CTE

Construction Technologies & Engineering, Inc.

Engineering Your Success : Outstanding Solutions in Construction Engineering

- Structural Engineering
- Form Travelers
- Heavy Lifting
- Incremental Launching
- Arch Construction
- Segment Lifters
- Post-Tensioning
- Stay Cables
- Shoring
- Formwork
- Slipforming
- Trestles
- Falsework
- Structural Repairs
- R&D

Construction Technologies
& Engineering, Inc.

CTE

The Company

CTE was established in 1992 and formally incorporated in 1995 by its Founder and Principal Engineer, Michael Veegh, P.E. MBA.

Our Mission is to make your project a success.

As licensed professional engineers we are engaged in engineering and design as needed for the construction phase of demanding bridge and infrastructure projects, mainly in North America but also internationally, with experience in Puerto Rico, Taiwan and South Africa.

We specialize in bridge construction engineering and related enabling technologies such as post-tensioning, heavy lifting, self-launching form systems, bridge launching, shoring and more. Some of this know-how we also apply in other types of construction such as buildings, stadiums and energy infrastructure.

Bringing innovative solutions to difficult construction projects is what we do. We back this with thirty years of experience in advanced construction techniques and a passion for delivering exceptional solutions whenever possible.

Our Edge

We are driven to excellence in what we do, always searching long and hard for a better solution.

As hands-on engineers, we have a very good understanding of what happens in the field and how it is accomplished. We have built forms, tied rebar, welded steel, finished concrete and installed post-tensioning. This knowledge is very much reflected in our work as we mentally go through the individual field operations to make sure our designs are efficient, practical and constructible.

We understand that construction is a business with many risks. We aim to reduce risk in our designs, carefully weighing the costs and benefits of what we do. Not every decision we make is a technical decision. Simply because something is technically feasible does not mean it is prudent.

For 30 years, we have been helping contractors meet their challenges by developing construction systems and methods for some of their most demanding projects. Whether the work called for heavy lifting, incremental launching, post-tensioning, temporary works, form travelers, arch construction or forming and shoring, we have kept our clients on track and out of trouble with timely, effective and innovative solutions.

Construction Technologies
& Engineering, Inc.

CTE

Contact Information

Michael Veegh, P.E. MBA

Construction Technologies & Engineering, Inc.

P.O. Box 218
Portsmouth, RI 02871
United States of America

Tel +1 401 841 0623
Email mveegh1@cox.net
Web www.cteg.com/wp

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Common Services Provided

Construction Systems

- Form travelers for cast-in-place cantilever construction
- Segment lifters for precast segment erection
- Incremental launching of bridge structures
- Arch construction - form travelers and tie-back systems
- Moving shoring systems / MSS
- Launching trusses
- Temporary work trestles
- Shoring towers
- Falsework
- Rigging and spreader beams
- Custom forming systems
- Slipform construction

Heavy Lifting + Moving

- Strand and bar lifting
- 100 tons and upwards
- Precast segments
- Bridge spans
- Steel structures and vessels
- Equipment erection

Structural Engineering

- Analysis and design
- Drawings and specifications
- Peer reviews
- Inspections and reports
- Repairs and rehabilitation
- Steel, concrete, wood, masonry

Post-Tensioning / Stay Cables

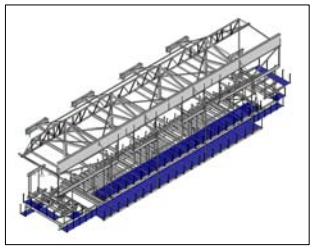
- System development
- Technical assistance
- Engineering and analysis
- Drawings and documentation

Technical Writing

- Copy and editing
- Specifications
- Manuals
- Research

Dispute Resolution

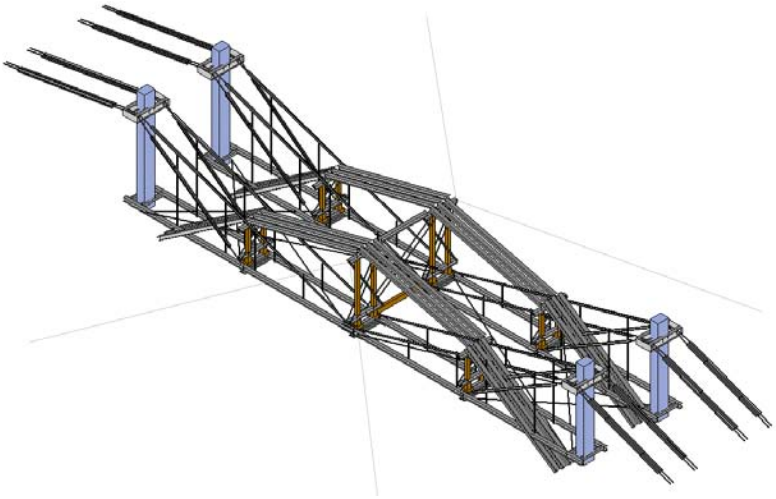
- Defense
- Investigative engineering
- Opinion papers



Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Klamath River Bridge Replacement

Temporary Cable-Stayed Bridge Supporting Cast-in-Place Concrete Arch



Structural analysis and verification of temporary cable-stayed bridge.

- Created 3D analysis model
- Detailed design verification of loads, members and connections
- Technical support for jobsite issues

Project	-	Klamath River Bridge Replacement
Location	-	Siskiyou County, California
Year	-	2020
Type	-	Temporary Cable-Stayed Bridge
Owner	-	Caltrans
GC	-	Golden State Bridge Inc.
Client	-	Nutt, Redfield & Valentine

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com/wp

Wind Turbine Erection Technology

Tower and Turbine Erection without the Tall Crane

Canyon, TX - Tallest Wind Turbine in the US

Why Taller Towers?

Higher turbines can access better wind conditions and thereby boost their annual energy production significantly.

With improved turbine performance, many more areas become suitable and economical for wind power production.

By eliminating the tall crane as a limiting factor, turbine heights are essentially uncapped, paving the way for the mega turbines of tomorrow. Preliminary studies of 50MW turbines on 500m towers are underway.

This technology was developed out of a DOE grant application and the need to dismantle a test turbine in Canyon, TX. This approach does not require a tall crane to erect and dismantle the tower and turbine. Best suited for steel towers at this point, as the tower diameter is typically limited to 4.5m because of transportation restrictions.

The concepts and methodology were independently reviewed by an industry leading company engaged in this type of work and deemed as practical and do-able.

The technology is available for licensing with protected territories, giving licensees an enduring competitive advantage in their markets. This includes technical support and ongoing development of related technologies.

Development of a Tower and Turbine Erection Method that does not require a tall crane, thereby uncapping turbine heights for much greater power production.

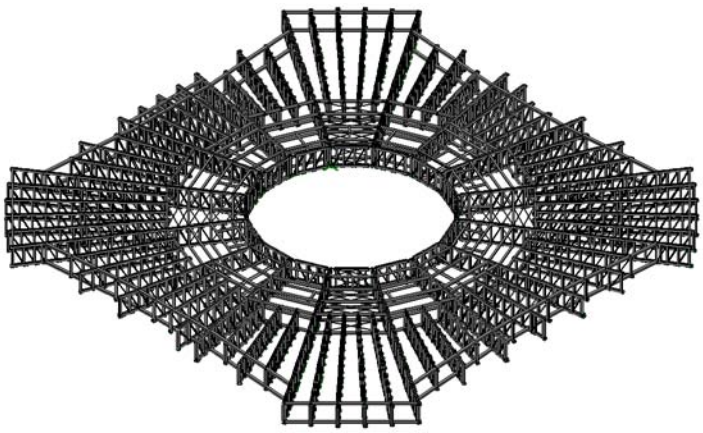
- This technology is available for licensing
- Protected territories
- Technical support and ongoing development

Project - Wind Turbine Decommissioning
Location - Canyon, Texas
Year - 2019
Type - Concept Development Only
Turbine - Goldwind
GC - (TBD)
Client - (TBD) / Licensee

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Hebron Offshore Oil Platform

Gravity Base Structure built by the Slipform Method of Construction



Framework for slipforming
variable cross-sections

Structural modeling and design review of the slipform truss for crane erection and in-service slipforming conditions.

