


MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION

ENGINEERING DIVISION

MEMORANDUM

DATE: ~~August 22, 2016~~ ~~Updated 07/10/2017~~ **Updated June 19, 2018**

TO: Ben Markert- Transportation Systems Management Division
Randy Dunsey - Transportation Systems Management Division
Alfred Erives - Permitting, Construction, and Inspection Division
Steve Wilcox - Engineering Division

FROM: Joe Pinto - Environmental Program Branch Manager 
Engineering Division

SUBJECT: MC85: 95th Avenue to 75th Avenue; MC85 at 79th Avenue Traffic Signal
W.O. Number: TT0345 & TT0553
Environmental Clearance – Re-Evaluation

The Environmental Program Branch has *re-evaluated* this project for environmental impacts and has determined that this project will not adversely affect the surrounding environment. No further environmental evaluation is required.

If there is a change in project termini or work is to be added outside of the original project scope or limits, MCDOT's Environmental Program Branch must be contacted to evaluate potential impacts.

The following mitigation measures will need to be followed and included in the Project Final Plans and Specifications:

Maricopa County Department of Transportation Responsibilities

- 1. The Maricopa County Department of Transportation Project Manager will contact the Maricopa County Department of Transportation Environmental Program Branch between sixty (60) and ninety (90) calendar days prior to Construction Notice to Proceed to ensure the Environmental Clearance is still valid.**
- 2. All disturbed soils that will not be landscaped or otherwise permanently stabilized by construction will be stabilized by an approved method.**

3. The Engineer will ensure a Stormwater Pollution Prevention Plan is prepared to meet the requirements of the Arizona Pollutant Discharge Elimination System Construction General Permit.
4. The Engineer will prepare and submit a Notice of Intent for the project to the Arizona Department of Environmental Quality.
5. The Engineer will prepare and submit a Notice of Termination upon achieving final stabilization for the project to the Arizona Department of Environmental Quality.
6. The Maricopa County Department of Transportation Environmental Program Branch Hazardous Materials Specialist will review the National Emission Standard for Hazardous Air Pollutants documentation, completed by the contractor, five (5) working days prior to being submitted to the regulatory agency [-ies].
7. Asphalt Rubber Concrete pavement will be used to provide noise abatement for the area residents.
8. The Engineer will notify the Maricopa County Department of Transportation Environmental Program Branch Manager (602.506.8068) at least sixty (60) days prior to the beginning of construction to schedule a burrowing owl survey.
9. The Maricopa Department of Transportation Environmental Program Branch will arrange for a qualified biologist to conduct a pre-construction survey for burrowing owls within thirty (30) days of construction. The biologist shall possess a burrowing owl survey protocol training certificate issued by the Arizona Game and Fish Department.
10. If burrowing owls are found during the survey, the Maricopa County Department of Transportation Environmental Program Branch will arrange for a licensed wildlife rehabilitator to remove all burrowing owls, nestlings, or eggs that will be impacted by construction and have the contractor avoid construction activities within one hundred (100) feet of active burrows.
11. The Maricopa County Department of Transportation Environmental Program Branch recommends the Maricopa County Department of Transportation Communications Branch provide English-Spanish bi-lingual public announcements and notifications based on the percentage of local Hispanic resident population and potential Linguistically Isolated Households. The population percentages for both these categories exceed thresholds set for implementation of Maricopa County Department of Transportation Title VI Plan compliance measures.
12. Traffic control measures will be communicated with the public, local officials, and the media prior to and during construction activities. Communication may

include, but is not limited to, media alerts, direct mailings to area businesses and property owners, information on variable message signs, and paid newspaper notices.

13. A construction notice will be provided to residents and businesses in the general project area at least fourteen (14) calendar days prior to construction.

Contractor Responsibilities

1. The contractor shall prepare and implement a Stormwater Pollution Prevention Plan that meets the requirements of the Arizona Pollutant Discharge Elimination System Construction General Permit, including sampling and analysis plan, as necessary.
2. Following review of the Stormwater Pollution Prevention Plan by the Engineer, the contractor shall prepare and submit a Notice of Intent for the project, and shall provide the Stormwater Pollution Prevention Plan and sampling and analysis plan, as necessary, to the Arizona Department of Environmental Quality. The contractor shall provide copies of the final Stormwater Pollution Prevention Plan and the contractor's Notice of Intent and Notice of Termination to the Maricopa County Department of Transportation.
3. The contractor shall prepare and submit a Notice of Termination upon approval from the Engineer for the project to the Arizona Department of Environmental Quality.
4. The contractor shall submit a copy of the authorization to discharge letter from the Arizona Department of Environmental Quality to the Maricopa County Stormwater Program, the City of Phoenix and the City of Tolleson, as regulated Municipal Separate Storm Sewer System operators and comply with their requirements.
5. The contractor shall have a copy of the Asbestos Building Material Survey Report (Dated February 26, 2018) on-site at all times.
6. Because measurable levels of lead were detected in the yellow and white road striping, the Occupational Safety and Health Administration Lead in Construction Standard (29 CFR 1926.62) shall apply to any construction work (including renovation and demolition) that may disturb the painted components or lead materials. The contractor shall notify their employees prior to any disturbance where lead is present and make the US Department of Labor Occupational Safety and Health Administration Lead in Construction Publication (OSHA 3142-12R 2004) available to workers. Link: <http://www.osha.gov/Publications/osha3142.pdf>
7. The Lead Based Paint identified during this survey is considered non-hazardous for purposes of disposal and can be disposed as regular construction waste.

- 8. The contractor shall complete a National Emissions Standards for Hazardous Air Pollutants notification for work associated with the headwall removals and submit it to the Engineer. The Engineer will send it to the Maricopa County Department of Transportation Environmental Program Branch Hazardous Materials Specialist for review five (5) working days prior to being submitted to the regulatory agency [-ies].**
- 9. After Maricopa County Department of Transportation Environmental Program Branch Hazardous Materials Specialist review, the contractor shall file the National Emissions Standards for Hazardous Air Pollutants notification with Arizona Division of Occupational Safety and Health and the Maricopa County Air Quality Department at least ten (10) working days prior to demolition/renovation associated with the headwall removals.**
- 10. The contractor cannot start work associated with the headwall removals until ten (10) working days have passed since the submittal of the National Emissions Standards for Hazardous Air Pollutants notification to the regulatory agency [-ies].**
- 11. A copy of the submitted National Emissions Standards for Hazardous Air Pollutants notification shall be sent to the Engineer. The Engineer will send it to the Maricopa County Department of Transportation Environmental Program Branch Hazardous Materials Specialist.**
- 12. The dumped material located on the south side of MC85 and 79th Avenue will be impacted by the project. The contractor shall hire a licensed hazardous materials contractor to inspect the dumped material for potential hazardous waste, and if present, test and remove the hazardous wastes from the site in accordance to all applicable federal, state, and local codes and regulations.**
- 13. Well abandonment and closures shall comply with the Arizona Department of Water Resources Well Abandonment Handbook dated September 2008. Link: <http://www.azwater.gov/azdwr/WaterManagement/NOI/documents/AbandonmentHandbook2008.pdf>**
- 14. The soil staining around the well to be abandoned on the southwest corner of MC85 and 91st Avenue shall be analyzed for the presence of hazardous substances by a licensed hazardous materials contractor and, if present, impacted soils shall be disposed of in accordance to all applicable federal, state, and local codes and regulations.**
- 15. If the dumped material located on the south side of MC85 and 79th Avenue, and/or the soil staining around the well to be abandoned on the southwest corner of MC85 and 91st Avenue exceeds federal, state, and local codes and regulations for specific hazardous substances, a licensed abatement contractor shall provide**

a Removal and Disposal Plan to be reviewed by the Maricopa County Department of Transportation Environmental Program Branch Hazardous Materials Specialist five (5) working days prior to implementation and removal.

