Procedure for Pavement Analysis Revised: 04/05/12

Whenever possible, requests for pavement analysis should be submitted during Project Development in Phase I so the approved design and costs can be included in the Project Report. The Phase II project manager should request a verification of pavement design for all projects to ensure current policies are followed. If an analysis is not completed in Phase I or if the scope of work changes at any point in the project, the Phase II project manager should submit a pavement analysis request early in the plan preparation process to allow sufficient time for an analysis to be completed. The following information should be included in each pavement analysis request:

1. Requirements for Pavement Analysis Form

Please provide details for each row and column and avoid leaving blanks or question marks.

Section A. For Phase II requests, the target letting date, section #, job #, and contract # number should be provided per the DOL. If the project is not programmed, a reasonable estimated construction year should be provided.

Section B. The existing material types and thicknesses should be provided. This data can be found using the microfilms in the Bureau of Maintenance. If this information is not available or the pavement has had multiple resurfacings, Project Studies or the designer who made the analysis request should provide pavement core data from the Bureau of Materials.

Section C. Proposed widening and resurfacing and/or reconstruction limits should be provided. Proposed lengths, widths, and areas should be provided as well as shoulder/curb & gutter information for each section. Please note that PCC pavement requires tied PCC shoulders or tied curb & gutter while HMA pavement may have curb & gutter, HMA shoulders, or aggregate shoulders.

Section D. Specify Roadway Class (I, II, III, or IV) as per BDE manual chapter 54, section 54-1.02. Please note that Roadway Class is different than Highway Classification. Indicate whether or not jurisdictional transfer is proposed. Present and future ADTs need to be provided. The most recent traffic information available should be used in this section. The total truck traffic should be split into multi-unit (MU) and single-unit (SU) vehicles. If pavement analysis of a cross street is required (per Section C), traffic information for said cross street must be provided.

Section E. Provide the intersection characteristics including the Roadway Class, Highway Type, Jurisdiction, pavement type required, existing pavement thickness, ADT, method of stop control, skid proofing, or high-stress classification for all crossroads.

Section F. Any additional restrictions and/or considerations for the pavement design should be included in this section. For widening/resurfacing jobs indicate if the profile and grade are to remain the same or change. Specify if the improvement is a safety job. Skid proofing requires polymerized HMA surface course mixture even if the ADT is less than 25,000 vehicles. The leveling binder will follow the ADT column as referenced in the current Bureau of Materials' "Hot-Mix Asphalt Mix Selection" Table.

2. Detailed Scope of Work

Provide a description of the work to be performed on this project, specifically that which relates to the proposed pavement.

3. Project Location Map

Please include a map showing the project limits as well county and location in the state.

4. Plan and Profile

Submit the most current geometric set of plans for the project. Do not send plans with a scale greater than 1" = 100'.

5. Typical/Cross Sections

Existing and proposed typical/cross sections for the improvement should be provided. Any changes to the configuration or scope of work (i.e. two lanes to four lanes) will change the pavement design and a new request must be submitted.

The four types of pavement analysis requests are as follows:

Pavement Resurfacing

Policy Resurfacing[1]
Previously resurfaced pavement with no adjacent widening -Generally 2 ¼" to 2 ½" comprised of a surface course (1 ½" or 1 ¾") and ¾"-1" leveling binder Resurfacing over bare concrete with no adjacent widening -Generally 2 ½" comprised of a surface course (1 ¾" or 1 ½") and ¾"-1" leveling binder respectively. Initial Resurfacing adjacent to composite widening -Generally 2 ¼" to 2 ½" comprised of a surface course and ¾"-1" leveling binder or 2" surface course and no leveling binder when strip reflective crack control treatment is used Initial Resurfacing adjacent to HMA widening Generally 2" surface course and no leveling binder
Policy Variance
The designer must discuss reasoning with the Pavement Design Engineer who will submit a recommendation to the Central Office for review and Approval. The design life will be customized for each situation.
Structural Overlay
Often utilized with new curb and gutter or on interstate highways is a Policy Variance. The designer should submit patching quantities, amounts of faulting and D-cracking, CRS values, traffic data, and pavement history. Central Office approval is required.

