

Concrete Pipe News

Winter 2017

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American
Concrete Pipe
Association

Ease of Network Access – the Fundamental Value of Social Media



Matt Childs, P.E., President
American Concrete Pipe Association

We have witnessed the power of social media on global geopolitics (Arab Spring) and election campaigns at local, state and national levels. The speed (powered by social media) at which populism has taken control of the electoral process in almost every western nation is astounding. There is no major leader in the world who does not have a presence on social media because of the ease of access to widespread local, regional, and global networks that connect with individuals.

And the trend is not the sole domain of people running for election. Social media networks have been the communications currency of realtors, entertainers, media networks, telecoms, on-line retailers, web browsers, and yes – industry and professional associations. If your business is not engaged with several social media networks, a marketing and sales function is likely missing opportunity for enhancing client experience management activities to retain the loyalty of existing clients, find opportunity for marketing products and services, and increase sales. The most effective social media networks for an industry association and its members are found in popular networks like Facebook business sites, YouTube channels, LinkedIn Groups, and Twitter. Email marketing campaigns are effective and generate metrics for assessing business direction and success when using accounts like GoToMeeting, Informz, and Constant Contact. Website analytics are easy to read using Google Analytics and other programs for displaying website metrics. And it is easy to survey client and prospect email databases using accounts like Survey Monkey and email marketing software. Some corporations may consider the only effective face time with clients and prospects are face-to-face, so facial expressions and body language can be read. This form of communications has not diminished in any way, but there are now many circumstances that dictate an immediate face meeting through apps like Skype, FB Messenger, GoToMeeting, WhatsApp, and Viber – among many others. For instance, over a billion people use Messenger for communications. How can we ignore such statistics?

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Concrete Pipe News is an interactive communications channel of the American Concrete Pipe Association that is published quarterly and archived at concretepipe.org. Readers include engineers, specifiers, contractors, suppliers, government officials, and members of the American Concrete Pipe Association.

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On the Cover:

144-in. dia. Jacking Pipe for Blue Plains Influent Sewers (Summer 2014 Issue CP News)

Photo: Mike Barna

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C21 Online Media

Constant Contact

YouTube

Web-based communication services for business

The American Concrete Pipe Association prepared itself for 21st century communications as it entered the new century. It was already engaged in email marketing and was consulting web analytics to measure communications and level of interest in technical documents archived on its website and promotions. As the first decade progressed, so too did the ACPA's activity on social media with the development of LinkedIn, Facebook, and Twitter sites.


In 2016, two Issues of Concrete Pipe News were distributed via Vertical Response and one distributed via Informz. Email Marketing Campaigns generate statistics about readers, articles, and geography of distribution. CP News is distributed to some 14,800 and each article is linked to the ACPA Blog page. There were no hard copies of CP News, and the files are available to members as a pdf for download and printing, or a flip book for reading online with a mobile device, or fixed work station. After distribution by Informz, the CP News distribution is enhanced through ACPA and member Facebook; LinkedIn and Twitter sites, as well as articles submitted as editorial in selected industry media.

Newscast is distributed online to all members who register email addresses with the ACPA and then archived on the Members Only site of concretepipe.org.

Other than direct email marketing campaigns, ACPA's Facebook, LinkedIn and Twitter sites are most effective online marketing touch points with various audiences. Several member firms of the ACPA have developed marketing programs with social media campaigns as major components. Such member-sites are second-to-none in the industry. Their sites are managed continuously incorporating news for upcoming events, industry technology, product development, applications, and educational webinars. The concrete pipe industry has a good online presence with room to expand and improve. If your company is not yet taking social media seriously, it may be time to develop an understanding of the social media networks that might be best for marketing services and products to prospects and existing clients in your market areas. "LIKE" the ACPA Facebook page and choose to get notifications each time the ACPA page posts information, and we can build the social media network of the concrete pipe industry. Leveraging social media networks can be very effective in staying in touch with prospects and clients between plant tours, corporate client receptions, and education events. Effective use of social media can keep the competition playing defence.

GET INVOLVED....BLOG YOUR THOUGHTS!

Have something to say to Matt Childs about this editorial? The blog is published under Latest News at concretepipe.org. Get involved and leave a comment.