- 16. A copy of any analysis conducted by the licensed hazardous materials contractor shall be submitted to the Engineer. The Engineer will send it to the Maricopa County Department of Transportation Environmental Program Branch Hazardous Materials Specialist.**
- 17. The contractor shall comply with the Occupational Safety and Health Administration Respirable Crystalline Silica Standard for Construction. Link: <https://www.osha.gov/Publications/OSHA3681.pdf>**
- 18. Avoidance or proper regulatory closure of unreported or undiscovered wells located within the project limits that may be impacted by construction is required.**
- 19. If suspected hazardous materials are encountered during construction, work shall cease at that location and the contractor shall notify the Engineer. The Engineer will notify the Maricopa County Department of Transportation Hazardous Materials Specialist (602.506.0001) immediately to arrange for the proper assessment, treatment, or disposal of those materials.**
- 20. If previously unidentified archaeological, historical, or paleontological features are encountered during activity related to the construction of the project, the contractor shall stop work immediately at that location, take all reasonable steps to secure the preservation of those resources, and notify the Engineer. The Engineer will notify the Maricopa County Department of Transportation Cultural Resources Manager (602.506.8082) to evaluate the significance of the resources and determine the appropriate next action.**
- 21. All disturbed soils that will not be landscaped or otherwise permanently stabilized by construction shall be stabilized by an approved method.**
- 22. To prevent the introduction of invasive species seeds, all construction equipment shall be washed at the contractor's storage facility prior to entering the construction site.**
- 23. To prevent invasive species seeds from leaving the site, the contractor shall inspect all construction equipment and remove all attached plant/vegetation and soil/mud debris prior to leaving the construction site.**
- 24. The contractor shall arrange for a qualified biologist to conduct a bird nest search of the grasses, shrubs, trees, and/or limbs to determine the presence/absence of active bird nests if vegetation removal activities will occur**

between February 1st and August 31st. The survey shall be conducted within ten (10) calendar days of vegetation removal.

25. If active bird nests are found during the bird nest survey, the contractor shall notify the Engineer. The Engineer will contact the Maricopa County Department of Transportation Environmental Program Branch to arrange for a licensed wildlife rehabilitator to remove any eggs or nestlings from active nests, or have the contractor avoid vegetation removal or pruning near the active bird nest(s) to comply with provisions of the Migratory Bird Treaty Act.
26. If active bird nests are found during the bird nest survey, the contractor shall avoid vegetation removal or pruning near active bird nest(s) until the Maricopa County Department of Transportation Environmental Program Branch Manager authorizes the contractor to proceed.
27. The contractor shall not remove any trees or large tree limbs or conduct vegetation removal activities such as grubbing or shrub clearing between February 1st and August 31st until a biologist has conducted a bird nest search of the grasses, shrubs, trees, and/or tree limbs and has determined that no active bird nests are present. Vegetation may be mowed or removed if it has been surveyed within ten (10) calendar days prior to removal as long as only inactive bird nests, if any, are present. Between September 1st and January 31st, grubbing, shrub clearing, and tree/limb removal activities are not subject to restriction.
28. If any burrowing owls are found during the pre-construction survey, the contractor shall avoid construction activities within one hundred (100) feet of active burrows until the Maricopa County Department of Transportation Environmental Program Branch Manager authorizes the contractor to proceed.
29. If any burrowing owls are located during work activities, the contractor shall cease work within one hundred (100) feet of any area occupied by burrowing owls and contact the Engineer. The Engineer will contact the Maricopa County Department of Transportation Environmental Program Branch Manager (602.506.8068) to arrange for removal of all burrowing owls, nestlings, or eggs that will be impacted by construction.
30. Construction of the project shall comply with The Maricopa County Air Quality Department's Rule 310—Fugitive Dust from Dust-Generating Operations and any required air quality permits. Link to the Dust Abatement Handbook: <https://www.maricopa.gov/DocumentCenter/View/5167/Rule-310---Dust-Abatement-Handbook-PDF>
31. Construction impacts such as equipment noise, dust, and fumes shall be monitored and controlled. The contractor is required to observe and comply

with all air pollution ordinances and regulations from those agencies having jurisdiction.

32. The contractor shall contact local emergency services (hospital, fire, police, and ambulance services) at least fourteen (14) calendar days in advance of construction to notify the emergency service of potential construction-related delays.
33. The contractor shall notify the public, business owners, and emergency services (hospital, fire, police, and ambulance services) of any temporary access change or road closures during construction at least fourteen (14) calendar days in advance of the change.
34. The contractor shall provide copies of all emergency service notifications to the Maricopa County Department of Transportation on the same day the notifications are made.
35. At least fourteen (14) calendar days prior to construction, the contractor shall place advance-warning signs at locations designated by the Engineer to notify motorists, pedestrians, and bicyclists of construction-related delays and closures.
36. With the exception of temporary, short-term closures (less than 4 hours) of driveways, the contractor shall maintain driveway access throughout construction. If a given property has multiple driveways, at least one shall remain open at all times.

Attachment:

- Asbestos Building Material Survey Report (Dated February 26, 2018)



**MARICOPA COUNTY
RISK MANAGEMENT**

**Asbestos Building Material Survey
Maricopa County Department of Transportation (MCDOT)
Project Number: TT0345
MC85 at 83rd Avenue and Center Lane Expansion
Buckeye, Arizona**

Survey Conducted February 20, 2018

Report Prepared February 26, 2018

By:

**Chris McAbee
Environmental/IH Consultant
Maricopa County Risk Management - Environmental Division
222 N. Central Avenue, Suite 1100
Phoenix, Arizona 85004
602-506-2891 - office**

LIMITED ASBESTOS SURVEY
MCDOT Project Number: TT0345
MC85 at 83rd Avenue and Center Lane Expansion
Buckeye, Arizona

1.0 INTRODUCTION

On February 20, 2018, Mr. Chris McAbee, Environmental/IH Consultant with the Maricopa County Risk Management (MCRM) Environmental Division was on site at a roadway stretch between 75th Avenue and 97th Avenue on MC85/Buckeye Road in Buckeye, Arizona which is owned and maintained by the Maricopa County Department of Transportation (MCDOT). MCDOT requested an inspection of suspect asbestos building materials slated for disturbance during upcoming renovation activities on the roadway between 75th Avenue and 97th Avenue on MC85/Buckeye Road. MCDOT provided information regarding location and specific materials slated for disturbance to MCRM. The purpose of the survey was to collect bulk samples of suspect asbestos-containing materials at the intersection prior to planned renovation activities. A previous MCRM survey was conducted on June 22, 2016 and it updated during this current survey. A total of one-hundred fourteen (114) bulk samples were collected during the June 2016 survey. MCRM also conducted a survey of the intersection of 79th Avenue and MC85 on March 7, 2017 under the MCDOT project TT0553 and collected nine (9) bulk samples. MCRM collected an additional twelve (12) bulk samples during the February 20, 2018 site survey. Additionally, limited bulk sampling data from a previous survey conducted in this same project area by Aztec Environmental in January of 2013 was utilized.

