ENGINEERING OPERATIONS COMMITTEE
MEETING MINUTES
MAY 27, 2021, 9:00 A.M. – 11:00 A.M.
VIA TEAMS

Present:	Carol Aldrich	Mark Geib	Brad Wieferich
	Mark Bott	Tony Kratofil	Gorette Yung
	Gregg Brunner	Ryan Mitchell	Hal Zweng
	Matt Chynoweth	Kristin Schuster	
	Mark Dionise	Will Thompson	
Absent:	Rebecca Curtis	Jason Gutting	Brandy Solak
Guests:	Kim Hill	James Ranger	Terry Stepanski
	Don Matula	Lindsey Renner	Dharmesh Valsadia
	Bill Mayhew	Anne Shelton	
	Val Napier	Mark Shulick	

OLD BUSINESS

1. Approval of the April 29, 2021, Meeting Minutes – Tony Kratofil

   ACTION: Approved

2. Michigan Department of Transportation (MDOT) New Materials and Products – N/A

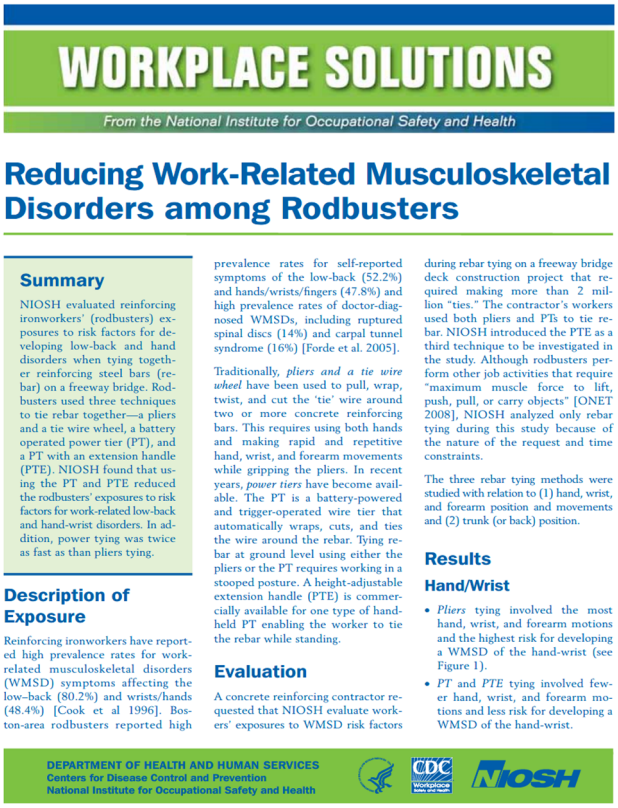
   a. New Material Monthly Report of Data

   - ❖ Number of Submittals Received
   - ❖ Number of Submittals Accepted
   - ❖ Number of Submittals Not Accepted
   - ❖ Biannual Qualified Products List Revisions

   ACTION: For information only. A New Products and Materials Annual All Committees Meeting is scheduled for June 8th.

NEW BUSINESS

1. Safety Topic: Work-related Musculoskeletal Disorders – Matt Chynoweth



WORKPLACE SOLUTIONS

From the National Institute for Occupational Safety and Health

Reducing Work-Related Musculoskeletal Disorders among Rodbusters

Summary

NIOSH evaluated reinforcing ironworkers' (rodbusters) exposures to risk factors for developing low-back and hand disorders when tying together reinforcing steel bars (rebar) on a freeway bridge. Rodbusters used three techniques to tie rebar together—a pliers and a tie wire wheel, a battery operated power tier (PT), and a PT with an extension handle (PTE). NIOSH found that using the PT and PTE reduced the rodbusters' exposures to risk factors for work-related low-back and hand-wrist disorders. In addition, power tying was twice as fast as than pliers tying.

Description of Exposure

Reinforcing ironworkers have reported high prevalence rates for work-related musculoskeletal disorders (WMSD) symptoms affecting the low-back (80.2%) and wrists/hands (48.4%) [Cook et al 1996]. Boston-area rodbusters reported high prevalence rates for self-reported symptoms of the low-back (52.2%) and hands/wrists/fingers (47.8%) and high prevalence rates of doctor-diagnosed WMSDs, including ruptured spinal discs (14%) and carpal tunnel syndrome (16%) [Forde et al. 2005].

Traditionally, *pliers and a tie wire wheel* have been used to pull, wrap, twist, and cut the 'tie' wire around two or more concrete reinforcing bars. This requires using both hands and making rapid and repetitive hand, wrist, and forearm movements while gripping the pliers. In recent years, *power tiers* have become available. The PT is a battery-powered and trigger-operated wire tier that automatically wraps, cuts, and ties the wire around the rebar. Tying rebar at ground level using either the pliers or the PT requires working in a stooped posture. A height-adjustable extension handle (PTE) is commercially available for one type of handheld PT enabling the worker to tie the rebar while standing.