[1] No pavement design required

Pavement Widening

Types of Widening[2,3]
Mechanistic Rigid (54-4) -Only used adjacent to existing Jointed PCC Pavement not to be resurfaced; match joints to existing joints or cracks Mechanistic Flexible (54-5) Modified AASHTO (54-5.02) Composite (54-6) -Used adjacent to existing resurfaced Jointed PCC Pavement. Thickness of the PCC Base Course equals the greater of 9" or the existing PCC slab thickness.
Selection
Central Office approval is needed if the pavement widening area exceeds 4,750 Sq Yds. Selection will be based on a first cost analysis. If the pavement widening area is less than 4,750 Sq Yds, segmental widening can be used to match the existing pavement.

[2] Widening less than 6ft should be paid for as "HMA (or PCC) Base Course Widening" while widening greater than 6ft should be paid for as "HMA (or PCC) Base Course". For contracts with similar quantities of each, use both pay items. If one quantity is significantly greater than the other, use only the pay item with the greater quantity.

[3] Widening with adjacent resurfacings should be paid for as "HMA Surface Course" in Tons and "HMA (or PCC) Base Course (Widening)" in Sq Yds.

Pavement Reconstruction

Mechanistic[4]	Segmental
Rigid (Jointed PCC Pavement) (54-4) -4 ½" HMA Stabilized Subbase needed when area > 25,000 SY or no enclosed drainage -CRC required on an interstate when TF > 60 Flexible (Full Depth HMA Pavement) (54-5)	Rigid -Standard Jointed PCC Pavement (Std. 420601) Composite -Concrete Base Course with HMA Surface Flexible -Mechanistic Flexible Design
Selection	Selection
Central Office approval is needed if the pavement area is greater than 4,750 Sq Yds. Selection will be based on a 45 year life cycle cost analysis. If the annual costs are within 10% of each other there will be an alternate bid consideration. Annual costs within 10-15% need Executive Office review before submittal to Central Office for review by the Pavement Selection Committee.	This category includes short segments of rehabilitation projects where the existing pavement is being removed and replaced by 4,750 Sq Yds or less of new pavement. Selection will be based on existing conditions. There is no first cost or life cycle cost comparison.

[4] A 20 year design period will be used for pavement areas under 25,000 Sq Yds and a 30 year design period will be used for pavement areas over 25,000 Sq Yd

Temporary Pavement[5]

Service Life < 2 Years	Service Life > 2 Years[6]
The pavement design request will be submitted to the Central Office for analysis. The required information for a temporary pavement design is the same for a permanent pavement design.	Temporary pavement to last longer than 2 years should be designed using the mechanistic pavement design procedures outline in Chapter 54 of the BDE Manual. The design period will be the expected service life plus one year and the actual calculated traffic factor will be used (no minimums). Central office approval is need for all temporary pavement designs.

[5] Temporary pavement includes both Transition Pavement from a newly reconstructed segment to an existing segment and Temporary Crossovers used in staged construction operations.

[6] Consider using permanent pay items rather than the "Temporary Pavement" pay item to ensure more stringent specifications are enforced during construction.

Municipal & County Roads

Design of municipal and county roads should be based on local requirements. While a pavement design can be requested for these roads, local concurrence is needed.

Jurisdictional Transfer

Pavement to be built by IDOT and jurisdictionally transferred may be designed using a Mechanistic Rigid, Mechanistic Flexible, or Composite analysis procedure. The local agency chooses the type of pavement since they will maintain it. These segments must be designed for at least the Actual design traffic for a 20 year design period as defined in Chapter 54 of the BDE Manual.