MCRM's update survey and sampling was conducted by Mr. McAbee, an Asbestos Hazard Emergency Response Act (AHERA) certified asbestos building inspector. A total of twelve (12) additional bulk samples were collected during this update survey. Samples were analyzed by Fiberquant Analytical Services in Phoenix, Arizona. Fiberquant is fully accredited by the EPA-required National Voluntary Laboratory Accreditation Program (NVLAP) for analysis of asbestos bulk samples using polarized light microscopy, and is also an American Industrial Hygiene Association (AIHA) accredited laboratory.

Laboratory analysis indicates that all building materials sampled were shown to be negative for asbestos content.

2.0 DESCRIPTION OF INSPECTED AREA

MCDOT owns and maintained the area where the sampling was conducted located between 75th Avenue and 97th Avenue on MC85/Buckeye Road and the crossroads of 83rd and 91st Avenues in Buckeye, Arizona. The roadway sections slated for disturbance were concrete, paint and asphaltic mastic based. With the exception of the original concrete roadway underneath the existing asphalt on MC85, it is unknown if any of the suspect building materials had been previously sampled for asbestos content. The original concrete roadway below the existing asphalt on MC85 were sampled previously by Aztec Environmental in January 2013 and the materials were identified to be negative for asbestos. The survey focused on all visually and physically accessible building materials at the roadway identified by MCDOT and slated for renovation activities.

3.0 SURVEY PROCEDURES

All functional spaces within the affected areas were visually inspected for the presence of suspect asbestos-containing materials. Each suspect material was sampled and analyzed for asbestos content, and assessed for damage and friability. As required by EPA, the inspector determined friability by touching each suspect material. Each suspect ACM was designated as a distinct homogeneous area. A homogeneous area is defined as a single material, uniform in texture and appearance, installed at one time, and unlikely to consist of more than one type or formulation of material. A sufficient number of samples were collected of each material to satisfy OSHA and NESHAP regulations for the determination

of asbestos content. A total of one-hundred thirty-five (135) samples were collected during the two MCRM surveys.

Fiberquant Analytical Services is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP) for bulk-asbestos sample analysis conducted by the National Institute of Standards and Technology. Although it is required by the NESHAP to initially analyze samples using PLM analysis with visual estimation, the EPA has determined that this method can inaccurately estimate the amount of asbestos in a bulk sample, especially at low asbestos concentrations. For this reason, the NESHAP imposes an additional requirement for materials determined by visual estimation to contain a detectable quantity of asbestos at less than or equal to one- percent concentrations. The additional requirement is that the facility owner must either (1) have the pertinent samples reanalyzed using point-counting PLM, or (2) assume the materials to be ACM and treat them as such. Materials determined by visual estimation to not have a detectable concentration of asbestos, or to have a concentration of one percent asbestos or greater, do not have to be reanalyzed by the point counting method. A description of the samples taken and their locations are located in Table 1. The official asbestos laboratory results are included in Appendix A.

4.0 SURVEY FINDINGS

The functional space locations identified in the table below incorporate the coordinates listed in the “Maricopa County Department of Transportation plans for the construction of MC85 center lane expansion (MC85: 97th Avenue to 75th Avenue)” which is located in Appendix C of this report. The R# listed correlates to the “Summary of Estimated Quantities” table on page G15 of G34 within the project plans. The results of MCRM’s asbestos survey are as follows:

Table 1:
Asbestos Survey Results
MCDOT Project – TT0345
MC85 at 83rd Avenue and Center Lane Expansion
Buckeye, Arizona
February 20, 2018

HA #	Material	Functional Spaces	NESHAP Category	ACM	Condition	Quantity Affected
A-1	White Roadway Paint Striping	MC85 between 75 th and 97 th Avenue	Category II Non-Friable	No	Good	
A-2	Yellow Roadway Paint Striping	MC85 between 75 th and 97 th Avenue	Category II Non-Friable	No	Good	
A-3	Black Asphaltic Seam Mastic	MC85 between 75 th and 97 th Avenue	Category I Non-Friable	No	Good	
A-4	Concrete Curbing	MC85 at R1-R8 North Side	Category II Non-Friable	No	Good	
A-5	Concrete Irrigation Ditch Lining	MC85 at R3 South Side	Category II Non-Friable	No	Good	
A-6	Concrete Headwall	MC85 at R3 South Side	Category II Non-Friable	No	Good	
A-7	Concrete Irrigation Ditch Lining	MC85 at R4-8 South Side	Category II Non-Friable	No	Good	
A-8	Concrete Headwall	MC85 at R4 South Side	Category II Non-Friable	No	Good	

HA #	Material	Functional Spaces	NESHAP Category	ACM	Condition	Quantity Affected
A-9	Concrete Drain Pipe	MC85 at R3 South Side	Category II Non-Friable	No	Good	
A-10	Concrete Drain Pipe	MC85 at R3 South Side	Category II Non-Friable	No	Good	
A-11	Concrete Irrigation Ditch Patch	MC85 at R4 South Side	Category II Non-Friable	No	Good	
A-12	Concrete Headwall	MC85 at R8 South Side	Category II Non-Friable	No	Good	
A-13	Concrete Irrigation Ditch Add-On	MC85 at R4-8 South of HA# A-7	Category II Non-Friable	No	Good	
A-14	Concrete Irrigation Ditch Add-On Patch	MC85 at R4-8 South of HA# A-7	Category II Non-Friable	No	Good	
A-15	Concrete Irrigation Box	SW Corner of MC85 and 83 rd Avenue	Category II Non-Friable	No	Good	
A-16	Concrete Wall	MC85 at R4-8 South of HA#7	Category II Non-Friable	No	Good	
A-17	Concrete Irrigation Ditch Lining	91st Avenue at R30-33 West Side	Category II Non-Friable	No	Good	
A-18	Concrete Headwall	91st Avenue at R33 West Side	Category II Non-Friable	No	Good	
A-19	Concrete Headwall	91st Avenue at R32 West Side	Category II Non-Friable	No	Good	
A-20	Concrete Headwall	91st Avenue at R31 at Pima West Side	Category II Non-Friable	No	Good	
A-21	Concrete Headwall	MC85 at R11 North Side JBS Driveway	Category II Non-Friable	No	Good	
A-22	Concrete Ditch Lining	MC85 at R11 North Side JBS Driveway	Category II Non-Friable	No	Good	
A-23	Concrete Irrigation Ditch Lining	MC85 at R20-24 South Side	Category II Non-Friable	No	Good	
A-24	Concrete Headwalls	MC85 at R20-24 South Side	Category II Non-Friable	No	Good	
A-25	Concrete Drain Pipes in Ditch	MC85 at R20-24 South Side	Category II Non-Friable	No	Good	
A-26	Concrete Irrigation Ditch Lining Patch	MC85 at R20-24 South Side	Category II Non-Friable	No	Good	
A-27	Concrete Base at Metal Grate	MC85 at R22 North Side Driveway	Category II Non-Friable	No	Good	
A-28	Concrete Headwall	MC85 at R20 North Side	Category II Non-Friable	No	Good	
A-29	Concrete Headwall	MC85 at R22 North Side	Category II Non-Friable	No	Good	
A-30	Concrete Curbing and Gutter	Intersection at MC85 and 91 st Avenue	Category II Non-Friable	No	Good	
A-31	Concrete Traffic Light Pole Base	Intersection at MC85 and 91 st Avenue	Category II Non-Friable	No	Good	
A-32	Concrete Cabinet Box Base	Intersection at MC85 and 91 st Avenue	Category II Non-Friable	No	Good	

