contracts Awarded

Route 352 Patterson Bridge /Chemung River
 Corning, NY • Cold Spring Construction Co., Inc.
 1,965 Tons

Brookfield Properties
 New York, NY • Stonebridge Steel Erection
 1,336 Tons

Garden State Parkway MP 93.5 to 99.5, Shoulder Restoration & Improvements
 Monmouth County, NJ • Northeast Remscos Construction, Inc. • 1,146 Tons

Paulsboro Marine Terminal Access Road and Bridge • Gloucester County, NJ
 A.P. Construction, Inc. • 586 Tons

I-90 Bridges / Moordener Kill
 Rensselaer County, NY • Bette & Cring, LLC.
 495 Tons

Seneca Street / Canisteo River
 Steuben County, NY • Ramsey Constructors, Inc.
 403 Tons

SR 119 Sect A02, US 119 / PA 819 Interchange
 Westmoreland County, PA • Golden Triangle Construction Co., Inc. • 389 Tons

SR 222 Sec 027, Lititz Pike Bridge /AMTRAK
 Lancaster, PA • J.D. Eckman, Inc. • 274 Tons

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and give good measure”**

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High Steel News

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