

New Year, New Funding

Although the release of this newsletter does not align perfectly with the start of the New Year, we still wanted to take a moment to wish everyone a happy and successful 2016. For those who have made New Year's resolutions we know it's not always easy, so hopefully you're still sticking to them!

We have a lot to look forward to this year including more transportation funding visibility than we've had in over 10 years. In fact, while putting Gridline #13 together last September there was a woeful lack of confidence that a new long-term bill would be passed by year-end. But much to the surprise of many who have followed the long and consistent train of short-term extensions (36 total), a 5-year \$300+ billion "FAST Act" was passed by Congress and signed into place by the President in early December. This new transportation funding bill is great news for our industry, as infrastructure owners now have more financial security to plan and fund the large multi-year engineering and construction projects. Although we have a long road ahead of us to bring the condition of our infrastructure to an acceptable level on a nationwide scale, the FAST Act is a sign of support by Congress and a huge step in the right direction!



BGFMA Design Program - Updated Version (V2.2) Available

Bridge Grid Flooring Manufacturers Association
Concrete Grid Deck / Exodermic Bridge Deck
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Bridge Grid Flooring Manufacturers Association
300 East Cherry Street
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The purpose of this program is to provide Owners and Engineers an easy and accurate way to evaluate Concrete Filled Grid Decks and Exodermic Bridge Deck Systems for use on their bridge structures.

The program allows the user to enter project specific data, choose a standard Concrete Filled Grid / Exodermic Bridge Deck System, and choose whether to evaluate the system either using:

- 1) Allowable Stress Design (ASD) as defined in the AASHTO Standard Specifications 17th Edition or
- 2) Load Resistance Factor Design (LRFD) as defined in the AASHTO LRFD 5th Edition, 2010

Page 1
Version 2.2 - Modified February 2016

To begin the design process [CLICK HERE >>>>](#)

Note: The user must enable macros to run this software

As a user of this software, you accept and acknowledge that:
The information provided herein was prepared with reference to generally accepted engineering practices. It is the responsibility of the user of this information to independently verify such information and determine its applicability to any particular project or application. The BGFMA assumes no liability for use of any information contained herein.

The original **BGFMA Design Program** was released in mid-2013 and has been available to users upon request ever since. Because many of you have this original version, we felt it important to announce that updates were made to the program in October 2015 (Version 2.1) and again early this year to fix typos, formatting errors, and minor bugs originally written into the code. This updated program, version 2.2 (V2.2), is now available upon request. Although most of the changes were to VBA settings or cosmetic, there were a few minor updates to note below:

- Changed cross bar spacing for fully filled grids utilizing a WT3x4.5 main bar (V2.1)
- Added non-composite effects to LRFD summary in accordance with AASHTO Appendix 6.2 (V2.1)
- Updated / changed standard grid configuration / selections for various deck types (V2.1 & V2.2)
- Slightly modified section and punch dimensions / locations for several grid main bar types (V2.2)

Cover sheet from updated BGFMA design program V2.2

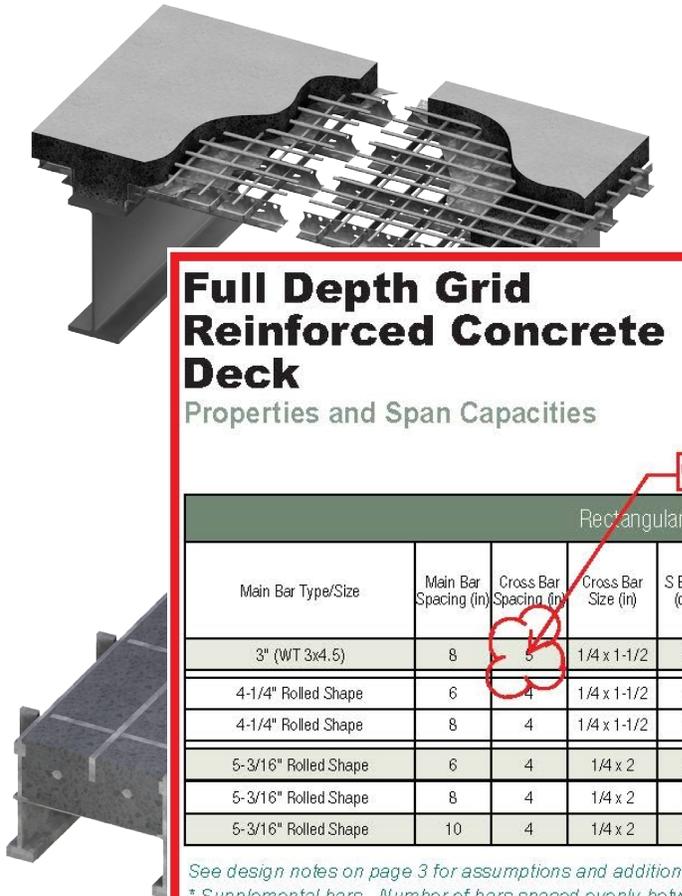
Again, none of the updates were major, so any designs that were completed previously on the original version or V2.1 should still be acceptable; however, designs completed in older versions should always be verified in the most current program. If you have questions, or would like to receive the most up-to-date program please email us at bgfma@bgfma.org.