HA #	Material	Functional Spaces	NESHAP Category	ACM	Condition	Quantity Affected
A-33	Concrete Sidewalk and Ramp	83 rd Avenue on North Side of MC85	Category II Non-Friable	No	Good	
A-34	Concrete Traffic Light Pole Base	Intersection at MC85 and 83 rd Avenue	Category II Non-Friable	No	Good	
A-35	Concrete Sidewalk	NW Corner of MC85 and 91 st Avenue	Category II Non-Friable	No	Good	
A-36	Concrete Drain Pipe	MC85 at R91st Avenue at HA# A-19	Category II Non-Friable	No	Good	
A-37	Concrete and Yellow Paint	83 rd Avenue Median South of MC85	Category II Non-Friable	No	Good	
A-38	Concrete Manhole Cover Base	SE Corner of 83 rd Avenue and MC85	Category II Non-Friable	No	Good	
A-39	Original Concrete Roadway	Below Existing Asphalt Roadway on MC85 From	Category II Non-Friable	No	Good	
A-40	Concrete Curb	83 rd Avenue and MC85	Category II Non-Friable	No	Good	
A-41	Concrete Red Walkway Platform	83 rd Avenue and MC85	Category II Non-Friable	No	Good	
A-42	Yellow Paint on Well Structures	SW Corner of 91 st Avenue and MC85	Category II Non-Friable	No	Good	
A-43	Concrete Base Below Well Structures	SW Corner of 91 st Avenue and MC85	Category II Non-Friable	No	Good	
A-44	Concrete Sidewalk	79 th Avenue and MC85	Category II Non-Friable	No	Good	
A-45	Yellow Concrete Step	79 th Avenue and MC85	Category II Non-Friable	No	Good	
A-46	Concrete Headwall	79 th Avenue and MC85	Category II Non-Friable	No	Good	

Laboratory analysis indicates that all building materials sampled were shown to be negative for asbestos content. A copy of this inspection report should be kept in an accessible location at the facility and jobsite at all times. The contents of the report and finding should be provided to all building maintenance personnel and any outside contractors that conduct work at the facility that may damage or disturb building materials. In the event of the entire or partial demolition of this building material, this report should be provided to all demolition and construction contractors and kept on-site during construction activities. Because no building materials were identified to be asbestos containing there is no requirement to submit a NESHAPs notification for asbestos. This survey information detailed in this report are valid for 12 months from the inspection date and must be updated after that date in accordance to NESHAP requirements. Please contact MCRM with any questions regarding this survey and laboratory data.

5.0 PROJECT LIMITATIONS

This Project was performed using, as a minimum, practices consistent with standards acceptable within the industry at this time, and a level of diligence typically exercised by industrial hygiene and environmental consultants performing similar services. The procedures used in this investigation attempt to establish a balance between the competing goals of limiting investigative and reporting costs and time, and reducing the uncertainty about unknown conditions. Therefore, because the findings of this report

were derived from the scope, costs, time, and other limitations, the conclusions should not be construed as a guarantee that all environmental or occupational hazards have been identified and fully evaluated. Where sample collection and testing have been performed, MCRM's professional opinions are based in part on the interpretation of data from discrete sampling locations that may not represent conditions at non-sampled locations. MCRM assumes no responsibility for omissions or errors resulting from the potential for hidden/inaccessible building materials not identified, inaccurate information, or data, provided by sources outside of MCRM or from omissions or errors in public records.

APPENDIX A

Laboratory Results



Polarized Light Microscope (PLM) Analysis for Asbestos in Bulk Sample

JobNumber: 201702445

Client:

MARICOPA COUNTY RISK MGMT

222 N CENTRAL #1110

PHOENIX, AZ

85004-0000

Office Phone:

(602) 506-2891

FAX:

(602) 506-5939

Samples: 9 **PLM** **Rec:** 3/8/2017 **Method:** EPA 600/R-93/116

The "New" Method; see below

Client Job: MCDOT-TT0553-79th Avenue

PO Number: 170000003048

Report Date: 3/8/2017

Date Analyzed: 3/8/2017

Routing Number: Pinto, Joe

Method and Analysis Information:

Fiberquant Internal SOP: PLMn

Each bulk sample is first dissected under a 7-30x magnification stereo-microscope. This examination is used to determine the general type of sample, how many and what type of layers it has, and initial estimates of fiber types and quantities. Second, liquid media mounts are made of each layer - such mounts may be of selected fibers (used solely for identification purposes) or may be representative of the layer as a whole (used for quantitation purposes). The mounts may be made in a synthetic Canadian balsam, one of several solvents, or in refractive index oils (media of known refractive index). Generally, a variety of different mounts are made: some optimized for fiber visibility, some optimized for fiber identification, and some optimized for fiber quantitation. The mounted slides are then examined at 50-400x magnification on a Nikon Labphot-pol microscope. Optical characteristics are used to identify each observed fiber type; the optical data are contained for each sample on its detail analysis sheet, attached.

Current EPA and NESHAP regulations designate a result of $\leq 1\%$ asbestos as "negative" and $> 1\%$ asbestos as "positive". Samples containing layers that have been determined to be "positive" may have to be handled differently during a renovation or demolition than samples whose layers have been determined to be "negative."

