



INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

Design Memorandum No. 09-06 Policy Change

March 16, 2009

TO: All Design, Operations, and District Personnel, and Consultants

FROM: /s/ Anthony L. Uremovich
Anthony L. Uremovich
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Production Management Division

SUBJECT: Pavement Design in Accordance with the *Mechanistic Empirical Pavement Design Guide (MEPDG)*

REVISES: *Indiana Design Manual Chapter 52*

EFFECTIVE: As Shown on Attached *MEPDG* Implementation Plan

Pavement design should be in accordance with the MEPDG, as described in the attached MEPDG Implementation Plan. An MEPDG version of *Indiana Design Manual Chapter 52* has been developed. The existing version of the Chapter can still be used for some projects, as indicated in the Plan. Both versions of the Chapter appear on the on the Department's website, at www.in.gov/dot/div/contracts/standards/dm.html.

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Attachment

MEPDG IMPLEMENTATION PLAN

January 1, 2009

The Indiana Department of Transportation (INDOT) has set a goal to implement the new Mechanistic Empirical Pavement Design Guide (MEPDG) beginning January 1, 2009 for the design and evaluation of INDOT pavements. It is a pivotal step towards more economical pavement design using a more scientific and data driven approach. Due to this significant improvement from the existing AASHTO 1993 methodology, the MEPDG roll out in Indiana will require a comprehensive and well communicated plan to ensure the new approach is deployed successfully. Therefore, INDOT and the FHWA Indiana Division have collaborated on this implementation plan as a road map for effective deployment of the MEPDG for INDOT and the Local Public Agencies (LPAs).

The MEPDG software developed by a National Cooperative Highway Research Program (NCHRP) project will be utilized until DARWIN ME software is completed and distributed by the American Association of State Highway and Transportation Officials (AASHTO). All states implementing the MEPDG must locally calibrate the models within the MEPDG. The INDOT Office of Research and Development has been instrumental in developing these calibrations and has participated with the Office of Pavement Engineering to include these in the amended version of Chapter 52 of the Indiana Design Manual.

Following are components of the INDOT/FHWA MEPDG Implementation Plan:

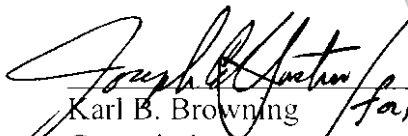
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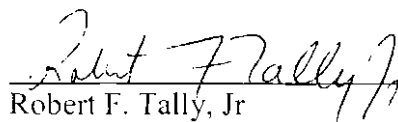
1. INDOT staff – INDOT conducted MEPDG design training for Central Office and District pavement designers on November 12 -- 14, 2008. This included all key personnel that will be doing future MEPDG designs, or providing quality control/quality assurance and technical support for others, such as LPAs.
2. Non-INDOT staff – INDOT strategically included critical non-INDOT personnel in the November training.
 - a. A representative from American Consulting Engineers Counsel (ACEC), Asphalt Pavement Association of Indiana (APAI), American Concrete Pavement Association (ACPA), and the Federal Highway Administration (FHWA) was present at the November training.
 - b. Consultants do the majority of pavement design for LPAs. Because only one representative attended the November training, INDOT is working along with ACPA-IN and the APAI to proactively ensure that consultants will be able to successfully perform the MEPDG design. This becomes more important as INDOT plans to provide less early oversight of LPAs pavement design beginning in early 2009.
 - c. Mike Byers, Executive Director of ACPA, is coordinating another training session for private industry (ACEC, APAI, ACPA, and Indiana Constructors Association, ICA) on March 16th and 17th, 2008. Chris Wagner from FHWA Atlanta Resource Center and Tommy Nantung and Dave Andrews from INDOT have agreed to present the MEPDG training for this two day session.

