THE CONSTRUCTION NEWSLETTER FEATURING NEWS AND INFORMATION FROM HQ CONSTRUCTION AND REGIONAL NEWS

HQ CONSTRUCTION

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A LETTER FROM WILL

Think of a key, experienced employee who plays a crucial role in your office, district, region or division. What would happen if that employee left without providing any notice? Would you and the rest of your team be equipped/trained to pick up the slack? While no one person is larger than the team, key individuals can be found in every organization and often serve as its foundation for success. However, it is vital that you not become dependent on those persons alone.

Training the next generation of key people is essential to maintaining the long term health of an organization. Headquarters Construction plans to develop a guide to reinforce the training of new employees, provide cross training of maintenance forces, and serve as a useful reference for existing construction employees. We will be calling this guide a *Construction Inspection Manual*. Development is scheduled to begin early in 2016.

The purpose of this manual will be to: provide guidance to Operations personnel performing construction inspection: promote consistency in administration of construction contracts; and ensure quality workmanship and materials are incorporated into all TDOT projects.

At this stage, the exact look and size of the manual are not determined though we are looking at what other States have developed. Some of you reading this may have already been asked to participate in a committee charged with reviewing this documents' development. My desire is that the manual be easily transitioned to an electronic format that will be easily accessible to Operations personnel via smartphone, tablet or laptop. (While that may take a little time to accomplish, it's my ultimate goal that this is a useful manual, regardless of media.) Each chapter of this guide will closely follow the corresponding sections in our Standard Specifications. However, the intent is not to repeat the specifications but rather offer guidelines for inspectors to ensure compliance, measure, and document work.

Stay tuned and have a Happy Holiday Season!

CONSTRUCTION LETTING SPOTLIGHT

The Department held the fourth and fifth construction lettings of 2015 on Friday, July 10th and Friday, August 28th. A total of fifty-five contracts were awarded at a combined total of $138,426,240.18. The contract values ranged from $38,000 all the way to $22.4 million. The total contracts with a spotlight on the largest project for each region are as follows:

REGION 1: A total of 10 (6 & 4) contracts were awarded to Region 1 in these lettings. The largest being the grading, drainage, and paving on I-75 between M.M. 144.9 and M.M. 147.6 for a truck climbing lane in Campbell County. This was awarded to Twin K Construction, Inc. for $6,957,018.79 and has a completion date of June 30, 2016. Region 1 has been awarded 54 contracts this year.

REGION 2: A total of 16 (7 & 9) contracts were awarded to Region 2 in July and August. The grading, drainage, signals, and paving on S.R. 52 in Overton County was awarded for $22,435,346.60 to J & M Grading Division LLC. The contract has a completion date of July 31, 2018. A total of 58 contracts have been awarded in Region 2 this year.

REGION 3: A total of 18 (4 & 14) contracts were awarded to Region 3 in the lettings. The grading, drainage, construction on an I-beam bridge, signals, and paving on U.S. 431 (S.R. 65) in Robertson County was awarded to Civil Constructors, LLC for $19,217,578.45. The project has a completion date of August 31, 2018. There have been 77 contracts awarded in Region 3 so far this year.

REGION 4: A total of 11 (5 & 6) contracts were awarded to Region 4 in the July and August lettings. The grading, drainage, signals, and paving on S.R. 128 in Hardin County was awarded to Delta Contracting Company, LLC for $21,254,261.69. The completion date for the project is August 31, 2017. Region 4 currently has 47 contracts awarded this year.

Editor
Lia Obaid

IN THIS EDITION OF HQ

TDOT FAST FIX 8 PROJECT SHOWCASE

Observed By Matthew Kosar, P.E.

Project Background/Overview

The Tennessee Department of Transportation (hereafter referred to as TDOT) recently executed a $62 million safety project to rehabilitate four (4) consecutive Interstate 40 (I-40) overpasses, a total of eight (8) bridges, through innovative methods of Accelerated Bridge Construction (ABC) in Nashville, TN. The interstate bridges of concern were as follows: I-40 over Herman Street, I-40 over Clinton Street, I-40 over Jo Johnston Avenue, and I-40 over Charlotte Avenue. Over the years, TDOT has dealt with recurring maintenances issues with the aforementioned bridges due to deteriorating bridge decks. This section of the interstate carries an approximate 131,000 ADT and serves as access for several commercial and business properties, in addition to hospitals, so the provision of an expedited yet safe repair solution was paramount to provide minimal impacts to the traveling public.