Evaluation

A concrete reinforcing contractor requested that NIOSH evaluate workers' exposures to WMSD risk factors during rebar tying on a freeway bridge deck construction project that required making more than 2 million "ties." The contractor's workers used both pliers and PTs to tie rebar. NIOSH introduced the PTE as a third technique to be investigated in the study. Although rodbusters perform other job activities that require "maximum muscle force to lift, push, pull, or carry objects" [ONET 2008], NIOSH analyzed only rebar tying during this study because of the nature of the request and time constraints.

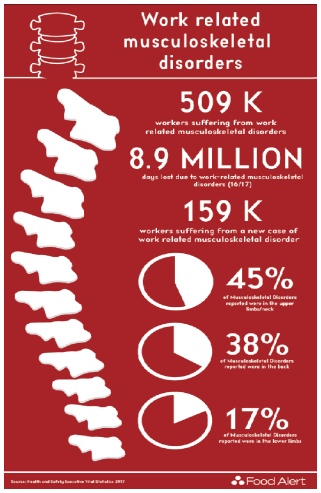
The three rebar tying methods were studied with relation to (1) hand, wrist, and forearm position and movements and (2) trunk (or back) position.

Results

Hand/Wrist

- *Pliers* tying involved the most hand, wrist, and forearm motions and the highest risk for developing a WMSD of the hand-wrist (see Figure 1).
- *PT* and *PTE* tying involved fewer hand, wrist, and forearm motions and less risk for developing a WMSD of the hand-wrist.

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health



ACTION: For Information Only

2. Roundabout Construction, M-20/US-127 Ramps in Union Township, Isabella County – Kim Hill and Bill Mayhew

   Issue Statement – Roundabout construction, M-20/US-127 ramps in Union Township, Isabella County

   Job Numbers: 201005 (M-20 reconstruction and roundabout at M-20/US-127 southbound ramps) and 202009 (M-20 safety project, roundabout at M-20/US-127 northbound ramps)
   Control Section: 37022
   Letting Date: 10/7/22

   Major Issue(s) - No anticipated issues at this time. The roundabout concepts at the M-20/US-127 ramps were presented at a stakeholder meeting on April 6, 2021, and a public meeting held on April 15, 2021. MDOT did not receive any negative comments related to the roundabout concepts.

   Background/History - In 2017, this project was approved for safety funds due to the number of serious crashes at the intersection of M-20 and the US-127 northbound ramps. Construction of the roundabout along with access management at the northbound ramps will reduce conflict points, angle crashes and driver confusion.

   A roundabout is also proposed to be constructed at the M-20/US-127 southbound ramps in conjunction with the M-20 reconstruction project. This roundabout at the southbound ramps is being proposed to due operational concerns with the proximity to the proposed roundabout at the M-20/US-127 northbound ramps. The distance between ramps is approximately 800 feet and a narrow median boulevard is being proposed between the two roundabouts.

   A Road Safety Audit (RSA) was held in April 2021 along the M-20 corridor from US-127BR (Mission Street) to just east of the US-127 ramps. The RSA identified the construction of roundabouts as a suggested mitigation measure for crash potential.

   The Transportation Service Center (TSC) staff met with Union Township, the City of Mt. Pleasant, Isabella County, Central Michigan University, and the Saginaw Chippewa Indian Tribe to discuss the design. The first stakeholder meeting was held on April 6, 2021. Three more stakeholder meetings are planned. The first virtual public meeting was held on April 15th with no negative responses related to the proposed roundabouts. There is one additional public meeting planned.

   The current layout has been reviewed and modified based on comments/concerns from the Mt. Pleasant TSC, the Bay Region (Traffic and Safety and the Region Engineers) and Lansing Geometrics.

   Recommendation(s) - Approval of the 2023 construction of roundabouts at these locations.

Status - A consultant was hired to design the roundabouts and associated M-20 reconstruction project. The base plans for this project are currently under review with a May 25th review meeting scheduled.

ACTION: Approved

3. Alternate Pavement Bid (APB) for I-69 from M-24 to Lake George Road in Lapeer County, Bay Region – Ryan Mitchell

   Issue Statement - APB in Lapeer County, Bay Region

   Route/Location: I-69 from M-24 to Lake George Road Freeway reconstruction packaged with a rest area rebuild and bridge capital preventative maintenance
   Job Number: 204418, 204879, 210139
   Control Section: 44044
   Letting Date: August 2021
   Total Est. Const. Cost: $59.7M

   Major Issue(s) – Use of APB on I-69 Design-Bid-Build (DBB) project.

   Construction Field Services coordinated with the project office and calculated a preliminary life cycle costs analysis on this project and determined that the difference between the pavement options was 7.20%. Hot mix asphalt was the low-cost alternative.