The method of fiber identification and quantitation is the "Standard Operating Procedures for the Analysis of Asbestos in Bulk Samples using Polarized Light Microscopy", Chapter 7 of the Quality Assurance and Management Manual. This SOP and its associated reporting have been designed to satisfy all requirements in both EPA Method 600/M4-82-020 (The Interim Method) and EPA Method 600/R-93/116 (The New Method). The Interim Method is the required method for AHERA (US EPA 40 CFR Pt. 763), but this method calls for the reporting of composited results of multi-layered samples that is no longer an acceptable reporting practice in most circumstances. Current EPA rules, such as NESHAP (US EPA 40CFR Pt. 61), as well as NVLAP accreditation policies, call for separate reporting for each layer of multi-layered samples. The New Method contains the same procedures for identification and quantification of asbestos as does the Interim Method, except that multi-layered samples are reported to comply with the latest US EPA rule. Fiberquant not only reports the asbestos content of each layer of multi-layered samples separately (satisfying current EPA and NVLAP reporting requirements), but Fiberquant also reports what percentage of the sample each layer comprises. Therefore, the results may be arithmetically composited to satisfy the reporting requirements of the Interim Method. The method of fiber quantitation is an estimation technique in which the analysts quantitation is routinely calibrated by reference quantitation standards, and which has been shown to be equivalent in precision and accuracy to point counting. Friability is estimated for the purposes of deciding when to point count. Friabilities determined in the field take precedence over those determined in the laboratory. Those sample layers which are friable and estimated by the analyst to contain $\leq 1\%$ asbestos are point counted using 400 points. Such point counting is required by NESHAP (National Emission Standards for Hazardous Air Pollutants, Nov. 1990) in order to rely on analytical results that are $\leq 1\%$. The coefficient of variation for the estimation quantitation technique is 100% in the range 0-5%. This means that PLM analysis is not capable of conclusively determining whether a layer containing close to 1% asbestos is actually "positive" or "negative". For this reason, Fiberquant refers to results where asbestos was detected but $\leq 1\%$ as "borderline negative", and results where asbestos was $> 1\%$ but $\leq 2\%$ as "borderline positive" to indicate the uncertainty in assigning a "positive" or "negative" label. In the sample summary, "ND" means that no asbestos was detected during the analysis. A "Tr" or "Trace" of asbestos reported is defined for our purposes as the detection of several asbestos fibers during the analysis; this level would be right at the limit of detection for the method. Trace is only reported on the analysis detail - in the summary a trace would be reported as $\leq 1\%$. The limit of detection (the smallest % of asbestos that can be detected) varies greatly depending on the matrix in which the asbestos is found. As little as 0.001% asbestos can be detected in favorable samples, while detection in unfavorable samples may approach the detection limit of 1% stated in the method. During the analysis, the analyst, for Fiberquant identification purposes only, determines the "apparent sample type" and "apparent layer types." It must be emphasized that these types are only what is apparent. Often, different materials appear similar or identical after sampling, so the analyst may assign a type other than what was sampled.

Floor tiles present a special problem for PLM asbestos analysis. Floor tile can contain chrysotile fibers so thin that they cannot be resolved by optical methods. In such a case, we may observe a percentage of asbestos which is lower than the actual percentage, or not observe asbestos at all when some is present. For this reason, floor tiles reported as negative should be confirmed to be negative using transmission electron microscope (TEM) analysis. Likewise, vermiculite insulation materials containing traces of asbestiform asbestos present a problem for routine PLM analysis - the amphiboles are sometimes present in trace amounts inhomogeneously distributed. For this reason, loose vermiculite samples reported as negative should be confirmed to contain no amphibole using hydroseparation techniques.

The samples were analyzed under the following ongoing quality assurance program: Blank samples are routinely analyzed to maintain contamination-free materials. Each analyst has at least a bachelor's degree in physical science, and has also completed extensive training specific to asbestos analysis for 1-3 months before being allowed to analyze client samples. Qualitative reference samples are routinely analyzed to assure that analysts can identify asbestos and asbestos-look-alike fibers. Quantitative reference samples are routinely analyzed to calibrate and characterize the

estimation procedure. Microscope alignment is checked each day. Refractive index oils are calibrated at least quarterly. At least 10% of client samples are re-analyzed from scratch by a different analyst than the original, and any discrepancies are resolved for the sample and similar sample types before the results are reported. All quality checks performed for these samples were in control except as detailed in the "Analytical Notes" below. All analysts participate in interlab round robins and proficiency testing to assure competence. Fiberquant is accredited by NVLAP (Lab code #101031) for the analysis of bulk samples for asbestos using PLM. Accreditation does not imply endorsement by the EPA, any other United States governmental agency or any private agency or association. Each lab analysis refers only to the sample tested, and may not, due to the sampling process, be representative of the material sampled. This report may not be reproduced except in full, without the approval of Fiberquant Analytical Services.

Some results may have been calculated using client supplied data, such as volume or area sampled, for which Fiberquant assumes no liability for accuracy.

Job Analysis Notes:

PLM Analysis Summary:

Job Number: 201702445

MCDOT-TT0553-79th Avenue

Sample Number			Lab Number	Apparent Sample Type *	Positive Layer Yes or No
Layer	Color	Apparent Layer Type *	Asbestos Results		
Sample # 1A			2017-02445- 1	Cementitious	Positive Layer? No
Layer # 1	gray	concrete	no asbestos detected		
Sample # 2A			2017-02445- 2	Cementitious	Positive Layer? No
Layer # 1	gray	concrete	no asbestos detected		
Sample # 3A			2017-02445- 3	Cementitious	Positive Layer? No
Layer # 1	gray	concrete	no asbestos detected		
Sample # 4A			2017-02445- 4	Cementitious	Positive Layer? No
Layer # 1	yellow	concrete	no asbestos detected		
Sample # 5A			2017-02445- 5	Cementitious	Positive Layer? No
Layer # 1	yellow	concrete	no asbestos detected		
Sample # 6A			2017-02445- 6	Cementitious	Positive Layer? No
Layer # 1	yellow	concrete	no asbestos detected		
Sample # 7A			2017-02445- 7	Cementitious	Positive Layer? No
Layer # 1	gray	concrete	no asbestos detected		
Sample # 8A			2017-02445- 8	Cementitious	Positive Layer? No
Layer # 1	gray	concrete	no asbestos detected		
Sample # 9A			2017-02445- 9	Cementitious	Positive Layer? No
Layer # 1	gray	concrete	no asbestos detected		

* Apparent Sample Types and Apparent Layer Types are as they appeared to the analyst. Since many types of materials appear similar after sampling damage, the apparent type of material may not be the actual type of material.

PLM Analysis Details

Job Number:

201702445

MCDOT-TT0553-79th Avenue

Sample 1A **Lab Number** 2017-02445- 1 **Sampled:** 3/7/2017 **Condition:** acceptable
Analyzed By DMS 3/8/2017 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 2A **Lab Number** 2017-02445- 2 **Sampled:** 3/7/2017 **Condition:** acceptable
Analyzed By DMS 3/8/2017 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 3A **Lab Number** 2017-02445- 3 **Sampled:** 3/7/2017 **Condition:** acceptable
Analyzed By DMS 3/8/2017 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

PLM Analysis Details
Job Number:
201702445

MCDOT-TT0553-79th Avenue

Sample 4A **Lab Number** 2017-02445- 4 **Sampled:** 3/7/2017 **Condition:** acceptable
Analyzed By DMS 3/8/2017 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No
Non-Fibrous Components (in approx. decreasing order): polymer, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	yellow	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	2	3	4	5	6	Oil	Col Par	Col Per	RI Par	RI Per			
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 5A **Lab Number** 2017-02445- 5 **Sampled:** 3/7/2017 **Condition:** acceptable
Analyzed By DMS 3/8/2017 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No
Non-Fibrous Components (in approx. decreasing order): polymer, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	yellow	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 6A **Lab Number** 2017-02445- 6 **Sampled:** 3/7/2017 **Condition:** acceptable
Analyzed By DMS 3/8/2017 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No
Non-Fibrous Components (in approx. decreasing order): polymer, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	yellow	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:				none						

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

PLM Analysis Details
Job Number:
201702445

MCDOT-TT0553-79th Avenue

Sample 7A **Lab Number** 2017-02445- 7 **Sampled:** 3/7/2017 **Condition:** acceptable
Analyzed By DMS 3/8/2017 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	2	3	4	5	6	7	8	9	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 8A **Lab Number** 2017-02445- 8 **Sampled:** 3/7/2017 **Condition:** acceptable
Analyzed By DMS 3/8/2017 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	2	3	4	5	6	7	8	9	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 9A **Lab Number** 2017-02445- 9 **Sampled:** 3/7/2017 **Condition:** acceptable
Analyzed By DMS 3/8/2017 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	2	3	4	5	6	7	8	9	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Fr=Friability: 1=very non-friable; 2= non-friable; 3=friable; 4=highly friable