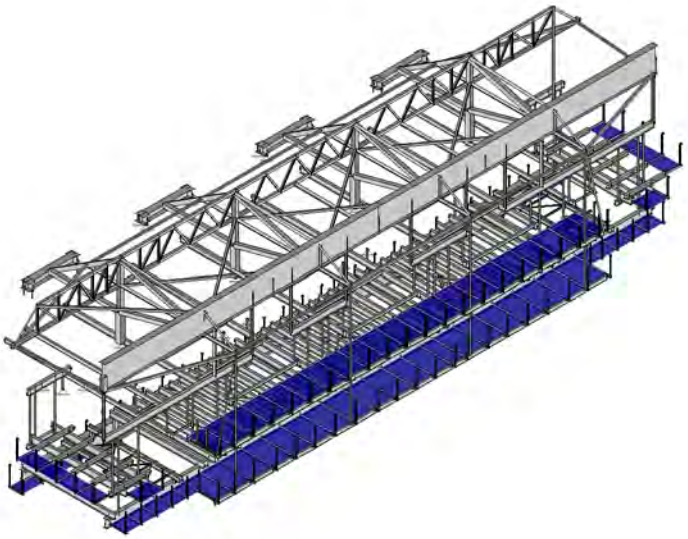
- 3D Modeling and analysis of the slipform star truss system
- 10,000 nodes, 8,000 members
- Detailed design review

Project - Hebron Offshore Oil Platform
Location - Newfoundland, Canada
Year - 2015
Type - Slipform Engineering
Owner - Exxon Mobil
GC - Kiewit-Kvaerner Contractors
Client - Gleitbau GBG Salzburg

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Pearl Harbor Memorial Bridge - Form Traveler with Four Main Frames

Extradosed, Cast-in-Place Bridge over the Quinnipiac River

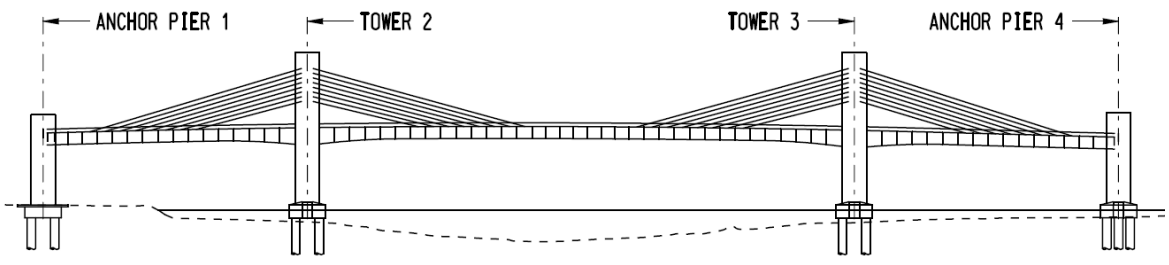


Structural analysis, design verification, pour deflections, loading on bridge, field inspections and technical assistance.

Segment Data:

Weight	-	735 kip
Length	-	14.3 ft ft
Width	-	108 ft

Project	-	Pearl Harbor Memorial Bridge
Location	-	New Haven, Connecticut
Year	-	2011
Type	-	Form Traveler
Owner	-	Connecticut DOT
GC	-	Walsh PCL JV II
Client	-	Schwager Davis Inc.

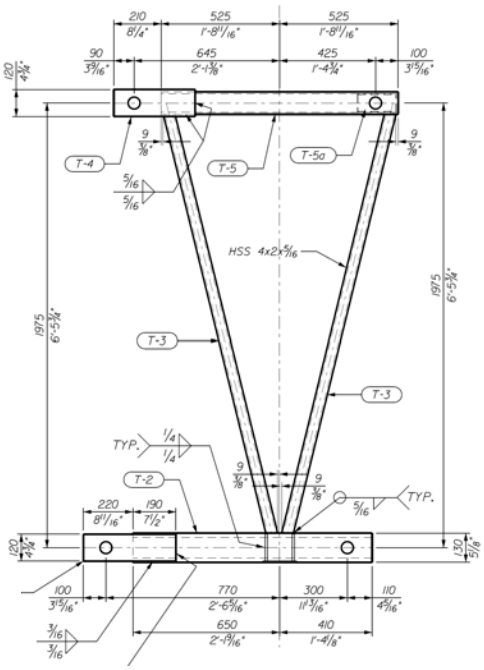


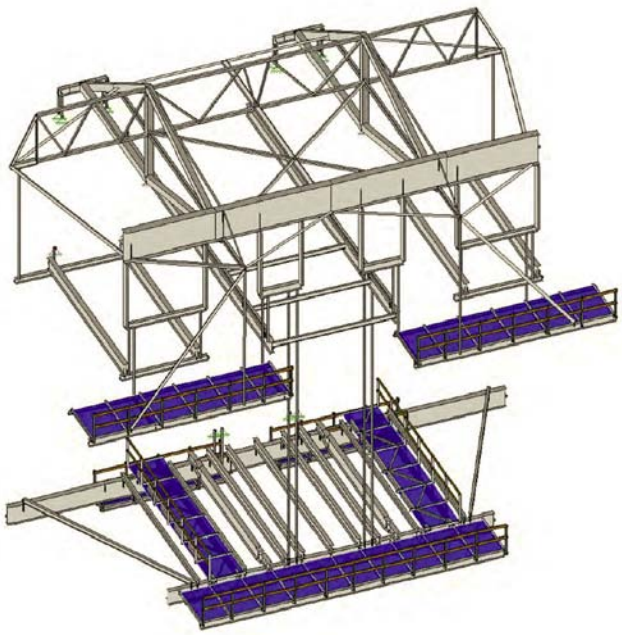
Structural Engineering • Form Travelers • Heavy Lifting • Incremental Launching • Arch Construction • Segment Lifters
Post-Tensioning • Stay Cables • Shoring • Formwork • Slipforming • Trestles • Falsework • R&D

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Broad Avenue Bridge over the Flint River - Form Traveler

Modify Form Traveler for New Balanced Cantilever Bridge





Reconfigure existing form traveler for new cast-in-place balanced cantilever bridge

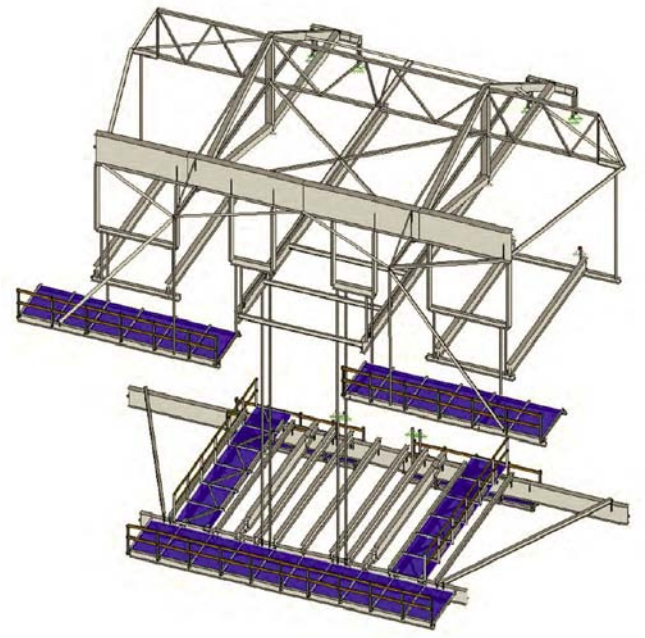
- Develop overall layout to suit new bridge
- Structural analysis and verification
- Sleeve layout
- Loading on bridge
- Pour deflections
- Modification drawings and calculations
- Field inspections
- Technical assistance

Project - Broad Avenue Bridge over Flint River
Location - Albany, Georgia
Year - 2013
Type - Form Traveler
Owner - Georgia DOT
GC - PCL Civil Constructors
Client - PCL Civil Constructors

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Clearwater Memorial Causeway

Form Traveler for Balanced Cantilever Bridge



Structural check and verification of form traveler for new cast-in-place balanced cantilever bridge