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America's Concrete Pipe Industry is Prepared for Change

Margarita Takou, Ph.D. Technical Resource Manager, American Concrete Pipe Association

Our Nation's infrastructure owners continue to face challenging times. DOT and municipal owners find that funding resources waver, when facing needs to expand and improve existing transportation modes, while maintaining elements of existing systems. Proper inspection, management, and maintenance of aging infrastructure seems to be consuming more resources, time, and money than ever before. The concrete pipe industry has been working with DOTs and municipalities for years to accommodate the combination of trenchless installation technology with concrete pipe. The result is added value to infrastructure assets while accelerating new construction and repairs to existing drainage systems.

Trenchless installation accommodates many Accelerated Precast Construction attributes that DOTs and public works agencies may wish to consider when faced with replacing small and large culverts under heavily travelled transportation systems (road and rail). Jacking concrete pipe is not a new concept, but the equipment used, construction techniques, and quality of the concrete pipe are modernized and competitive in cost in many situations where open cut is considered the only construction method. Records suggest that in the 1930s Northern Pacific (railway) standardized the use of concrete jacking pipes with internal diameters from 4 to 72 inches (100mm - 1800mm). Today, reinforced concrete pipe 18 to 144 inches in diameter can be installed using jacking installation procedures.

Pipe jacking is a trenchless technique for installing pipelines and culverts without open-cutting the entire length of the pipe run. Microtunneling is a jacking method using remotely controlled equipment to install pipelines beneath highways, railroads, runways, harbors, rivers, and environmentally sensitive areas. Support at the excavation face is a key feature of microtunneling, distinguishing it from traditional open-shield pipe-jacking. Concrete pipe producers have the experience working with contractors, owners, and design engineers to supply pipe and boxes that can be designed for the loads and pressures required for a trenchless installation. Staff are knowledgeable and product has been improved through quality certifications of plants and products along with continuous education of industry personnel in the details of design, inspection and proper installation of these products.

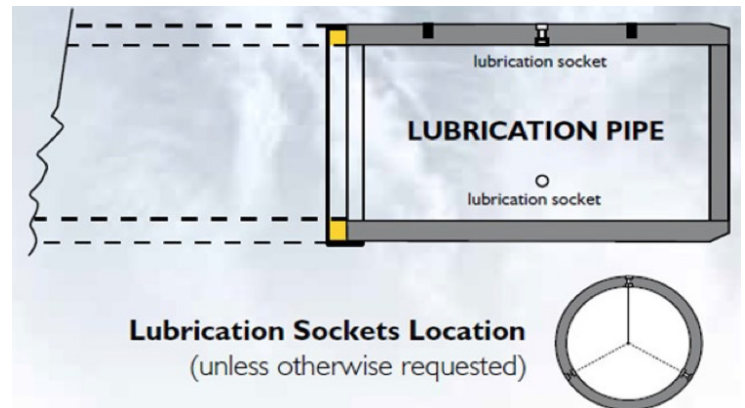
Close coordination of responsibilities between the key members of the project team will ease the complexities of a trenchless installation. The contractor designs the jacking pit, selects the excavation method and equipment, elects jacking equipment, and schedules the operation. The owner/engineer defines the intended use of the pipeline or culvert, determines the pipe inside diameter, and designs

the pipeline plan and profile. The concrete pipe producer provides design data of the pipe (or boxes), produces the product, and delivers according to the contractor's schedule.

The loads applied to the pipe during the jacking procedure have two components: jacking force and earth load. The jacking pressure is applied during installation mainly at the periphery of the pipe. This load should be uniformly distributed to prevent localized stresses which may lead to failure at the applied area, due to concrete crushing. A cushioning material should be used between the pipe segments to assist with distributing the jacking loads evenly over the cross section of the pipe. The most common type of material used is plywood and particle board 5/8 in. to 3/4 in. in thickness.



To move the pipe horizontally, jacking forces must overcome the frictional force between the soil and the pipe. Friction from pipe and liners is reduced with lubrication that is designed into the installation methodology to accommodate soil type and lubricant loss to the soil. Lubrication of the jacked pipe is accomplished mechanically by overboring the excavated material.