   Both pavement alternates are expected to have similar environmental, right of way, drainage, and utility impacts along with similar maintaining traffic concepts. Paving is the controlling operation for the construction schedule.

   Background/History - The project appears to meet the criteria for the use of APB.

   Recommendation(s) - The Innovative Contracting Committee (ICC) recommends approval of the use of APB on this DBB project.

   Status - New

   ACTION: Approved

4. Request Approval for the Use of Alternate Technical Concepts (ATCs) for Maintenance of Traffic (MOT) on I-75 Project from Levering Road to US-31, Cheboygan County – Ryan Mitchell and Dharmesh Valsadia

   Issue Statement - Request approval for the use of ATCs for maintenance of traffic on I-75 reconstruction project from Levering Road north nine (9) miles to US-31, Cheboygan County. This is a busy corridor and summer tourist mobility is a top concern. Due to the

complexity of maintaining traffic on this multi-year project, industry input and innovation is being sought for the purpose of improving MOT for the project.

Est. Const Cost: $39.6M

Key Dates
11/17/2021 – Final Project Coordination
01/07/2022 – Plan Completion
06/03/2022 – Letting
2022-2024 – Construction

Major Issue(s) – I-75 is a busy tourist corridor and mobility with constructability is a top concern during this multiple year construction project. Two lanes northbound on Friday and Saturday and two lanes southbound on Sunday are required to be open for majority of summer months. Two lanes in each direction are required to be open during holiday periods. Alternative technical concepts for MOT are desired to allow for potential contractor innovations in providing efficiency and continuity of traffic control throughout the duration of construction activities.

Recommendation(s) - The ICC has recommended the use of ATCs for MOT on this project considering work type and recognizing a need for innovative traffic management options. Flexibility in contractor means and methods could improve MOT staging which may result in expedited delivery of the project. ATC for MOT is expected to deliver efficiency, continuity of traffic control throughout the duration of construction activities and perhaps reduction in construction schedule.

ACTION: Approved

5. Request Approval for Construction Manager/General Contractor (CMGC) for the Demolition of Properties in Association with the I-94 Modernization Project, City of Detroit – Ryan Mitchell, Terry Stepanski and James Ranger

   Issue Statement – Request approval for the use of the CMGC) delivery method for the demolition of approximately six industrial properties and possibly additional commercial properties in association with the I-94 modernization project in City of Detroit.

   Major Issue(s) – CMGC input, including site visits with the department, will be critical to assess these complex industrial facilities and to develop unique demolition plans. Commercial properties may also be included in the contract. This CMGC contract would be executed using a process similar to the process successfully utilized on the Gordie Howe International Bridge project which utilized two CMGC contractors to negotiate and deliver multiple industrial demolition packages. Multiple CMGC contractors may be used on this project, and multiple demolition contracts are anticipated to account for the various sites and acquisition schedules. Timeliness of the CMGC site visits, input, and demolition contract

execution will be critical, and the negotiation/award of individual demolition contracts, as parcels become available, will ensure schedules can be met.

The demolition contracts will utilize standard pay items to the degree possible, however, unique pay items will be developed, as necessary, for circumstances that are not encountered on typical residential and commercial demolition projects. As part of the CMGC process, contingency pay items will be evaluated on a parcel-by-parcel basis and may also be utilized to reduce contractor risk and thus lower costs to the department.

Independent cost estimator input will also offer considerable value for these complex and unusual demolition contracts.

Background/History – This project has an Acquisition/Demolition Owners Representative contract with Beam, Longest and Neff.

Environmental risks include asbestos containing material, hazardous materials/regulated waste, subgrade contamination, underground storage tanks, air monitoring during demolition, and potential remediation.

Utility coordination will be required with the City of Detroit, DTE electric/gas, AT&T, and other impacted utilities.

Project Cost: $15M
Desired request for quote advertisement: June 2021
CMGC selection and contracting: June 2021-January 2022
CMGC Notice to proceed for pre-demolition services: January 2022
Job Number: 122376ROW
Control Section: 82024

Recommendation(s) – The ICC recommends approval to use CMGC.

Status - New

ACTION: Approved

6. Roundabout Construction, US-10 at Mackinaw Road Ramps in Monitor Township, Bay County – Annette Shelton and Don Matula

   Issue Statement – Roundabout construction, US-10 at Mackinaw Road ramps in Monitor Township, Bay County

   Route/Location: US-10 Westbound from Seven Mile to west city limits of Bay City
   Job Numbers: 201403, 202144,
   Control Section: 09101
   Letting Date: 12/02/22

Major Issue(s) – No anticipated issues at this time. The roundabout concept at the US-10/Mackinaw Road ramps was presented at a public meeting held on April 13, 2021.

