

PROJECT SPOTLIGHT

An Uncommon Coping

**Tricon Precast, LTD
Manor Expressway**

The Manor Expressway is a 6.2 mile, \$500M public private partnership near Austin Texas. This expressway will provide the connection between a new toll road and the heavily travelled I-35 Interstate highway. The design of the roadway features a “Central Texas Heritage” design theme developed through a public forum of stakeholders, including local residents.



Precast concrete plays prominently in bringing the design concept to life. The MSE retaining walls, supplied by Tricon Precast in Houston, feature a special decorative coping that ties into the design theme. The coping sits at the top of a precast “winged” column and has a stepped design on the face of the panel that creates depth and shadows. The design is unique, and so is the form used to produce the coping.

Although it’s an intricate design, Hamilton Form designed the formwork to cast the product with an eye toward simplifying production, stripping and handling. The product is cast upside down in a form that is 15 feet long; 5 foot, 5 inches high on a 5 foot wide base. Chamfer welded on the base of the form is used to locate the center block-out.

Two sideforms create the stepped design on the front of the precast product. The bolt-on side forms are slightly offset to eliminate a visible seam at the center reveal. Welded chamfer creates the three vertical reveals in the center of the panel. *(continued)*



PROJECT SPOTLIGHT

An Uncommon Coping (continued from cover)



A hanging back pan is attached to the top of the form to create the top ledge. A mat is used on the flat reveal area on each side of the fluted center to create a bush hammered finish. A removable riser with integral top ties form the holes at the back of the product where protruding rebar ties into the retaining wall.

For stripping considerations; three-quarter-inch chamfer was used on all outside corners. All of the seams are chamfered, and the top is slightly drafted.

Tricon has been working successfully with the form for several months. What seemed like a complicated piece of precast has been relatively simple to set-up and strip with virtually no finishing required. The simplicity of the formwork has kept the project moving on schedule and within budget.

As expressways, fly-overs and bridges continue to inundate the urban landscape, it's refreshing to see details incorporated into the design that add character and beautify the roadways. What could have been a mundane and expected MSE retaining wall installation has been raised to new heights with these innovative, precast concrete copings.

EQUIPMENT SPOTLIGHT

Hamilton Form Utility Machines

Mechanized production to reduce labor, save time and help improve safety.



Hamilton Form Utility/Casting Machines mechanize precast/prestressed concrete production making the process more consistent, shorten set-up time, decrease production costs and help improve product quality.

Most utility machines are built to service a particular bed and can be designed to do a number of tasks. A utility machine can reduce set up time by pulling strand. Handling headers can be aided with the use of a header cart that stores and carries headers down the bed for placement. Other options include a spray and mop to apply form oil, vibratory and oscillating screeds, brushes to clean the form, and a deck to store and distribute mesh. A utility machine can even be fitted with a tarp roller/dispenser attachment.

The machine can ride on the edge of the form or on a track next to the bed. Machines are normally operated from a platform where the operator has a good view of the operation. Controls are typically lever operated, but can be designed for remote operation.

A utility/casting machine can automate many of your most difficult and labor intensive production processes. Give us a call with your wish list and we'll design a machine for your specific needs. It's a versatile and practical investment that will help save time and money.

FORMWORK

Using Piling Liners

How do you make an adjustable piling form?

By using piling liners. Piling liners can be tack welded into a piling form to produce piles smaller than the base form. For example, you have a 20 inch piling form and need to make 16 inch pilings for a project. Using piling liners is a handy solution in this situation.

Piling liners can be used to multi-purpose a piling bed, but there are some guidelines to follow when using piling liners.

1. Don't leave a piling liner in a form for an extended time.

Condensation collects under the liner and will damage the form over time. If you are casting for an extended period, take out the liners, clean the form, apply form oil and re-install the liners. (By the way, this rule also applies to stem fillers in double tees and block-outs and side rails on steel casting tables.)

