

FORM

MARKS®

SPRING 2021



Hurricane Evacuation Route
Built With EFCO ... p. 34



CONTENTS



COMMERCIAL & HIGHRISE

Ottawa, Canada.....	Forming Thick Concrete Walls, Thick Enough to Stop X-Rays.....	4-5
Richmond and Berea, Kentucky.....	High to Low Walls, Everything is Possible Using EFCO Formwork Solutions	6-7
Charlotte, North Carolina.....	How Can You Quickly Adjust to Varying Floor Heights?	8-9
Los Angeles, California	Using Fewer Ties is How to Reduce the Need for Patching	10-11
Balamban Cebu, Philippines.....	Want to be the Last to Start and the First to Finish?.....	12-13



UTILITIES & WATER TREATMENT

Padre Hurtado, Chile	A Partnership in Innovation.....	14-15
North Vancouver, Canada.....	Forming Round Concrete Walls	16-17
Biddeford, Maine	Formwork Systems Help Speed Construction of Saco River Facility	18-19
Fenton, Missouri.....	Helping the Customer Build Efficiently.....	20-21
Buenos Aires, Argentina.....	First Time Customer Is Happy With Outcome	22-23
Reading, Pennsylvania.....	Construct Any Radius with the Revolutionary REDI-RADIUS System.....	24-25



BRIDGES & HIGHWAYS

Hertford, North Carolina.....	New Bridge Replaces the Old One Built When Model T Cars Traversed The Roads	26-27
Kenner, Louisiana	Planning to Help You Realize the Most Productivity.....	28-29
Monterrey, N.L Mexico.....	Self-Spanning PLATE GIRDER Works Well When There is Irregular Terrain	30-33
Galveston to Houston, Texas.....	Expansion to Eliminate Traffic Jams During Hurricane Evacuations.....	34-37



CIVIL & INDUSTRIAL

Sungai Kapar Indah, Malaysia	Shoring Needs to Be Assembled Only Once, Simply Adjust Jacks for Height Variances	38-39
Lehi, Utah.....	SUPER STUD & E-BEAM to the Rescue	40-41
Middlesex, New Jersey	Get Architectural Concrete Pour After Pour Using Steel Faced Formwork	42-43
United Kingdom.....	Historical Sewerage System Meets Halfway Mark in Improvement Project.....	44-45



PARKING & TRANSPORTATION

Trujillo, La Libertad, Peru.....	Achieve Multiple Diameters With One Set of Forms	46-47
Santa Clara, California	Single-Sided Wall Truss Proves Its Value After Use	48-49
Bangkok, Thailand	EFCO's High-Load Shoring Supports Cross Beams in Construction of Yellow Line	54-57



OIL & ENERGY

Brillion, Wisconsin.....	Depending on EFCO's Expertise to Help Gain Efficiency in Concrete Construction	58-59
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SAFETY AWARD 50-53

Featuring a contractor that has been recognized for outstanding safety practices on the jobsite.

FORM MARKS® SPRING 2021 Volume 70, No.1

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the people in the business of concrete
construction.



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“
These quotes can be seen
throughout FORM MARKS. They
contain customer feedback given
to EFCO Field Supervisors at the
jobsite.

”
The EFCO PLATE GIRDER® form system
is a registered trademark. This product
was designed for use with products
manufactured by EFCO, and it is
recommended that it not be commingled
with products of other manufacturers'
forming systems.



SAFETY SEASON

In Iowa, we had a pretty decent March as far as weather. Highs in the 50s and 60s and lows in the high 30s and 40s. The maple trees outside my office are budding out and the red-winged blackbirds have arrived; a sure sign that spring is almost here. Another sure sign is the presence of construction cones, “single lane ahead” digital signs and concrete trucks lining a side street in downtown Des Moines. People in Iowa will say there are only two seasons; winter and construction season and by all accounts, construction season is on our doorstep.

Construction season means safety season. In 2019 alone, 130,000 construction workers missed days of work due to injury, and OSHA reports that one in five deaths among U.S. workers is in the construction industry. The Bureau of Labor Statistics has recorded that falls account for 33% of all construction deaths each year. This issue of FORM MARKS serves as a reminder to be safe, look for existing hazards, and be reminded of “Construction’s “FATAL FOUR”—FALLS, STRUCK BY AN OBJECT, ELECTROCUTIONS & CAUGHT IN OR IN BETWEEN AN OBJECT. Together, these four account for over 60% of all construction related deaths.

Construction season is here, be careful, be smart and be on the lookout for potential safety problems. Watch out for each other.

Cathy Howell
VP & Director of Advertising



FORMING THICK CONCRETE WALLS, THICK ENOUGH TO STOP X-RAYS

TESTING FACILITY

First time customer, **Waterdon Construction, Ltd.**, was contracted by the project owner to build a testing facility for medical sanitizing equipment. The equipment uses an Electrical Linear Accelerator to produce X-rays to sterilize equipment. Due to the X-rays produced, the testing facility walls and roof slab were required to be 13'-9 1/2" (4200 mm) thick. This required a tricky tie situation in the corners and for the wall slabs.

WALL FORMING

EFCO was brought on board by Waterdon to provide the concrete formwork solution for this project. Their decision was made due to EFCO having the expertise and experience to make their project a success. An EFCO Jump Bracket System was chosen to form the concrete walls, utilizing a combination of **PLATE GIRDER**® plus **SUPER STUD**® and **E-BEAM**® wall forming system. The forms were cycled three times for five pours (two wall pours, approximately 12' (3600 mm) high each and three roof slab pours of 2' (600 mm), 6' (1800 mm) and 6' (1800 mm). EFCO's E-Z DECK shoring system was chosen for the roof slabs.

EFCO ASSISTED WITH SAFETY, ASSEMBLING AND CYCLING

Construction began in August 2020 and the final pour was completed in December 2020. Being a new EFCO customer, EFCO provided field service support to assist

Waterdon with the assembly of gangs, as well as helping them plan and cycle the equipment for the first and second pours.

Due to the volume of concrete required for each pour, the adherence to scheduling on the job was critical. Concrete placement was scheduled on Saturdays to enable the concrete supplier to have multiple plants providing the 160 yd³ (120 m³)/hour required

for each placement. EFCO's customer service helped Waterdon achieve their pour dates by producing detailed drawings quickly and shipping equipment to the jobsite in a timely fashion.

The formwork systems that EFCO provided outperformed the customer's expectations and was an overall success on the project. ♦

PROJECT LOCATION

Ottawa, Canada

EFCO EQUIPMENT

PLATE GIRDER®, **E-BEAM**® and **SUPER STUD**® Wall forms, **E-Z DECK**®

WATERDON

CONSTRUCTION TEAM

Neal L. HallSenior Vice President
Russel W. Grass, Jr Vice President
Nick NortonProject Manager
Simon JohnsProject Superintendent

EFCO FORMWORK

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Alex LacasseTerritory Manager
Richard WilderField Supervisor
Shah KhanEngineer

HOW TO CONNECT

<https://waterdon.ca/>





HIGH TO LOW WALLS, EVERYTHING IS POSSIBLE USING EFCO FORMWORK SOLUTIONS

DOUBLE-DUTY FACILITY

When the Madison County Board of Education decided to build two new Technology Centers in Richmond and Berea, Kentucky, they also decided to build the gymnasiums to act as community storm shelters. Rising Sun Developing was awarded the contract to build both structures and asked EFCO to look at the tall concrete walls on these gymnasiums. After reviewing the structural plans and discussing with the contractor, it was decided the EFCO LITE® wall system was the answer.

STRAIGHT CONCRETE WALLS

The walls started at 32' (9.8 m) tall on the high end of the gymnasium and sloped to 25' (7.6 m) tall on the low end. EFCO provided approximately 5,256 ft² (490 m²) of formwork for one corner set-up with two 32' (9.8 m) legs and 2,952 ft² (275 m²) of formwork for a straight wall section that was 41' (12.5 m) long. Using the EFCO LITE system with EFCO Quick Clamps enabled the contractor to set 8' (2.4 m) form sections. The Quick Clamps were used as connections at the vertical form joints and greatly reduced the form assembly time. These two form set-ups enabled the contractor to pour the walls on each structure in eight pours with the

walls in the balcony area being done in two lifts. Rising Sun Developing has been a long-time EFCO customer, and we look forward to many more future projects with them. ♦



The walls were cast utilizing the EFCO LITE® wall forming system which enabled for full height gangs and fast cycling using the EFCO Quick Clamp. Each EFCO Quick Clamp includes a steel aligning pin to align panel joints and face sheets.

PROJECT LOCATION

Richmond and Berea, Kentucky

EFCO EQUIPMENT

EFCO LITE®

RISING SUN

DEVELOPING TEAM

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Shane Carpenter.....Project Manager

Jack HammondProject Superintendent

EFCO FORMWORK

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Brian JenneField Supervisor

Dan Burns.....Engineer

HOW TO CONNECT

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How Can You Quickly Adjust to Varying Floor Heights?

E-Z DECK BEAM TOWERS WITH SLAB DECK PANELS

United Forming, Inc. chose EFCO to provide the horizontal shoring formwork for the 2151 Hawkins Street project. Located in the heart of Charlotte's developing South End neighborhood, this 17-level building includes 298,600 ft² (27,740 m²) of office space atop its 8-level, 304,500 ft² (28,290 m²) parking garage with a total of 710 spaces. It is located directly on the Charlotte Rail Trail and Light Rail, making it easily accessible. An existing next-door brewery will be moved into a portion of the ground level's 24,400 ft² (2,265 m²) of retail space.

OPTIMIZED CONSTRUCTION PROCESS LED TO SHORING SYSTEM DECISION

The cycling sequence of the hybrid E-Z DECK® beam towers and CUNNINGHAM® deck panels placed EFCO's shoring solution at the top of the list for formwork suppliers, making EFCO an easy choice. After cycling perimeter beam towers with EFCO's new 3.5K (15.6 kN) adjustable C-Caddy, two six-legged beam towers per beam bay were moved out of the way with EFCO Crazy Wheel Dollies, making it easy to come back and retrieve the slab deck panels. Then beam towers were set in place atop the next level and were followed by slab deck panels being flown into final position and ready for the next pour.

The 2151 Hawkins Street Project had many varying floor heights. EFCO's E-Z DECK system was an efficient solution for the varying floor heights, given its ability to be assembled and disassembled quickly because of the minimal components it uses. With a fast release of the Jack Retainer Clip, the jacks are easily removed and swapped out for longer or shorter versions. And, staying true to its name, EFCO's Quick Bolts, a fast nut and bolt combination that can be quickly removed from E-Z DECK U-heads, separated the tabletops from towers so they can be cycled over to the newly reconfigured towers atop the next level.

SKY'S THE LIMIT

Topping out the parking garage at level 8 and moving up to level 9 with its 12' (3.6 m) slab cantilevered out towards the street and another 12' (3.6 m) slab cantilever on the back side presented another opportunity for EFCO's E-Z DECK capabilities to shine. United Forming, Inc. once again chose to use EFCO to provide 100' (30.5 m) tall shoring towers on both sides of phase one to handle the 12' (3.6 m) slab cantilevers. The cantilevered conditions also came with additional obstacles, requiring the wet deck to span several areas with a maximum span of 23' (7.0 m) from tower to tower. To handle these spans, EFCO's SUPER STUDS® with moment connections were used. ♦



EFCO's E-Z DECK system was an efficient solution for the varying floor heights, given its ability to be assembled and disassembled quickly because of the minimal components it uses.



Cycling the perimeter beam towers with EFCO's new 3.5K (15.6 kN) adjustable C-Caddy.

