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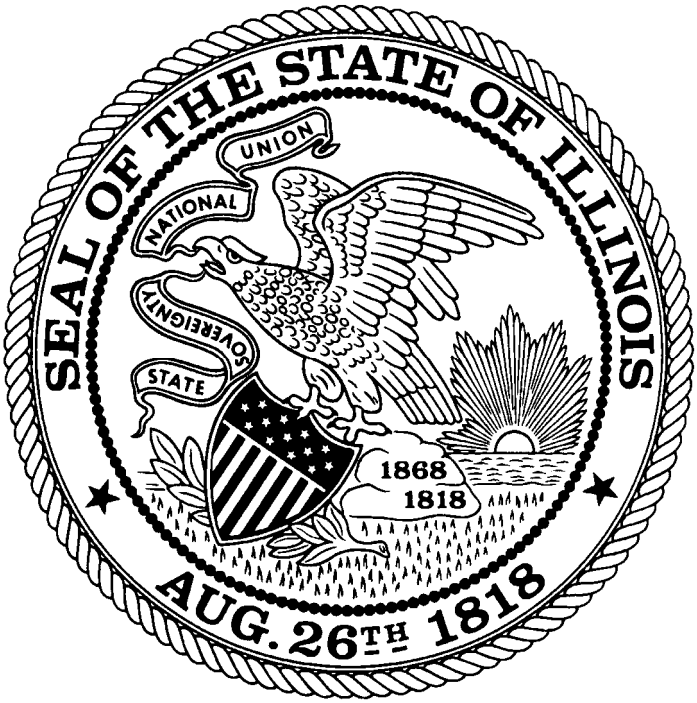

Management Audit
Illinois Department of Transportation's
Life-Cycle Cost Analysis
For Road Construction Contracts

May 2012

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Management Audit

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RECOMMENDATIONS - 6

ACCEPTED - 2
IMPLEMENTED - 4

Background

Life-cycle cost analysis (LCCA) is a process for evaluating the financial impact of a project by analyzing initial costs and discounted future costs, such as maintenance, user, reconstruction, rehabilitation, restoring, and resurfacing costs, over the life of the project. By taking into account all of the costs that would occur throughout the life of each alternative, LCCA helps identify the lowest cost alternative to the State to carry out the project and provides other critical information vital for the overall decision-making process. In order to perform a life-cycle cost analysis, there must be at least two competing alternative pavement designs for comparison. The two primary types of pavement used for road construction are hot mix asphalt (HMA) and portland cement concrete (PCC).

Effective August 25, 2009, Public Act 96-715 required the Illinois Department of Transportation (IDOT) to *develop and implement a life-cycle cost analysis for each State road project under its jurisdiction for which the total pavement costs exceed $500,000*. The Public Act requires IDOT to design and award these paving projects using the material having the lowest life-cycle cost. However, at the discretion of the Department, interstate highways with high traffic volumes or experimental projects may be exempt from the requirement.

On November 16, 2010, the Legislative Audit Commission (LAC) adopted Resolution Number 140 directing the Auditor General to conduct a management audit of the Illinois Department of Transportation's implementation of the life-cycle cost analysis (LCCA) required by statute. The auditors contracted with a consultant with expertise in both pavement design, as well as life-cycle cost analysis practices.

Specifically, the resolution asks the Auditor General to determine:

- Whether the Department has developed and implemented a life-cycle cost analysis which complies with the requirements of the law for each State road project under its jurisdiction for which the total pavement costs exceed $500,000 funded, in whole, or in part, with State or State appropriated funds;

- Whether the Department has designed and awarded these projects utilizing material having the lowest life-cycle cost; and
- The frequency in which the Department has made a decision based on other criteria when alternative material options are substantially equivalent on a life-cycle cost basis.