2. When casting in only one side of a multi-cavity form, the entire bed should be stressed.

Never stress only one cavity of a multi-line piling form. Think about what the form does when only one side is stressed. The stressed side shortens while the other side does not, resulting in uneven form movement. Uneven form movement may cause form damage and will definitely cause issues when stripping the product.

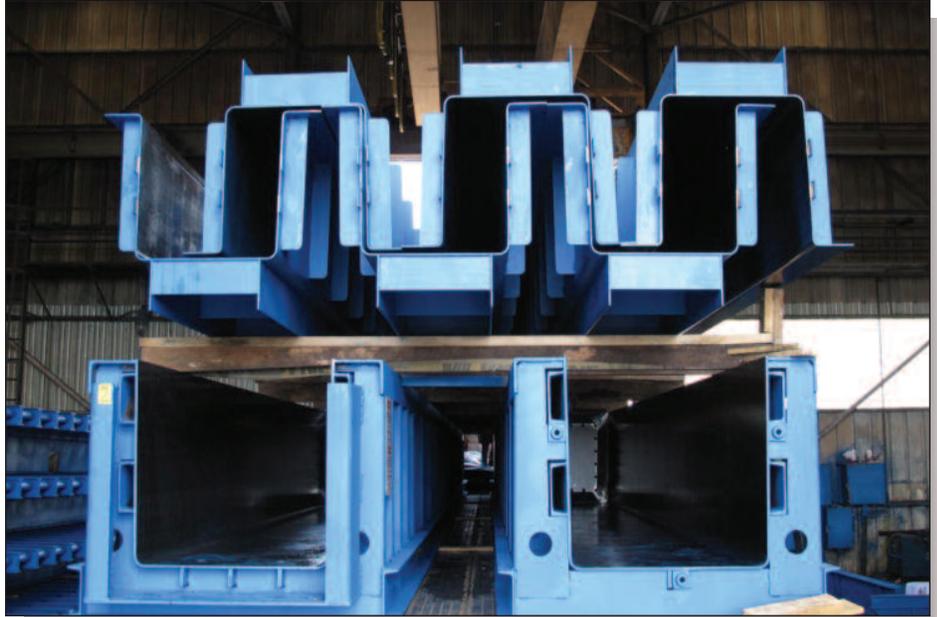
3. Don't use two very different strand pattern designs in a multi-line piling bed.

For example, you have a dual 20 inch piling form stressed to 600 kips on one side. You use a piling liner on the other side to produce a 14 inch piling stressed to 250 kips. Now you have two sections of the same form stressed to two different capacities.

This causes uneven form movement. The product will be difficult to strip because the form is uneven. Try a similar scenario in a triple line form and your problem could be worse.

4. Don't use a liner more than 6 to 8 inches smaller than the base form.

First, you are dramatically changing the CG (center of gravity) of the bed. Second, the cost difference between building the back-up structure to produce the liner and producing a new form is minimal. At this point, it's wiser to buy a new forms.



5. Don't drill holes in your jacking plates.

When changing strand patterns; don't drill too many penetrations in your jacking plates; it will compromise the structural integrity of the plate. There is also the possibility of making mistakes by choosing the wrong hole for your strand. If you need to make significant changes, be safe; buy new jacking plates. Never, ever, use a jacking plate that looks like Swiss cheese!

Piling liners should only be used as a temporary solution. If you are casting a significant quantity of pilings, the cost difference between liners and new forms can be negligible when you consider not only the cost of the liners, but the labor and time to reconfigure your bed and the maintenance required if you are casting long term. You may find you are better off with new forms.

As always, if you have any questions about using piling liners, or making changes to your forms, call Hamilton Form first. We're here to help; 817 590-2111.



Chisel Tip Headers

Hamilton Form recently fabricated these V-shaped headers used to produce piling with tapered ends that help drive the pilings into the ground.

TECHNICALLY SPEAKING

Concrete Curing

Curing is an important process in the production of precast/prestressed concrete because it has a direct influence on the quality and durability of the concrete. Proper curing assists in the development of the concrete's compressive strengths at early release and at 28-days; and minimizes the evaporation of mix water, reducing the potential for shrinkage cracking.

