Tennessee Department of Transportation
Division of Materials and Tests

Sampling of Asphalt and Concrete Cores for Pavement Analysis & Investigation
(SOP 9-1)

Purpose: The purpose of this document is to provide guidance when sampling is needed for the investigation & evaluation of asphalt and concrete pavements.

Discussion: The core request should be directed to the Pavements Team to discuss project details.

After receiving a coring request, the coring location and number of cores will need approval from the Pavements Team Lead and Field Services before the project start date. The Pavements Team Lead will decide if further testing is needed such as Dynamic Cone Penetrometer, FWD testing, and/or ground penetrating radar (GPR).

Procedure: Cores for a pavement failure investigation will differ from a core for depth investigation. Each pavement investigation is unique, so coring location and quantity will depend on the specific situation. Core location and quantity shall be approved by the Pavements Team before traffic control is scheduled.

Coring procedure:

Before coring, note surface distresses per the most current version of the FHWA Distress Identification Manual (FHWA-HRT-13-092) in the area of study. Areas exhibiting high levels of distress should be flagged for additional coring.

- Check with the Pavement Team Lead on the size of cores needed. In most cases, a 4-inch core bit will suffice.
- Collect core samples per AASHTO R67-20 Sample Asphalt Mixture after Compaction (Obtaining Cores).
- Identify the location of the core and offset without causing damage to the core. If the core is damaged to the point that it cannot be used for its intended purpose; it shall be noted in the report and a new core shall be obtained within 4 inches of the original location.

The following information shall be obtained for each core. This document can be found on the Materials and Tests website (Materials and Pavements (tn.gov)) under Asphalt information (See Appendix A):

- Core ID with core number and direction of travel
- Route ID
- City or town, County
- Direction (northbound, southbound, eastbound, westbound)
- Core Mile Post/Log Mile or approximate distance to the nearest landmark (overpass, exit ramp, sign, etc.)
- Lane (Lane 1, 2, 3, etc.)
- Location within lane (Center Line (CL), Left Wheelpath (LWP), Right Wheelpath (RWP), Shoulder (SH)
- Distress type (if applicable)
- Pavement type (asphalt, concrete) and thickness
- Base type (concrete, gravel, granular) and thickness if sampled.
- Quality of bond between pavement lifts/layers (good, fair, poor)
- Image of the core with the measurement using a tape measure/ruler from top to bottom
- Distresses on surface
- Recommendations if applicable
- Comments

The following information are minimum requirements when creating a Pavement Analysis and Investigation Report (See Appendix B):

- **Cover page** – Route, County, and map showing the coring location.
- **Introduction** – Brief explanation of the project and what we want to accomplish. When did coring take place? Who made this request? Who cut the core?
- **Field Observations** – Describe field conditions and type of cracking observed if any. Include images with descriptions.
- **Core information** – Summary of core report in table format.
- **Testing performed** – If DCP testing was conducted, include the following information found in the table/graph below. Include a description of where DCP was conducted. Provide GPS location or Log Mile/Mile Post of where the test was performed.
- **Testing performed** – If FWD testing was conducted, provide a table with calculated Structural Numbers. Provide GPS location or Log Mile/Mile Post of where the test was performed.
- **Conclusion** – Summarize findings and provide recommendations if applicable.

Please contact the Pavement Team at 615-350-4155 if you have any questions.