Colors: B=black;BL=blue;BR=brown;CL=clear;G=Green;GY=gray;OR=orange;OW=off-white;PN=pink;PU=purple;R=red;TN=tan;W=white;Y=yellow;V=various

Fiber Morphology: A=fine fibers/bundles, white, sinewy, flexible; B=fine fibers/bundles, w-br, straight, broomed ends; C=fine fibers/bundles, blue, straight, broomed ends;

D=fine to coarse fibers, CL-B, brittle; E=coarse fibers,CL or dyed, striated; F=coarse fibers or splinters, W-BR, ribbon-like; G=lath-like or shards, low aspect ratio, may taper

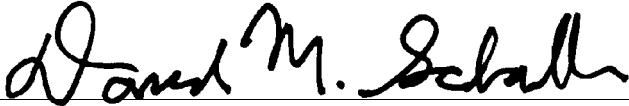
Iso=isotropism - may be yes or no; Pleo=pleochroism - may be yes or no; Bi=birefringence - may be None, Low, Medium or High

Elg=sign of elongation - may be +, - or B (both); Ext=extinction - may be Parallel, Oblique, None or Undulating; Oil=medium used to for dispersion staining

Col Par=dispersion staining colors parallel to the fiber (fiber/halo): b/w=black/white; dg/py=dark gray/pale yellow; vg/y=violet gray/yellow; db/ly=dark blue/lemon yellow;

vb/g= vivid blue/gold; sb/o=sky blue/orange; pb/r=pale blue/red; gb/dr=gray blue/dark red; w/b=white/black. Col Perp=same only perpendicular to fiber.

RI Par=refractive index parallel to fiber; RI Perp=refractive index perpendicular to fiber



Analyst: DAVID M. SCHALLER

Printed: 08-Mar-17

Original Print Date: 08-Mar-17



Larry S. Pierce, Approved Accreditation Signatory

FIBERQUANT

ANALYTICAL SERVICES

Fiberquant Analytical Services 5025 S. 33rd St.;
Phoenix, AZ 85040; Phone: 602-276-6139; FAX: 602-276-4558;
info@fiberquant.com

Analysis Request/Chain-of-Custody Form

Submitted by (Company)	Maricopa County Risk Mngmt
Address	222 N. Central Ave #1110
City, State, Zip Code	Phoenix, AZ 85004
Phone	602-506-2891
FAX	
Email	mcabeem@mail.maricopa.gov

Invoice to (Company)	MCDOT - Accounts Payable
Address	2222 S. 27 th Avenue -- c/o Terry Ellwanger
City, State, Zip Code	Phoenix, AZ 85009
Phone	602-506-8645
FAX	

Contact (print)	Chris McAbee
Sampled by (signature)	<i>Chris McAbee</i>
Job Number or Project Name	MCDOT - TT0553 - 79 th Avenue
PO Number	Joe Pinto 170000003048

RUSH

<Analysis Method Requested> ONLY ONE METHOD per COC		Turn-around-time (choose one)			
		Rush	Norm	Ext.	
Asbestos by PLM	Method > Improved <input checked="" type="checkbox"/> or Interim <input type="checkbox"/>	Urg. Rush <input type="checkbox"/>	<6 hrs <input checked="" type="checkbox"/>	1-3 days <input type="checkbox"/>	15-30 days <input type="checkbox"/>
	Analyze > All <input checked="" type="checkbox"/> or ATPF <input type="checkbox"/>				
	ATPF then > by Layer <input type="checkbox"/> or by Sample <input type="checkbox"/>				
	Single Layer Protocol > Yes <input type="checkbox"/> or No <input type="checkbox"/>				
Fibers by PCM	Method > 7400(Area) <input type="checkbox"/> ORM (Personal) <input type="checkbox"/>	<4 hr <input type="checkbox"/>	24hr <input type="checkbox"/>	-	
Asbestos by TEM	In Air > AHERA <input type="checkbox"/> Mod. AHERA <input type="checkbox"/>	<6hr <input type="checkbox"/>	24 hr <input type="checkbox"/>	3-5d <input type="checkbox"/>	
	In Water* > Water <input type="checkbox"/> Sludge <input type="checkbox"/>	1-2d <input type="checkbox"/>	3-5d <input type="checkbox"/>	N/A	
	In Bulk (Annex2) > Chatfield <input type="checkbox"/> Full Quant <input type="checkbox"/>				
	In Dust > Vacuum Dust (ASTM D-5755) <input type="checkbox"/>	3-5d <input type="checkbox"/>	5-10d <input type="checkbox"/>	N/A	
Pb by FLAA	Analyte > Pb <input type="checkbox"/> Other <input type="checkbox"/>	<6 hrs <input type="checkbox"/>	2-3 days <input type="checkbox"/>	N/A	
	Filter > MCE <input type="checkbox"/>				
	Paint > by Area (mg/cm2) <input type="checkbox"/>				
	by Weight (ppm) <input type="checkbox"/>				
	Soil > <input type="checkbox"/>				
	Wipe > <input type="checkbox"/>				
Check here certifying wipes used are ASTM E1792 compliant <input type="checkbox"/>					
Fungi	Air Sample > Zef <input type="checkbox"/> Aller <input type="checkbox"/> Oth <input type="checkbox"/>	<6 hrs <input type="checkbox"/>	1-2 days <input type="checkbox"/>	N/A	
	Bulk > Sample <input type="checkbox"/> Swab <input type="checkbox"/>				
	Tape Lift > Qualitative (%& type) <input type="checkbox"/> or Quantitative (type/cm2) <input type="checkbox"/>				
Soot	ASTM D6602-03B	Optical <input type="checkbox"/>	<6 hrs <input type="checkbox"/>	1-2 days <input type="checkbox"/>	N/A
		Optical & TEM <input type="checkbox"/>	1-2 days <input type="checkbox"/>	3-5days <input type="checkbox"/>	N/A
Other		Call	Call		

Sample # (1 per line)	Description/Location	Sample Date	Sample Time	Vol. or Area
1) 1A	Concrete Sidewalk	3-7-17		
2) 2A				
3) 3A				
4) 4A	Concrete step (yellow)			
5) 5A				
6) 6A				
7) 7A	Concrete Headwall			
8) 8A				
9) 9A				
10)				
11)				
12)				
13)				
14)				
15)				
16)				
17)				
18)				
19)				
20)				

1) Relinquished by: <i>Chris McAbee</i>	Date: 3-7-17	Time: 748	3) Relinquished by:	Date:	Time:
2) Received by: <i>Joe Pinto</i>	Date: 3-8-17	Time: 748	4) Received by:	Date:	Time:
* TEM Water: Sampler's permit Required by State of Arizona			Print Name: DB	Fiberquant assigned Job Number:	201702445
Review of Analysis Request (Initials): <i>JD</i>				Page	1

Note: Data completed by client (including number and identity of samples) is assumed to be correct until it is verified at time of sample preparation.