PROJECT LOCATION

Charlotte, North Carolina

EFCO EQUIPMENT

E-Z DECK® beam towers, CUNNINGHAM® Deck Panels, C-Caddy, Crazy Wheel Dollies

UNITED FORMING, INC. TEAM

Juvenal Ibarra Field Manager
Alex Cornejo Project Manager
Brian Sallaz General Superintendent

EFCO FORMWORK SPECIALISTS-ATLANTA

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Mark Stewart Territory Manager
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Melvin Marcos Engineer

HOW TO CONNECT

<http://www.unitedforming.com/>



USING FEWER TIES IS HOW TO REDUCE THE NEED FOR PATCHING

PROJECT PURPOSE

UCLA developed an ambitious plan to expand student housing to accommodate a 7% projected increase in students annually. With limited land and resources, a high-density living model was chosen to replace buildings at three sites on their West Los Angeles Campus. **PCL Construction** was selected as the General Contractor to oversee projects at all three sites.

The Southwest Campus Apartments were designed as the corner stone of UCLA's aggressive plans to expand student housing. The new apartments would replace a portion of the existing Weyburn dormitories and provide almost 50% of the total living space to be constructed. The project would have unique challenges with time constraints, both in allowable duration and the hours the site could be worked. Any loss in speed or efficiency would impact the project exponentially. PCL selected to leverage the vast experience of their own crews to self-perform the concrete on this project. EFCO systems used:

- **E-BEAM®** and **SUPER STUD®** Wall Gangs – where contractor supplied plywood sheets are used
- **SUPER STUD** Jump Platforms – Climbing vertical formwork is typically used on building of 5 stories or more
- **Flipper Lock Platforms** – provide a safe way for supporting inner walls for elevator core forming
- **Manual Retractable Corners** – Retracting and expanding formwork for forming concrete corners with ease

- **SUPER STUD** One-Sided Wall Frames – wall forming frames used to assist in concrete forming when the opposite side of the wall is formed up against dirt or a concrete wall
- **E-Z DECK®** Shoring system is ideal for gang stacking
- **EFCO LITE®** system for forming concrete columns and walls

PROJECT OVERVIEW

The Southwest Campus Apartments consist of three cast-in-place 8 to 10-story buildings, providing 591,100 ft² (54,915 m²) of living space. Each building has a combination of concrete cores, interior and exterior concrete shear walls, and columns up to 18' (5.5 m) high. Once the foundations were poured in the densely packed campus footprint, there would be no laydown area for idle formwork. It would be necessary to keep formwork continuously cycling throughout the project and additionally challenging due to the variety of wall conditions in the building designs.

EFCO SUPER STUDS STAND TALL

PCL partnered with EFCO to provide adaptable formwork that could handle many different wall conditions and still meet their aggressive cycling plan. EFCO demonstrated the versatility of the **SUPER STUD** and supplied **E-BEAMS** and **SUPER STUD** equipment for the wall and core formwork, **Flipper Decks**, exterior jump platforms and one-sided walls.

The capability of EFCO's Quick Bolt to connect EFCO **SUPER STUDS** together



The column forms were hinged, giving PCL the advantage of a single pick that set quickly. It only took four EFCO Quick Bolts to close and set a 10' (3.1 m) column.

and achieve a full moment connection enabled PCL to transition from their first 18' (5.5 m) tall forms down to their typical 9' (2.75 m) tall forms by simply unbolting a handful of Quick Bolts. EFCO's Quick Bolt is fast and lightweight while still possessing the strength of an A325 fastener. With its fast, six square threads per inch (per 25mm), it can be inserted, nutted and tightened quickly.

The typical 9' (2.75 m) tall walls used only a single row of EFCO's reusable 30,000 lb (133.4 kN) capacity Rugged Ties. With sparse ties to remove and install, the gangs were stripped and cycled quickly and left minimal holes to patch. Using the same few parts and pieces over and over, PCL's crews were able to quickly gain proficiency across all equipment applications. The ability to have a flexible workforce was very useful at minimizing the impacts brought on by this year's pandemic.

STEEL FACED COLUMNS STEAL THE SHOW

The Southwest Campus Apartments used 34 EFCO **LITE®** and **PLATE GIRDER®** column formwork in a continuous cycle. Welding a steel chamfer to EFCO's steel faced formwork panels provided PCL a superior concrete finish from the first pour to the last pour. The columns were hinged, giving PCL the advantage of a

single pick that set quickly. It only took four Quick Bolts to close and set a 10' (3.1 m) column. The strength of EFCO columns enabled PCL to pour faster, reaching up to 1400 PSF (67 kPa). PCL was impressed with the features of the EFCO **LITE** and **PLATE GIRDER** column formwork and elected to add them to their inventory, confident they will continue to perform for years to come. ♦

PROJECT LOCATION

Los Angeles, California

EFCO EQUIPMENT

EFCO **LITE®**, **PLATE GIRDER®**, **E-Z DECK®**, **E-BEAM®** and **SUPER STUD®**, **Flipper Lock Platforms**, **Manual Retractable Corners**

PCL CONSTRUCTION TEAM

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HOW TO CONNECT

<https://www.pcl.com/us/en>



WANT TO BE THE LAST TO START AND THE FIRST TO FINISH?

AFFORDABLE HOUSING

Verona Subdivision is a 12.5 acres (5.2-hectare) socialized housing project composed of 548 houses and lots. It is strategically located in Cambuhawe, Balamban, Cebu and developed by Priland Development Corporation.

Priland Development Corporation is a Cebuano real estate development company and a member of a diversified Cebu-based group with business interests in food and furniture manufacturing, property development and utilities distribution for more than 20 years.

Priland Development Corporation initially awarded 350 units to **Vaps3 Builders Inc.** for the construction of the concrete houses.

FAIR FACED CONCRETE WALLS

Vaps3 Builders Inc. is located in Pangasinan (North of Luzon) and has expanded their operations in the Visayas Region, particularly in Cebu. Vaps3 Builders chose the lightweight **HAND-E-FORM®** system to meet the developer's expectation for the fair-faced concrete finish and the speed of cycling of the formwork.

HANDSET CONCRETE FORMWORK

EFCO initially supplied two units of the **HAND-E-FORM** system to form the ground floor concrete walls, and later they decided to add four more units of the handset formwork for a total of 10,235 ft² (951 m²) to speed up the construction of the houses. The versatility of the system helped them to produce three units 5,120 ft² (475.5 m²) in a day with 24 workers in 8 hours per day. They can easily complete 18 units 30,710 ft²

(2,853 m²) of row houses in just one week and 72 units 112,840 ft² (11,412 m²) in one month. The average rate of progress is around 27 ft² (2.48 m²) per man hour.

LOWEST IN-PLACE CONCRETE COST

VAPS 3 Builders Inc. was the last contractor to join this project and the first one to complete finished houses. EFCO formwork helped them not only achieve productivity, but it delivered the lowest in-place concrete cost for this project. ♦



The EFCO Plate Clamp (above) is used to hold the HAND-E-FORM panels together. It is a fast and efficient one-piece connection.



“

Thanks to EFCO for the support, we hope that our working relationship will become stronger. The HAND-E-FORM is a good forming system!”

Ronaldo Lazaro
Operations Manager

”

PROJECT LOCATION

Balamban Cebu, Philippines

EFCO EQUIPMENT

HAND-E-FORM®

VAPS3 BUILDERS INC. TEAM

Noel AnaudPresident
Ronaldo Lazaro Operations Manager

EFCO FORMWORK SPECIALISTS-PHILIPPINES

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Caryll MendiolaField Supervisor
Jeanna Fernandez Engineer



A PARTNERSHIP IN INNOVATION

VIRTUOUS CIRCLE IN FAVOR OF THE ENVIRONMENT

The water company, Aguas Andinas, through its Mapocho El Trenal plant, is located in the western suburb Padre Hurtado in the Metropolitan Region. The plant processes half of the wastewater for the region with a treatment capacity of 8 m³/sec of purification. Aguas Andinas has started an ambitious project of converting the plant into a Biofactory. This solution is designed to support green initiatives through a series of environmental activities. The new plant will not generate residue nor impact the environment and will produce its own energy thus avoiding the consumption of fossil fuels. It will create a virtuous circle in favor of the environment and against global warming.

REPEAT CUSTOMER

Ingeniería y Construcción MST Ltda. was awarded the construction of this important and challenging project, and they did not hesitate in approaching EFCO again to help them design an innovative formwork solution. With a tight production schedule, MST required planning expertise and high-performance formwork that would guarantee a high-quality concrete finish. EFCO proposed the use of the steel faced **PLATE GIRDER**® system, which provided a high-quality concrete finish pour after pour.

THE PROJECT INCLUDES THE FOLLOWING STRUCTURES:

SBR DEMON Tank: a 101'-9" (31 m) wide, 229'-8" (70 m) long and 23' (7 m) high structure requiring 386 tons (350 tonnes)

of iron, 2,354 yd³ (1800 m³) of concrete and the installation of 43,050 ft² (4000 m²) of EFCO's **PLATE GIRDER** formwork with pour windows.

SBR CYCLOR Tank: a 91'-10" (28 m) wide, 213'-4" (65 m) long and 23' (7 m) high structure requiring 386 tons (350 tonnes) of iron, 2,485 yd³ (1900 m³) of concrete and the installation of 48,440 ft² (4500 m²) of EFCO's **PLATE GIRDER**.



*With the EFCO
PLATE GIRDER system,
each rib acts like a rung
on a ladder. With proper
safety equipment, you
can climb it.*

DEMON and CYCLOR Blower Buildings: Two buildings of 1,940 ft² (180 m²) and 16'-5" (5 m) high each completed with EFCO's **HAND-E-FORM**® panels and **E-Z DECK**® shoring.

Smaller Tanks: These structures required 198 tons (180 tonnes) of iron, 1,308 yd³ (1000 m³) of concrete and the installation of 26,910 ft² (2500 m²) of EFCO's **HAND-E-FORM** and **E-Z DECK**.

BENEFITS OF USING EFCO'S PLATE GIRDER

MST chose to use EFCO's **PLATE GIRDER** to form the tank walls due to its various benefits:

- A high-quality concrete finish.
- Fewer ties per square meter: up to 32 ft² (2.88 m²) of formwork per tie which means fewer holes to patch.
- Versatile and useful pour windows.
- Possibility to cycle the formwork in large gangs for better productivity. ♦

PROJECT LOCATION

Padre Hurtado, Chile

EFCO EQUIPMENT

PLATE GIRDER®, **E-Z DECK**®, **HAND-E-FORM**®

INGENIERÍA Y CONSTRUCCIÓN MST TEAM

Rodrigo TagleProject Manager
Jorge ArayaAdministrator
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Luis HerreraTechnical Office
Patricio CarreñoChief of Job

EFCO FORMWORK SPECIALISTS-CHILE

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Cristian SantibáñezField Supervisor
Conrado LlanzaEngineer

HOW TO CONNECT

<https://mst.cl/>



FORMING ROUND CONCRETE WALLS

NEW WASTEWATER TREATMENT PLANT

The New Lions Gate Wastewater Treatment Plant constructed in North Shore on a 8.6-acres (3.5-hectare) site will provide secondary treatment to approximately 200,000 residents.

Acciona Design Build teamed with EFCO to provide formwork and engineering support for the 111'-9 1/2" (34.1 m) tall digesters. The twin 70'-2 1/2" (21.4 m) diameter digesters were poured in 10 uninterrupted, full circumference lifts with integrated hopper pours on the third and fourth lifts.

A PANEL CAN BE CYCLED NUMEROUS TIMES

EFCO's **REDI-RADIUS**® formwork, with integrated flexible straps, was used for the round tank wall forming. The **REDI-RADIUS** panel is a complete forming unit and is delivered flat to the jobsite. With a simple shaping table built on site, each panel can be shaped to the specified radius. With EFCO's patented radius method, each panel can be cycled numerous times with confidence that the panel will hold its shape. Fixture built precision along with EFCO's tried and true EFCO Quick Bolt connection ensures excellent panel joint alignment, eliminating formwork offsets. Numerous pipe penetrations were incorporated into the formwork plan, leading to a successful engineered forming design.