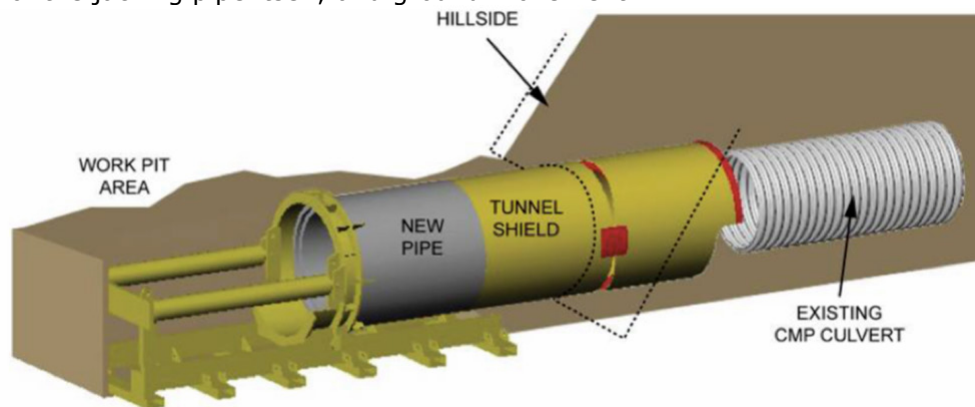


Applications	Benefits (based on FHWA: Accelerated Bridge Design)	Limitations
Pipelines beneath highways, railroads, runways, harbors, rivers, and environmentally sensitive areas. Culverts Gas mains Watermains Subways Transmission ductwork Sewer replacement and new construction	Reduce construction time Reduce weather-related time delays Reduce impact on road users Reduce environmental impact Reduce impact in roadway alignment Can be utilized in most soil types	Coordination among the contractor, owner/engineer and producer of the jacking pipe Direction change in shafts Friction from pipe and liners

When long jacking distances are required, higher concrete strengths, lubricants, and greater care are required. Factors that can affect lubrication are: soil type; lubricant loss to soil; and mechanical means—overbore.

The earth loads imposed on the pipe have vertical and horizontal components which should be analyzed using national standards that account for all the components of the installation. The final condition of a jacked pipe is usually treated in the same manner as a pipe installed in an embankment. Other loads applied to the system are: live loads; dead load; fluid load; and additional earth fill or surface surcharge loads.

Concrete pipe producers understand that key elements of a trenchless installation include: the soil investigation; proper design of the shield and selection of the tunneling machine; working shaft design; drive lengths; jacking and friction loads; design of intermediate jacking stations; lubrication selection and port designs; surface equipment and facilities; the design of the jacking pipe itself; and ground movement.



Concrete pipe plant facilities of the 21st century are designed for ultimate safety and ability to meet production schedules that can accommodate various standard pipe and box sizes and strengths, along with special designs for trenchless projects. Robotic and automated production equipment can quickly adapt to new technology. The concrete pipe industry is prepared for change while the applied science of trenchless technology becomes more mainstream as a modern pipeline and culvert installation method.

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Storm Water Attenuation Becoming More Important with Urbanization and Roadway Expansion

Hank Gottschalk, Concrete Pipe & Precast, LLC

The need for storm water attenuation is becoming increasingly important as urbanization continues to increase impervious drainage surfaces through the development and redevelopment of residential, commercial, institutional and workplace areas, and associated roadways. Combine urbanization with the expensive costs associated with servicing land, it is then easy to understand why owners are relying more on the use of underground storm water management systems. Storm water attenuation structures, such as oversized sections of storm sewer pipelines within a storm drainage system, can hold and detain peak flows during rain events and allow full use of the land surface.

Improvements to Stringtown Road in Montgomery County, MD included two under-ground storm water attenuation systems as part of the storm water drainage plan. Charles P. Johnson & Associates, Inc. designed each of the two systems as 96-inch diameter Class D25 reinforced concrete pipelines meeting ASTM C361, including precast plugged ends, pipe openings, and manhole tee fittings.

The Salem, VA facility of Concrete Pipe & Precast produced the 96-inch diameter reinforced concrete pipe (RCP), fittings, and plugged end sections for the two systems. The north system consisted of 13 RCP sections (103.17 feet) and the south system consisted of 9 RCP sections (71.0 feet) plus risers to grade. Pipe and fittings were delivered with embedded lifting devices, allowing Kinsley Construction to maneuver and install the heavy sections.

96-inch diameter Class D25 reinforced concrete pipelines meeting ASTM C361.



Quick Notes	
Who	Owner: Montgomery County, MD Project Engineer: Charles P. Johnson & Associates, Inc. General Contractor: Kinsley Construction, Inc. Pipe Supplier: Concrete Pipe & Precast, LLC
What	Storm water attenuation structures.
Why	Increased runoff with urban land development and road construction.
When	2016
Where	Stringtown Road in Montgomery County, MD
How	Two systems: A north system consisting of 13 RCP sections (103.17 feet) and a south system consisting of 9 RCP sections (71.0 feet) plus risers to grade.