Polarized Light Microscope (PLM) Analysis for Asbestos in Bulk Sample

JobNumber: 201606402

Client:

MARICOPA COUNTY RISK MGMT

222 N CENTRAL #1110

PHOENIX, AZ

85004-0000

Office Phone:

(602) 506-2891

FAX:

(602) 506-5939

Samples: 114 **PLM** **Rec:** 6/24/2016 **Method:** EPA 600/R-93/116

The "New" Method; see below

Client Job: MCDOT-TT345-75th-97th Ave MC85

PO Number: Hugh Davidson

Report Date: 6/29/2016

Date Analyzed: 6/27/2016

Routing Number: -

Method and Analysis Information:

Fiberquant Internal SOP: PLMn

Each bulk sample is first dissected under a 7-30x magnification stereo-microscope. This examination is used to determine the general type of sample, how many and what type of layers it has, and initial estimates of fiber types and quantities. Second, liquid media mounts are made of each layer - such mounts may be of selected fibers (used solely for identification purposes) or may be representative of the layer as a whole (used for quantitation purposes). The mounts may be made in a synthetic Canadian balsam, one of several solvents, or in refractive index oils (media of known refractive index). Generally, a variety of different mounts are made: some optimized for fiber visibility, some optimized for fiber identification, and some optimized for fiber quantitation. The mounted slides are then examined at 50-400x magnification on a Nikon Labphot-pol microscope. Optical characteristics are used to identify each observed fiber type; the optical data are contained for each sample on its detail analysis sheet, attached.

Current EPA and NESHAP regulations designate a result of $\leq 1\%$ asbestos as "negative" and $> 1\%$ asbestos as "positive". Samples containing layers that have been determined to be "positive" may have to be handled differently during a renovation or demolition than samples whose layers have been determined to be "negative."

The method of fiber identification and quantitation is the "Standard Operating Procedures for the Analysis of Asbestos in Bulk Samples using Polarized Light Microscopy", Chapter 7 of the Quality Assurance and Management Manual. This SOP and its associated reporting have been designed to satisfy all requirements in both EPA Method 600/M4-82-020 (The Interim Method) and EPA Method 600/R-93/116 (The New Method). The Interim Method is the required method for AHERA (US EPA 40 CFR Pt. 763), but this method calls for the reporting of composited results of multi-layered samples that is no longer an acceptable reporting practice in most circumstances. Current EPA rules, such as NESHAP (US EPA 40CFR Pt. 61), as well as NVLAP accreditation policies, call for separate reporting for each layer of multi-layered samples. The New Method contains the same procedures for identification and quantification of asbestos as does the Interim Method, except that multi-layered samples are reported to comply with the latest US EPA rule. Fiberquant not only reports the asbestos content of each layer of multi-layered samples separately (satisfying current EPA and NVLAP reporting requirements), but Fiberquant also reports what percentage of the sample each layer comprises. Therefore, the results may be arithmetically composited to satisfy the reporting requirements of the Interim Method. The method of fiber quantitation is an estimation technique in which the analysts quantitation is routinely calibrated by reference quantitation standards, and which has been shown to be equivalent in precision and accuracy to point counting. Friability is estimated for the purposes of deciding when to point count. Friabilities determined in the field take precedence over those determined in the laboratory. Those sample layers which are friable and estimated by the analyst to contain $\leq 1\%$ asbestos are point counted using 400 points. Such point counting is required by NESHAP (National Emission Standards for Hazardous Air Pollutants, Nov. 1990) in order to rely on analytical results that are $\leq 1\%$. The coefficient of variation for the estimation quantitation technique is 100% in the range 0-5%. This means that PLM analysis is not capable of conclusively determining whether a layer containing close to 1% asbestos is actually "positive" or "negative". For this reason, Fiberquant refers to results where asbestos was detected but $\leq 1\%$ as "borderline negative", and results where asbestos was $> 1\%$ but $\leq 2\%$ as "borderline positive" to indicate the uncertainty in assigning a "positive" or "negative" label. In the sample summary, "ND" means that no asbestos was detected during the analysis. A "Tr" or "Trace" of asbestos reported is defined for our purposes as the detection of several asbestos fibers during the analysis; this level would be right at the limit of detection for the method. Trace is only reported on the analysis detail - in the summary a trace would be reported as $\leq 1\%$. The limit of detection (the smallest % of asbestos that can be detected) varies greatly depending on the matrix in which the asbestos is found. As little as 0.001% asbestos can be detected in favorable samples, while detection in unfavorable samples may approach the detection limit of 1% stated in the method. During the analysis, the analyst, for Fiberquant identification purposes only, determines the "apparent sample type" and "apparent layer types." It must be emphasized that these types are only what is apparent. Often, different materials appear similar or identical after sampling, so the analyst may assign a type other than what was sampled.

Floor tiles present a special problem for PLM asbestos analysis. Floor tile can contain chrysotile fibers so thin that they cannot be resolved by optical methods. In such a case, we may observe a percentage of asbestos which is lower than the actual percentage, or not observe asbestos at all when some is present. For this reason, floor tiles reported as negative should be confirmed to be negative using transmission electron microscope (TEM) analysis. Likewise, vermiculite insulation materials containing traces of asbestiform asbestos present a problem for routine PLM analysis - the amphiboles are sometimes present in trace amounts inhomogeneously distributed. For this reason, loose vermiculite samples reported as negative should be confirmed to contain no amphibole using hydroseparation techniques.

The samples were analyzed under the following ongoing quality assurance program: Blank samples are routinely analyzed to maintain contamination-free materials. Each analyst has at least a bachelor's degree in physical science, and has also completed extensive training specific to asbestos analysis for 1-3 months before being allowed to analyze client samples. Qualitative reference samples are routinely analyzed to assure that analysts can identify asbestos and asbestos-look-alike fibers. Quantitative reference samples are routinely analyzed to calibrate and characterize the

estimation procedure. Microscope alignment is checked each day. Refractive index oils are calibrated at least quarterly. At least 10% of client samples are re-analyzed from scratch by a different analyst than the original, and any discrepancies are resolved for the sample and similar sample types before the results are reported. All quality checks performed for these samples were in control except as detailed in the "Analytical Notes" below. All analysts participate in interlab round robins and proficiency testing to assure competence. Fiberquant is accredited by NVLAP (Lab #101031) for the analysis of bulk samples for asbestos using PLM. Accreditation does not imply endorsement by the EPA, any other United States governmental agency or any private agency or association. Each lab analysis refers only to the sample tested, and may not, due to the sampling process, be representative of the material sampled. This report may not be reproduced except in full, without the approval of Fiberquant Analytical Services.

Some results may have been calculated using client supplied data, such as volume or area sampled, for which Fiberquant assumes no liability for accuracy.