INNER AND OUTER WALLS

EFCO's **GUIDED RAIL SYSTEM**®, with its form roll back mechanism, was used on the outer walls, and conventional jump brackets were used on the inner walls. This provided 360-degree access on both the inner and outer sets of formwork. With the use of the **GUIDED RAIL SYSTEM**, the support system never becomes detached from the structure, providing safe and timely formwork cycling. EFCO supplied wedge anchors that provided perfectly parallel supports to enable smooth roll back on the outer radius panels.

INNER HOPPER

The inner hopper construction was integrated into the wall pours. At 3'-3 3/8" (1000 mm) thick and 33'-9 1/2" (10.3 m) in height at a 45-degree angle, this was a big piece of concrete. Using EFCO's renowned steel **SUPER STUD**® system as the support shoring, engineering was able to provide a conical design that followed the geometry of the hopper soffit. The steel **SUPER STUD** A-frames were preassembled and dropped into place, ready for the engineered wood soffit design. ♦

PROJECT LOCATION

North Vancouver, British Columbia, Canada

EFCO EQUIPMENT

REDI-RADIUS®, **GUIDED RAIL SYSTEM**®,
Wedge Anchors, **SUPER STUDS**®

ACCIONA DESIGN BUILD, JV TEAM

Chris McKay Structures/Civil
Construction Manager
Sean McBride General Superintendent
Payam Memar Senior Field Engineer

EFCO FORMWORK SPECIALISTS-AIRDRIE

Jorge Vanegas Territory Manager
Robert Cottam Field Supervisor
Nate Witte Engineer

HOW TO CONNECT

<https://acciona.ca/>



REDI-RADIUS panels were supported by the **GUIDED RAIL SYSTEM**. The **GUIDED RAIL SYSTEM** never becomes detached from the structure, providing safe and timely formwork cycling.



FORMWORK SYSTEMS HELP SPEED CONSTRUCTION OF SACO RIVER FACILITY

FORMING & SHORING FOR CONCRETE CONSTRUCTION

The \$50 Million Saco River Drinking Water Treatment Facility is scheduled to become operational in 2022 and will replace the existing water treatment facility, which has served Southern Maine communities of Biddeford, Saco, Old Orchard Beach and Scarborough since 1884. VR Concrete, Inc. has pushed full steam ahead to successfully form, shore and place concrete for the Pump Room, Process Area, Chemical Room, Filtration and Flocculation Areas.

DESIGN & CONSTRUCTION OF THE CONCRETE STRUCTURE

The Saco River Water Treatment Facility is a 37,000 ft² (3,440 m²) building, which includes a Raw Water Pumping Station, Chemical Room, Process Area, Filtration and Flocculation Area. The concrete structure will become a 20-million gallon (76-million liters) water treatment facility providing drinking water to coastal municipalities in York County serving 50,000 people and allows for future expansion to serve neighboring water systems in Southern Maine.

EFCO SERVICES FOR YOUR PROJECT — PLANNED AND ENGINEERED FORMWORK SOLUTIONS

The Saco River Water Treatment Facility jobsite was organized with spacious areas for laydown and assembly of equipment, which provides greater

safety on the jobsite. With EFCO's global network of sales and logistic locations, the construction schedule was on time and communication flowed well with respect to equipment deliveries and returns. EFCO's Field Service provided on-site coordination of the construction process, which proved to be very effective. EFCO's engineering support was superior and played a big role throughout each phase of the project's success.

A PROJECT SPECIFIC SHORING SOLUTION

VR Concrete is a loyal EFCO customer and very experienced using EFCO products. The optimal solution for their project was the E-Z DECK® shoring system. Because of its rigidity, versatility, and the safe working deck E-Z DECK provides for concrete placement, the VR crew was able to gang and cycle the shoring equipment within the respective areas of the water treatment facility. ♦

PROJECT LOCATION

Biddeford, Maine

EFCO EQUIPMENT

E-Z DECK®, E-BEAM® and SUPER STUD®, Z-BEAM®

VR CONCRETE INC. TEAM

Vincent RoscilloPresident
Bob McKinnon.....Superintendent
Maine Water Co..... Project Owner

EFCO FORMWORK SPECIALISTS-NEW ENGLAND

Matthew TaylorTerritory Manager
Lou SzaboSr. Field Supervisor
Joel Lindberg Engineer

HOW TO CONNECT

<https://www.vrconcrete.com/>



The EFCO E-Z DECK® system uses a spring loaded U-Head design that clips on the top of E-Z DECK® posts or jacks. The U-Head quickly and securely attaches to the stringer(s) for gang forming or flying tables with a simple and easy to use EFCO Quick Bolt and E-Nut.



HELPING THE CUSTOMER BUILD EFFICIENTLY

FORMING & SHORING FOR CONCRETE CONSTRUCTION

The Fenton Wastewater Treatment Plant sets next to the Meramec River. Heavy flooding, including a 500-year flood in December of 2015, has taken its toll on the Wastewater Treatment Facility.

DIGESTER WALLS

Brockmiller Construction, out of Farmington, Missouri, chose **EFCO LITE**® to form the concrete digester walls. After forming and pouring a 4' (1.2 m) tall starter wall, the EFCO LITE ganged formwork was set on top of the starter wall. The highest portion of the wall was 24' (7.3 m) high with a width of 2'-2" (660 mm). The digester measures 84'-4" x 82'-7" (25.7 m x 25.2 m) with a 2'-8" (815 mm) thick divider wall down the middle. To minimize the number of construction joints, bulkheads, pump truck charges and manpower, Brockmiller formed and poured this digester in two pours, optimizing the formwork construction process. Also, during these times of the COVID-19 pandemic, fewer pours means fewer times a concrete crew needs to be assembled. With thorough planning, engineering and training up front, Brockmiller assembled nearly 11,000 ft² (1,020 m²) of EFCO LITE forms with six carpenters.

On July 7, 2020, Brockmiller Construction made their biggest concrete wall pour in their 90+ year history of 525 yd³ (402 m³). Starting the pour first thing in the morning with two pump trucks, Brockmiller finished pouring this wall by 2:30 P.M. Pour two was identical to pour one, minus the divider wall.

CLARIFIER WALLS REQUIRE CIRCULAR FORMWORK

In early October, Brockmiller received EFCO's **REDI-RADIUS**® forms to form the circular clarifier walls. For all the same reasons as the round digester forming, Brockmiller took the same approach for the clarifier. The 1' (300 mm) thick clarifier measures 42'-6" (13 m) radius and was 17'-8" (5.4 m) tall. With the same six carpenters, Brockmiller formed and poured the tank in halves. Once the first pour was completed, Brockmiller's

crew picked and cycled the forms for the second half of the tank. In early November, Brockmiller was finished with all the vertical concrete formwork.

Any good carpenter is directly responsible for the success of any given concrete forming system. The success of this project was a result of Brockmillers' skilled crew under the direct supervision of superintendent, Rick Pyatt. Rick and his crew brought to the table many years of concrete forming experience. This was the last project for Rick before entering retirement. Rick and the Brockmiller crew were excellent to work with on the Fenton Wastewater Treatment Plant Project. EFCO thanks them for their partnership on this project and wishes Rick an enjoyable retirement. ♦

PROJECT LOCATION

Fenton, Missouri

EFCO EQUIPMENT

EFCO LITE®, REDI-RADIUS®

BROCKMILLER CONSTRUCTION TEAM

Rick PyattProject Superintendent

EFCO FORMWORK

SPECIALISTS-DES MOINES

Jacob GuckTerritory Manager

Matt HarringtonField Supervisor

Nathan WitteEngineer

HOW TO CONNECT

<http://www.brockmillerconstruction.com>



To minimize the number of construction joints, bulkheads, pump truck charges and manpower, Brockmiller formed and poured this digester in two pours, optimizing the formwork construction process.



FIRST TIME CUSTOMER IS HAPPY WITH OUTCOME

PROJECT SCOPE

The Riachuelo System is a mega infrastructure and engineering project, which aims to provide a complete solution to the sewage transport capacity in the metropolitan area of Buenos Aires, Argentina. This is a substantial improvement to the quality of the service as well as the elimination of contamination of the Matanza, Riachuelo and Rio de la Plata rivers with sewage effluents.

With a total budget of US\$1,2 billion, this project is divided into three sections: the mega collector, the pre-treatment plant and the wastewater tunnel.

The construction of the pre-treatment plant was awarded to a joint venture of companies formed by FISIA ITALIMPIANTI - ACCIONA AGUA UTE, who trusted EFCO to develop and implement a concrete formwork plan for the sand trap walls.

The sand traps project has an area of 129,170 ft² (12,000 m²). It is divided into 18 modules, each with eight types of walls varying in height and thickness. The project required more than 6,540 yd³ (5,000 m³) of cast-in-place concrete.

A LIGHTWEIGHT FORMWORK SYSTEM

The EFCO systems chosen for this project were **HAND-E-FORM**®, a lightweight formwork system, and **SUPER STUDS**®. These systems, used in conjunction with one another, provided great versatility in

the joints between walls and enabled the assembling of ganged forms at ground level. The ability to cycle the larger gangs optimized work times to comply with the stipulated dates and the high-quality standards demanded by the client.

This project was the first time the contractor used EFCO equipment, but they were quick to learn how to best assemble

and cycle the equipment from EFCO's field service. Using the correct forming system, attention to detail and the partnership between EFCO and FISIA ITALIMPIANTI - ACCIONA AGUA UTE, resulted in positive results including production efficiency and a fair-faced concrete finish. ♦

PROJECT LOCATION

Buenos Aires, Argentina

EFCO EQUIPMENT

HAND-E-FORM®, SUPER STUD®

FISIA ITALIMPIANTI S.P.A. SUC. ARG. - ACCIONA AGUA S.A. SUC. ARG. UTE TEAM

Martin Maidana.....Project Manager
Angel AchauProduction Manager
Eugenio NúñezProduction
Juan Carlos ListaProduction

EFCO FORMWORK SPECIALISTS-ARGENTINA

Fernando CaimoTerritory Manager
Agustin SaracenoField Supervisor
Gaston CampagnolleEngineer



HAND-E-FORM provides a "single" tight joint with no offsets which produces a dimensionally accurate, smooth finish concrete.



CONSTRUCT ANY RADIUS WITH THE REVOLUTIONARY REDI-RADIUS SYSTEM

CONSTRUCTION UPDATES TO WASTEWATER TREATMENT PLANT

M.F. Ronca & Sons began construction on the \$148M Fritz Island Wastewater Treatment Plant Project in the Spring of 2017. The plant services fourteen municipalities in the surrounding Reading, Pennsylvania area. Once completed, the plant will handle 27.4 MG (104 million liters) of sewage per day, serving 130,000 people in the region.

The wastewater treatment plant on Fritz Island, in the city of Reading, Pennsylvania, was originally constructed in the late 1800s. In 1929, the city constructed a larger facility on the current site, near Angelica Creek and the Mifflin Arm of the Schuylkill River to handle increased population.

ROUND CONCRETE TANK FORMWORK

M.F. Ronca & Sons knew that they needed a high-quality forming system if they were to keep the project on schedule. As they have done many times, M.F. Ronca & Sons called upon EFCO for forming solutions that would assemble quickly and cycle even faster. EFCO's formwork solution included **REDI-RADIUS**® forms to construct the circular concrete tanks and **PLATE GIRDER**® forms for the straight walls.

FORMS FOR CIRCULAR TANK WALLS

The project consisted of several structures including a 63' (19.2 m) diameter Round Sludge Tank with 21'-6" (6.6 m) tall walls as well as several traditional structures. EFCO's REDI-RADIUS system was used to form the circular walls on the Sludge Tank. ♦



PROJECT LOCATION

Reading, Pennsylvania

EFCO EQUIPMENT

REDI-RADIUS®, PLATE GIRDER®

M.F. RONCA & SONS TEAM

Scott WachinskiProject Manager

Darren ConnersSuperintendent

EFCO FORMWORK

SPECIALISTS-PITTSBURGH

Mark DulacyTerritory Manager

Rick LynchField Supervisor

John LustEngineer

HOW TO CONNECT

<http://www.mfronca.com/>



The EFCO Quick Bolt produces a fast connection, perfect form panel alignment, and superior concrete finish.