Kinsley Construction prepares to install a section of 96-in. dia. RCP for the storm water attenuation structure.

Hank Gottschalk; hgottschalk@concretepandp.com

Photos: Concrete Pipe & Precast, LLC



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Precast Concrete Products Accelerate Highway 20 Construction in Iowa

Bob Schaffler & Bill Adams, Sales Territory Managers, Hancock Concrete Products, LLC



Precast concrete boxes of various sizes shipped to culvert construction sites along 37 miles of Highway 20.



138-inch span arch culvert pipe.

Precast Innovations Accelerate Highway 20 Construction

Expansion of U.S. Highway 20 in northwest Iowa from two lanes to four lanes had been planned for decades. The cost to widen the highway was a reason for the delay of construction. After a first letting of 9 miles in 2014 won by C.J. Moyna & Sons Construction of Elkader, Iowa, Governor Branstad signed a \$0.10 per gallon increase to the fuel tax on May 25, 2015. The new tax revenue of approximately \$200 Million accelerated widening of the remaining 37 miles of the Highway 20 expansion. Specifications allowing precast concrete boxes and pipe for the remaining lettings expedited construction so that the widening could be completed as planned.

In a news article by Governor Branstad responding to where the additional gas tax money would be used, he said, "One road project that could be accelerated because of the additional gas tax revenue is the expansion of U.S. Highway 20 in northwest Iowa from two lanes to four lanes. The Iowa Department of Transportation is currently working on a section of U.S. 20 between Merville and Correctionville, leaving a 37-mile stretch between Correctionville and Early. Once the final piece is completed, U.S. Highway 20 will be a four-lane expressway from Sioux City to Dubuque." The approximate cost would be \$290 Million, which would include grading and paving, precast boxes, round pipe, and precast arches for culverts.

The Concrete Pipe Association of Iowa had been meeting with the Iowa Department of Transportation to draft specifications and standards for precast concrete for as long as the widening was being planned. Even though the IDOT specified portions of the final alignment of the project cast-in-place only (some long outlet flumes and transition sections), most of the drainage structures were specified allowing precast alternates. IDOT's Chief Engineer determined that precast box culverts would be conducive to an accelerated construction schedule. Ames Construction, Hancock and IDOT worked to finalize a sound construction strategy.

The initial 9-mile grading project had specified cast-in-place only for nine box culverts crossing the highway grade. A precast option was added to all box culverts on subsequent projects because of the speed of installation of precast. IDOT officials, including the Chief Engineer felt this would help accelerate construction that had an October 2018 completion.

Ames Construction of Burnsville, Minnesota won the largest contract of the 37-mile widening with a bid of \$62 Million, while C.J. Moyna & Sons Construction of Elkader, Iowa took the largest number of the remaining contracts and Peterson Contractors of Reinbeck, Iowa took one. The participating contractors' preference toward precast concrete structures will be key in completing the projects accelerated schedule. Ames Construction and C.J. Moyna offered extensive value engineering proposals to turn cast-in-place to precast whenever possible. This strategy proved invaluable by reducing the impact of record rainfall in 2016 that occurred during the prime construction period between April and November. Precast concrete products from Hancock Concrete helped keep all crews on schedule.

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Photos: Hancock Concrete Products, LLC