Interstate 40 is one of three (3) of the nation's interstates that intersect, forming the "Inner Loop," around downtown Nashville. Nashville is widely known for its popular music scene, with festivals, concerns, and other performances occurring year-round, in addition to professional sporting events and other tourist attractions. Given the vitality of the project location, and the magnitude of the impacts when performing any interstate closures, TDOT performed pubic outreach early in design process to keep the city and local communities informed of the project's intent. In order to convey all related public information, various forms of communication were utilized, including social media, visual concepts / drawings, emails, and phone calls. Communication was maintained throughout the duration of the design and into construction.

This bridge replacement project employing ABC techniques for short-term, total interstate closures is known as the Nashville Fast Fix 8. The corridor between the I-40 / I-65 split west of downtown to the I-40 / I-65 split south of downtown was closed to all traffic for 13 weekends, scheduled to occur between July 2015 and June 2016. The interstate detour routes were the same for all weekends, with local detours necessary depending on the set of bridges being rehabilitated.

Construction Manager / General Contractor (CM/GC) Contracting Method

An Integrated Project Team consisting of TDOT, the Design Consultant (Gresham, Smith, and Partners), and the Contractor (Kiewit) was formed for this project to meet all project goals. In order to improve the construction schedule, streamline the design process, develop a cost-effective design solution, and mitigate risk, a CM/GC contracting method was utilized to form the partnership between the Contractor and TDOT as well as the Design Consultant. During the design phase, the Contractor participated in formal design reviews, risk assessment and mitigation workshops, providing constructibility, value engineering, and construction cost reviews, as well as providing support for public outreach. Given the project site and constraints, and the resulting motion to utilize ABC techniques for construction, it was beneficial to select and work closely with the Contractor to improve the design and means and methods of construction early, which also served to alleviate risk associated with innovative construction methods and materials.

Figure 1. *I-40 over Charlotte Avenue new abutment construction (looking west along east elevation). Note: Existing steel K-Frame superstructure still in place at time of construction.*

I-40 over Charlotte Avenue

One of the four (4) sets of interstate bridges replacements performed during the Fast Fix 8 project was the I-40 over Charlotte Avenue overpass. The original structure consisted of a three (3) span continuous steel "K-Frame" superstructure with a cast-in-place reinforced concrete deck. As part of the Fast Fix 8 project, the previous structure was demolished and new bridge constructed over the course of two (2) weekends. Beginning on Friday, October 23rd at approximately 8:00 PM, the interstate closure went into effect and D.H. Griffin (Subcontractor to Kiewit) crews began to demolish the (then) existing deck for the northbound lanes.

Approximately one month prior to demolition of the K-Frame structure, the cast-in-place abutment footings, columns, and caps were constructed beneath the end spans, avoiding the existing bolster footings for the K-Frame columns (see Figure 1). A split face endwall was erected around each of the two new abutments, and filled with coarse rock and select backfill to an elevation just below the bottom of the existing girders. Each of the abutment columns rest on spread footings, with elevations established through the use of leveling concrete. Construction of these substructure elements offline prior to the full interstate closures provided beneficial and allowed for the accelerated completion of the bridge replacement over the course of two weekends.

During the demolition process, care was exercised to not damage the newly constructed abutments beneath the end spans. Approximately eight (8) hours after the interstate closure was n effect, the majority of the deck had been successfully demolished, and removal of the K-Frame girders began. Two (2) skilled laborers elevated with telescoping boom-lifts proceeded to burn full-depth

Continued on page 3

FAST FIX 8 PROJECT SHOWCASE

Continued from page 2

holes through the girder webs in the main span along the far sides of the bolted field splices, leaving the flanges intact. A heavy duty demolition grapple then gripped the girder midway between the burn holes (forming a single pick-up point, see Figure 2). The flanges were then burned progressively to a certain depth, and then the grapple began to torque the girder once the laborers had safely moved the boom lifts away. The existing girder diaphragms had also been served along the connection of the girder to be removed prior to girder removal. Over the next few hours of the early morning, each remaining girder was removed using this demolition procedure.

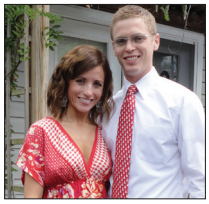
Figure 2. *East fascia girder demolition (east elevation shown looking west.)*

Demolition and subsequent debris removal / cleaning was completed by the early afternoon on Saturday, October 24th, enabling the Contractor to proceed with placement of the new superstructure units. The units consisted of two, built-up weathering steel girders composite with a reinforced deck approximate 14 foot width (see Figure 3). ASTM A709 Grade 50W structural steel was utilized for the girder design, with ASTM A325 Type 3 weathering bolts used for bolted connections. The deck consisted of Class "D" concrete with a design compressive strength (f'c) equal to 4,000 psi.