NEW BRIDGE REPLACES THE OLD ONE BUILT WHEN MODEL T CARS TRAVERSED THE ROADS

AN OLD SWING BRIDGE

McLean Contracting is a local contractor with offices in Glen Burnie, Maryland and Chesapeake, Virginia. They were recently selected by NC DOT to replace the existing Perquimans River bridge, which is an old swing span bridge on US RT17 & NC37 in Hertford, North Carolina.

NEW SWING BRIDGE

The substructure consisted of expansion and fixed bents of different lengths supported by 30" x 30" (750 mm x 750 mm) square piles. They also had to form a pivot pier and rest piers to support the swing span section of the new bridge.

McLean chose EFCO *PLATE GIRDER*® with a hinged soffit to form the expansion of the bridge piers. The cap forms would sit on custom 35 kip (155 kN) Pile Friction Collars designed and built by EFCO. The *PLATE GIRDER* cap form was easily adjusted for length by adding or removing side and soffit formwork. In stripping the formwork, the hinged soffit swung down, enabling the cap form to be removed in one pick.

The fixed piers and rest piers were formed using *PLATE GIRDER* side forms sitting on McLean's dance floor. The concrete pier widths were up to 16' (4.9 m) wide, and they were up to 5'-8" (1.7 m) thick. *SUPER STUD*® yokes were used as a dry tie at the top of the form and only had one row of ties 12" (300 mm) from the bottom of the forms.

FORMING A PIVOT PIER ON A BRIDGE

The pivot pier is an irregular octagon block of concrete. To form this pier, McLean used EFCO's *E-BEAM*® and *SUPER STUD*® formwork sitting on their floor props. This gives the ability to form the varying lengths of side forms and enables the ties to come through the formwork at varying angles. ♦

PROJECT LOCATION

Hertford, North Carolina

EFCO EQUIPMENT

PLATE GIRDER®, *E-BEAM*® and *SUPER STUD*®

MCLEAN CONTRACTING TEAM

Joe WallenfelszProject Manager
Tom BettcherProject Superintendent
Max Kremenchugskiy Project Engineer
Breshawn BrownField Engineer

EFCO FORMWORK SPECIALISTS—WASHINGTON D.C.

Kevin PyleTerritory Manager
Scott NorvellTerritory Manager
David ThibauEngineer

HOW TO CONNECT

<https://mcleancontracting.com/>



Rest piers will support the swing span section of the new bridge. The rest piers and fixed piers were formed using *PLATE GIRDER* side forms sitting on McLean's dance floor.



PLANNING TO HELP YOU REALIZE THE MOST PRODUCTIVITY

INTERCHANGE IMPROVEMENTS TO LEAD TO LESS CONGESTION TO AIRPORT

Gilchrist Construction Co., LLC is on schedule for the \$125M design build interchange located at Loyola Drive and Interstate 10 in Kenner, Louisiana. The Louisiana DOTD project includes two elevated flyover ramps connecting Interstate 10 to the newly built Louis Armstrong International Airport. EFCO and Gilchrist partnered early in the design build process to strategically plan complex forming solutions and meet the demanding project schedule. The project location is a very limited right of way in the middle of an active interstate with heavy traffic volume and congestion. The specifications on this project included Louisiana PE stamped formwork drawings and calculations, architectural concrete finish and wind load bracing requirements.

UNIQUE “CHAMPAGNE GLASS” SHAPED COLUMNS

EFCO's primary scope was the Delta “Champagne Glass” shaped columns, which included architectural reveals on both column formwork faces. The 40' (12.2 m) tall (maximum height) columns were monolithically poured with the column caps built into the top of the column formwork. The column cap radial soffits have custom tapered (12" to 6" (300 mm to 150 mm)) fillet corners. The **PLATE GIRDER**® formwork system used for this project was configured

to handle varying concrete dimensions. It was also designed to be cycled through the project with minimal re-assembly or shipping of additional system components. EFCO's warehouse drilled several hundred custom bolt holes to accommodate the varying concrete dimensions and corner fillets as well. ♦

PROJECT LOCATION

Kenner, Louisiana

EFCO EQUIPMENT

PLATE GIRDER®

GILCHRIST CONSTRUCTION CO., LLC TEAM

Randy Gilchrist..... President and CEO
Marc Dinnat..... Chief Project Officer
JJ Hickey..... Sr. Project Manager
John Paul..... Construction Manager
Daymond Brister, Bridge Structures Manager
Tristen Brister..... Field Manager
Roger Castellano..... Field Manager
Roderick Olds..... Production Engineer
Casey Leleux..... Quality Control

EFCO FORMWORK SPECIALISTS-MEMPHIS

AJ Shipman..... Sr. Territory Manager
Mark McCarty..... Sr. Field Supervisor
Jeremiah Curley..... Engineer

HOW TO CONNECT

<https://gilchristconstruction.com/>



The 40' (12.2 m) tall (maximum height) columns were monolithically poured with the column caps built into the top of the column formwork.



SELF-SPANNING PLATE GIRDER WORKS WELL WHEN THERE IS IRREGULAR TERRAIN

NEW CONSTRUCTION TO REDUCE HEAVY TRAFFIC

The Santa Catarina highway overpass is an extension of the Monterrey – Saltillo Highway that consists of a 4.9 miles (7.9 km) overpass that will coexist with the Santa Catarina river. It is a partnership between the private and public sector with a total cost of \$350 million. The main purpose of the project is to avoid heavy transit drives down the main streets of Santa Catarina country, avoiding damages and reducing maintenance expenses in the actual infrastructure. It will have an A4 design with two lanes in each direction, saving the drivers 20 minutes.

The construction of this project is headed by **GP Construcción**, a family company of Grupo Garza Ponce, with more than 54 years of experience in infrastructure, edification, industrial and commercial projects all around Mexico.

The use of EFCO's self-spanning **PLATE GIRDER**® steel formwork was ideal because of its versatility and its ability to meet the irregular terrain conditions at the jobsite, as well as produce an architectural concrete finish. **PLATE GIRDER** panels can be bolted together into large rigid gangs, which can help with optimizing form alignment, bracing and reducing the amount of ties needed. Using larger gang forms in concrete construction lead to greater safety and productivity on the jobsite.

COMPONENTS OF CONCRETE BRIDGE

The 72' (21.9 m) long x 8' (2.4 m) wide x 8' (2.4 m) tall bridge caps are supported by two oval columns, which measure 22' (6.7 m) to 45' (13.7 m) high. Each soffit in the caps had a different incline, giving more than 200 different combinations. EFCO SB-4 jacks, located on the inside of the oval columns,

combined with heavy-duty distribution beams to support the bridge cap formwork. EFCO's high-quality equipment and expertise, plus its close collaboration with GP Constructora was a winning formula on this project.

► 32

Each soffit in the caps had a different incline, giving more than 200 different combinations. EFCO SB-4 jacks, located on the inside of the oval columns, combined with heavy-duty distribution beams to support the bridge cap formwork.





PLATE GIRDER panels can be bolted together into large rigid gangs, which can help with optimizing form alignment, bracing and reducing the amount of ties needed.



SHORING SYSTEM SUPPORTS BRIDGE PIER CAPS

The E-Z DECK shoring system was the best choice for supporting the shorter-height pier caps and gave the best assembly and cycling times for the project requirements. With the help of E-Z DECK® posts and jacks, varying inclines and slopes were achieved by adjusting the jacks.

The HAND-E-FORM® handset panel formwork system was best for its manageability to form the pier caps when there was limited access to a crane. It also easily adapted to the different inclines of the pier caps and gave the productivity the client desired. ♦

PROJECT LOCATION

Monterrey, N.L Mexico

EFCO EQUIPMENT

PLATE GIRDER®, E-Z DECK®, HAND-E-FORM®

GP CONSTRUCTORA TEAM

Mario Velazquez Construction Director
Marcos Zavala Superintendent
Alfredo Barrios Superintendent

EFCO FORMWORK SPECIALISTS-MEXICO

Esteban Flores Territory Manager
Francisco Islas .. Field Supervisor Manager
Francisco Ortega Engineer

HOW TO CONNECT

<https://www.gpconstruccion.com.mx/en/home/>



EXPANSION TO ELIMINATE TRAFFIC JAMS DURING HURRICANE EVACUATIONS

PROJECT SUMMARY

State Highway 146 is the main roadway along Trinity Bay providing a vital connection between Galveston and Houston. It serves as a hurricane evacuation route and provides access for commuters and cargo freight along Trinity bay. Growth in the area has increased traffic over the years, which necessitated an expansion of the roadway. In 2016, TxDot began moving forward with right-of-way acquisitions, and in 2019, Webber LLC. began work on this \$200 million project.

CAST-IN-PLACE FORMWORK SYSTEM NEEDED TO KEEP TRAFFIC MOVING

The biggest undertaking of this job was the expansion of the existing Clear Creek Bridge, which would remain open to local traffic, and the creation of the a new expressway that would enable through traffic to bypass the main traffic in the cities of Kemah and Seabrook. The main bridge expansion called for additional lanes to be added, increasing it from four lanes to six lanes of traffic. The additional bridge super structure consisted of large concrete round columns, tie beams and square pier caps, which necessitated

multiple pours in order to complete each bent. The new Express Bridge will also add an additional six lanes for the through traffic. The bridge structure over the water also consisted of large concrete round columns, tie beams and square pier caps. Over the land, the Expressway turned into an elevated roadway, which consisted of large inverted T-shaped caps sitting on flared concrete columns.

ADJUSTABLE COLUMN FORMS ADAPT TO SITE CONDITIONS

Webber worked with EFCO to design multiple formwork systems to tackle the different parts of their job. On the Main Bridge and the Express Bridge over Clear Creek, Webber utilized multiple sizes of standard **Round Column®** formwork [66", 54", and 36" (1,675 mm, 1,372 mm, and 915 mm)] to form the columns and a self-supporting hinged soffit formwork system to handle the tie beams and square caps.

STEEL FORMING SYSTEM WITH SUPERIOR POUR PRESSURE CAPACITIES

On the Express Bridge over land, Webber elected to use EFCO's **PLATE GIRDER®** formwork for the large flare columns

On the Main Bridge and the Express Bridge over Clear Creek, Webber utilized multiple sizes of standard Round Column®





4' x 6'-6" x 44' (1.2 m x 2.0 m x 13.4 m) tall], which incorporated custom made radial soffit panels. They also used a self-supporting, steel soffit solution for their inverted T-shaped pier caps. The steel-face *PLATE GIRDER* system enabled Webber to use the same forms throughout the project and gave them the ability to handle the large cantilever on some of the caps without the use of a shore tower or additional support providing Webber LLC labor and material savings. ♦

PROJECT LOCATION

Between Galveston and Houston, Texas

EFCO EQUIPMENT

Round Column®, *PLATE GIRDER*®

WEBBER LLC TEAM

Wilfred Bradley.....Area Manager
Savanna MageeProject Manager
Maksim Golubovskiy.....Project Manager
Nadia Nourhussein Project Engineer

Steven Dean..... Project Engineer
Javier Rodriguez.....Field Engineer
Mariano BarrientosSuperintendent
Luis Araujo Asst. Superintendent
Mariano Barrientos, Jr. Structures Foremen
Aaron McGraw..... Structures Foremen
Rafael Vasquez..... Structures Foremen
Juvenal Barrientos ... Structures Foremen
Primitivo Ruiz..... Structures Foremen
Manuel Huerta..... Structures Foremen

**EFCO FORMWORK
SPECIALISTS-DALLAS**

Jared Graeve Territory Manager
Matt Bruce..... Regional Field Supervisor
Kate McComb, PE..... Engineer

HOW TO CONNECT

<https://www.ferrovial.com/en-us/webber/>



*The steel-face *PLATE GIRDER* system enabled Webber to use the same forms throughout the project and gave them the ability to handle the large cantilever on some of the caps without the use of a shoring or additional support.*



SHORING NEEDS TO BE ASSEMBLED ONLY ONCE, SIMPLY ADJUST JACKS FOR HEIGHT VARIANCES

THREE-BLOCK, THREE-STORY FACTORY

The Vital Healthcare: Industrial Development is a three-block, three-story factory with a warehouse and office. Once completed, the factory will have 80,730 ft² (7,500 m²) of floor area equipped with a production floor, finished goods warehouse with loading docks, semi-trailer parking bays and a guard house.