Corresponding to bullet 2 in the BGFMA Design Program update on page 1, a typo was recently discovered in the “Properties and Span Capacities” table for full depth grid decks utilizing 3” (WT 3 x 4.5) main bars. The cross bar spacing for this system is 6 inches based on design and fabrication standards, not 5 inches as shown in the design table. Similar to many of the program updates pointed out on page 1, this cross bar spacing correction does not significantly impact the deck properties or span capacities. Furthermore, at this time we do not plan to update the brochure, but thought it important enough to point out the correction in the event someone noticed a conflict between our tables and shop drawings.



Grid Reinforced Concrete and Exodermic® Bridge Decks

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Design Properties and Product Information

Full Depth Grid Reinforced Concrete Deck
 Properties and Span Capacities

Rectangular Full Depth Grid Deck with 2" Concrete Overfill

Main Bar Type/Size	Main Bar Spacing (in)	Cross Bar Spacing (in)	Cross Bar Size (in)	S Bars* (qty)	S Bar Size (in)	Bottom Rebar Spacing** (in)	Bottom Rebar Size	Concrete Thickness (in)	Total Height (in)	A
3" (WT 3x4.5)	8	5	1/4 x 1-1/2	2	5/8 x 5/8	12	#5	4.95	4.95	1
4-1/4" Rolled Shape	6	4	1/4 x 1-1/2	0	-	8	#5	6.25	6.25	1
4-1/4" Rolled Shape	8	4	1/4 x 1-1/2	0	-	8	#5	6.25	6.25	1
5-3/16" Rolled Shape	6	4	1/4 x 2	1	5/16 x 1	8	#5	7.19	7.19	2
5-3/16" Rolled Shape	8	4	1/4 x 2	1	5/16 x 1	8	#5	7.19	7.19	1
5-3/16" Rolled Shape	10	4	1/4 x 2	2	5/16 x 1	8	#5	7.19	7.19	1

See design notes on page 3 for assumptions and additional information.
 * Supplemental bars. Number of bars spaced evenly between main bars. 1/4" x 1" supplemental bars also available.
 ** Bottom rebar parallel with cross bars.



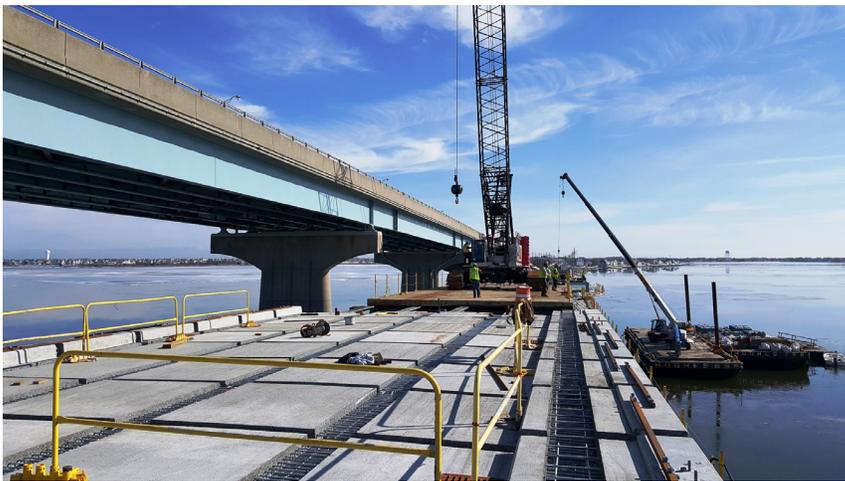
Precast Exodermic® Deck Panels Used to Rehabilitate 65-Year Old Mathis Bridge

