

A survey about the current usage of Pontis across the U.S.

In association with AASHTO

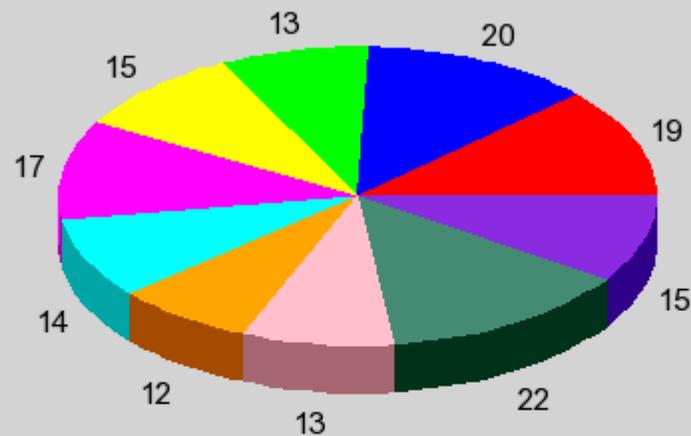
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The following pages are results from the questions deemed important from the online survey sent out to the all states' DOT departments in the United States of America. Thirty Five states (and/or other departments) answered the survey, although all the questions were not required to be answered.

Question # 4:

In August 2008, an Ad Hoc committee representing AASHTO, ASCE, and SEI produced a "White Paper on Bridge Inspection and Rating." There are 10 recommendations made by the committee. Please check all recommendations that you feel, at this time, are needed by your state's Bridge Management program.



- Different inspection intervals
- Better QA/QC measures
- Consistent inspector qualifications
- National bridge inspection manual
- Closer collaboration between bridge inspection and maintenance/repair
- National uniform load ratings
- Centralized system for documenting critical deterioration elements
- Standardized NDE evaluations
- Consistency in terminology (functionally obsolete, structurally deficient, etc.)
- Timing/scheduling of improvements based on BMS output

Question #5:

What do you see as the most important next step in the further development of your agency's Bridge Management System?

Response	Answer
Response 1	Develop better performance measures and the development of life-cycle cost profiles. Comment on question 4- inspection intervals- the intervals should be based on condition and bridge type. The intervals should be considered longer for low risk bridges (excess of 4 year).
Response 3	We currently use Pontis strictly as a database. We do not utilize the BMS output for modeling deterioration rates, time/scheduling improvements, etc
Response 4	Customizing the agency policy rules and MR&R action effectiveness in the PONTIS BMS software to get more reasonable results.
Response 5	Finding Funding
Response 6	Developing state specific deterioration curves and costs for various repair/maintenance activities and alternatives for use in Pontis. Pontis need not be so difficult to use.
Response 7	Improved analysis of needs including recommended actions that match agency determined needs.
Response 8	Better tie in to budget process.
Response 9	The prioritizing of the maintenance and rehabilitation of bridge structures needs to be improved within the Bridge Management System. As well, the funding shortage needs to be more accurately identified/tracked within the BMS.
Response 10	With our limited federal funding for bridges, trying to program preventive maintenance projects so that good bridges don't go bad.
Response 11	Development of a practical way to prioritize bridges that have been identified as repair, rehabilitation, and replacement candidates for our 5-Year Transportation Improvement Program.
Response 12	Improving the modeling capabilities of the system.
Response 13	Populating the preservation model within Pontis.
Response 14	Ohio needs a national standard for load rating truss gusset plates.