The owner of this project is Vital Healthcare Sdn Bhd. Its current factory is located at North Port, Malaysia and has an expected production capacity of tubing sets for hemodialysis: 10,000,000 sets/year; disposable A. V. fistula needle: 1,000,000 sets/year; and hemodialyzer: 3,000,000 sets/year. The expected annual gross sales revenue is US\$40M.

To further increase their production and distribution capacity, they are building a new factory in Sungai Kapar Indah. It is located in the Hi-Tech Industry Park not far away from North Port. This is a very strategic location for an export business.

EXPERIENCED BUILDERS MEET EXPERIENCED FORMWORK AND SHORING COMPANY

The awarded contractors for this Vital Healthcare: Industrial Development project are CCIE Engineering (M) Sdn Bhd JV IAQ Solution Sdn Bhd. CCIE Engineering (M) Sdn Bhd, who specializes in industrial building, and IAQ Solution

Sdn Bhd who specializes in life science and pharmaceutical plant construction. Both companies have many years of experience and project references in industrial building.

IAQ Solution awarded EFCO Malaysia all three blocks which consist of concrete column formwork and slab and beam shoring for reinforced concrete structure work. The project duration was estimated for one year with target completion of May 2021.

CONCRETE FORMWORK FOR WALLS AND COLUMNS

EFCO Malaysia supplied seven sets of EFCO's *PLATE GIRDER*® column formwork 3'-6" x 3'-6" modifiable to 3' x 3' (1000 mm x 1000 mm modifiable to 900 mm x 900 mm), nine sets of *EFCO LITE*® column formwork 24" – 32" x 24" – 32" (600 mm – 800 mm x 600 mm x 800 mm), and two sets of *EFCO LITE* column formwork 10" – 16" x 10" – 16" (250 mm – 450 mm x 250 mm – 450 mm) to complete the three-story concrete column construction.

EFCO's *PLATE GIRDER* and *EFCO LITE* column formwork is easy to install, because it does not require concrete form ties. This eliminates the need to go back and patch tie holes. In addition, EFCO column formwork can be easily lifted in

an L-Shaped orientation in one crane pick with the attached EFCO Heavy-Duty Pipe Braces. This further reduces the need of dismantling formwork and optimizes construction costs.

SIMPLE, FAST VERTICAL STACKED SHORING

EFCO Malaysia is also responsible for supplying the *E-Z DECK*® shoring system with an estimated 35,520 ft² (3,300 m²) per each floor. The lightweight *E-Z DECK* shoring equipment is cycled horizontally and cycled six times to complete the three blocks. EFCO had supplied an estimated total of 35,520 ft² (3,300 m²) for level 1 up to 26'-3" (8.0 m) floor to floor height and 35,520 ft² (3,300 m²) for level 2 up to 16'-5" (5.0 m) floor to floor height.

MAXIMUM SAFETY IN LOAD BEARING TOWER

EFCO's *E-Z DECK*® system has an advantage over other systems as it only needs to be assembled once, and its height adjustment is easily done by turning the jacks up or down, even under high loads. To move the lightweight modules to the next casting zone, they can be placed on EFCO's Crazy Wheel Dollies and pushed by workers. Another advantage to this system is the *E-Z Deck Panel*, which is easily installed with a hammer and

does not require any other accessories. EFCO's *E-Z DECK* shoring system is very versatile and is easily adaptable to all sorts of structure design. This project consists of slab & beam. EFCO's innovative plan provided the lowest in-place concrete cost, saving time and cost for the customer. ♦

PROJECT LOCATION

Sungai Kapar Indah, Klang, Selangor, Malaysia

EFCO EQUIPMENT

PLATE GIRDER®, *EFCO LITE*®, *E-Z DECK*®, Crazy Wheel Dollies

IAQ SOLUTION SDN. BHD. JV CCIE ENGINEERING SDN BHD TEAM

Shawn LewProject Director
Mr. YeeConstruction Manager
Mr. NelsonContract Manager

EFCO FORMWORK SPECIALISTS-MALAYSIA

Stephen Koon.....Territory Manager
Foo Ming Huang.....Field Supervisor
Kevin Khor.....Engineer

With the large capacity of the E-Z SHORE® Post, EFCO can reduce both the number of shore posts and associated stringers.





SUPER STUD & E-BEAM TO THE RESCUE

DRY CREEK DAM & RESERVOIR MODIFICATION

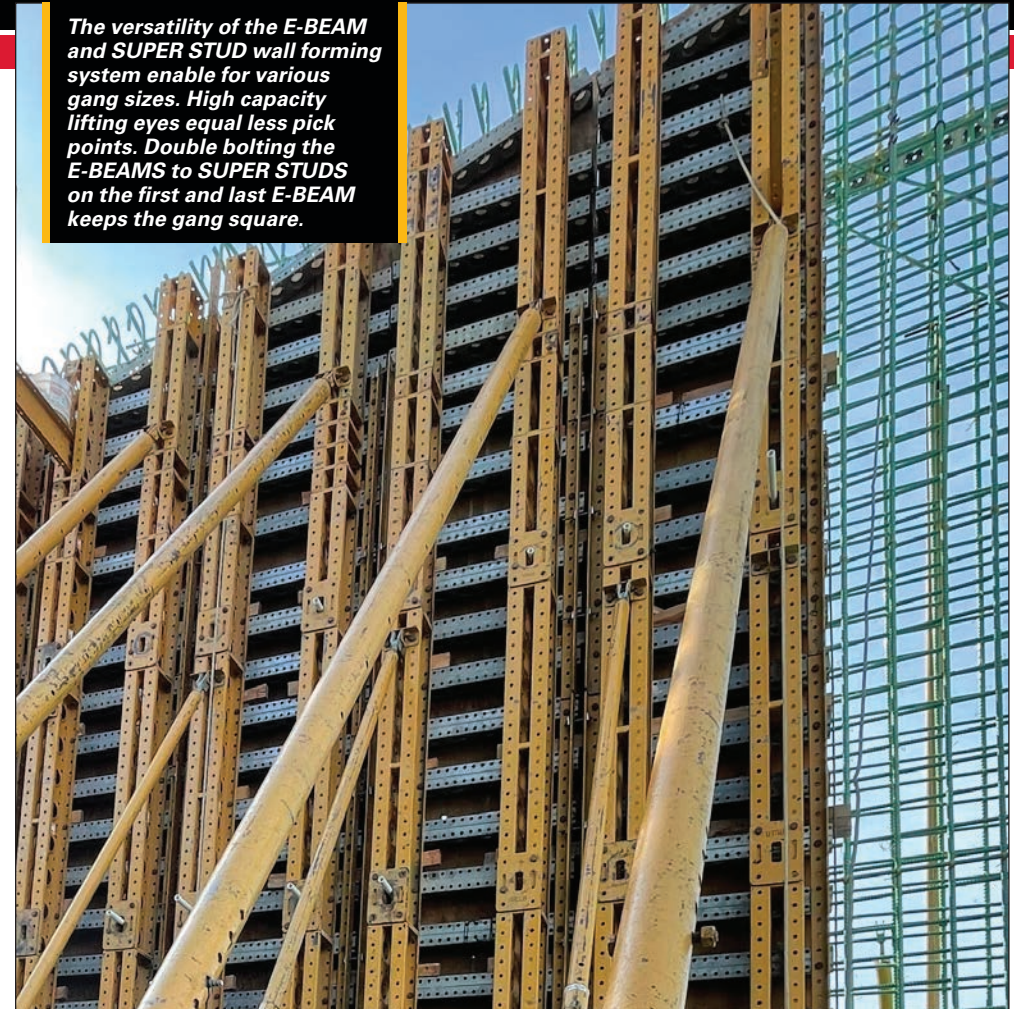
The purpose of the Dry Creek Dam and Reservoir Modifications project is to upgrade the dam to meet current safety regulations and to extend the life of the structure by 50+ years. This rehabilitation project includes excavation of almost half of the existing reservoir, construction of a new spillway, sediment basin and improvements to the drainage system and roadway. In addition to improved dam safety, it will also add irrigation water storage capacity for Lehi. Once finished, Dry Creek Lake will provide outdoor recreation activities such as stand up paddle boarding, canoeing, kayaking and swimming. Surrounding the reservoir, the Murdock Canal Trail will provide trails for running, walking and road biking.

PLANNING INCREASES PRODUCTIVITY

One of the initial obstacles W.W. Clyde faced was finding a solution to handle the outer walls of the spillway, which had sections of changing conditions. Some were battered up to a certain elevation and then straightened out. Other sections consisted of a batter all the way to the top of the wall, some of which were 40' (12.2 m) in height. About halfway along the spillway, these walls even began to curve. With tight rebar spacing and ever-changing conditions, selecting a forming solution that would reduce the costly drilling and repair of steel face sheets was essential. The most suitable

solution was EFCO's **SUPER STUD®** and **E-BEAM®**. The versatility of the system enables adjustment to meet almost any criteria. Bolt holes at 2" (50 mm) centers for E-BEAMS and 3" (75 mm) centers for SUPER STUDS made adjusting the location of the Tie Bearings to avoid rebar while maintaining a 1,000 psf (48 kPa) pour pressure possible. Plywood facing is advantageous for drilling new tie holes where necessary without the need for costly repair. By creating 4' (1,200 mm) modular panels, W.W. Clyde was able to chord several panels in a row to achieve the necessary radius in the curved concrete sections of the spillway. EFCO's wide variety of SUPER STUD lengths (ranging from 6" to 12' (150 mm x 3600 mm)) enabled the contractor to add or remove SUPER STUDS in the areas with a drastic slope. Because of its end moment connection and incredible bending capacity, the SUPER STUDS acted as stiffbacks to allow these concrete walls to be set and poured to full height. In situations where they just couldn't get a tie to fit at a SUPER STUD location, W.W. Clyde's crew was able to create walers between two SUPER STUDS to adjust the tie location. The accessories of the system were used outside of the wall forming as well. EFCO's Heavy-Duty Pipe Braces were used to hold up 30'-40' (9.2 m-12.2 m) tall rebar cages, and E-BEAMS were laid out to create a table on which to tie rebar. ♦

The versatility of the E-BEAM and SUPER STUD wall forming system enable for various gang sizes. High capacity lifting eyes equal less pick points. Double bolting the E-BEAMS to SUPER STUDS on the first and last E-BEAM keeps the gang square.



PROJECT LOCATION

Lehi, Utah

EFCO EQUIPMENT

SUPER STUD®, E-BEAM®

W.W. CLYDE TEAM

Matt Giles Superintendent
Rory Taylor Field Supervisor

EFCO FORMWORK SPECIALISTS-PHOENIX

Nick Dudzinski Territory Manager
Skyler Saemisch Field Supervisor
Jill Provost Engineer

HOW TO CONNECT

<https://www.clyde.net/>



GET ARCHITECTURAL CONCRETE POUR AFTER POUR USING STEEL FACED FORMWORK

The Green Brook Flood Risk Management Project is in central New Jersey within the Raritan River Basin. The project stretches through 13 municipalities, 3 counties and drains around 65 miles² (168 km²) of urban and industrialized area. The project has been divided over numerous contracts to allow for funding. This project is the result of many damaging floods dating back to 1973 with continued flooding devastation from large storms like Floyd in 1999 and an April 2007 Nor'easter.