Background/History – The interchange at US-10 and Mackinaw Road has been a location of interest for capacity for several years. A study was first completed in 2004 for long term planning of the interchange. The interchange was restudied in 2012 after additional commercial development in the area. In the 2012 study, four configurations were considered which compared costs and long-term operations and capacity. Roundabouts were the preferred option from the 2012 study.

This interchange provides access to a nearby industrial park, including a Fabiano Brothers distribution warehouse. This location also serves as an access point to and from freeways for student commuter traffic for Saginaw Valley State University and Delta College.

In 2017, this project was approved with the 2023 Call for Projects (CFP) for rehabilitation and reconstruction funds as part of the reconstruction of US-10 from Seven Mile to the west limits of Bay City. The Mackinaw Road bridge over US-10 was also approved for replacement with the 2023 CFP.

Construction of the roundabouts at these locations will address peak traffic flows and improve capacity, improve sight distance at the ramps, improve turning movements for trucks and reduce crashes. The roundabout option is also the only option that allows the Mackinaw Road bridge to maintain the existing two lanes of traffic instead of increasing to three or more lanes.

A virtual public meeting was held on April 13th. The project was also discussed at a recent Bay City Area Transportation Study meeting which is the local Metropolitan Planning Organization.

The proposed layout has been reviewed and will be modified based on comments/concerns from the Bay City Transportation Service Center, Lansing Geometrics, and public input.

Recommendation(s) - Approval of the 2023 construction of roundabouts at these locations.

Status - The Bay Region Design squad is currently designing this project. Base plans are under development.

ACTION: Approved

7. Additional Revisions to the Work Zone Safety Mobility Manual Including the Decision Tree and Supporting Instructions – Lindsey Renner

Issue Statement – Revisions to the Work Zone Safety Mobility Manual (WZSMM) including the Decision Tree and supporting instructions, approved by the EOC on 4/29/21.

Major Issue(s) – The MDOT WZSMM has been revised as follows:

- Incorporation of the MDOT Safety and Mobility Decision Tree and supporting instructions, as approved, and promised to EOC on 4/29/21.
- Section 6.01.06: Correcting section on barricades to reflect that Type D lights are also allowed in addition to type C lights, as already stated in the standard specifications.
- Section 6.02.02: Update to include the Traffic Regulations Engineer Manual, updated in 2020, to give advanced guidance on when a Temporary Traffic Control Order is needed.
- Section 4.03.05: Addition of the Accommodations Table and accompanying text created by Work Zone Safety Task Force Action Team 2.
- Table 8-1: Clarification of text in the Work Zone Durations Table 8-1.
- Appendix N: Addition of the TACT Plan Creation Guidelines, referenced in Section 1.02.07 as well. Section 1.02.07 provides an update to staff to include in review of Alternative Technical Concept TMP reviews.

Background/History - The last update to the WZSMM was in December of 2020. The Bureau of Field Services is committed to updating this manual to host accurate and current information. The primary reason for this update is to include the MDOT Safety and Mobility Decision Tree. All other updates are those that have been collected since the last manual or as requested by the TSCs and region staff.

Recommendation(s) – Approve revisions (as above) to the WZSMM. Doing so will allow staff in regions and TSCs to begin officially using a published and live version of the Decision Tree.

Status – The manual is hosted at this OneDrive location. The agenda may be updated to include additional changes or enhancements. If so, the EOC will be updated in advance of the EOC meeting as to what the additional changes were.

ACTION: Approved

8. Establish Tiered Approach for Design Error Process – Kristin Schuster and Mark Shulick

Subject/Issue – Establish tiered approach for design error process.

Issue Statement – Tiered approach based on contract value allows for targeted error identification.

Major Issue(s) – Initial process development would benefit from clarification of thresholds associated with design error identification.

Background – Original language developed for this process lacked clarity in establishing the thresholds where a design error would be tracked. Based on further discussions a tiered approach is being proposed based on the construction contract value to better target issues.

Attached is the updated draft Road Design Manual, which will also be contained in the Construction Manual.

Design error process was implemented to address outstanding findings from an older Office of the Auditor General audit.

Recommendation(s) – Approve revised process including tiered approached and thresholds.

ACTION: Approved

Carol Aldrich, Secretary
Engineering Operations Committee

RA:lrb

cc: EOC Members
Meeting Guests
Region Engineers (MDOT)
Assoc. Region Engineers (MDOT)
TSC Managers (MDOT)
L. Doyle (MDOT)
C. Libiran (MDOT)
L. Mester (MDOT)
C. Newell (MDOT)
R. Jorgenson (FHWA)
R. Brenke (ACEC)
G. Bukoski (MITA)
D. DeGraaf (MCA)
C. Mills (APAM)
D. Needham (MAA)
M. Ackerson-Ware (MRPA)