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Quick Notes

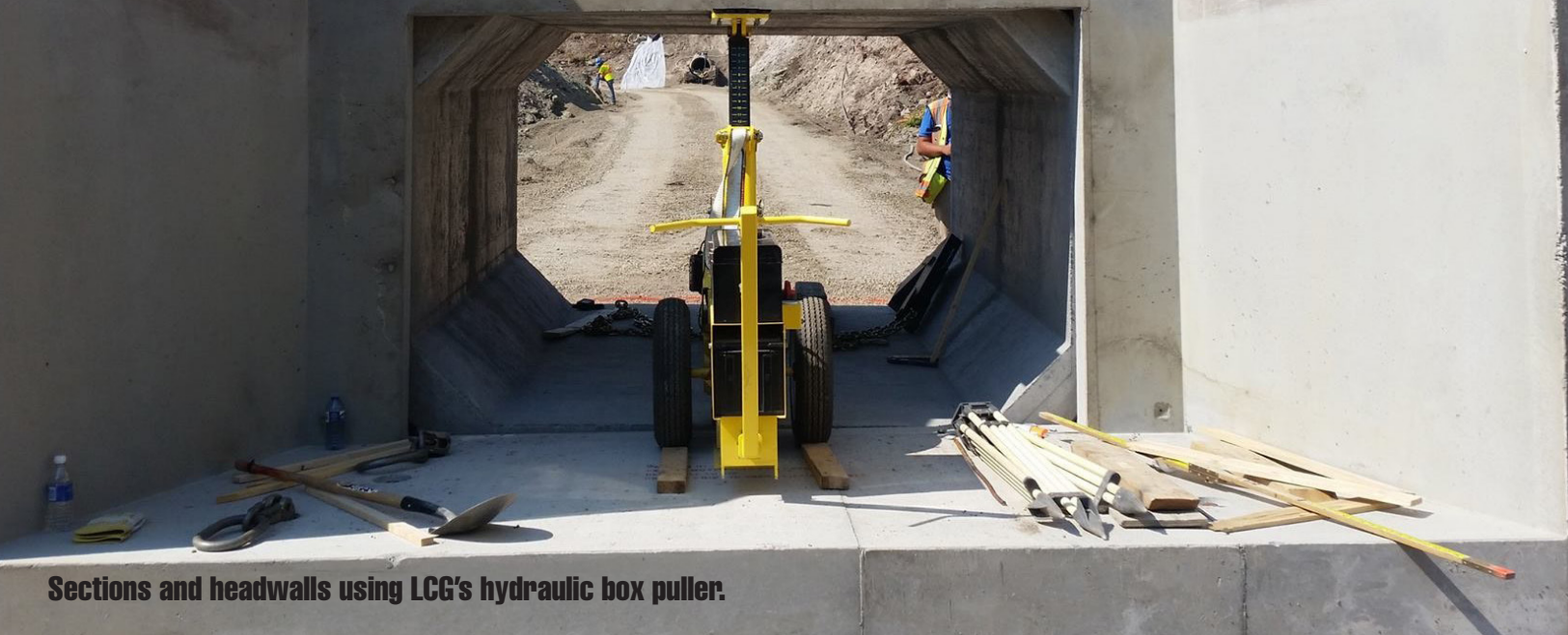
Who	Owner: Iowa Department of Transportation Project Engineer: Iowa Department of Transportation Contractors: Ames Construction; C.J. Moyna & Sons Construction; Peterson Contractors Precast Supplier: Hancock Concrete Products, LLC
What	37 miles of precast boxes, round pipe, and precast arches for culverts.
Why	Expansion of U.S. Highway 20 in northwest Iowa from two lanes to four lanes.
When	2014 - 2018
Where	A 37-mile highway alignment between Correctionville and Early, Iowa.
How	Open cut construction of precast concrete box culverts.



Iowa Governor Terry E. Branstad signs 2016 Proclamation declaring Concrete Pipe Week August 14 to 20.

QCast-certified Boxes Used for B.C. Culverts

Joel Shimozawa, P. Eng., Marketing Engineer, Langley Concrete Group



Sections and headwalls using LCG's hydraulic box puller.

British Columbia's Ministry of Transportation and Infrastructure chose to realign a section of the #3 Provincial Highway between Hope and Princeton and install precast concrete box culverts to improve road safety and hydraulic capacity of a redesigned drainage system. The highway is a section of the Trans-Canada Highway locally known as the Hope-Princeton Highway. The mostly two-lane highway mainly follows a mid-19th century gold rush trail that took its name from the Crowsnest Pass; the location at which the highway crosses the Continental Divide between British Columbia and Alberta.

Removal of S-curves required an extensive upgrade to the stormwater and snowmelt conveyance systems. Subsequently, precast box structures were specified for box culverts designed to accommodate increased flow and volume and the new alignment of the drainage systems.

Langley Concrete Group (LCG) worked with R.F. Binnie Consultants Inc. to provide the box designs. Three box designs were prepared.

1. **Less than 6m (20ft.) of cover**
1.8m (6ft.) x 1.5m (5ft.) x 1.5m (5ft.) over 101m (331feet).
2. **15m (<50ft.) of cover**
2.4m (8ft.) x 1.5m (5ft.) over 95m (312 feet)
3. **22m (72ft.) of cover**
2.4m (8ft.) x 1.5m (5ft.) over 76m (250 feet)

Once the designs had been accepted, LCG produced all product under the QCast program of the American Concrete Pipe Association to ensure quality products from the certified Chilliwack plant. The QCast Plant Certification (qcast.org) is a voluntary program to continue the advancement of quality in the precast concrete pipe and products industry.

Emil Anderson Construction (EAC) Inc. installed all sections and headwalls using LCG's hydraulic box puller. Use of the box puller homed all joints without causing any damage to the structure or joints.