Carbro Constructors Corp. has been awarded three contracts to date: Segment B-2, Segment C-2 Contract 1 and Segment C-1. These contracts consist of concrete Floodwalls, Levee, Pump Station and a NJ Transit Culvert Crossing. Carbro chose the EFCO **PLATE GIRDER**® to form the concrete footings and floodwalls on Contract C-2.

UNIQUE CONCRETE WALL FORMWORK DESIGN

The walls have a fluted fin wall texture with a painted surface finish, and the heights range from approximately 16' (4.9 m) to 19' (5.8 m) with typical pour lengths of 40' (12.2 m). Carbro poured over 100 segments for an overall length exceeding 3,000' (915 m). This project was perfect for gang forms and the **PLATE GIRDER** system was the perfect

solution. The larger panels and large tie spacing enabled us to avoid any penetrations through the required form liner. These were some of the key features that enabled Carbro to optimize the construction process and achieve excellent productivity. EFCO has now partnered with Carbro on this project with three separate contracts and looks forward to continuing to provide the lowest in-place concrete cost. ♦

PROJECT LOCATION

Middlesex, New Jersey

EFCO EQUIPMENT

PLATE GIRDER®

CARBRO CONSTRUCTORS CORP. TEAM

Anthony CarusoPrincipal
Michael CarusoPrincipal
Domenick CarusoPrincipal
Pino CarlomagnoProject Manager
Rich KeirsteadProject Superintendent

EFCO FORMWORK SPECIALISTS-MARLBORO

Vincent VergonaSr. Territory Manager
Lou SzaboSr. Field Supervisor
Jacquelyn EwaldEngineer

HOW TO CONNECT

<https://carbroconstructors.com/>



Floodwalls: Carbro poured over 100 segments for an overall length exceeding 3,000' (915 m). This project was perfect for gang forms and the **PLATE GIRDER** system was the perfect solution.





HISTORICAL SEWERAGE SYSTEM MEETS HALFWAY MARK IN IMPROVEMENT PROJECT

The original sewerage and stormwater management system for London was a marvel of the Victorian age and completed over 150 years ago. It was to service a population of four million Londoners at the time. By the millennium, the population of greater London had ballooned to a figure more than eight million, and the system was becoming overwhelmed, discharging 43 million tons (39 million tonnes) of storm sewerage into the river Thames each year.

CONSTRUCTION OF UNDERGROUND TUNNELS

The solution required a significant upgrade to the five treatment works surrounding the capital, completed by 2012, followed by the new 15 mile (25 km) long, 23' (7 m) diameter Tideway

tunnel running directly below the river Thames at a depth of up to 262'-6" (80 m) to remain clear of the multitude of other services under the city. Started in 2016, completion is scheduled for 2024 at a projected cost of US \$5.82Bn (£4.2Bn). The project involves 24 separate project sites across the city, each one connecting the new underground tunnel through deep shafts and CSO (Combined Sewerage Outflow) structures to the existing network.

EFCO UK has been active on the project over the last four years, providing the best possible formwork solution with the lowest in-place concrete cost. A combination of EFCO's **REDI-RADIUS**®, **PLATE GIRDER**® and **SUPER STUDS**® were used to complete the construction

of the shaft linings, CSO connection culverts, headwalls, TBM launch structures and vortex walls at sites including Kirtling Street, Blackfriars Foreshore, King Edwards Memorial Park, Earls Pumping station, Barn Elms, Abbey Mills, Beckton and Deptford.

Working with the main contractor joint ventures **CVB (Costain, Vinci, Bachy)**, **FLO (Ferrovia, Laing O'Rourke)** and **BMB (Bam, Morgan Sindall, Balfour Beatty)** as well as numerous concrete sub-contractors, EFCO UK has risen to the challenge of providing engineering plans and support to construct a safe and efficient water management system to service all Londoners and drive positive change to the ecology of the river system the city lives alongside. ♦

PROJECT LOCATION

United Kingdom

EFCO EQUIPMENT

PLATE GIRDER®, **REDI-RADIUS**®, **SUPER STUD**®

EFCO FORMWORK SPECIALISTS-UNITED KINGDOM

Gary Dillon Territory Manager
Colin Walker Sr. Field Supervisor
Stuart De Freyne Engineer



Construction progresses on the new 15 mile (25 km) long, (7 m) diameter Tideway tunnel running directly below the river Thames.



ACHIEVE MULTIPLE DIAMETERS WITH ONE SET OF FORMS

ABOUT THE COMPANY:

Consorcio Redram – Tucumann, is a consortium incorporated on November 29, 2019 to develop large-scale projects in the country. Redram, founded in 1974 of Brazilian origin, is dedicated to the development of various types of national and international concrete construction projects, such as airports, energy, urban paving, civil construction, special art works, roads, sanitation, bridges and port construction. In turn, Tucumann, also of Brazilian origin, founded in 1990, is an expert in the development of large port and airport infrastructure projects and industrial works.

DETAILS OF THE PROJECT AND SYSTEM USED

The Salaverry Port Terminal Project consists of modernization, rehabilitation, installation of cranes, construction of storage Silos, maneuvering yard, etc., as well as ensuring the terminal operation lasts for a period not exceeding 30 years.

DEVELOPING – PLANNING – SCHEDULING – COMPLETION OF THE FORMWORK SOLUTION

This time, the consortium gave EFCO the opportunity to plan and develop the projects for the formwork solution. First, it was necessary to provide a radial formwork system that would form the curved concrete sections. When assembled, the formwork section would result in a large volume and capacity silo to be used to store grains. Second, they needed formwork for concrete columns of variable and irregular shapes and

dimensions for their warehouses. Third, they needed a formwork solution that would optimize construction cost for forming the concrete tunnels, which would enable massive emptying of the silos in less time.

MORE THAN A CONCRETE FORMWORK SOLUTION

The solutions offered by EFCO suited the project well. Starting with the **REDI-RADIUS®** system, which was chosen by Consorcio Redram – Tucumann, as their first option. In comparison to the competitors, the REDI-RADIUS system

requires less parts to assemble and the steel face sheets leave a smooth concrete finish. EFCO supplied 17 sets of **REDI-RADIUS** formwork that formed a curved concrete wall that was 35'-6" (10.80 m) long x 10" (0.25 m) wide x 8' (2.40 m) high. Next, 10 sets of **PLATE GIRDER®** steel panels were supplied to form the columns. The **PLATE GIRDER** high-capacity formwork system is recognized in the market for its maneuverability and the quality fair faced concrete finish it creates.

TUNNEL FORMWORK SYSTEM

For the construction of the tunnels, the **BOX CULVERT®** system was chosen. The **BOX CULVERT** traveler formwork system made inverted "U" shaped concrete shells in lengths of 24' (7.20 m). The system is easy to assemble and cycle, speeding up productivity.

SATISFACTION SUCCESS WITH EFCO SOLUTIONS

Consorcio Redram – Tucumann was quite satisfied with the EFCO solutions provided and expressed its satisfaction of wanting to partner with us again on future projects. ♦

PROJECT LOCATION

Trujillo - La Libertad - Peru

EFCO EQUIPMENT

PLATE GIRDER®, **REDI-RADIUS®**, **BOX CULVERT®**

CONSORCIO REDRAM - TUCUMANN

Ricardo Carvallo Project Manager
Leandro Saroni .. Technical Office Leader
Bernardo de Julio Production Leader

EFCO FORMWORK SPECIALISTS-PERU

Rodolfo Quesquen ..Sr. Territory Manager
Freddy Vite C. Field Supervisor
Daniel Fernandez Engineer

HOW TO CONNECT

<https://www.redram.com.br/>

<https://tucumann.com.br/>



The precision of fixture built formwork provides excellent panel joint alignment, eliminating offsets, and minimizing grout leakage.



SINGLE-SIDED WALL TRUSS PROVES ITS VALUE AFTER USE

PARKING GARAGE EXPANSION

McClone Construction had just finished construction on an 8-story parking garage when a plan for expansion was finally implemented. Completion of the 8-story expansion will be Summer 2021.

Excavation on Lawson Lane West Parking Garage Expansion took place and covers a U-shape dimension of 122' x 130' x 122' (37.2 m x 39.6 m x 37.2 m). EFCO's **Single-Sided Wall Truss (SSWT)**® formwork was

needed to pour the U-Shaped 20' (6.1 m) tall concrete wall. EFCO preassembled the **SUPER STUD**® and **E-BEAM**® Wall formwork system and the SSWT frames (A+B sections) separately to be shipped to the jobsite. The SUPER STUD and E-BEAM Wall formwork system was picked and placed face down into the pit. Then the preassembled frames followed so that a complete gang was built face down.

SYSTEM SUITED FOR THE PROJECT

EFCO Single-Sided Wall Truss system was the most efficient way to tackle this job. Eleven 20' (6.1 m) tall gangs using A+B frames

optimized @ 6' (1.8 m) O.C. were provided for Pour 1 on the 130' (39.6 m) portion of the 'U'. The gangs were strategically engineered to properly cycle without reconfiguration to the two subsequent 122' (37.2 m) one-sided wall pours.

McClone was a first-time user of the system, but executed their plan tremendously well from pouring the loop anchors, to building the gangs, to pouring, to cycling. Now that they have used EFCO's Single-Sided Wall Truss system, they will consider using it whenever they have one-sided walls over 12' (3.6 m) tall. Because of the way it cycles and moves around, its use increased production rates which means labor savings.

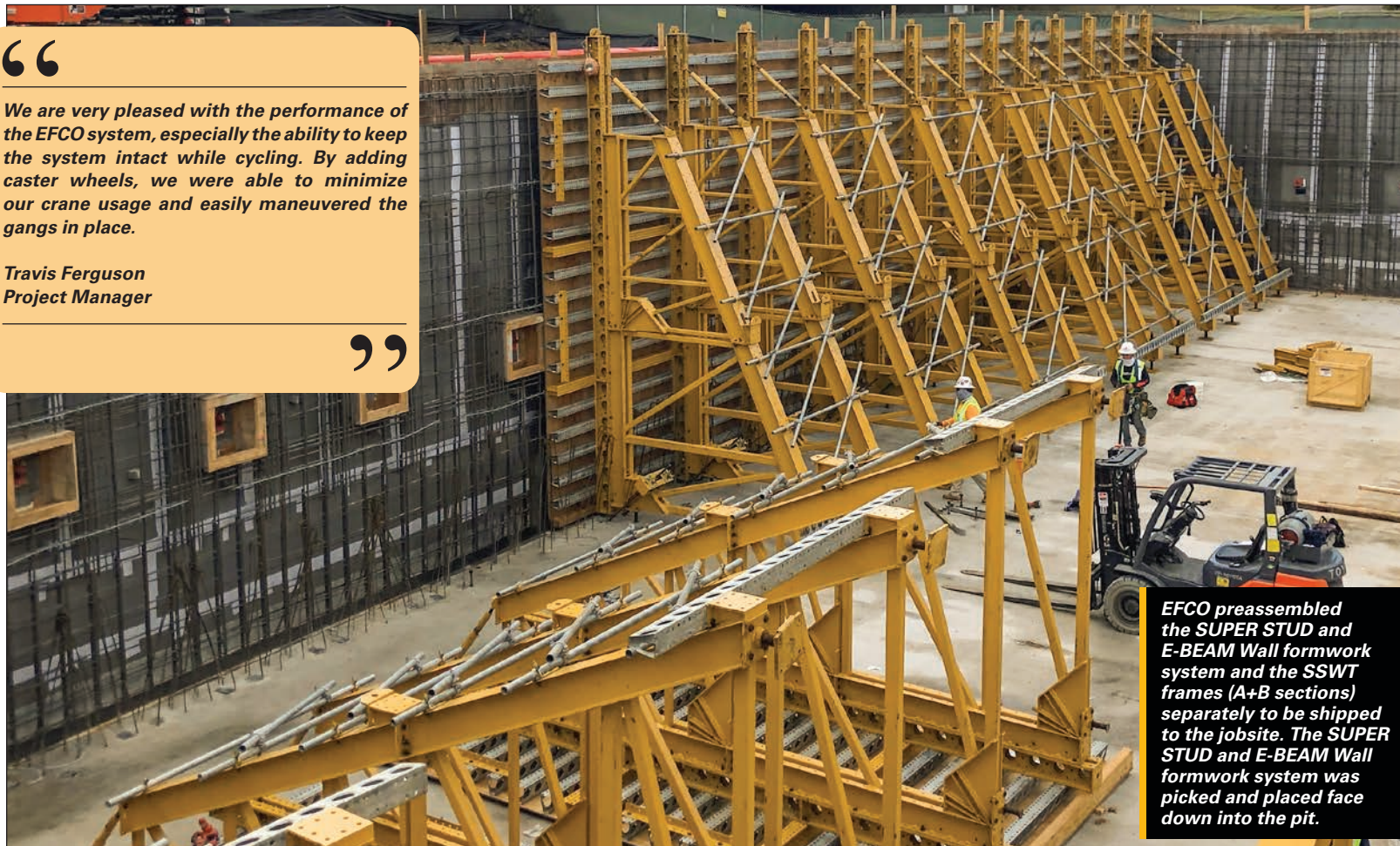
As far as the design challenge for EFCO, there were base plates with anchor protrusions through the Mat-Slab that had to be considered. EFCO's design and layout had to miss these, but also efficiently cycle from pour to pour. ♦