Report Conclusions

Of the 313 road contracts under the State's jurisdiction awarded by IDOT in 2010 with pavement costs greater than $500,000, 19 (6%) received a life-cycle cost analysis (LCCA), based on documentation provided by IDOT. There are two primary reasons that most projects with pavement costs greater than $500,000 did not receive a life-cycle cost analysis by IDOT. The first is that while IDOT performs life-cycle cost analyses on new construction and reconstruction projects, it typically does not perform LCCAs on rehabilitation projects, such as resurfacing. The law does not exclude or exempt rehabilitation projects from receiving a LCCA. According to IDOT officials: "Simple resurfacing, which constitutes the vast majority of so-called "paving" projects, does not lend itself to the production of equivalent sections." To conduct a life-cycle cost analysis, at least two equivalent designs of pavement alternatives (with equal analysis periods) are required. The auditors concluded that given the requirements of Public Act 96-715, IDOT should be performing LCCAs on rehabilitation projects.

The other reason projects do not undergo a LCCA is IDOT has determined that a "special design" is required or another IDOT policy exemption to a LCCA exists. The law exempts Interstate highways with high traffic volumes or experimental projects from the LCCA requirement. IDOT has established other exemptions to the LCCA requirement such as high stress intersections, a need to match surface type of small projects with those abutting road sections, and widening projects. The Audit also found:

- Eight of 15 contracts utilized LCCAs that were 3 or more years old (at the time of project letting), ranging from 3 years to over 12 years old. Costs could have changed dramatically over the time period between when the LCCAs were prepared and when the projects were put out for bid.
- Twelve of 15 contracts (80%) were missing unit cost support for one or more of the major pay items for concrete or asphalt. Without the cost support, it would be difficult for IDOT's Central Office to perform its review and ensure that appropriate unit costs were used by each respective District.
- There were 21 instances where costs were miscalculated in the LCCA. Two of the errors resulted in a pavement being selected that actually had higher life-cycle costs than the alternative.
- IDOT's maintenance and rehabilitation activity schedules in use during calendar year 2010 were based primarily on engineering judgment and not actual

historical project schedules, and therefore, were not in compliance with the Act. They have since been updated and are based on historical schedules and actual pavement performance.

- IDOT does not incorporate user costs into its life-cycle cost analyses. Public Act 96-715 states that IDOT "may include estimates of user costs throughout the entire pavement life."
- IDOT's Central Office does not check to ensure that all eligible projects receive a LCCA.
- The Pavement Selection Committee was not functioning as required by IDOT policy.

The audit report contained six recommendations directed towards the Department of Transportation. According to updated responses, the Department has implemented four of the recommendation and accepted two recommendations.

Recommendations

1. **The Department of Transportation should conduct life-cycle cost analysis on all projects that meet the requirements of Public Act 96-715. Should IDOT conclude that statutory changes are needed to include additional criteria as to when a LCCA is not feasible, then it should work with the General Assembly to revise the statutory requirements. Furthermore, the Department should more clearly define in the LCCA section of Chapter 53 in its BDE Manual regarding the circumstances when LCCA is required for rehabilitation projects.**

Findings: Auditors reviewed each of the 1,481 contracts awarded by IDOT in 2010 and identified 381 contracts that had pavement costs that exceeded $500,000. Of these 381 contracts, 68 were for roads that were under local jurisdiction, and thus were not required by State law to have a LCCA conducted. Of the remaining 313 contracts in 2010 with pavement costs greater than $500,000 that were under IDOT's jurisdiction, 19 (6%) received a LCCA**,** based on information supplied by IDOT.

There are two primary reasons that only a small number of road projects received a LCCA. The first is IDOT's definition of "pavement." The second is that IDOT is not using LCCA on construction projects with special designs or other exemptions established by IDOT. Public Act 96-715 exempts "interstate highways with high traffic volumes or experimental projects" from the LCCA requirement. IDOT was using some experimental designs in 2010 which exempted them from the LCCA requirement. According to IDOT officials, the key to the definition, and their understanding of pavements, is that pavements are structural systems and the entire cross-section should be considered in a structural manner. If a road project does not involve a change to the pavement structure, then it would not be required

to undergo a LCCA. IDOT's BDE Manual, Chapter 53 (Pavement Rehabilitation), indicates that overlays that play a structural role are not less than 5 inches of equivalent HMA (asphalt) pavement for interstate highways and 3.75 inches of equivalent HMA (asphalt) pavement for non-interstate highways. Exhibit 2-2 compares, by District, total contract award amounts for the 313 State jurisdiction projects with the 19 projects that received a LCCA.