Appendix A

TN TDOT Department of Transportation

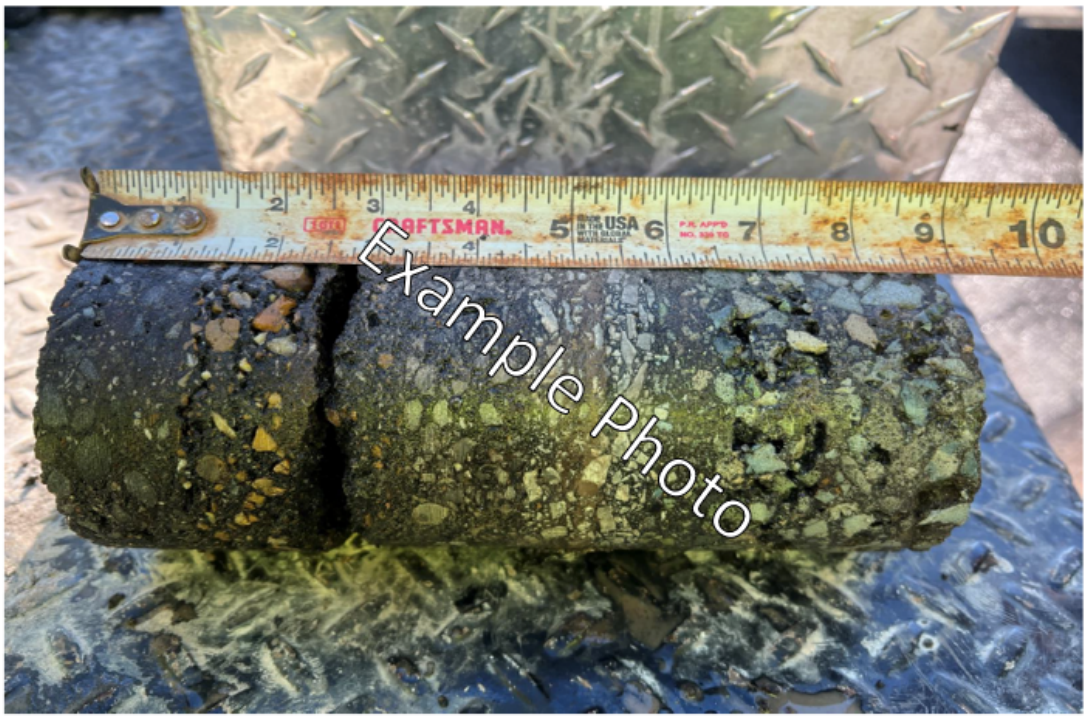
Core Report

Project Name/Description/Route:									
City, County:			Starting LM:				Date:		
Contract ID:			Ending LM:				Drill Crew:		
Core Number	LM	Lane Direction	Lane Number	CL	LWP	RWP	SH	Core Depth	Notes
1							✓		
2									
3									
4									
5									
6									
7									
8									

Legend
SH-Shoulder
CL-Center of Lane
LWP-Left Wheel Path
RWP-Right Wheel Path
LM-Log Mile

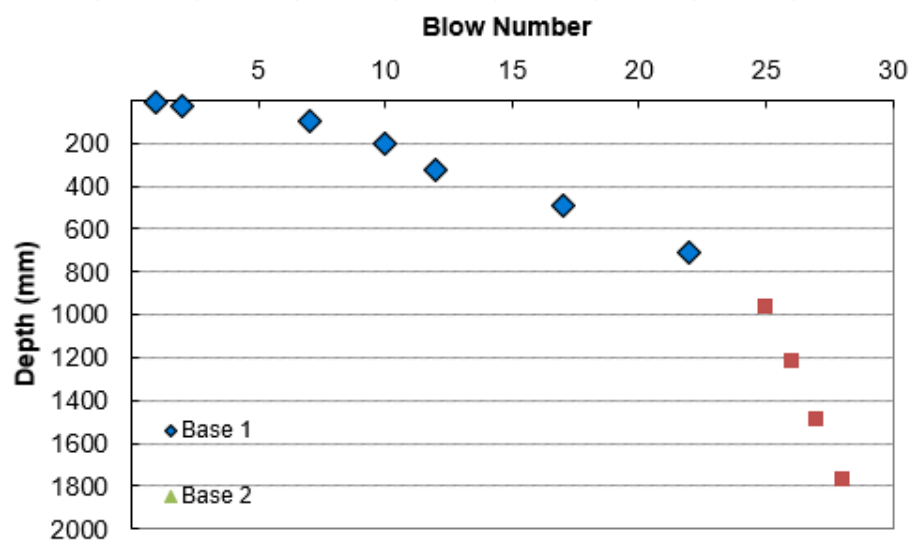
Discusion of Findings

Core Number



Comments
Pavement Type & Thickness
Base Type & Thickness
Distress Type
Delamination/De-bonding?
Distresses on the surface?

Core#
Direction - Depth
Location

Appendix B

NAME	Core #1							
B.N.	Cumu. B.N.	P.	Cumu. P.	mm/B.N.	CBR	E_{BASE} (PSI)	CBR	E_{BASE} (PSI)
1	1	10	10	10.00	22.15	18554		
1	2	20	30	15.00	14.07	13874		
5	7	70	100	14.29	14.86	14368		
3	10	100	200	20.00	10.19	11289	**11.63**	**11995.67**
2	12	120	320	26.67	7.38	9185		
5	17	170	490	28.82	6.77	8687		
5	22	220	710	32.27	5.96	8011		
3	25	250	960	38.40	4.91	7073		
1	26	260	1220	46.92	3.92	6126	**3.73**	**5900.11**
1	27	270	1490	55.19	3.27	5454		
1	28	280	1770	63.21	2.81	4948