“

We are very pleased with the performance of the EFCO system, especially the ability to keep the system intact while cycling. By adding caster wheels, we were able to minimize our crane usage and easily maneuvered the gangs in place.

Travis Ferguson
Project Manager

”



EFCO preassembled the SUPER STUD and E-BEAM Wall formwork system and the SSWT frames (A+B sections) separately to be shipped to the jobsite. The SUPER STUD and E-BEAM Wall formwork system was picked and placed face down into the pit.

PROJECT LOCATION

Santa Clara, California

EFCO EQUIPMENT

SINGLE-SIDED WALL TRUSS®, E-BEAM®, SUPER STUD®

MCCLONE CONSTRUCTION TEAM

Travis Ferguson Project Manager
Robert Bragg General Superintendent

EFCO FORMWORK SPECIALISTS-FRESNO

Alan Johnson Territory Manager
Jason Clark Field Supervisor
Zachary Peacock Engineer

HOW TO CONNECT

<https://mcclone.net/>

FIRST IN THE NATION To Use This INNOVATIVE METHOD

EFCO HELPS TO CONNECT ORLANDO TO MIAMI THROUGH RAILWAY TUNNEL

Brightline is constructing a high-speed inter-city railway line to bring passengers from Miami, Fort Lauderdale and West Palm Beach to Orlando. The new rail line connecting South Florida to Central Florida is expected to open in 2022. Train travel on Brightline is expected to range from 79-125 mph (125 km/h - 200 km/h). Three additional stops will be added in future expansion along the South Florida Express line, including stations in Aventura, Boca Raton and Port Miami. Brightline's new South Terminal at the Orlando International Airport (MCO) is a part of the company's Phase 2 expansion into Central Florida, including a Tampa extension. The massive infrastructure project is making progress and encompasses four zones, including the area of the Orlando International Airport and the Brightline Vehicle Maintenance Facility. This monumental endeavor, which will use 225 million pounds (100 million kilograms) of American steel, will include the laying of 490,000 ties and transporting 2.35 million tons (2.1 million tonnes) of granite and limestone by 20,000 railcars. Additionally, approximately 2 million spikes and bolts will be hammered and put in place.

UNIQUE TUNNEL FORM CONSTRUCTION TECHNIQUE

The second phase of the Brightline high-speed rail project will extend the railway line from West Palm Beach to Orlando. The construction of phase two began in May 2019. Included in this phase is the construction of two concrete box tunnels.

BOX-JACKING METHOD FOR TUNNEL CONSTRUCTION

Granite Construction Inc. was awarded a contract for the tunnel segments of the Brightline Train project due to a unique method they pitched to Michael Cegelis (Executive Vice President of Rail Infrastructure, Brightline). The innovative box-jacking method can build a tunnel for a train in the fraction of the time it would take using conventional methods, making this method safer and more economical.

HISTORICAL ACCOMPLISHMENT FOR THE US CONCRETE CONSTRUCTION INDUSTRY

When Brightline Trains embarked on jacking a precast concrete box under an Orlando roadway, it marked a historical accomplishment for the US construction industry. Brightline & Granite Construction Inc. became among one of the first companies in the nation and the first outside the northeast to use this innovative box-jacking method that enables the above infrastructure to have minimal disruption while the tunneling is underway.

INNOVATIVE TUNNEL FORMWORK SOLUTION

After winning the contract for this portion of the Brightline, Granite Construction approached EFCO and asked if we could precast the concrete tunnel segments on site. Team sellers John Jennings and Arif Akar assured Granite that it could be done utilizing EFCO technology such as the E-Z DECK® shoring and PLATE GIRDER® wall forms. The box-jack operation at Goldenrod Rd., just east of Orlando International Airport, took just two weeks to complete compared to traditional underpass construction, which would have shut down local roadways for nearly a year.



At EFCO®, our employees are our most valuable assets. We share this ideology with our customers in that they, too, recognize the value of their employees and the direct impact they have on the business.

EFCO demonstrates our commitment to safety with an Awards Program. Each winner receives a personalized plaque (pictured left) and appears in FORM MARKS® magazine.



The box-jack operation took just two weeks to complete compared to traditional underpass construction, which would have shut down local roadways for nearly a year.

Michael was quoted saying that, "We are constantly working with our contractors to implement the most innovative and advanced approach to construction, and Granite responded with this innovative technology that is proven in Europe, but not widely utilized in the U.S. It will reduce the period of traffic detour from many months to weeks."

FAST, EFFECTIVE, LABOR SAVING RESULTS

The PLATE GIRDER® forming system was used to pour the 30,000+ ft² (2,785+ m²) of Thrust Blocks, Box Tunnel Walls, Box

Tunnel Wing Walls and Box Tunnel Slab Edges. The unexposed box tunnel is buried underneath South Goldenrod Road making the concrete finish not an issue. EFCO was able to offer a cost-saving solution with the use of "Shore Grade" (Non-Architectural) PLATE GIRDER panels. A PLATE GIRDER panel is deemed "Shore Grade" when it is no longer able to provide the as-cast finish it is known for. These "Shore Grade" panels have all the same characteristics of the modular PLATE GIRDER forming system, but with up to 25% off the original replacement value.

► 52

RE-USABLE STEEL FORMING SYSTEM

The rigid all-steel *PLATE GIRDER* forms, manufactured in the USA, give the ability for larger ganged picks; thus, minimizing crane handling time. The large panels require minimum bracing and aligning and a reduced number of ties, eliminating rework between pours. The rugged EFCO *PLATE GIRDER* panel will withstand the concrete placement pressures and rough handling at the worksite.

TUNNEL SYSTEMS - QUALITY IN EVERY DETAIL

The 9,000+ ft² (835+ m²) of Box Tunnel Deck was poured by erecting and cycling (22) 10' (3 m) long x 6' (1.8 m) wide x 24' (7.2 m) tall E-Z DECK® shoring towers. The versatile E-Z DECK complete deck system incorporates the **E-BEAM®**, **Z-BEAM®** and the **E-Z SHORE®**. These components have been designed and engineered to move together in large modular units. With the large capacity of the E-Z SHORE Post, EFCO can reduce both the number of shore posts and associated stringers. Z-BEAM and E-BEAM can both extend beyond the rectangular four-corner post setup by just varying the lengths of the Z-BEAM and E-BEAM. ♦

“

As you know, we recently completed the third box push in North America (the largest, longest and first under a roadway) four days ahead of schedule. This accomplishment was done even with an eighty-three hour delay in the middle of the push. This feat would not have been possible if not for the help and cooperation of our subcontractors and vendors. The groundwork for the successful operation was laid out over a year ago, with many hours of work and planning ahead of the actual push. I just wanted to take a minute and thank the team at EFCO for their contribution to making this task a success. Your contribution to helping us will not be forgotten.

Richard A. Brown
Project Executive

”

PROJECT LOCATION

Orlando, Florida

EFCO EQUIPMENT

PLATE GIRDER®, *E-Z DECK®*, *E-BEAM®*, *Z-BEAM®*

GRANITE

CONSTRUCTION, INC. TEAM

Richard A. Brown Project Executive
Clint Seace Project Manager
Rodney Willix General Superintendent
Terry Messerschmidt Superintendent
John Ramus Superintendent
Bob Peabody ... Structures Superintendent
Mario Salcedo Superintendent
Jamie Baxter Equipment
Dan Day Safety
Amanda Price Safety
Luis Barragan Foreman
Geyzer Salgado Project Engineer
Carlos Llaurador Engineer
Nicholas Schmidt Engineer
Samuel Conaway Engineer

EFCO FORMWORK SPECIALISTS-ORLANDO

John Jennings Sr. Territory Manager
Frank Bonventre Sr. Field Supervisor
Aaron Tang Engineer

HOW TO CONNECT

<https://www.graniteconstruction.com/>



The unexposed box tunnel is buried underneath South Goldenrod Road making the concrete finish not an issue. EFCO was able to offer a cost-saving solution with the use of "Shore Grade" (Non-Architectural) PLATE GIRDER panels.





EFCO's High-Load Shoring Supports Cross Beams in Construction of Yellow Line

ELEVATED MONORAIL

The Mass Rapid Transit Authority of Thailand (MRTA) under the Ministry of Transport, the Kingdom of Thailand, is implementing the MRT Yellow Line Project, Lat Phrao – Samrong Section using an elevated monorail system. The total distance of this elevated monorail is long 18.9 miles (30.4-km) with 23 stations, and the total investment cost is US \$1.76 billion (55 billion Thai baht). BSR, the entity awarded for the contracts, is a Joint Venture between BTS Group Holding, Sino-Thai Engineering and Construction (STECON) and Ratchaburi Electricity Generating Holding. EFCO partnered with STECON on this project, providing a strategic plan to achieve the lowest in-place concrete cost.

ELEVATED CROSSBEAMS FOR FALSEWORK

STECON needed a suitable shoring system and formwork for various elevated crossbeams for this project. The CA5 crossbeam, with dimensions of 10'-6" (3.20 m)(W) x 74'-6" (22.70 m)(L) x 11'-6" (3.50 m)(H), is located at the center of the main road. The four corbels at the corners of the crossbeam are located 36'-2" (11 m) above the existing ground level.