With a service life greater than 75 years, these precast structures will contribute to a safe highway through Crowsnest Pass and serve as a low maintenance component of the storm water conveyance system that adds value the province's critical infrastructure assets.



Specially designed box culvert with 23 metres of fill under Highway 3.

Quick Notes

Who	Owner: British Columbia Ministry of Transportation and Infrastructure Project Engineer: R.F. Binnie Consultants Inc. Contractor: Emil Anderson Construction (EAC) Inc.
What	Precast box structures for three precast concrete box culverts.
Why	Improve highway safety and accommodate storm water and snowmelt flow and volume of new drainage alignment.
When	July 2015
Where	A section of the #3 Provincial Highway between Hope and Princeton, B.C.
How	Construction of three box culverts of varying lengths depths, and size.

Joel Shimoszawa, P.Eng.; jshimoszawa@langleyconcretegroup.com

Photos: : Langley Concrete Group



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Use of the box puller homed all joints without causing any damage to the structure or joints.

Precast Concrete Culverts are Critical Infrastructure in North Dakota County

Richard Edgar, Sales Territory Managers, Hancock Concrete Products, LLC

With a small population of around 11,000, Walsh County in North Dakota depends upon its network of bridges and culverts crossing branches of multiple waterways that drain toward the Red River, a major waterway flowing northward into Canada. According to local officials, residents and commerce cross all those waterways with the help of more than 500 bridges, 240 of which are greater than 20 feet in length. The Walsh County Highway Superintendent is responsible for identifying bridges that require replacement, however, the North Dakota Transportation normally determines the timing of funding. In 2016, an 18-foot x 10-foot precast concrete twin cell culvert was funded by a onetime funding bill and chosen by the County.

Local and state engineers have opted for precast concrete products to construct structures that can replace bridges with less than 20-foot spans. Jon Markusen of KLJ Engineering stated; "When given a choice, the County will choose precast concrete culverts since the guard rails can be eliminated." Hancock Concrete Products has supplied contractors who have installed numerous precast concrete structures throughout the County.

The 18-foot x 10-foot precast concrete twin cell culvert exemplifies the range of structures that can be constructed with precast products to ensure public safety and provide the public with critical infrastructure that will perform for the design life of the local rural road or paved highway.

Hancock supplied Witzel Construction with 10 specially designed twin box sections for an 18-foot x 10-foot precast concrete twin cell culvert, 52 feet in

length. The twin cell structure was designed per AAS-HTO - LRFD Bridge Design with ETCulvert, a culvert design software. The precast wing walls of the culvert were designed with precast anchors and footings to complete the basic structural design. The concrete box culvert carries a County road that is critical in providing a route to ship local farm products to market.

Installation of 12-foot x 10-foot twin-cell precast box sections with specially-designed precast wingwalls with anchors.



Failing waterway crossing.



Quick Notes

Who	Owner: Walsh County, North Dakota Project Engineer: KLJ Contractor: Witzel Construction Precast Supplier: Hancock Concrete Products, LLC
What	Several precast box culverts in Walsh County.
Why	Aging infrastructure had to be replaced.
When	2015-2016
Where	Walsh County, North Dakota
How	Open cut construction of precast concrete box culverts.

Richard Edgar; richard.edgar@hancockconcrete.com

Photos: Hancock Concrete Products, LLC



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Installation of 18-foot x 10-foot twin-cell precast box sections. The length of each section was reduced to lower the overall weight of each precast section.

Site preparation prior to removal of the old structure and installation of the twin cell precast box culvert.



Video Features

Comparative Flammability Demonstration October 21 2015 Unedited

This is an unedited demonstration of the comparative flammability of polypropylene pipe (PP), reinforced concrete pipe (RCP), and high density polyethylene pipe (HDPE). Dry hay is ignited in three 18 in. by 18 in. pipes and allowed to burn.

[WATCH VIDEO](#)

[SUBSCRIBE](#)

Concrete First

A collage of concrete pipe and precast concrete box applications.

[WATCH VIDEO](#)

[SUBSCRIBE](#)

Concrete Pipe: Rigid. Rugged. Resilient

Video of the D-Load machine taking a pipe to ultimate load conditions at the Geneva Pipe Salt Lake plant. This is a 15-inch, Class III pipe that was loaded to represent the loads that the pipe will see in the field. The first crack didn't appear until well after the acceptable "0.01-inch D-Load" was applied.

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