To determine whether IDOT was conducting life-cycle cost analyses as required by State law and in accordance with its own policies, auditors reviewed a sample of nine road project contracts awarded in 2010 for which documentation provided by

Exhibit 2-2
TOTAL AWARD AMOUNTS AND NUMBER OF CONTRACTS BY DISTRICT
Contracts Awarded in Calendar Year 2010

	State Jurisdiction Contracts		**Contracts that received a LCCA**	
District	**Award Amount**	**Total Contracts**	**Award Amount**	**Total Contracts**
1	$329,559,182	51	$51,752,427	3
2	$157,908,612	34	$33,111,536	3
3	$105,880,814	23	$14,926,640	1
4	$166,299,592	57	$14,174,447	1
5	$110,616,054	25	$7,645,626	1
6	$212,292,175	45	$43,351,750	3
7	$117,771,878	19	$0	0
8	$222,889,577	39	$68,438,022	4
9	$104,955,645	20	$19,451,911	3
Total	**$1,528,173,528**	**313**	**$252,852,359**	**19**

Note: Numbers do not add due to rounding.

Source: OAG summary of IDOT data.

IDOT showed that no LCCA had been conducted. In compiling information related to requests for these nine projects, IDOT determined that, in fact, two of the nine did have LCCAs conducted on them and provided us with the documentation.

For the remaining seven projects, auditors determined the following:

- Three projects involved structural overlays and should have received a LCCA. For one project, the rehabilitation of Interstate 39 in Lee County, 5 inches of pavement were laid. Regarding the second project, a rehabilitation of Interstate 80 in LaSalle and Grundy counties, when it was originally designed, the project called for a non-structural overlay of 3.75 inches of pavement. However, the pavement thickness was subsequently revised to 6 inches of overlay, which would be considered a structural rehabilitation. No LCCA was conducted on the revised design. On the third project, the resurfacing of US 51 in Macon County, the pavement overlay was 3.75 inches. Since this is a non-interstate highway, a 3.75 inch overlay is a structural overlay.

- Two projects, with design approvals prior to September 2010, involved a process called rubblization (breaking existing concrete into small pieces and compacting it to create a uniform base which can then be repaved over). Up until September 2010, IDOT considered rubblization projects to be "experimental" and not subject to LCCA requirements. Public Act 96-715 specifically exempts experimental projects from undergoing a LCCA. However, with the 2010 update to IDOT's BDE Manual, rubblization projects are no longer considered experimental and will be required to undergo a LCCA.
- The remaining two projects involved resurfacing which was not structural in nature.

Auditors subsequently submitted an additional 20 projects to IDOT and, based on IDOT's responses, determined that: 6 involved a structural overlay for at least part of the project; 2 projects involved an experimental process and were thus exempt from LCCA; 2 projects actually had received a LCCA which was previously unidentified by IDOT; and the remaining 10 projects did not involve a structural overlay.

There are three basic types of project-specific data that go into a LCCA: the initial project costs, the maintenance and rehabilitation activity schedules, and the maintenance and rehabilitation costs. IDOT used actual cost data for its cost inputs. However, IDOT's maintenance and rehabilitation activity schedules in use during calendar year 2010 were based primarily on engineering judgment and not actual historical project schedules, and therefore, were not in compliance with the Public Act. In April 2011, IDOT updated its maintenance and rehabilitation activity schedules and, unlike the activity schedules used for the 2010 projects, the updated schedules are based on historical schedules.

Response: The Department disagrees with the recommendation. The current policy in Chapter 54 of our BDE Manual requiring a life-cycle cost analysis (LCCA) on projects that newly construct or reconstruct pavement, and not requiring an LCCA on projects that rehabilitate or resurface pavement, does meet the requirements of the statute (20 ILCS 2705/2705-590 (PA 96-715)). The statute states, "As used in this Section, "life-cycle cost" means the total of the cost of the initial project plus all anticipated future costs over the life of the pavement" *(underlined emphasis added).* The Department understands this language to mean the initial project is the one that begins the pavement's life (i.e. new construction/reconstruction). Rehabilitation/resurfacing projects are a part of sustaining the pavement's life and thus considered a future cost which has already been accounted for in the original analysis. The audit report agrees with this understanding on page 1 (1st paragraph) when it states, "Life-cycle cost analysis (LCCA) is a process for evaluating the financial impact of a project by analyzing initial costs and discounted future costs, such as maintenance, user,

reconstruction, rehabilitation, restoring, and resurfacing costs, over the life of the project."