INCLINED SOFFIT CONSTRUCTION IS EASY WITH HIGH LOAD CAPACITY SHORING SYSTEM

EFCO introduced STECON to E-Z DECK®, the adjustable shoring system, for the falsework of a crossbeam. The E-Z DECK Swivel Head supports the Z-BEAM®,

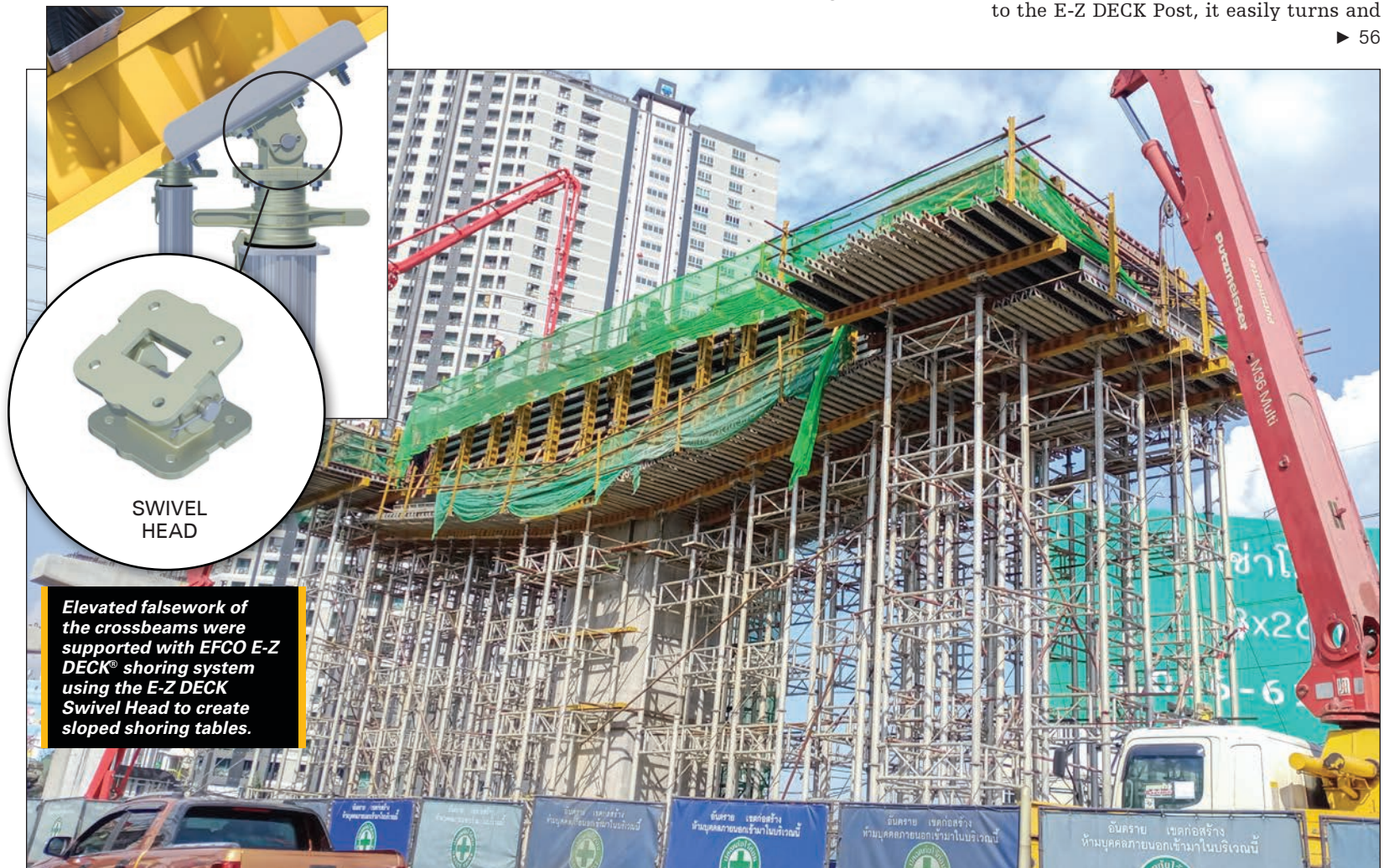
which in turn supports the inclined soffit of the crossbeam. This enabled STECON to easily assemble the E-Z DECK shoring equipment without additional wood blocks or steel fabrication. This is an outstanding benefit of EFCO equipment compared with the traditional method used in the market.

Even with the U-head, the E-Z DECK shoring post is still able to maintain the heavy-load capacity of 20 kip (89 kN). This high-load capacity enabled STECON to fully cast concrete at 11'-6" (3.50 m) height in one pour.

ADJUSTABLE SHORING SYSTEMS FOR CONCRETE CONSTRUCTION

Another structure was CA6 crossbeam, which has a similar dimension with CA5, but is located adjacent to the bridge and nearby the canal. EFCO engineering developed an innovative design which uses different post locations on different ground elevations, each with different ground support bearing capacity. Some of the E-Z DECK posts are situated on the contractor's platform in the canal, a few E-Z DECK towers are sitting on the bridge. Once the E-Z DECK Long Jack is attached to the E-Z DECK Post, it easily turns and

► 56



SWIVEL HEAD

Elevated falsework of the crossbeams were supported with EFCO E-Z DECK® shoring system using the E-Z DECK Swivel Head to create sloped shoring tables.



adjusts the height between 5" (125 mm) to 965 mm to meet the varying heights of the inclined soffits. EFCO's Z-BEAM® stringer, which can be connected end to end using EFCO Quick Bolts, enables the Z-BEAM to carry bending moment between each Z-BEAM and acts as a continuous beam to support the loading from the long crossbeam.

PARALLEL INCLINED FORMWORK

EFCO provided E-BEAM® and Z-BEAM for the sloping side formwork. The E-BEAMS were designed to be inclined parallel to the inclined soffit. The benefit of E-BEAMS, which have holes at 2" (50 mm) centers, combined with Z-BEAMS, which have holes at 4" (102 mm) centers, is the contractor can connect the different degree of sloping E-BEAM on the Z-BEAM. STECON team was able to easily shape the plywood to fit the actual concrete area of the side form.

CAST-IN-PLACE CONCRETE

Most of the typical pier heads in this project are precast, however the long span parts, which is designed to carry the load over the existing obstructions like intersections, bridges, etc., are cast-in-place. Therefore, these cast-in-place crossbeams and hammer head pier caps were the critical part of the MRT Yellow Line construction schedule. EFCO's engineering plan provided efficiency and the productivity that the customer needed to meet the critical construction schedule.

EFCO's E-Z DECK® shoring system is being used for several pier caps and crossbeam, as following:

- 2 bridge piers of Crossbeam CA5: 10'-6" (3.20 m)W x 74'-6" (22.70 m)L x 11'-6" (3.50 m)H with shoring height 36'-4" (11.07 m).
- 2 bridge piers of Crossbeam CA6: 10'-6" (3.20 m)W x 84'-4" (25.70 m)L x 11'-6" (3.50 m)H with shoring height 39'-8" (12.07 m).

- 2 bridge piers of Crossbeam CA2: 21'-8" (6.59)W x 22'-8" (6.90)L x 5' (1.50)H with shoring height 41'-5" (12.62 m).
- 2 Hammerhead pier caps YL10-P33,P34: 9'-3" (2.80 m)W x 25'-5" (7.74 m)L x 6'-7" (2.0 m)H with shoring height 48'-11 1/2" (14.9 m).
- 13 Hammerhead pier caps YL10-P37-44,P47-51 7'-7" (2.30 m)W x 36'-3" (11.04 m)L x 6'-7" (2.0 m)H with shoring height = 14'-6" to 38'-2" (4.40 to 11.63 m).
- 7 Hammerhead pier cap YL11-P12-14, P5,P6,P34,P35: 7'-7" (2.30 m)W x 32'-10" (10.00 m)L x 6'-7" (2.0 m)H with shoring height 37'-5" to 40'-9" (11.40 to 12.40 m).

PARTNER WITH EFCO, WHY TRUST ANYONE ELSE!

The versatility of EFCO's E-Z DECK shoring system and the E-BEAM and SUPER STUD® helped reduce the contractor's workload. The outstanding versatility and strength of EFCO products combined with good planning and implementation were the key to success on this project. EFCO is looking forward to continuing to build a successful partnership with STECON. ♦

PROJECT LOCATION

Bangkok, Thailand

EFCO EQUIPMENT

E-Z DECK, Z-BEAM, E-BEAM, SUPER STUD

SINO-THAI ENGINEERING AND CONSTRUCTION PUBLIC COMPANY LTD TEAM

Seri Chaiput.....Project Manager
Varong Siripunthana Project Engineer
Phasu PrachammuangField Engineer
Amorn TreesiriprasertField Engineer
Wutikrai PromsuwanField Engineer

EFCO FORMWORK SPECIALISTS-THAILAND

Veerayut Ponsetmatargul .Territory Manager
Rakchat Nimpila.Field Supervisor
Ralph Owen Sta Maria Engineer

HOW TO CONNECT

<http://www.stecon.co.th/>





DEPENDING ON EFCO'S EXPERTISE TO HELP GAIN EFFICIENCY IN CONCRETE CONSTRUCTION

ANIMAL WASTE AS A SOURCE OF GREEN ENERGY

As the demand for renewable natural gas (RNG) increases, many farm operations have begun installing anaerobic digesters to process animal waste as a source of green energy. JP Tank, of Eldorado, Wisconsin, was contracted to install a pair of these digesters at Shiloh Dairy in Brillion, Wisconsin. JP Tank's owner Josh Pipping has twenty years' worth of experience in agricultural concrete construction, and ten years ago he discovered EFCO at the World of Concrete Expo in Las Vegas. Josh puts a great deal of effort into finding the most efficient approach to his projects and could quickly see the potential in EFCO's formwork systems.

CIRCULAR FORMWORK WALL

The round, concrete digester tanks on this project are 26' (7.9 m) tall with a 96' (29.3 m) inside diameter. JP Tank was able to assemble the REDI-RADIUS forms on the ground at full height in 12' (3.6 m) wide gangs. Once the forms were assembled, they were picked flat and set on a shaping table made with EFCO SUPER STUDS to set the required curved formwork. Once the shaping was complete, they were picked from horizontal to vertical and set in place.

KEEP THEIR CREWS MOVING

After each pour, the forms had to remain in place for 72 hours to allow the concrete to cure. To keep their crews moving, JP Tank used two sets of REDI-RADIUS formwork, each 76' (23.2 m) long to enable the tanks to be poured in 90 degree sections.

JP Tank makes time to review and discuss the formwork solutions prior to each project to address any potential issues and identify opportunities for increased efficiency. This attention to detail and time investment made up front reduces downtime on site and ensures a smooth project from start to finish!

PROJECT LOCATION

Brillion, Wisconsin

EFCO EQUIPMENT

REDI-RADIUS®, SUPER STUD®

JP TANK TEAM

Josh Pipping Owner
Juan Vera Project Foreman
Norberto Angeles Project Foreman

EFCO FORMWORK SPECIALISTS-CHICAGO

Nick Olson Territory Manager
Paul Huisinga Sr. Field Supervisor
Zach Scholten Engineer

HOW TO CONNECT

<https://jptank.com/>



INTEGRATED STRAP

One size integrated strap fits all diameters. Bolts of the integrated strap need to be loosened and the form panel pulled to the shaping fixture to create the radius required, then re-tighten the bolts.

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<https://www.efcoforms.com/form-marks-subscription/>

THE POWER OF LEADING BY EXAMPLE



Cassone Truck and Equipment Sales is a family owned and operated business located in Ronkonkoma, New York. They have been in business for over 50 years serving the Long Island area of New York. The company began its roots through its parent company, Cassone Leasing, a leading provider of temporary building solutions for events, business use, retail spaces, and classrooms.

In 2013, Cassone became a SwapLoader distributor and quickly became a dominant force in the hook lift market, specializing in mounting new SwapLoader hoists to used trucks.

"There are many benefits to the hook lift, from productivity to safety. We looked at other brands but chose SwapLoader because we liked the operation of the unit along with the hoist

being backed by a 4-year warranty," says Tim Muschenick, Senior Vice President of Operations.

Through the years they have expanded their sales portfolio to include various bodies such dump bodies, flatbeds, and van bodies. They also specialize in facilitating deliveries out of state and even out of the country. SwapLoader has helped them grow to the company they are today.

"As the country's largest SwapLoader distributor, we always have a customer's hook-lift in stock. We generally have over 20 various models in stock. Our lead time is a matter of days, not weeks. We learned early on, when a hoist is mounted, it sells," says Tim Muschenick.

Cassone Truck Equipment is a great example of leveraging a market and creating success!

An EFCO Company

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"Hooked on Quality"

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	Temuco*	(56-45) 222-8197
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