Built in 1950, the 3-lane **Mathis Bridge** currently carries Route 37 eastbound over the Barnegat Bay and is a vital route for commuters traveling between Island Heights and Seaside Heights in Ocean County, New Jersey. Route 37 travelers heading west utilize the newer and larger raised **Tunney Bridge**, which was built in 1972 and also carries three lanes of traffic. The Mathis Bridge is comprised of over 60 flanking and approach fixed spans, and a double-leaf bascule span, and is only a football field short of 1-mile long. Due to normal deterioration triggered by the structure's age and damage caused by an encounter with Hurricane Sandy in 2012, many components in the spans are in poor condition and ready for replacement. The declining condition of the structure spurred the **NJDOT** to let a 3-year \$79 million rehabilitation project in late 2014, with work officially starting in late 2015. Rehabilitation plans and specifications were prepared for NJDOT by **Parsons Brinckerhoff** (Lawrenceville, NJ) with a scope that includes replacement of bridge deck and bearing assemblies, substructure and structural steel repairs, painting, safety improvements, upgrades to the electrical and mechanical components for the machinery in the movable span, and more.



Typical deck spall on existing Mathis Bridge deck

The eastbound Mathis and parallel westbound Tunney Bridges are not just an important means for daily commuters, but also a critical evacuation route from the barrier island. Considering the possible importance of needing both structures during the summer hurricane months, the contractor will only be permitted seasonal closures to the Mathis Bridge between November and May. During construction eastbound traffic will be diverted to the Tunney Bridge, which is equipped with a movable barrier and will maintain one eastbound and two westbound lanes. In the unlikely event there is a need to evacuate the island while the Mathis Bridge is closed for construction, all three lanes of the Tunney Bridge would carry eastbound traffic off the island.



New precast Exodermic® panels being placed on each approach span

Deck replacement in the short 6-month construction sequences is possible using precast **Exodermic®** panels that accelerate installation. The deck panels and components, such as scuppers, railings, lighting boxes and safety walks are all being prefabricated off-site. Over 175,000 square feet of Exodermic® deck panels are being fabricated by BGFMA member company **L.B. Foster** and will be replaced in the three construction seasons with the first panels to be set in early 2016. The galvanized grid panels are being precast close to the project site, and will utilize galvanized rebar and high-performance concrete (HPC). The deck closure pours will be completed using high early strength grout, and the deck will be finished with

a $\frac{3}{4}$ " polyester polymer concrete (PPC) overlay after all the panels are in place. With this project currently in the early stages, we will plan to provide an update in the next *Gridline* newsletter summarizing the first phase of seasonal construction. Also, for those going to National Harbor, MD in early June for the **International Bridge Conference (IBC)**, representatives from the consulting firm Parsons Brinckerhoff will be presenting an update on the Mathis Bridge project so make sure to check it out.

Grid Facts - Why are Steel Grid Decks Hot Dip Galvanized (HDG)?

Hot dip galvanizing (HDG) is considered by many as the best option for protecting steel that is exposed to deicing chemicals or coastal environments with salt-laden humidity and/or steel that is embedded in concrete. According to the **American Galvanizers Association (AGA)**, HDG is comparable in initial cost to spray-applied coatings but almost always has a much lower life-cycle cost thanks to the 75-100 year maintenance free life HDG offers, depending on coating thickness, environment, etc. Furthermore, the close-knit orthogonal framework of a grid deck panel prevents thorough coverage of sprayed coatings such as paint or metalizing and limits access to proper inspection. The dipping process assures complete and consistent coverage.



More Information

If you would like to receive more information about the features and benefits of grid deck systems, please contact us at **1-877-257-5499** or **bgfma@bgfma.org**. We are also available to make presentations at your office and can offer continuing education credits for professional engineers as a registered provider in New York and Florida.

BGFMA Tradeshow Schedule

Please visit **BGFMA members** at our exhibit booth during the following upcoming bridge engineering conferences:

World Steel Bridge Symposium	April 13-15	Orlando, FL
International Bridge Conference (IBC)	June 6-10	National Harbor, MD
Heavy Movable Structures (HMS)	September 19-22	Tampa, FL



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