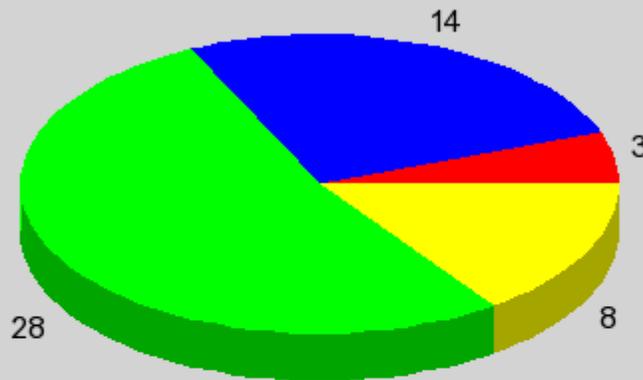
Response 15	Action related to routine inspections
Response 16	We would like to find the resources to develop the planning and cost estimating capabilities of PONTIS for scheduling future preventive maintenance activities as part of our bridge preservation program.
Response 17	Closer collaboration between bridge inspector and maintenance/repairs
Response 18	Integration with other data systems in use at NJDOT
Response 19	A better system to determine the structural condition of a bridge and compare it on a network wide basis with other structures. The national bridge inspection manual should be element based.
Response 20	Modify the Bridgit Program to perform analysis of future needs.
Response 21	Implementation of Pontis software.
Response 22	Need qualified personnel to be in charge of the whole system.
Response 23	NMDOT would like to see a bridge management system that is easy to implement. Version 4 of PONTIS requires significant degree of effort for implementation of all modules. NMDOT does not have the resources for this. We are optimistic that version 5 will be easier to implement. NMDOT needs more resources in all aspects of bridge management.
Response 24	Better understanding by senior management.
Response 25	Developing a system architecture to integrate various stand-alone information and data sources.
Response 26	Dedicating personnel to organize the details of the process and how it should be structured to get the most benefit for our state.
Response 27	Retaining experienced personnel involved in bridge management.
Response 28	"Buy-in" by all involved with bridge management process including inspectors, maintenance, design, funding and upper management
Response 29	Ability to optimize based upon multiple objectives and not only cost.
Response 30	Modification of Pontis to accurately assess the condition of our bridges.
Response 31	The Bureau of Local Project is setting up a method and providing personnel to ensure that Local Bridge Inspections are being completed to a higher standard. State System needs to get to where Pontis can be used as a better forecasting tool for BMS.
Response 32	Addition of vulnerabilities/risks and upgrading of analytical capabilities to combine economic analysis with risks.
Response 33	Strengthening the forecasting/optimization/management tools available to ALDOT.
Response 34	Improving the method to capture the work accomplished on structures in order to complete the management cycle.

Response 35

Bridge Management has come a long way since its inception, but there is still a need to improve more. Most agencies are well versed in the inspection data and storage, but less are using the economic evaluation capabilities of the BMS software. In order to increase the use of economic evaluations in BMS, several things needs to be done: 1) Improve the element inspection manual (AASHTO CoRE manual). The analysis can only be as good as the condition assessment data. 2) Develop improved modeling within BMS software to account for condition and vulnerabilities such as scour and seismic needs. 3) Update the National Bridge Inventory to accept the element inspection data from the states. 4) Modify the apportionment formulas to utilize the element inspection data in the funding of transportation dollars.

Question #6:

What are the biggest barriers in your department to implement innovations that may strengthen your Bridge Management System?



- Cost-effective tools for data management
- Cost-effective approaches for analysis, priority-setting, and decision-making
- Lack of sufficient personnel/ money/ other resources
- Other

Other Responses:

What are the biggest barriers in your department to implement innovations that may strengthen your Bridge Management System? (Check all that apply, if you selected other, please explain)

Respondent 1	better element types and definitions
Respondent 12	Cost data is not compatible with BMS
Respondent 19	Confidence in the data models
Respondent 20	The Pontis software is inadequate. WSDOT plans on using a modified version of BRIDGIT.
Respondent 24	New state law interpretation by senior management.
Respondent 30	Coordination between FHWA and AASHTO in standardizing the NBIS with Pontis
Respondent 31	We don't need regulations requiring only PE bridge inspectors or greater restrictions on FC intervals. Let us make our own decisions on this.

Question #7:

After reading the one-page summary of the current US-DOT-sponsored project addressing Remote Sensing and Visualization applications in Bridge Management Systems, being conducted by the University of North Carolina at Charlotte, please give your opinions or comments below.

Response	Answer
Response 1	I believe that remote sensing is marginal at best. The process has its place, but for long-term use and universal implantation has not matured.
Response 3	It sounds like a good idea but like with everything else DOT's are short money and staff. In most cases the DOT's know what bridges have issues; they just don't have the money to rehab/replace them.
Response 4	This sounds like great technology. Our biggest concern is with the expense. Depending on the expense of this technology, it may be necessary to limit the application to the more critical locations. It is our impression that this technology is not intended to replace the visual NBI safety inspections.
Response 5	We think remote sensing would be nice but our needs are much more fundamental. If I had more funding, I would spend it on painting and repairing bridges before I would spend it on remote sensing.
Response 6	I see a benefit for complicated structures that have difficult to inspect details. For the most common type and simply constructed bridges this seems more extravagant than necessary.
Response 7	The summary misses the point of real needs to move BMS forward. Remote sensing and GIS technology is already advanced to implementation stage. We can collect all the data we need. What we need are better analysis and predictive tools.
Response 10	What really are being monitored? There are a number of companies out there with capabilities on remote sensing technologies. What is more important is monitoring critical areas of a bridge that would give one an indication of a potential problem(s) so that it can be addressed before it becomes major whether it be a concrete, steel, or whatever material type or configuration. If the goal of this project is to only "extend" the application of this technology to transportation infrastructure, you are wasting your time/money. You should already know that this technology can be applied to sensing and visualization of our bridges remotely so should be spending money on determining what, how, where, etc. to measure/monitor our bridges most economically, efficiently and in the most useful way. This topic is not new. There are many research/studies going on across the country including a Hawaii DOT sponsored project at the University of Hawaii under Dr. David Ma. The project is entitled "Structural Health Monitoring and Reliability Analysis of Highway Bridges Using Smart Sensor Technologies".