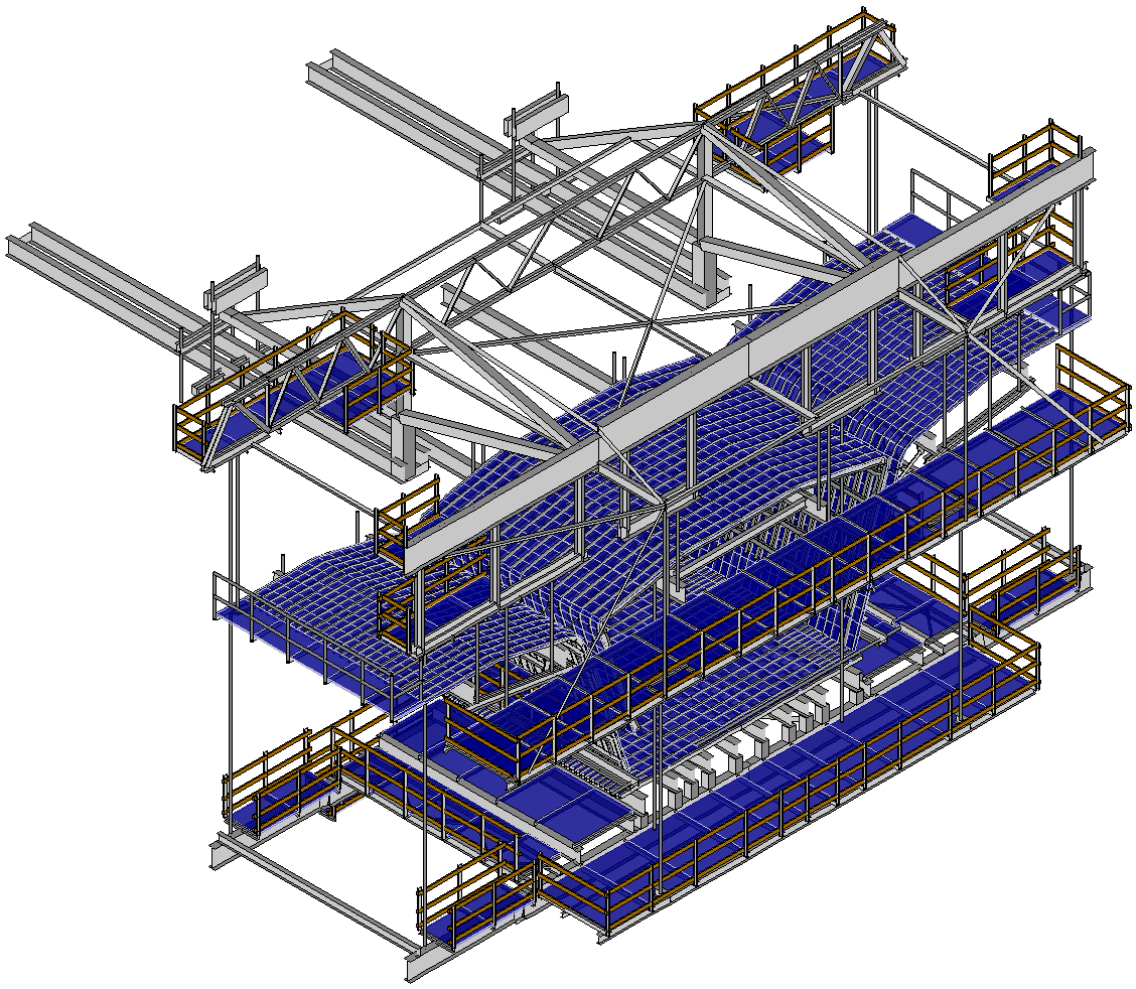
- Structural analysis and verification of form traveler
- Verification of formwork design
- Determine loading imposed on bridge
- Calculate pour deflections
- Field inspections
- Technical assistance

Project	-	Memorial Causeway
Location	-	Clearwater, Florida
Year	-	2001
Type	-	Form Traveler
Owner	-	Florida DOT
GC	-	PCL Civil Constructors
Client	-	Schwager Davis Inc.

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Wekiva Parkway (Section 6) - Form Traveler

Form Traveler for New Balanced Cantilever Bridge



Structural Analysis and Design Review

- Developed 3D FEA analysis model
- Structural analysis and verification
- Checked members and connections
- Generated loading on bridge
- Provided pour deflections
- Reviewed load test setup and prodedures
- Conducted field inspections
- Provided ongoing technical assistance

Project - Wekiva Parkway (Section 6)
Location - Orlando, Florida
Year - 2018
Type - Form Traveler
Owner - Florida DOT
GC - Superior Construction Co.
Client - Superior Construction Co.

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Pfeiffer Canyon Bridge Replacement

310 ft Plate Girder Bridge launched over Canyon

Structural analysis and verification of plate girder bridge, shoring towers and launching works.

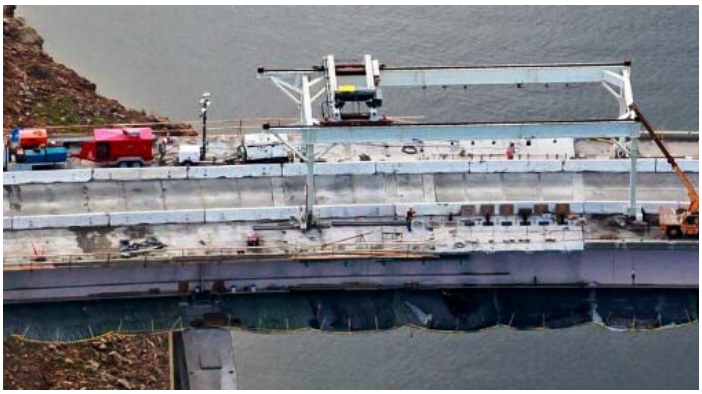
- Created 3D model of entire launch setup
- Performed step-by-step launch analysis
- Bridge checked to AASHTO LRFD 2016
- Abutments checked for stability during launching
- Verified tie-back systems and launch deflections
- Analyzed 36 in. and 60 in. anchor piles
- 314 ft long plate girders, 13 ft deep with 1.25 in. webs
- Launched uphill with 7% grade

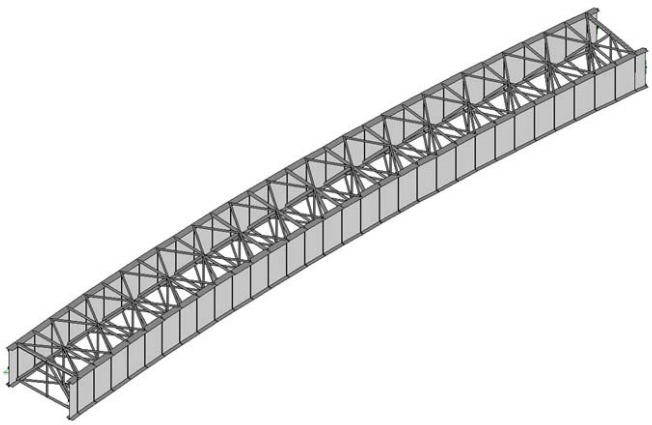
Project	-	Pfeiffer Canyon Bridge Replacement
Location	-	Big Sur, California
Year	-	2017
Type	-	Bridge Launch
Owner	-	Caltrans
GC	-	Golden State Bridge Inc.
Client	-	Golden State Bridge Inc.

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

James E. Roberts Bridge | Tuolumne River Bridge

Complete Deck Replacement with Precast Panels





Structural analysis and verification of plate girder bridge during reconstruction.

- Developed capacity envelope for entire bridge
- Created 3D model of center span
- Checked Caltrans construction scheme
- Girders checked to AASHTO LRFD 2009 and BDS 2004
- Deck replaced in sections during nighttime
- Bridge open to traffic during the daytime
- Plate girders 14 ft deep, 1/2" web, 2-1/2" flanges
- Mono-symmetric section, 100 ksi flanges, 36 ksi web
- Longitudinal stiffeners added to stabilize web
- Checked moving gantry

Project	-	Tuolumne River Bridge
Location	-	Tuolumne County, California
Year	-	2016
Type	-	Bridge Deck Replacement
Owner	-	Caltrans
GC	-	Golden State Bridge Inc.
Client	-	Nutt, Redfield & Valentine

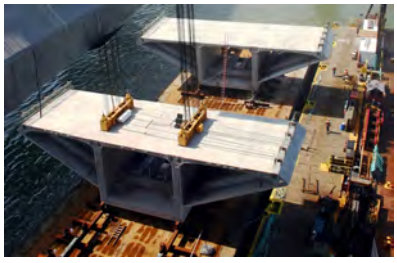
Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Segment Lifter for San Francisco Oakland Bay Bridge

Self-Launching Erection Device / SLED

A self-launching beam-and-winch system for erecting 800 ton precast segments.

Four hydraulic winches were used, each with a 10-part line, to lift a total of 452 segments. The average lift time was about 20 minutes. After erecting a segment, the SLED was moved to a new lift position using its built-in hydraulic launch system.