The Department's current policy in Chapter 54 also has been approved by the Federal Highway Administration (FHWA) as a control document in accordance with our Stewardship/Oversight Agreement. The FHWA requires an LCCA to consider three key points: 1) an equal analysis period when evaluating alternatives, 2) alternatives which require periodic maintenance and rehabilitation, and 3) an analysis period which includes at least one major rehabilitation activity. To analyze options for rehabilitation projects which rarely have equal lives and by definition would not have any rehabilitation activities within their life as is suggested, would not meet these requirements.

In an effort to resolve this disagreement, the Department will initiate a legal review of the statute to validate its intent and to determine if clarifying language is necessary.

Chapter 53 of the BDE Manual deals with pavement rehabilitation and based upon the reasoning above, LCCAs are not required. The chapter presents information on the typical problems found in Illinois pavements and the various methods available for addressing them. In other words, the guidance is meant to facilitate selecting the proper scope of a rehabilitation project not in selecting the lowest cost material option for a given project scope which is what an LCCA does. To this end, the Department feels it would be better to change the terminology within Chapter 53 from LCCA to "asset management" of "project scope selection" to clarify the intent and separate it from the LCCAs mandated by statute.

Auditor Comment: *The auditors differ with the Department's interpretation of the LCCA statute. The statute requires that a life-cycle cost analysis be conducted on each "State road project" for which the total pavement costs exceed $500,000. The law does not limit this requirement to "new construction" or "reconstruction" projects as interpreted by the Department. The definitions of life-cycle cost analysis used in both the Act and in our audit report also do not limit the use of LCCAs only to "new construction" or "reconstruction" projects. Rather, the generic term "projects" is used which may include rehabilitation projects.*

Contrary to the Department's assertion that rehabilitation projects do not meet FHWA requirements, FHWA guidance on pavement design considerations states that as part of the project analysis for major rehabilitation projects, an economic analysis, "based on life cycle costs," should be performed.

Regarding the Department's position to conduct life-cycle cost analyses only for new construction or reconstruction projects, the auditors note the following:

- *Several other Midwestern states surveyed by auditors reported using LCCA on rehabilitation, resurfacing, and/or structural overlay projects (see Chapter 4). Furthermore, a 2011 report issued by the Transportation Research Board noted that 13 state departments of transportation perform LCCA for rehabilitation projects.*

- *Chapter 53 (Pavement Rehabilitation) of IDOT's BDE Manual unequivocally states "This section provides guidance on conducting Life-Cycle Cost Analyses (LCCA) for pavement rehabilitation projects to assess the long-term cost effectiveness of alternative rehabilitation strategies." (emphasis added) It goes on to state that "LCCA should be conducted as early in the project development cycle as practicable. For rehabilitation projects, the appropriate time for conducting the LCCA is during the alternatives evaluation stage of Phase I." The Department's position taken in response to this audit is contrary to guidance delineated in its own policy manual since 2000.*

- *Pavement costs and pavement technologies can dramatically change from the time the original LCCA was prepared to when a major rehabilitation occurs. To fulfill its fiduciary responsibilities, it would seem prudent for the Department to undertake a LCCA to ensure the rehabilitation strategy used is the most economical.*

Updated Response: Accepted. In an effort to resolve the difference in interpretation of the LCCA statute, the Department conducted a legal review of the definition of "pavement" as used in Section 590 in order to determine if clarification exists under the law. From that review, it appears that neither Section 590 as a whole, nor the definition of "pavement" specifically, has ever been addressed in any judicial opinion or explored in other legal context. As a result, the following clarifying amendment to Section 590 is recommended and the Department will present this issue and the suggested language to the General Assembly in order to come to an acceptable solution.

> The Department shall develop and implement a life-cycle cost analysis for each **new construction or reconstruction project undertaken by the** State ~~road project~~ **for roads** under its jurisdiction for which the total pavement costs exceed $500,000 funded in whole, or in part, with State or State-appropriated funds. … At the discretion of the Department, interstate highways with high traffic volumes or experimental projects may be exempt from this requirement. … 20 ILCS 2705/2705-590.

