

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION  
BUREAU OF MAINTENANCE AND OPERATIONS

Date: March 4, 2002

Subject: Concrete Mid-Slab Cracking Survey Project

To: All District Engineers/Administrator

From: Robert M. Peda, P.E./s/  
Director, Bureau of Maintenance and Operations

*Strike-Off Letter*

4650202



As you know, the Concrete Pavement Quality Improvement Task Force (CPQI-TF) has been analyzing the premature cracking of concrete pavements, and evaluating repair strategies. As part of this effort, an extensive survey strategy has been proposed in order to monitor the extent and severity of mid-slab cracking, and to initiate timely and appropriate treatments.

Attached is the "Concrete Mid-Slab Cracking Survey Project - Process Narrative" which defines the participants and roles necessary to perform the task. Namely, the Bureau of Maintenance and Operations (BOMO) and Engineering District personnel have been proposed to perform the duties related to this project.

BOMO has developed a listing, based on Roadway Management System (RMS) data, of all concrete pavements constructed with Open Graded Subbase (OGS) material. These are the pavements of concern. As defined in the attached process narrative, it is proposed that District personnel verify the accuracy of this listing, note and report additions or revisions to BOMO.

The next step proposes District personnel to mark (paint) the beginning and ending of each section of Concrete/OGS pavement so that BOMO can collect survey data and images bi-annually with the Roadway Inventory and Testing Section's "Videologging" van. This data will then be analyzed and reported by District personnel. Further details are provided in the attachment.

We request that the Districts verify and mark their Concrete/OGS pavement sections by March 31, 2002, so that Videologging can be performed during the Springtime when crack propagation is at its highest.

Please respond by notifying Jim Moretz, Chief, Roadway Management Division, of your willingness to participate and the personnel assigned to this project. It is our recommendation that the RMS Coordinator or Pavement Management Engineer take the lead.

Thank you in advance for your consideration of this very important project.

Attachments (2: process, time line)

4650 JSM/JML/jsm 787-7908

File - C:\Moretz Files\Word Files\CPQI-TF\Cracking Survey document.doc

cc: M. Ryan, PE           Keystone, 8-North  
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Assistant District Engineers, Construction  
Assistant District Engineers, Maintenance  
District RMS Coordinators  
Highway Administration Bureau Directors  
Library Services  
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# CONCRETE MID-SLAB CRACKING SURVEY PROJECT

## PROCESS NARRATIVE

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J. S. Moretz, P.E. - February 28, 2002

### Step #1: (BOMO & Districts)

- BOMO's Roadway Inventory and Testing Section (RI TS) prepares a list of concrete segments built on OGS.
- BOMO sends list to Districts for action.
  - Districts verify accuracy of list and add or delete as necessary.
  - Districts physically mark (paint) the beginning and ending of each OGS section as follows:
    - White paint line from edge of pavement to ½ of the travel lane.
    - The letters "OGS" on the shoulder side of the pavement and the OGS side of the section.
  - To be completed by March 31, 2002.
- Districts to inform RI TS of verification and marking completion.
- Districts send corrected OGS list to RI TS and update RMS Pavement History.

### Step #2: (BOMO)

- RI TS to conduct concrete mid-slab cracking survey beginning on or about April 1, 2002.
  - RI TS collects images on removable hard drives with their videolog van.
  - Only the travel lane is surveyed due to the limiting factor of the time needed for analysis.
- RI TS completes survey by May 31, 2002.
- RI TS sends images on hard drives to Districts by June 1, 2002.
- RI TS performs a second survey annually during the month of November.

### Step#3: (BOMO)

- The Pavement Analysis and Design Section (PDAS) of BOMO prepares an Excel spread sheet for the Districts to use for data entry.
  - Design form with input from Districts.
  - Prepare a generic sample.
  - Prepare instruction document.
  - Create folder on PENNDOT Intranet to house documents.
- PDAS informs Districts of the network location of spread sheet and provides instructions by June 1, 2002.

#### Step #4: (Districts)

- Districts receive images and evaluate the videolog images of all OGS slabs.
- Districts evaluate slabs and place them into one of the following categories:
  1. "0" = no mid-slab crack detectable.
  2. "L" = low severity mid-slab crack present with no loss of aggregate interlock.
  3. "W" = medium severity, working mid-slab crack present with loss of aggregate interlock.
  4. "F" = high severity mid-slab crack present with faulting greater than ½ inch.
  5. "R" = mid-slab crack repaired.

#### Step #5: (Districts)

- Districts report videolog survey evaluation in Excel spread sheet by August 1, 2002.

#### Step #6: (BOMO)

- PDAS analyzes the mid-slab cracking data reported by the Districts.
- PDAS reports the results of their analysis by September 1, 2002.
  - Number and types of repairs needed.
  - Estimated funding needs for repairs.
  - Later reports will include cracking growth rates and repair rates.
- Spring survey will provide information for fall programming efforts.
- Fall survey will give an update on any new cracks found and report on what has been repaired.

#### Step #6: (BOMO)

- PDAS analyzes the mid-slab cracking data reported by the Districts.
- PDAS reports the results of their analysis by September 1, 2002.
  - Number and types of repairs needed.
  - Estimated funding needs for repairs.

#### Step #7: (BOMO)

- RI TS conducts five rounds of mid-slab cracking surveys over three years.
  - Spring surveys are done April 1 through May 31.
  - Spring surveys will provide information for fall programming efforts.
  - Fall surveys done October 1 through November 30.
  - Fall surveys will give an update on any new cracks found and report on what has been repaired.
  - Reports will include cracking growth rates and repair rates.
- PDAS analyzes data and determines repair strategies and funding needs.
- PDAS consolidates data and issues final report by August 31, 2004.

Concrete Mid-Slab Cracking Survey Project													
Step	Operation	2002											
		JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
0	Districts verify & mark OGS pavement sections			1									
1	BOMO collects images & distributes to Districts				1						2		
2	Districts evaluate images and enter in spreadsheet					1						2	
3	BOMO consolidates data & does final report							1					
		2003											
		JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	BOMO collects images & distributes to Districts				3						4		
2	Districts evaluate images and enter in spreadsheet	2				3						4	
3	BOMO consolidates data & does final report		2						3				
		2004											
		JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC
1	BOMO collects images & distributes to Districts				5								
2	Districts evaluate images and enter in spreadsheet	4				5							
3	BOMO consolidates data & does final report		4						5				