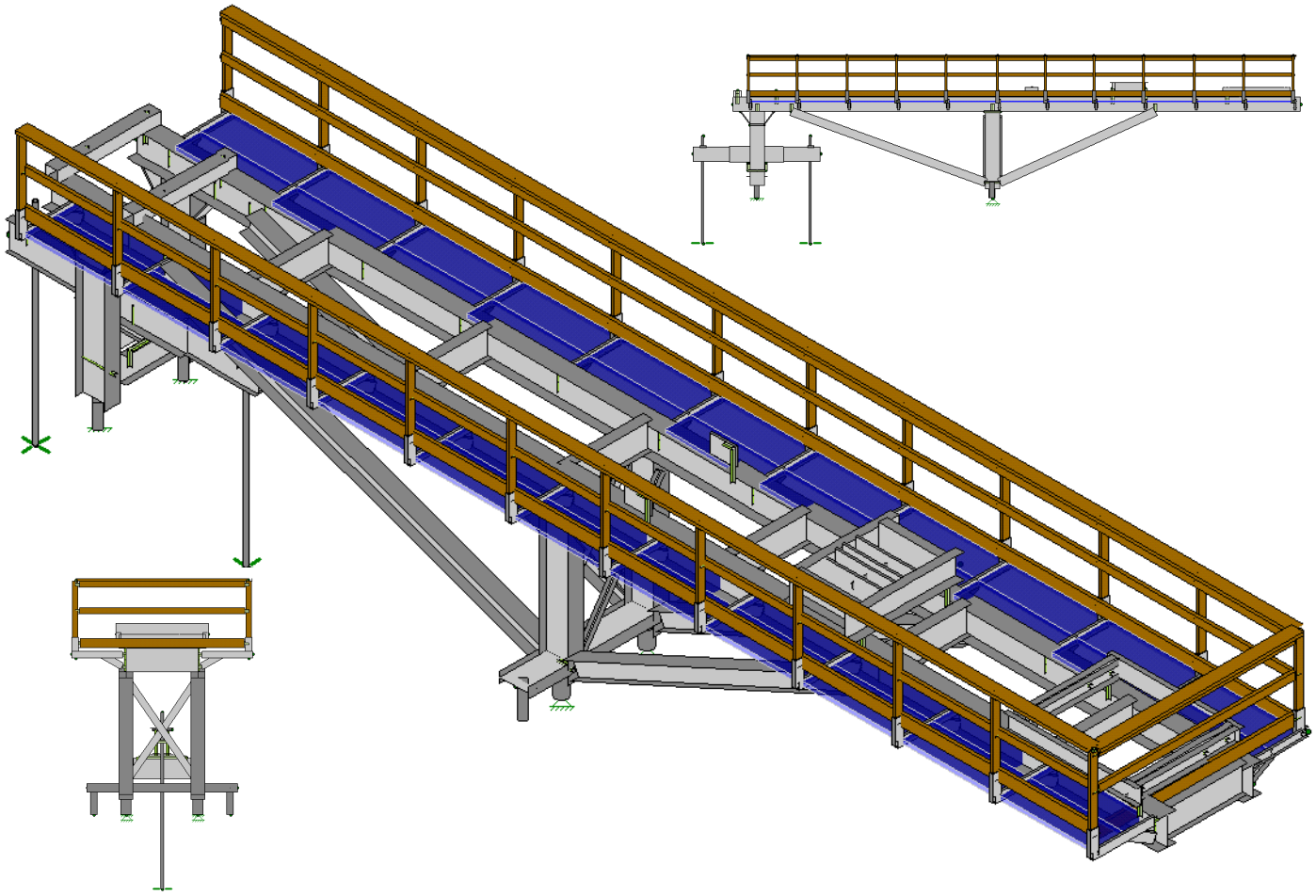


Project - San Francisco Oakland Bay Bridge
Year - 2002 - 2005
Type - Segment Lifter
Owner - Caltrans
GC - Kiewit Pacific / FCI / Mansion JV
Client - Schwager Davis Inc.

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Bonner Bridge Replacement Project

Segment Lifter for Balanced Cantilever Bridge



Development and design of a highly optimized segment lifter with a very low ratio of equipment weight to segment weight (0.25)

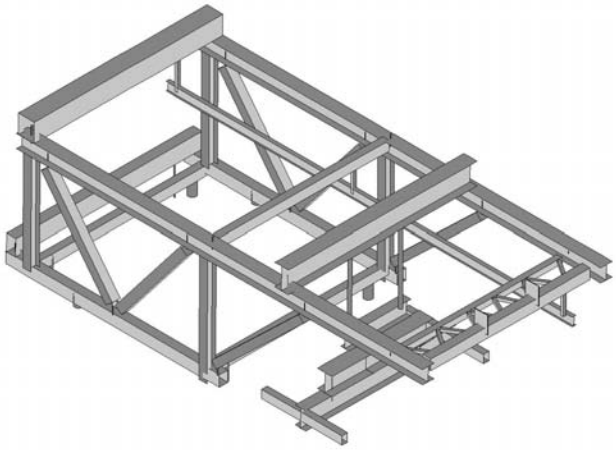
- Segment weight of 126 tons max.
- Hydraulic winches
- 10-part lines
- Self-launching
- Overall concept development
- Mechanical component selection and interface
- 3D analysis
- Final design and drawings

Project - Bonner Bridge Replacement
Location - Dare County, North Carolina
Year - 2015
Type - Segment Lifter
Owner - North Carolina DOT
GC - PCL Civil Constructors
Client - Schwager Davis Inc.

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Bonner Bridge Replacement Project

Segment Lifter for Balanced Cantilever Bridge



Design review and structural analysis of the segment lifter

- Max. segment weight of 126 tons
- Lifting done by hydraulic winches
- 16-part line using 28 mm wire rope
- Self-launching design
- Performed 3D structural analysis
- Detailed calculations and verification

Project - Bonner Bridge Replacement
Location - Dare County, North Carolina
Year - 2016
Type - Segment Lifter
Owner - North Carolina DOT
GC - PCL Civil Constructors
Client - HCR Bridge Machinery

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Caguanas River Bridge on Highway PR-10 in Puerto Rico

Curved Incrementally Launched Bridge

First curved incrementally launched bridge in North America

Length = 1271 ft / 387.5 m
Weight = 11,100 tons
Slope = 4%

Design, engineering and drawings:
- Launching nose
- Temporary piers
- Pier tie-back system
- Sliding bearings and launching guides
- Superstructure modifications
- Launching mechanism (2 x 1000 ton jacks)
- Field supervision

Project - Caguanas River Bridge on PR-10
Location - Utuado, Puerto Rico
Year - 1989
Type - Incremental Launch
Owner - Puerto Rico DOT
GC - Las Piedras Construction Co.
Client - VSL Corporation

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

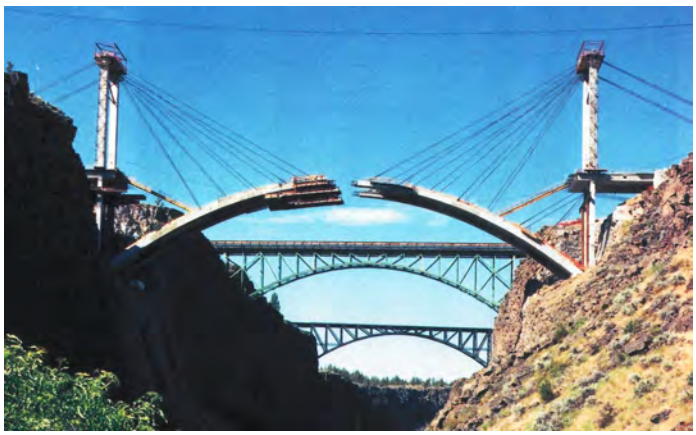
Crooked River Gorge Bridge Arch Construction

410 ft Concrete Arch Bridge over 330 ft Gorge

Segmental arch construction with (2) rib form travelers and (1) slab form traveler.

Design, engineering and drawings:

- Arch construction analysis to determine required pull on rib form traveler
- Rib form traveler supported by leading stay cable
- Slab form traveler
- Temporary precast concrete towers with stressing platform and jack trolley system
- Arch tie-back system and anchorage blocks
- Rock anchors
- First lift falsework
- Shop drawings
- Technical assistance



Project	-	Crooked River Gorge Bridge
Location	-	Bent, Oregon
Year	-	1999
Type	-	Arch Construction
Owner	-	Oregon DOT
GC	-	Kiewit Pacific
Client	-	Schwager Davis Inc.

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Temporary Work Bridge for Foothills Parkway Bridge No. 2

790 ft crane and segment trestle on steep hillside

Temporary work bridge to facilitate the top-down construction and erection of a precast balanced cantilever bridge in the Great Smoky Mountain National Park.