The Department maintains it has implemented the LCCA statute to the best of its ability based upon a common engineering understanding of the language; in a manner that recognizes strategic goals for the overall condition of Illinois' pavement system; and in a manner that ensures the best use of constrained fiscal resources.

2. The Department of Transportation should consider including some measure or acknowledgment of user costs in its life-cycle cost analysis.

Findings: Although including costs incurred by the traveling public is noted as a best-practice by the FHWA, IDOT's LCCA calculation does not include user costs in its life-cycle cost analysis. According to IDOT officials, they have looked at including user costs several times. However, the quality of the analysis is difficult to ensure and it is hard to get an accurate number. IDOT officials said the user costs can be two to five times the amount of the total project and, if used, the user costs could be the overwhelming majority of costs for some projects. If user costs would have that large of impact, for this reason alone, it would seem user costs should be an important consideration in at least some capacity (e.g., weighted), especially in urban projects. Public Act 96-715 states that IDOT "may include estimates of user costs throughout the entire pavement life." [emphasis added]

The FHWA LCCA Primer, which provides guidance on the use of LCCA, notes that incorporating user costs into LCCA enhances the validity of the results, but also admits that it can be a challenging task. The Primer states, "Although best-practice LCCA considers both agency and user costs, in actual practice many analysts are reluctant to assign the same level of validity to user costs that they assign to agency costs. Thus, alternatives are often compared chiefly on agency costs." The FHWA designed LCCA software (*RealCost*) is free and, among its features, has an optional user cost calculation capability.

IDOT's non-use of user cost in its LCCA is consistent with standard practice among states. Only three (Indiana, Michigan, and Pennsylvania) of ten survey respondents (nine other states and the Illinois State Toll Highway Authority) reported including user costs in the analysis of life-cycle costs.

Updated Response: Implemented. As agreed, the Department further researched the practice of including user costs in an LCCA. In August-September 2012 a new survey was conducted to determine how many other DOTs include user costs in their pavement selection process. The pavement engineers in the surrounding states of Indiana, Iowa, Wisconsin, and Missouri were personally contacted when survey responses were not received in order to ensure that practices of states in the Midwest region were included. From the 25 total responses, only 16 use an LCCA to select their pavement type. Of those 16, only 8 include user delay costs in the analysis. Based on these results, it is apparent that Illinois is not alone when it comes to omitting user delay costs.

On roadways with high traffic volumes, user costs can be an order of magnitude larger (10 times) than the construction and maintenance costs; further, the models and means for calculating user costs vary greatly. These factors combined run the risk of gross errors and undue influence on the result of an LCCA. So, the Department remains reluctant to include them, but will revisit this issue after we have

gained experience with our revised pavement selection process which debuted in April of 2011.

3. The Department of Transportation should ensure unit cost documentation accompanies the life-cycle cost analysis submittals as required by Department policy.

Findings: When reviewing the 15 contracts with LCCAs, auditors found many did not contain unit cost documentation for all of the major pavement pay items. Unit cost documentation provides support for the unit costs used to calculate the initial construction costs of a project. According to the BDE Manual, all calculations and assumptions related to an economic analysis should be included in a pavement design submittal. The BDE Manual also notes that unit cost sheets for each major pay item involved in each of the alternative designs are required to be submitted to the Central Office for BDE approval. Having the appropriate documentation when reviewing a project helps ensure the most accurate cost figures were used in the LCCA.

Twelve of 15 contracts (80%) were missing unit cost support for one or more of the major pay items for concrete or asphalt. For the concrete LCCAs prepared, seven contracts had no support for any pay items and an additional three were missing support for at least one pay item. For the asphalt LCCAs prepared, eight contracts had no support for any pay items and an additional four were missing support for at least one pay item.

The auditors' consultant reviewed the initial construction material costs for eight contracts and concluded that the values used by IDOT are reasonable and generally consistent with the practice in other states; however, without all of the unit cost documentation, there cannot be complete assurance that the unit costs used were appropriate and reflective of District costs. Likewise, it would be difficult for IDOT's BDE Central Office to perform its review and ensure appropriate unit costs were used for each respective District. Inclusion of the unit cost documentation also provides transparency.