INDOT Strategic Pavement Program

1. The Indiana Design Manual (IDM): Chapter 52 of the IDM, Pavement and Underdrain Design Elements, has been revised to provide clear guidance for designers on how to utilize the MEPDG. The LPA Guide Manual, which is expected to be published in January 2009, includes a requirement that LPAs perform pavement designs in accordance with Chapter 52. INDOT's trained staff will be available to LPAs and consultants that request their support as the MEPDG is initially implemented.
2. MEPDG Pavement Design Implementation
 - a. INDOT
 - i. For 2009 construction year contracts that have already been let and have significant amounts of pavement (i.e. QC/QA pay items), and where a redesign will be economical, INDOT will meet with the contractor to determine if a mutually agreeable contract change can be developed to implement the redesign. If an agreement cannot be worked out, the project will be constructed as bid. Cost savings for contracts where redesigns have been implemented will be calculated and summarized by the Office of Pavement Engineering for the Commissioner and FHWA.
 - ii. Pavement designs for FY 2010 contracts will be redesigned with the MEPDG and the project managers will work with the designers to incorporate the new designs into the contracts.
 - iii. All other existing designs to be constructed beyond FY 2010 will be redesigned utilizing the MEPDG.
 - iv. All pavement designs for new projects will be designed utilizing the MEPDG.
 - b. LPAs
 - i. 2009 construction year contracts may be built as designed and bid, with an option for the LPAs to check the pavement design utilizing the MEPDG to determine if a redesigned section is more economical. If a savings can be realized the LPA may approach the contractor to work out a mutually agreeable contract change. If an agreement cannot be worked out, the project will be constructed as bid. Cost savings for contracts where redesigns have been implemented will be calculated and summarized for the Commissioner and FHWA.
 - ii. FY 2010 construction year contracts may be built as designed and bid based on AASHTO 93 Pavement Design Guide or the MEPDG with an option for the LPAs to check an AASHTO 93 pavement design utilizing the MEPDG to determine if a redesigned section is more economical. If a savings can be realized the LPA may approach the contractor to work out a mutually agreeable contract change. If an agreement cannot be worked out, the project will be constructed as bid.
 - iii. All other existing designs to be constructed beyond FY 2010 may be redesigned utilizing the MEPDG.
 - iv. All other pavement designs that have not been completed as of April 1, 2009, will be designed using the MEPDG.

3. INDOT will issue a Design Memorandum regarding the use of the MEPDG as stated in 2.b for LPA projects.
4. All MEPDG designs during calendar year 2009 will be compared to the current AASHTO pavement design guide and PerRoad (asphalt pavements only) for Quality Control. Any MEPDG designs during this time period that are less than (thinner) the current AASHTO method by more than 10 percent shall be reviewed by the INDOT Pavement Design Engineer and the Manager, Office of Pavement Engineering.
5. INDOT will continue to refine IDM Chapter 52, the Standard Drawings, the Standard Specifications, and the inputs to the MEPDG based on Quality Control of the MEPDG pavement designs. An initial area to be reviewed involves the contractor options for subgrade treatment. The different types of subgrade treatment will be initially covered by using the option with the weakest resilient modulus during design. However, INDOT will research and revise the Standard Specifications to address the best overall value of Subgrade Treatment to the project when typical pavement design benefits and constructability issues have been considered.
6. INDOT will collaborate with FHWA to raise national awareness of any required changes to the MEPDG discovered during this implementation process. Further exchange of information through a North Central MEPDG Users Group started in 2008 sponsored by the FHWA will be continued.
7. Preventive Maintenance / Preservation Overlays or Surface treatments of existing pavements should be checked for structural adequacy using the MEPDG and Falling Weight Deflectometer (FWD) before projects are programmed for construction.
 - a. For 2009 construction season 10 Preventive Maintenance / Preservation microsurface projects are already programmed and six of the ten have been checked with the FWD. The remaining four (4) will be allowed to proceed with only a visual inspection in order to gain experience with the letting and construction of microsurface projects.
 - b. All future year Preventive Maintenance / Preservation projects should have requests submitted to perform MEPDG evaluations and/or FWD analysis at least three (3) months in advance. Note that FWD can not be performed with frozen subgrade, basically from November through March.


Karl B. Browning / *for KBB* 1-20-09
Commissioner Date
Indiana Department of Transportation


Robert F. Tally, Jr 1-26-09
Division Administrator Date
FHWA – Indiana Division Office