- Sitting on micro-piles and precast pile caps
- 790 ft long, 7% grade, S-shaped (reverse curve)
- Adjustable deck width to suit equipment
- Switch between pinned and fixed foundations

Used for:
- Trestle foundation construction
- Trestle erection
- Bridge foundations and substructure construction
- Crane and truck traffic
- Segment delivery and erection
- Trestle removal

Project - Foothills Parkway Bridge No. 2
Location - Blount County, Tennessee
Year - 2011
Type - Temporary Work Bridge
Owner - Federal Highway Administration
GC - Bell & Associates Construction
Client - VStructural LLC

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Span-by-Span Construction of the Jamestown Verrazzano Bridge

Precast, Post-Tensioned Spans floated in by Barge - 2400 tons

Heavy lift engineering, equipment design, permanent structure modifications, shop drawings, lifting procedures and onsite technical assistance.

Weight	-	2400 tons (with added materials)
Span	-	167 ft x 72 ft
Jacks	-	12 x 1000 ton
Height	-	130 ft (max.)
Lifts	-	15 total

Pier segments on final structure sliding bearings
Compound tie-down angles creating lateral loads

Project	-	Jamestown Verrazzano Bridge
Location	-	N. Kingstown-Jamestown, Rhode Island
Year	-	1990
Type	-	Heavy Lifting
Owner	-	Rhode Island DOT
GC	-	Atkinson Kiewit JV
Client	-	VSL Corporation

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Marlins Ballpark Roof Beam Erection

Stadium with Retractable Roof

Heavy lift engineering, equipment design, permanent structure modifications, tie-down anchors and lifting procedures.

- Erection of (9) spans weighing up to 1,632 tons
- Technically complex lifts with unbalanced column moments
- Adjacent spans were used for tie-down reactions whenever possible

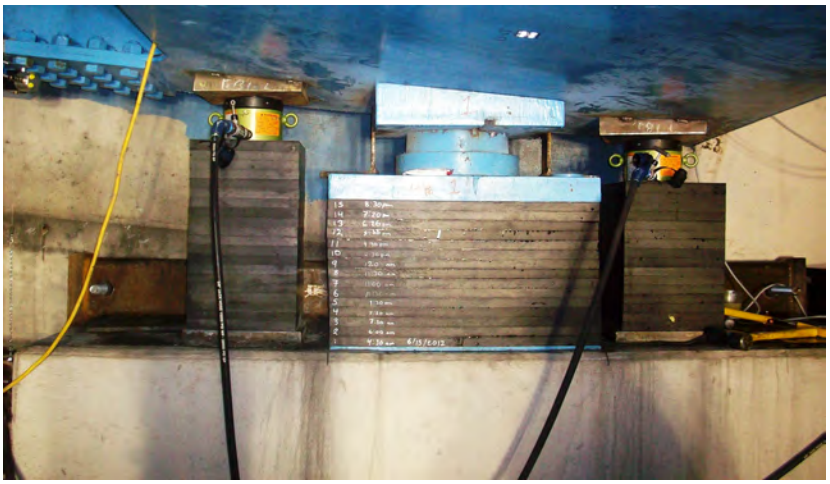
Project - New Marlins Ballpark
Location - Miami, Florida
Year - 2010
Type - Heavy Lifting
Owner - Miami Marlins
GC - Hunt / Moss JV
Client - VStructural LLC

Structural Engineering • Form Travelers • Heavy Lifting • Incremental Launching • Arch Construction • Segment Lifters
Post-Tensioning • Stay Cables • Shoring • Formwork • Slipforming • Trestles • Falsework • R&D

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Raising of Ramp N over I-595 with 10% Lateral Capacity

Avoiding demolition by increasing traffic clearance



Heavy lift engineering, design of shoring towers and lateral system, lifting procedures, onsite assistance.

Weight	-	2600 tons
Length	-	960 ft
Jacks	-	36 (synchronized)
Height	-	18 in.
Time	-	30 hours

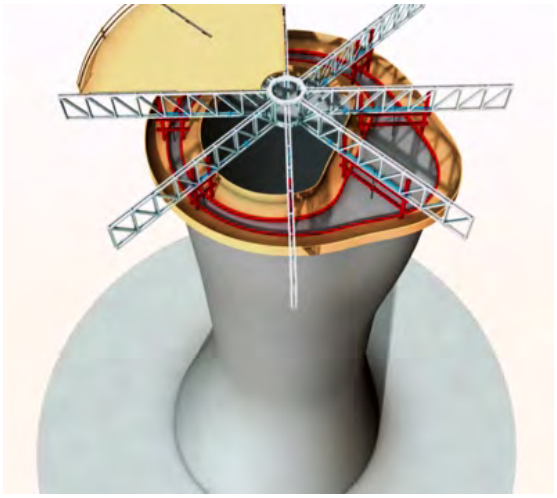
- The Owner declined our offer to lift the bridge by 18 inches in a single stroke
- The bridge was lifted in 1 in. increments over a 30 hour non-stop period
- Lateral capacity of 10% was maintained at all times during the lift by means of an innovative and new restraint system at every pier and abutment

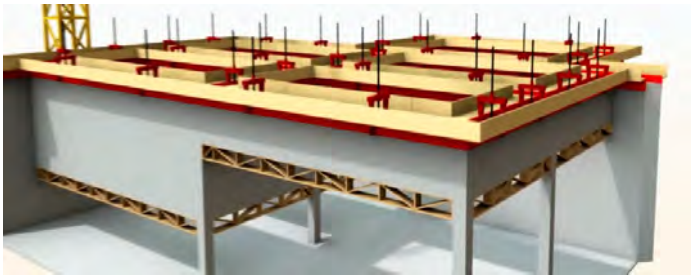
Project	-	Ramp N over I-595
Location	-	Broward County, Florida
Year	-	2012
Type	-	Heavy Lifting
Owner	-	Florida DOT
GC	-	Dragados USA
Client	-	VStructural LLC

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Vertical Concrete Slipform Construction Services

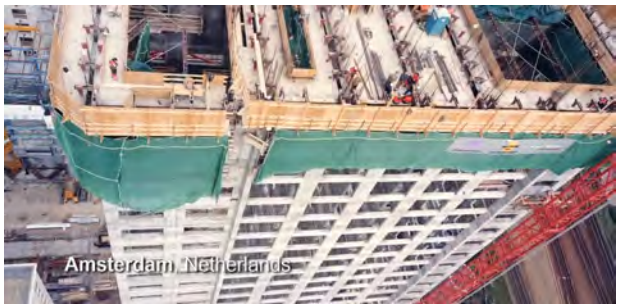
State-of-the-Art Slipforming Services for Large-Scale Civil Engineering Projects





North American Agent for Gleitbau GBG, world-leader in slipform construction

- Slipform Consulting Services
- Slipform Equipment Rental with Expert Supervision
- Full Construction Services with Slipform Method
- Registered Engineers to support your Project
- Heavy Lifting Services



Structural Engineering • Form Travelers • Heavy Lifting • Incremental Launching • Arch Construction • Segment Lifters
Post-Tensioning • Stay Cables • Shoring • Formwork • Slipforming • Trestles • Falsework • R&D

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

IU Health People Mover Guideway Structure

7400 ft Precast and Post-Tensioned Structure

Designer and Engineer-of-Record for this precast, post-tensioned elevated guideway structure.

Total length - 7400 ft
Average span length - 80 ft
Maximum span - 110 ft
Minimum radius - 100 ft

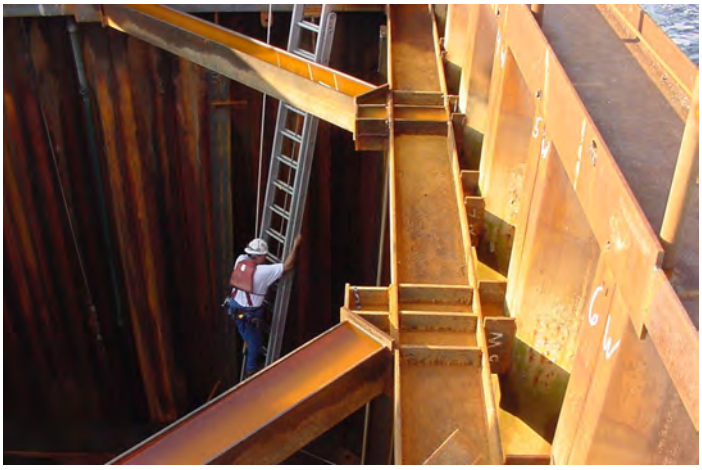
Project - IU Health Automated People Mover
Year - 2001 - 2003
Type - Precast post-tensioned guideway
Owner - IU Health (Clarian Health)
GC - Schwager Davis Inc.
Client - Schwager Davis Inc.