Updated Response: Implemented. As agreed, the Department now ensures unit cost documentation accompanies the LCCA submittals. Such documentation is kept in our files.

4. The Department of Transportation should develop an appropriate time period for which a life-cycle cost analysis is valid to ensure the analyses are based on up-to-date data, such as traffic numbers, pavement designs, and material prices and require updating of LCCAs whose age exceeds that time period.

Findings: Public Act 96-715 requires the data used in LCCAs to be actual and relevant which would require up-to-date traffic data, material prices, and pavement designs. In the review of 15 contracts with LCCAs, auditors found that 8 of 15 contracts utilized LCCAs (at the time of project letting) ranging from 3 years to over 12 years old. The average age for the 15 LCCAs was 3.7 years old. Auditors found projects let and awarded in calendar year 2010 that had LCCAs prepared as early as 1998 and 2003. Costs could have changed dramatically between preparation of the LCCAs and the time the project was put out for bid.

According to an IDOT official, part of the dilemma is receiving pavement designs early in the letting and construction process. Pavement designs may be submitted as one large project; however, due to funding constraints or other priorities, IDOT may be forced to split a project into smaller projects and postpone some.

According to an IDOT official, IDOT does not have a policy explicitly stipulating a period for which a particular LCCA is valid and beyond which it must be revisited. The IDOT official noted that a "rule of thumb" is that a LCCA should be prepared within 12 to 18 months of the letting date.

The main concern of redoing a LCCA was the time involved if the pavement choice changed. District officials noted that they update plans to be in compliance with any changes to the BDE Manual, but it is a significant amount of additional work to create a new set of plans if the type of pavement changed. District officials noted that it does not just affect the pavement; it could also affect the earthwork and other prep work.

Several other states noted that they did not have a standard "shelf-life" defined in policy, or time after which a LCCA is no longer considered valid; however, a maximum of 3 to 4 years prior to letting was a general consensus.

Updated Response: Recommendation Accepted. After further review, the Department agrees with the recommendation and will be revising the pavement selection policies to set a 5 year shelf-life for an LCCA.

5. **The Department of Transportation should establish a process to ensure a complete and thorough review of life-cycle cost analyses to prevent errors and to ensure the integrity of the life-cycle cost analysis results. In addition, IDOT should improve its tracking and controls to ensure that LCCAs are being done on all projects required by State law and IDOT policy.**

Findings: Auditors noted various calculation errors in the LCCAs. For 8 of 15 contracts reviewed, there were 21 instances where the LCCA costs were

miscalculated (9 of these errors were on the same contract). In 14 of the 21 (67%) instances, the errors were greater than $10,000.

Two of the errors resulted in a pavement being selected that actually had higher life-cycle costs than the alternative. The first (U.S. Route 20, contract #64D92) was caused by a transposition error resulting in a $51,200 understatement of initial costs. The pavement selection for this 2010 project should have been made by the Pavement Selection Committee because the life-cycle costs were within 10%; however, the pavement for this project appears to have been chosen based on the lower costs in the erroneous life-cycle cost computation.

The other miscalculation resulting in pavement with a higher life-cycle cost being selected was caused by a data input error. As a result, the asphalt pavement that, from the submitted IDOT LCCA outputs, had lower life-cycle costs by 1.3%, actually was found to have higher life-cycle costs by 7%. Relying on cost data from the erroneous LCCA, the Pavement Selection Committee chose the asphalt pavement over the concrete.

IDOT officials indicated that IDOT's Central Office reviews all LCCAs prepared by the Districts. Given the extent and impact of errors auditors identified in their review of LCCAs, a more detailed review needs to be undertaken by Central Office of the LCCAs completed by the Districts.

Furthermore, according to IDOT officials, IDOT's Central Office does not check to ensure that all eligible projects receive a LCCA. IDOT's Central Office did not maintain effective controls which would enable them to readily identify which projects had undergone a LCCA and which had not. As noted previously, IDOT had originally identified 15 projects as receiving a LCCA; subsequent to auditors' inquiries, 4 more were identified. There are no other reviews or sampling of projects that would identify projects that did not, but should have received a LCCA.