The American Concrete Institute (ACI) defines curing as *“the action taken to maintain moisture and temperature conditions in a freshly placed cementitious mixture to allow hydraulic cement hydration and pozzolanic reactions to occur so that the potential properties of the mixture may develop.”*

Simply stated, concrete curing is the process of controlling heat and moisture for a period of time (usually overnight), after the concrete is placed so that the process of hydration becomes more complete and concrete reaches its designed potential.

The production of precast concrete is unique in its ability to control curing because the product is plant cast in a controlled environment. But, like many precast production practices, curing is still a mix of art and science. The art involves the control of heat and moisture in varying conditions. As temperatures drop in the winter, it is especially important to pay attention to the curing process. Curing is also important when the water to cementitious ratio (w/c) in the mix design is lowered and less mix water is available to hydrate the cement.

The Portland Cement Association (PCA) has determined that concrete must be kept at a relative humidity above 80% and temperature above 50°F to cure. This “internal environment” helps concrete maintain sufficient moisture at a temperature that allows for the continued hydration of cementitious mixtures. If the temperature drops below 40°F, hydration becomes very sluggish. At temperatures near or below freezing and/or at a relative humidity of less than 80%, hydration basically stops. Many specifying agencies and codes require freshly placed concrete to maintain temperatures above 50°F, as a minimum, through the release of prestressing forces or through achieving the required stripping strengths.

Electric heat, recirculating hot water/oil and live steam are often used to cure concrete in precast plants. Although these methods are high energy users, they are easily controlled and monitored. Many producers insulate their forms to bolster the retention of applied heat and/or to hold in the naturally occurring heat of hydration.

One of the simplest methods to help cure precast concrete is to cover the beds with an insulated blanket. Concrete develops its own heat from hydration. An insulated blanket helps retain that heat. Depending on climate and conditions, curing blankets can be used alone or can be used to augment other curing methods. Use an insulated blanket on a heated bed to reduce energy use. In some climates a non-insulated curing tarp covering the bed can be used to hold in the heat. An insulated blanket; or a non-insulated curing tarp can also be used over wet fabric to hold in moisture so that the fabric won't have to be re-wetted.

No matter what method or methods you use, don't minimize the importance of curing to the quality of your precast concrete products.



We've Got You Covered

An insulated blanket is an energy-free solution for curing. Hamilton Form is unique because we fabricate custom sized, **Insulated Curing Blankets** to fit your application.

In some climates, a non-insulated curing **Tarp** may work well.

For handling tarps and insulated blankets, a **Motorized Tarp Cart** is the perfect solution. Our carts make handling heavy, bulky blankets and tarps quick and easy – while protecting your curing cover from damage when it is not in use.

No matter which option you choose – we've got you covered.

Call us at 817 590-2111 or e-mail sales@hamiltonform.com

PRODUCTIVITY

High Volume Piling Production

At Dunham Price Concrete Products

Efficiency is the name of the game in high volume piling production. Improve efficiency, improve profits.

The first step in efficiency happens in form design. Depending on the pile size; a dual, triple or even quad-line form may be most cost-effective.

When forms are fabricated, a multi-line form is a better utilization of materials than a single line form because the cavities share the same understructure. Sharing the same understructure reduces the amount of material needed to build the form and the number of pieces that need to be cut, fitted and welded together; saving both machine time and labor required to fabricate the form.

At the precast plant, setting up and installing forms in one bed is easier than two or three. A single bed has a smaller footprint, saving space at the plant. In production, crews can work both sides of the bed making for a more efficient set-up and casting procedure. Equipment, including cranes and concrete delivery vehicles needed to work the bed are located in one area of the plant, further improving efficiencies. Finally, mechanizing production processes delivers even more productivity gains.

High Efficiency Production

Dunham Price Concrete Products knows high volume piling production. The company has plants in Westlake and Vinton, Louisiana and produces piling for marine and building structures throughout the Gulf Coast states. Dunham Price has well over 10,000 bed feet of square piling forms ranging from 14 to 30 inches.