Structural Engineering • Form Travelers • Heavy Lifting • Incremental Launching • Arch Construction • Segment Lifters
Post-Tensioning • Stay Cables • Shoring • Formwork • Slipforming • Trestles • Falsework • R&D

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Brightman Street Bascule Bridge Coffer Dams

Design Review and Inspection



Design review and inspection of the Brightman Street Bridge temporary cofferdams for constructing the pier foundations.

Project	-	Brightman Street Bascule Bridge
Location	-	Fall River, Massachussetts
Year	-	2001
Type	-	Coffer Dams
Owner	-	Massachusetts DOT
GC	-	Jay Cashman, Inc.
Client	-	Rusco Steel Co.

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Segment Lifting Beam | 3D Manipulator

C-Frame Design Requiring No Segment Inserts

Development and Design of a C-Frame Segment Lifting Beam / Manipulator.

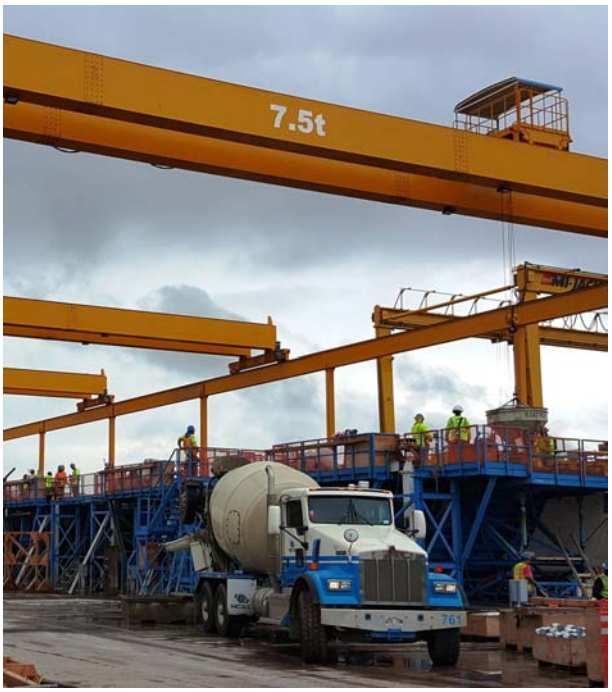
- Innovative new segment lifting beam for 165 k segments
- Highly optimized, with a weight of under 25,000 lbs
- Works like two mechanical hands with hydraulic "thumbs"
- No segment inserts or tie-down bars required
- Segment can precisely match the previous segment
- Longitudinal slope adjustment of +/- 5%
- Transverse slope adjustment of +/- 8%
- Requires very low headroom
- Modular design with high-reliability bolted connections
- Very small hydraulic jacks compared to other designs

Project	-	I-49/N Segment K - Phase 2
Location	-	Shreveport, Louisiana
Year	-	2015
Type	-	C-Frame Segment Manipulator
Owner	-	Louisiana DOTD
GC	-	PCL Civil Constructors, Inc.
Client	-	PCL Civil Constructors, Inc.

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Honolulu High-Capacity Transit Corridor Project

Overhead Crane for Servicing the Precast Yard



Structural verification and design improvements for an overhead crane used for servicing the concrete precasting yard.

- Lifting height of 12m / 39 ft
- Span of 35m / 115 ft
- Lifting capacity of 7.5 ton
- Three separate cranes, running simultaneously
- Highly irregular column spacings, matched to existing foundations
- Checked for hurricane and earthquake loading

Project	-	HART Extension - Island of Oahu
Location	-	Honolulu, Hawaii
Year	-	2017
Type	-	Precast Yard Overhead Crane
Owner	-	HART
GC	-	Shimmick, Traylor, Granite JV
Client	-	HCR Bridge Machinery (M) Sdn. Bhd.

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

New Bar Lifting System without Split Nuts

Lifting Innovation

Developed from scratch - a new and innovative bar lifting system that does not require special fabrication split nuts.

This system was developed in response to the contractor's decision to use a bar lifting system for erecting the extremely wide and flexible form traveler bottom platforms on the new Pearl Harbor Memoral Bridge in New Haven, Connecticut. The system proved very effective and was quickly re-deployed for other jobsite lifting work such as for raising and lowering formwork and falsework. The design was based on off-the-shelf components in conjunction with a special jack chair and related accessories.

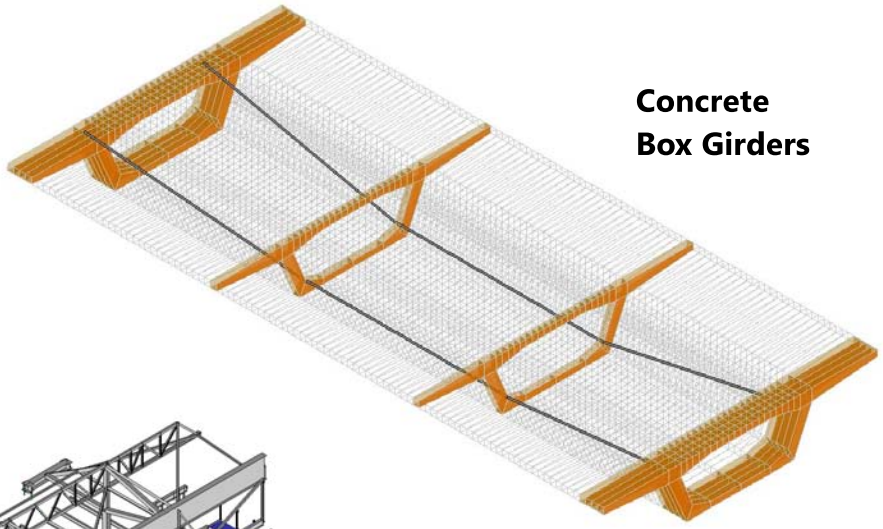
Project	-	Pearl Harbor Memorial Bridge
Location	-	New Haven, Connecticut
Year	-	2011
Type	-	Equipment Design
Owner	-	Connecticut DOT
GC	-	Walsh / PCL JV II

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

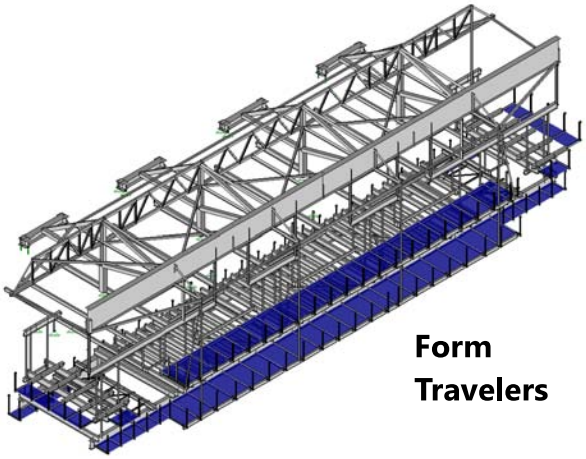
CTE

Structural Analysis

Checks and Verifications for Heavy Lifting and Construction Applications



Concrete Box Girders



Form Travelers

Steel Tub Girders

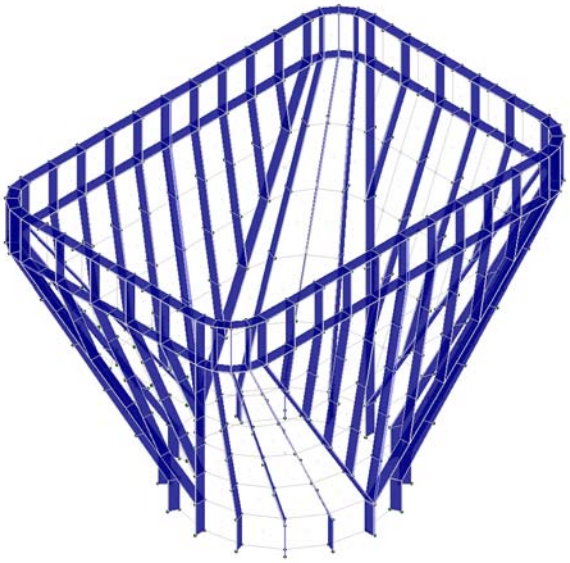
Checking Equipment and Components

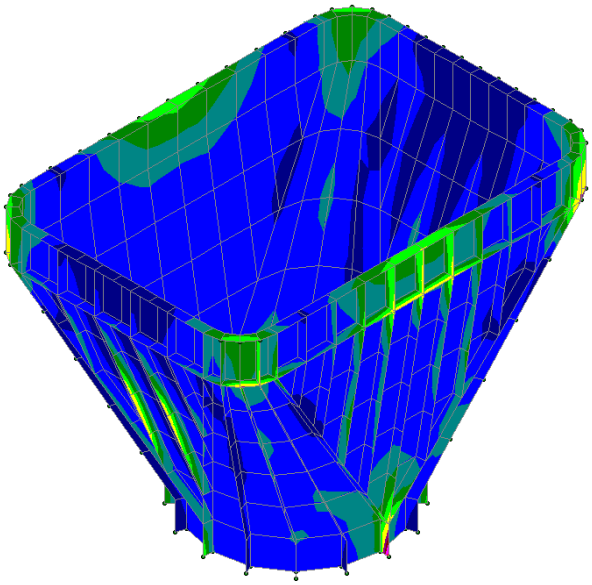
- Designing and checking custom equipment
- Checking structural elements for stresses during erection and construction.