	We will be applying this technology to a couple of concrete bridges to get an indication the pros and cons of this monitoring system and its feasibility and limitations.
Response 11	After reading the one-page summary and the entire research solicitation paper, I was unable to develop a good understanding of the IRSU initiative. However, I will make two observations: 1. Based on my limited understanding of the proposed research, it appears that initiative does not address any of the ten categories of need listed on the first page of the Executive Summary of AASHTO's White Paper on Bridge Inspection and Rating. 2. It is unlikely that the endeavor will result in something that will have wide spread applicability/use in the day-to-day inspection of bridges.
Response 12	The biggest issue with remote sensing technology is to not be overwhelmed by too much data. The data collected needs to be processed and consolidated for the use of the bridge manager.
Response 13	I have my doubts as to how useful the project will be regarding a bridge management system. It also seems that this type of remote sensing will be very expensive in an atmosphere where we don't have enough funding to replace structurally deficient bridges.
Response 14	It is not clear why this would benefit the State of Ohio. If the answer is for emergency response, focusing on bridges doesn't seem to be the right direction. If this is about data management, yes Ohio DOT has a long way to go to manage how are current systems interact with one another. We currently have bridge data located in a number of locations - inspection and inventory records in one location, photos in another location, and plans in a couple of locations. So a data management system would be helpful. I believe that would be a challenge to integrate into all bridge owners business practices.
Response 15	It's a tool in the tool box very useful for appropriate circumstances
Response 16	I am still uncertain as to the accuracy, usefulness, and effectiveness of remote sensing equipment and programs, and their particular suitability to our day-to-day activities. At the present time the cost/benefit ratio is not clear for a small state such as New Hampshire. Funds for routine bridge maintenance work is difficult to find and the additional cost of a remote sensing system may not be within our financial constraints for some time. Further, one must be careful to not completely and/or blindly depend on the interpretation and results of an electronic remote sensing system without appropriate oversight and review. There is truly no replacement for a hands-on inspection by a trained, qualified, and experienced bridge inspector.
Response 18	If the picture shown in the one-page summary is a real-time satellite generated image, the system looks to have some valid potential. However, who & how does one access this satellite data/image. But, if the image is dependent upon the DOT or bridge owner installing cameras & other hardware & software at bridge sites than the system is/will be too costly. If it utilizes camera's already owned and operated by the DOT, it would be a good thing, but we would not have system wide coverage.
Response 20	I'm not sure what the connection is between this research and BMS? GIS mapping of bridges shows where some bridge are based on sort criteria. BMS is about looking at your bridge network and determining the future needs.
Response 22	Remote sensing is good for the important bridges.
Response 23	Remote sensing and visualization is not economically feasible on a large scale. The cost and time of implementing a program at a scale that would be of any use is not practical. NMDOT and New Mexico State University have conducted research on this topic. NMDOT has not found the research to be cost effective and/or manageable.
Response 24	Sounds interesting. I am very close to Charlotte and would like to see their research.
Response 25	Will be very interested to see results and recommendations from this study. TxDOT is in the process of contracting for 3rd party vendor services to perform vehicle-mounted LIDAR scans for vertical and horizontal

	clearance data on approximately 20,000 underpass bridge and overhead sign bridges throughout the state.
Response 27	Hadn't read it. Remote sensing is ok if there is someone constantly monitoring the wired bridge. However data is typically collected at intervals and then has to be interpreted and studied to make conclusions. This approach may lend itself to forecasting, assuming traffic patterns are constant and weather is constant. However there are many factors that can impair the forecast.
Response 28	Remote sensing and visualization could expedite the inspection process by facilitating the access to difficult areas to detect deficiencies without the use of costly and time consuming equipment or rigging. Areas observed to have deficiencies could then be accessed for more detailed inspection whereas those areas without visual defects could be noted for future investigation.
Response 29	as a small, rural state - we just don't have the resources (money, people) to devote to something like this
Response 30	Although remote sensing is an effective tool for bridge management, it should not replace the hands-on approach currently being used.
Response 31	Interested in learning more but it sounds expensive and we don't have funds available now for this type of effort.
Response 33	Discussed this project today by phone with Dr. Edd Hauser.
Response 34	Looks interesting but if remote sensors are attached to bridges this could become very expensive for Virginia due to the number of bridges in our inventory.
Response 35	Certainly load induced deterioration is a factor and I think that you could enhance the knowledge of the cause of field measure or projected deterioration.