A total of five (5) units with full-depth by one foot wide closure pours between units comprised the new bridge section. Each side of the deck units contained hooped, epoxy-coated reinforcing steel projecting outward to engage the closure pours between adjacent units. By earl y afternoon on Saturday, the unit were being installed, placed from west to east. Once two superstructure units were set, precast end blocks were then installed atop the abutment caps behind the units, serving as a pedestal for the approach lab units and as a backwall in front of the select backfill. Performed holes to receive vertical reinforcing steel between the abutment cap and end blocks aided in the alignment of the end block units. Reinforcing steel was then installed into the performed holes and filled with a field-mixed grout. Once the end blocks between the first two units were installed, another superstructure unit was set, followed by the placement of the next end block, and so on.

Figure 3. *Typical superstructure unit prior to installation, transported using Self-Propelled Modular Transporter (SPMT).*

EMPLOYEE HIGHLIGHT



"How you climb a mountain is more important than reaching the top", Yvon Chouinard, entrepreneur and founder of Patagonia. This quote resonates deeply with me. Not only because I try to be thorough in what I do, but because I love to set goals and develop plans to reach them. Whatever the goal, I believe in becoming educated on the topic and charting the steps to get there.

After completing my Civil Engineering degree in 2009 at Western Kentucky University (GO TOPS!), my goal was to find a job with a team-oriented environment that promotes professional growth. After a few months of job hunting, I was blessed with an opportunity in TDOT's HQ Construction Division. The environment here is exactly what I was hoping for. In 2012, I completed my Master's Degree from UT-Knoxville through the TDOT Master's program. Six months later I received my Professional Engineering License. I'll be the first to tell you that I have a lot to learn, but I've picked up a few things in my 6 years with TDOT. Most of you probably associate me with the administration of our consultant CEI program, which was my primary duty when I started. Since then, my responsibilities have expanded into working with many of our internal/external partners. I work with our Civil Rights Office regarding DBE goals/participation. I also provide assistance and oversight on pre-construction and construction procedures to the Local Programs Office. More recently, I took-on managing the use of Critical Path Method (CPM) schedules within TDOT, which I'm very excited about. This goes right along with my passion for planning and helps us to reach our goal of delivering projects on-time and on-budget.

If I'm not at work, you can probably find me living an active lifestyle with my beautiful wife, Samantha. Fitness and nutrition are central to our lives, so we regularly enjoy running, hiking, biking, and strength training. We are also animal lovers and share our home with 3 cats and a dog that were all rescued from local animal shelters. My other hobbies/interests include woodworking, golf, and personal finance.

WELCOME ABOARD

LORI LANGE

Lori Lange worked in the private sector for 17 years prior to joining the Tennessee Department of Transportation. In this role, she served as engineer of record and principal on a variety of transportation projects from rural widening, new alignment and urban interstate. Lori joined the Department in 2013, collaborating with staff on a variety of Project Development initiatives. In her current role, Lori will have the responsibility of Region 2 Contract Administration, the Construction Management System (CMS) and Constructability Review programs.

NEWS & NOTES

- **The Construction Division advertised on December 15, 2015 for consultant services to develop a Construction Inspection Guide**. This document will advise our field personnel on proper construction inspection techniques and documentation. The advertisement has a January 15, 2016 turn in.

- In the on-going effort to promote and improve the asphalt industry in Tennessee by the Tennessee Road Builders Association Asphalt Division, the **15th Annual Tennessee Quality Asphalt Initiative** seminar and program will be held **January 28-29, 2016** at the **Nashville Airport Marriott** in Nashville. This program is being conducted by the TRBA Asphalt Division in conjunction with TDOT and FHWA.

Jason Blankenship

TDOT CM/GC EXPERIENCE WITH ABC

Fast Fix 8 in Downtown Nashville was presented at the 2015 National Accelerated Bridge Construction Conference, Miami, Florida on December 7, 2015. Above: : Lia Obaid (TDOT), Terry Mackie (TDOT), and David Paris (Kiewit).

CONGRATULATIONS!

Vonda Lane has been promoted to Transportation Manager 1 in the HQ Construction Division.

Chris Hampton has been promoted to Senior Transportation Project Specialist in the HQ Construction Division.