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

HART Column Formwork - Honolulu Authority for Rapid Transportation

72 ft Column Formwork with Intricate Capital Shape





Structural verification and design review for a family of column forms with maximum height of 72 ft and diameter of 9 ft.

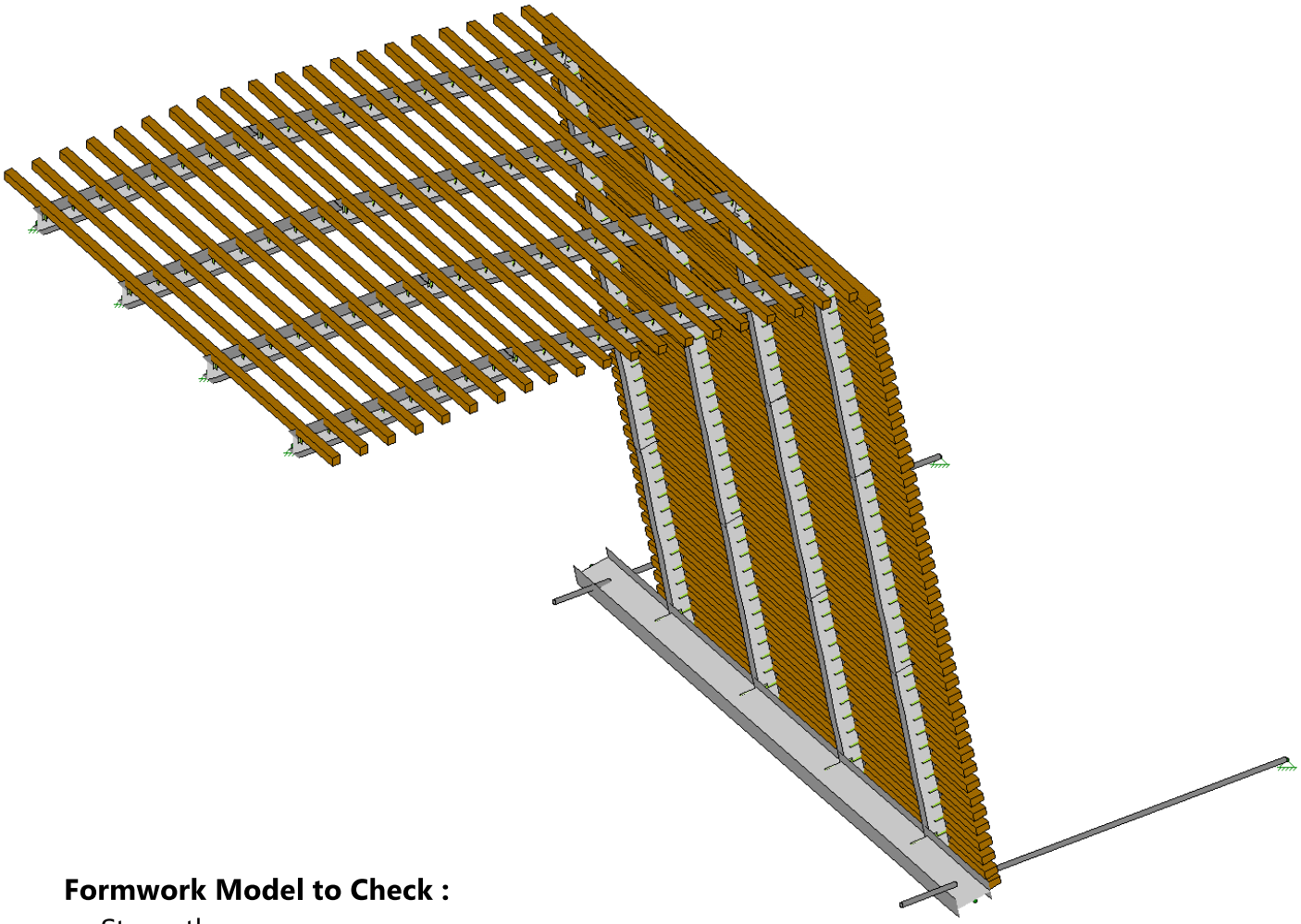
- Column heights from 24 ft to 72 ft
- Column diameters from 5.5 ft to 9.0 ft
- Designed for concrete pressure and storm winds
- Braced and secured with concrete weights
- Finite element analysis of capital form including stiffeners
- Form deflections checked
- Overall stability checked

Project	-	HART Extension - Island of Oahu
Location	-	Honolulu, Hawaii
Year	-	2017
Type	-	Column Formwork and Capital
Owner	-	HART
GC	-	Shimmick, Traylor, Granite JV
Client	-	NINIVE Casseforme S.r.l.

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Custom Formwork Design

Form Traveler Outside Formwork Shown



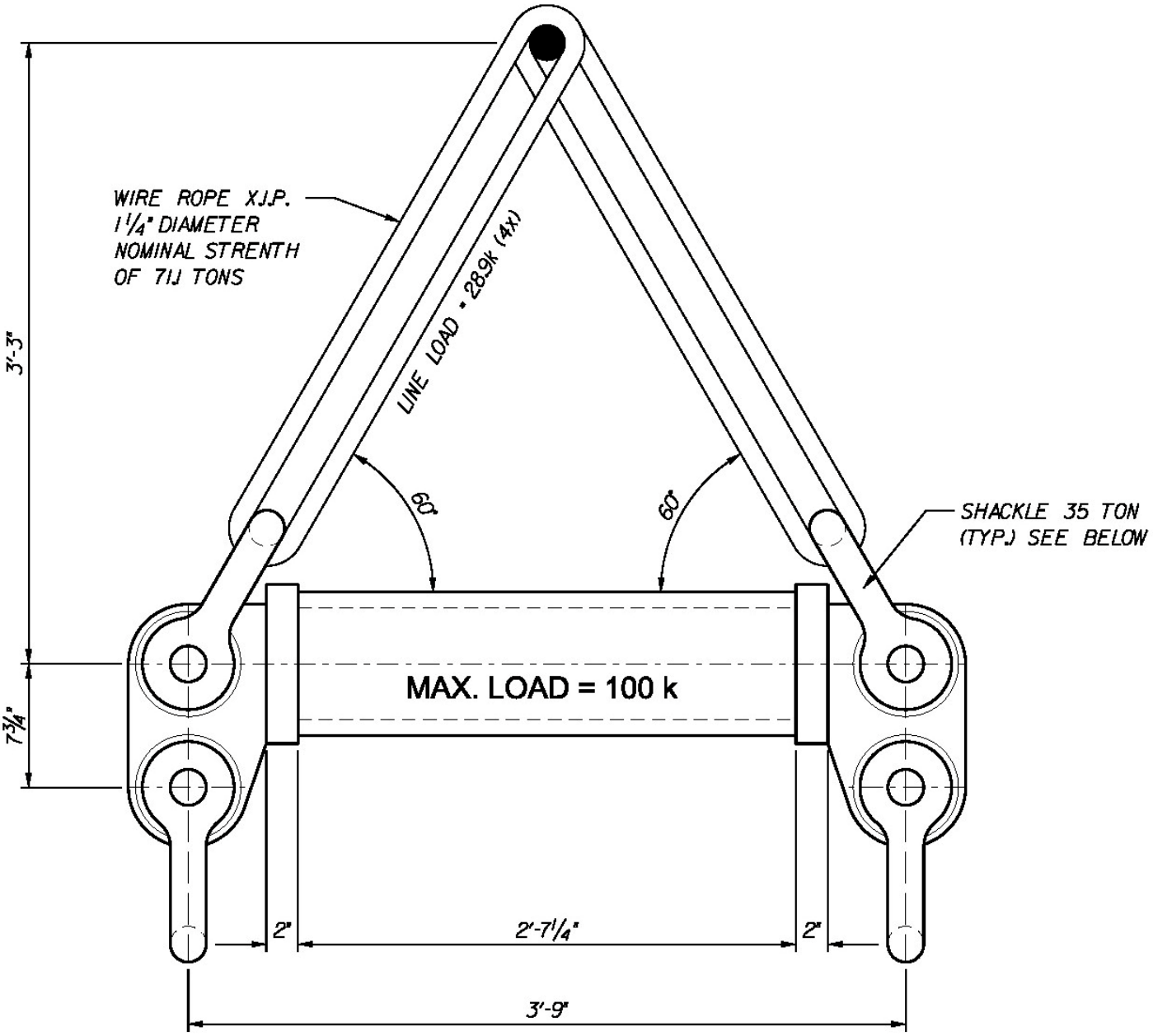
Formwork Model to Check :