The plant in Vinton is an excellent example of a plant designed for high volume production and efficiency. Five hundred foot long triple 18 inch piling beds are set up in pairs in one location of the plant. Each pair is close to each other with wider equipment lanes located between the pairs to provide ample space to move equipment while conserving space. The storage area is located at the end of the beds so that product can be stripped and moved directly into inventory. The same configuration is used for other piling sizes throughout the plant.

In addition to forms, Hamilton Form has built machines to help Dunham Price mechanize some of their production processes. Tarp Carts that ride on the edge of the forms are used to unroll and roll curing covers. A single tarp cart services both the quad-14" and the triple-18" beds. The cart has flange wheels that roll on the edge of the form. To adjust for the two different beds widths, the wheels are loosened, slid into the secondary position; and tightened in place. A dedicated reel and curing cover is used on each bed.



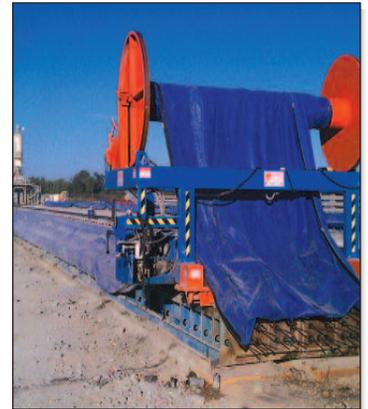
Depending on the pile size, a dual, triple, or even quad-line form may be most cost-effective.

The reels are stored at the end of the beds. Finally, the controls for the Tarp Carts were located to face the equipment lanes for pay out and re-rolling.

To clean the beds, Dunham Price uses Hamilton Form's Piling Form Cleaner. The machine moves down the bed on rollers and can be used on both single and multiple line forms. One machine services all of the piling beds by changing out the brush assembly.

Used as a daily maintenance tool, The Cleaner helps prevent heavy buildup from developing inside the forms. The machine is quick and easy to use reducing labor time and effort. Cleaning forms after every casting makes stripping easier, produces a better quality product, and helps maintain forms.

Plant layout, efficient processes and mechanization have greatly improved the productivity of pile production at Dunham Price. These processes have positioned the company as one of the largest and most competitive piling producers in the country.



Custom built Tarp Rollers are adjustable to work both 14" and 18" piling beds.



The Piling Cleaner™ used after every pour helps keep beds in good shape and makes product easier to strip.



Hamilton Form Company, Ltd

7009 Midway Road • Fort Worth, Texas 76118
Ph 817.590.2111 • Fx 817.595.1110
www.hamiltonform.com

EMPLOYEE PROFILE

Charlie Leidholdt

Charlie Leidholdt recently relocated to Texas to join the team at Hamilton Form. A civil engineer with over 20 years of experience in the precast/prestressed industry, he brings a fresh perspective and new energy to the company.

Most recently, Charlie was the plant manager at Encon's plant in Utah. The plant produced structural precast for the transportation and commercial industries. While there, he installed the state's first UDOT bulb tee girder bed. He also installed a new vapor energy steam heating plant for curing Federal and UDOT products. Prior to Encon, Charlie worked as a senior project manager at Metromont Corporation. He was also the Manager of Quality Control at High Concrete for a number of years and spent a short time at Fabcon in Minnesota after graduating with a degree in civil engineering from the University of North Dakota.

One of the values of working with Hamilton Form is the ability to work with a staff that has a deep understanding of form design and fabrication, plus the experience and knowledge you can only get working in precast production. That's why it's only natural that someone with practical, hands-on experience as Charlie would join the staff at Hamilton Form. *Welcome Aboard.*



"During my career, I have been fortunate to work with several managers who I have admired and was able to learn a great deal from. In the few months I have been with Hamilton Form, I have been amazed at the knowledge here and how much guidance and value engineering is provided to customers who work with this company. It's been a learning experience and I am excited to be a part of the company."