Response: The Department agrees with the first part of the recommendation. The number of errors should indeed be limited to ensure the integrity of the LCCA process. IDOT will develop an improved excel spreadsheet to replace the one reviewed in this audit which seemed to be the predominant source of the errors.

The Department disagrees with the second part of the recommendation. Per the 29 contracts tested in this audit, IDOT performed an LCCA on each and every pavement construction/reconstruction project per policy. The projects that the audit determined the Department missed were pavement resurfacing/rehabilitation projects for which LCCAs are not required. Therefore, this recommendation comes not from a lack of control over the process but from a difference in interpretation of 20 ILCS 2705/2705-590 (PA 96-715) which is a part of Recommendation Number 1.

Auditor Comment: *The auditors' recommendation does not come from a difference in interpretation of the LCCA statute, as purported by the Department. Rather, it is based on IDOT's own actions. When auditors requested a listing of all LCCAs performed by the districts for contracts awarded in 2010, the list provided by IDOT was inaccurate and incomplete. When auditors followed up with IDOT officials inquiring "Does central office do any type of review to ensure all projects with pavement costs greater than $500,000 receive a LCCA?", an IDOT official responded, "With respect to central office checking that all eligible projects received LCCA's, we do not." (emphasis added) The official went on to say they periodically review a sampling of projects to ascertain the extent to which they are policy-compliant.*

Updated Response: Implemented. IDOT agrees the number of errors should be limited to ensure the integrity of the LCCA process. To that end, IDOT has developed a new Excel spreadsheet to replace the one which was reviewed in the 2011 OAG audit. This new spreadsheet, which was released on August 14, 2012, is protected such that the users cannot make changes to it or possibly corrupt it. Further, users are required to use the most current version of the spreadsheet each and every time they perform an analysis and that version is made easily available on the IDOT website: http://www.dot.il.gov/desenv/pdp.html.

Users were informed of the new spreadsheet and its location via e-mail. Contact information was included for anyone with questions. A session on the use of the new spreadsheet was presented at the Annual Program Development Meeting held October 16th - 18th, 2012.

Lastly, the Department's "Pavement Design Class" is being updated to cover the pavement thickness design revisions and revised pavement selection process released in April of 2011. This class will also cover use of the new Excel spreadsheet.

6. The Department of Transportation should ensure the Pavement Selection Committee meets and documents its pavement selection recommendation as required by IDOT's Bureau of Design and Environment (BDE) Manual.

Findings: According to the BDE Manual, for projects awarded during calendar year 2010, if the difference in life-cycle costs between two equivalent designs is 10% or less, the pavement type and design selection was to be determined by the Pavement Selection Committee. Although this process is not specifically delineated in statute, the State law does allow the Department to make a decision on other criteria when alternative material options are substantially equivalent on a life-cycle cost basis.

Auditors requested the decisions of the Pavement Selection Committee for 2010. IDOT's initial response was that the Committee did not meet formally in 2010; however, an IDOT official offered to provide decisions made via e-mail chains. IDOT officials responded that, after looking at the e-mail record, all LCCA projects for 2010 went to the lowest cost alternative; therefore, the Pavement Selection Committee did not meet or make any pavement decisions in calendar year 2010. The IDOT official also added that very few designs ever go to the Committee because Districts choose to accept most of the lowest life-cycle cost designs notwithstanding the policy established in the BDE Manual,

Auditors requested Committee decisions from 2009 or 2008. IDOT officials provided six Pavement Selection Committee examples (two from 2009 and four from 2008); however, only three actually went to the Pavement Selection Committee.

Of the three projects that went to the Pavement Selection Committee, the Committee recommended one project based on the lowest life-cycle costs. The other two projects received approval from the Pavement Selection Committee to select the pavement option with higher life-cycle costs for reasons such as traffic control concerns and costs and ease of construction and staging.

The remaining three were submitted to BDE for approval, but not specifically to the Pavement Selection Committee. These three had life-cycle cost differences which were greater than 10%, which exceeds the authority of the Pavement Selection Committee; therefore, these projects received approval from the Director of the Division of Highways.

Updated Response: Implemented. As agreed, the Department now ensures the Pavement Selection Committee meets and documents its decision as required by policy. Such documentation is kept in our files.