- Strength
- Deflections
- Form tie forces
- Strong-back beam
- High-strength bars

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Rigging and Spreader Beams

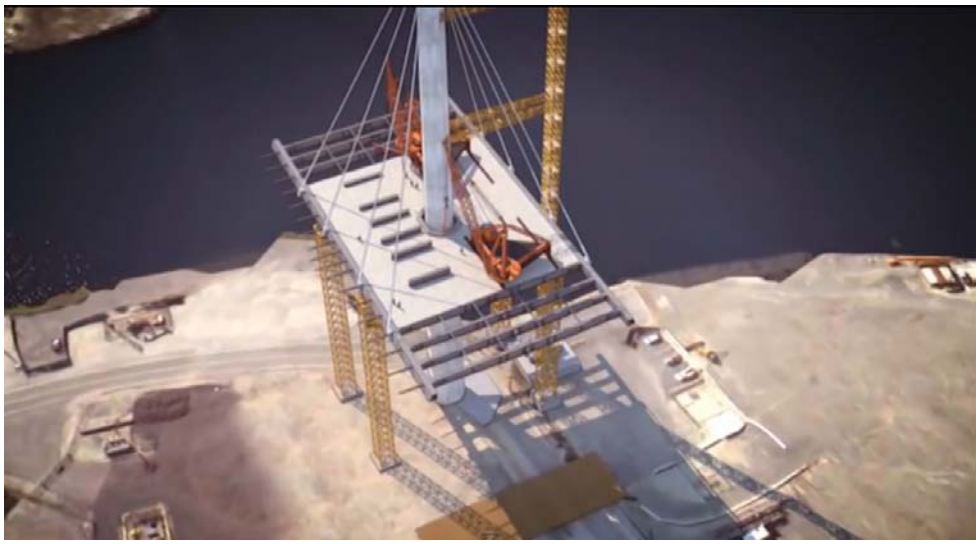
Typical Example Below



Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Construction Animation Videos

Cable-Stayed Bridge Erection

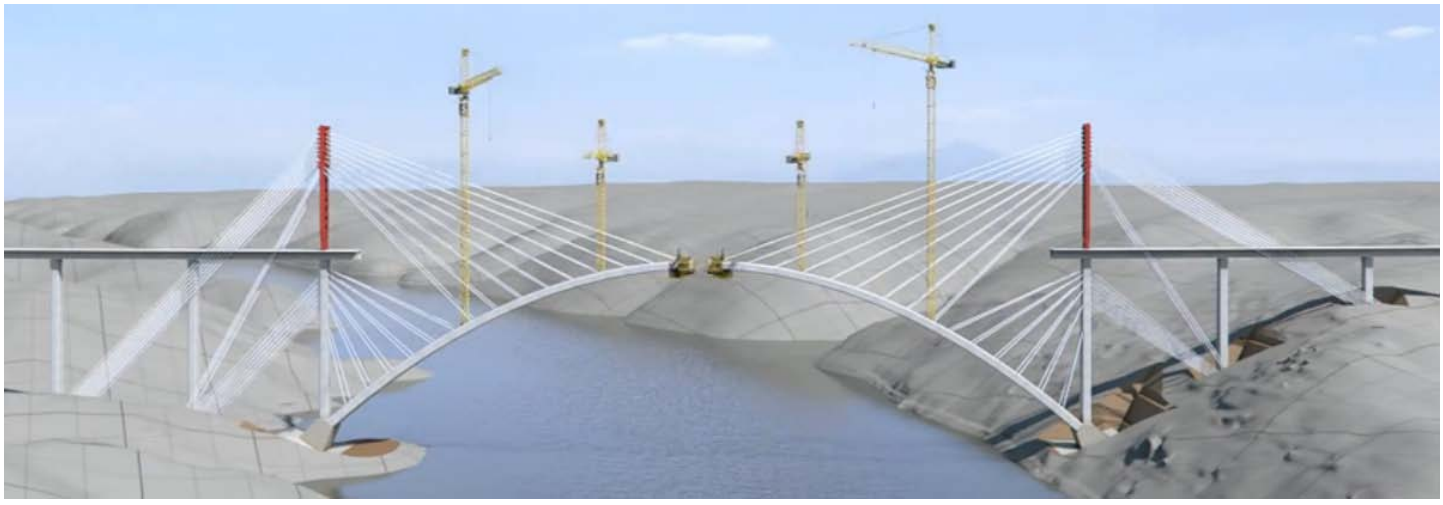


Design/Build

Value Engineering

PPP Projects

Arch Construction with Temporary Towers



Need to explain your design? We offer animated construction videos to help you sell your concepts and ideas to decision makers and stakeholders. There is no better medium to hold people's attention and to get your points across than a striking video presentation. We will work hand in hand with your estimators and planners to develop the kind of presentation that will put you out in front.

Construction Technologies & Engineering, Inc.
P.O. Box 218 • Portsmouth • RI 02871 • USA
T (001) 401-841-0623
E info@cteg.com
W www.cteg.com

Founder and Principal Engineer

Michael A. Veegh, P.E. MBA MASCE

Name - Michael A. Veegh
Nationality - Austria, US Resident since 1985
Born - 1961
Languages - English, German
Member - ASCE American Society of Civil Engineers
- ASBI American Segmental Bridge Institute
- PTI Post-Tensioning Institute
- AISC American Institute of Steel Construction
- SEARI Structural Engineers Association of Rhode Island

The company founder and principal engineer is Michael Veegh, a registered professional engineer in CA, RI, MA, IN, PA, LA, NC, FL, MI and TX. His NCEES record allows him to obtain additional state licenses, as needed.

Mr. Veegh grew up in Switzerland and later South Africa where he graduated in 1983 from the University of the Witwatersrand with a BSc (Eng) Civil degree and from the University of Rhode Island in 1994 with an MBA.

He began his career at Watermeyer, Legge, Piésold & Uhlmann (now Knight Piesold), a South African and now international civil consulting firm, working on general building and industrial structures. In 1985, he joined VSL Corporation in Campbell, California where he became Division Engineer for the Engineering Structures Unit. He worked on the construction of long-span, steel and concrete bridges using such techniques as incremental launching, form travelers and span-by-span lifting of segments weighing up to 2400 tons. He is also well-versed in prestressed concrete and post-tensioning technology. In 1995, he incorporated CTE to pursue his goal of engineering excellence. With more than 30 years of experience in bridge construction and special projects, designing in steel and concrete, he performs much layout work, engineering and detailing himself, ensuring a high level of professional attention to all aspects of his projects.

His focus is on construction engineering for demanding infrastructure projects such as bridges, stadiums and offshore oil platforms. He assists general contractors and specialty subcontractors by designing and checking their temporary structures, means-and-methods and custom equipment. He also performs general structural engineering in steel, concrete, timber and masonry to round out his practice.

He has hands-on experience in machining and welding and has spent much time on numerous jobsites, as resident engineer and also building forms, framing, tying rebar and installing post-tensioning. This gives him a highly practical and constructability-based approach when designing for construction, a fact much valued by his clients. He is just as comfortable on the jobsite as he is in the design office. With degrees in engineering and business, he also has a clear understanding of not only the technical challenges faced by contractors, but also of their financial and risk management concerns.

In 2012, he authored "Converting Graduates into Engineers", an eBook which aims to share some insights with students and younger engineers. It is based on his personal experiences over the years.