Job Analysis Notes:

PLM Analysis Summary:

Job Number: 201606402

MCDOT-TT345-75th-97th Ave MC85

Sample Number			Lab Number	Apparent Sample Type *	Positive Layer Yes or No
Layer	Color	Apparent Layer Type *	Asbestos Results		
Sample # 1A			2016-06402- 1	Miscellaneous	Positive Layer? No
Layer # 1	off-white	paint, textured	no asbestos detected		
Layer # 2	black	asphalt	no asbestos detected		
Sample # 2A			2016-06402- 2	Miscellaneous	Positive Layer? No
Layer # 1	off-white	paint, textured	no asbestos detected		
Layer # 2	black	asphalt	no asbestos detected		
Sample # 3A			2016-06402- 3	Miscellaneous	Positive Layer? No
Layer # 1	off-white	paint, textured	no asbestos detected		
Layer # 2	black	asphalt	no asbestos detected		
Sample # 4A			2016-06402- 4	Miscellaneous	Positive Layer? No
Layer # 1	yellow	paint, textured	no asbestos detected		
Layer # 2	black	asphalt	no asbestos detected		
Sample # 5A			2016-06402- 5	Miscellaneous	Positive Layer? No
Layer # 1	yellow	paint, textured	no asbestos detected		
Layer # 2	black	asphalt	no asbestos detected		
Sample # 6A			2016-06402- 6	Miscellaneous	Positive Layer? No
Layer # 1	yellow	paint, textured	no asbestos detected		
Layer # 2	black	asphalt	no asbestos detected		
Sample # 7A			2016-06402- 7	Adhesive/caulk	Positive Layer? No
Layer # 1	black	mastic	no asbestos detected		
Sample # 8A			2016-06402- 8	Adhesive/caulk	Positive Layer? No
Layer # 1	black	mastic	no asbestos detected		
Sample # 9A			2016-06402- 9	Adhesive/caulk	Positive Layer? No
Layer # 1	black	mastic	no asbestos detected		
Sample # 10A			2016-06402- 10	Cementitious	Positive Layer? No
Layer # 1	gray	concrete	no asbestos detected		
Sample # 11A			2016-06402- 11	Cementitious	Positive Layer? No
Layer # 1	gray	concrete	no asbestos detected		
Sample # 12A			2016-06402- 12	Cementitious	Positive Layer? No
Layer # 1	gray	concrete	no asbestos detected		
Sample # 13A			2016-06402- 13	Cementitious	Positive Layer? No
Layer # 1	gray	concrete	no asbestos detected		
Sample # 14A			2016-06402- 14	Cementitious	Positive Layer? No
Layer # 1	gray	concrete	no asbestos detected		
Sample # 15A			2016-06402- 15	Cementitious	Positive Layer? No
Layer # 1	gray	concrete	no asbestos detected		
Sample # 16A			2016-06402- 16	Cementitious	Positive Layer? No
Layer # 1	gray	concrete	no asbestos detected		
Sample # 17A			2016-06402- 17	Cementitious	Positive Layer? No
Layer # 1	gray	concrete	no asbestos detected		
Sample # 18A			2016-06402- 18	Cementitious	Positive Layer? No
Layer # 1	gray	concrete	no asbestos detected		
Sample # 19A			2016-06402- 19	Cementitious	Positive Layer? No
Layer # 1	gray	concrete	no asbestos detected		
Sample # 20A			2016-06402- 20	Cementitious	Positive Layer? No
Layer # 1	gray	concrete	no asbestos detected		
Sample # 21A			2016-06402- 21	Cementitious	Positive Layer? No
Layer # 1	gray	concrete	no asbestos detected		
Sample # 22A			2016-06402- 22	Cementitious	Positive Layer? No
Layer # 1	gray	concrete	no asbestos detected		
Sample # 23A			2016-06402- 23	Cementitious	Positive Layer? No
Layer # 1	gray	concrete	no asbestos detected		
Sample # 24A			2016-06402- 24	Cementitious	Positive Layer? No
Layer # 1	gray	concrete	no asbestos detected		
Sample # 25A			2016-06402- 25	Cementitious	Positive Layer? No
Layer # 1	gray	concrete	no asbestos detected		

Sample # <u>26A</u>			2016-06402- 26	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>27A</u>			2016-06402- 27	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>28A</u>			2016-06402- 28	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>29A</u>			2016-06402- 29	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>30A</u>			2016-06402- 30	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>31A</u>			2016-06402- 31	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>32A</u>			2016-06402- 32	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>33A</u>			2016-06402- 33	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>34A</u>			2016-06402- 34	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>35A</u>			2016-06402- 35	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>36A</u>			2016-06402- 36	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>37A</u>			2016-06402- 37	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>38A</u>			2016-06402- 38	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>39A</u>			2016-06402- 39	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>40A</u>			2016-06402- 40	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>41A</u>			2016-06402- 41	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>42A</u>			2016-06402- 42	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>43A</u>			2016-06402- 43	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>44A</u>			2016-06402- 44	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>45A</u>			2016-06402- 45	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>46A</u>			2016-06402- 46	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>47A</u>			2016-06402- 47	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>48A</u>			2016-06402- 48	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>49A</u>			2016-06402- 49	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>50A</u>			2016-06402- 50	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>51A</u>			2016-06402- 51	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>52A</u>			2016-06402- 52	Miscellaneous	Positive Layer? No
Layer # 1	gray	block		<i>no asbestos detected</i>	
Layer # 2	gray	mortar		<i>no asbestos detected</i>	
Sample # <u>53A</u>			2016-06402- 53	Miscellaneous	Positive Layer? No
Layer # 1	gray	block		<i>no asbestos detected</i>	
Layer # 2	gray	mortar		<i>no asbestos detected</i>	
Sample # <u>54A</u>			2016-06402- 54	Miscellaneous	Positive Layer? No
Layer # 1	gray	block		<i>no asbestos detected</i>	
Layer # 2	gray	mortar		<i>no asbestos detected</i>	
Sample # <u>55A</u>			2016-06402- 55	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>56A</u>			2016-06402- 56	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>57A</u>			2016-06402- 57	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>58A</u>			2016-06402- 58	Miscellaneous	Positive Layer? No
Layer # 1	gray	block		<i>no asbestos detected</i>	
Layer # 2	gray	mortar		<i>no asbestos detected</i>	
Sample # <u>59A</u>			2016-06402- 59	Miscellaneous	Positive Layer? No
Layer # 1	gray	block		<i>no asbestos detected</i>	
Layer # 2	gray	mortar		<i>no asbestos detected</i>	

Sample # 60A			2016-06402- 60	Miscellaneous	Positive Layer? No
Layer # 1	gray	block		<i>no asbestos detected</i>	
Layer # 2	gray	mortar		<i>no asbestos detected</i>	
Sample # 61A			2016-06402- 61	Miscellaneous	Positive Layer? No
Layer # 1	gray	block		<i>no asbestos detected</i>	
Layer # 2	gray	mortar		<i>no asbestos detected</i>	
Sample # 62A			2016-06402- 62	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 63A			2016-06402- 63	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 64A			2016-06402- 64	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 65A			2016-06402- 65	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 66A			2016-06402- 66	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 67A			2016-06402- 67	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 68A			2016-06402- 68	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 69A			2016-06402- 69	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 70A			2016-06402- 70	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 71A			2016-06402- 71	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 72A			2016-06402- 72	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 73A			2016-06402- 73	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 74A			2016-06402- 74	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 75A			2016-06402- 75	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 76A			2016-06402- 76	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 77A			2016-06402- 77	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 78A			2016-06402- 78	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 79A			2016-06402- 79	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 80A			2016-06402- 80	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 81A			2016-06402- 81	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 82A			2016-06402- 82	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 83A			2016-06402- 83	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 84A			2016-06402- 84	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 85A			2016-06402- 85	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 86A			2016-06402- 86	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 87A			2016-06402- 87	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 88A			2016-06402- 88	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 89A			2016-06402- 89	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 90A			2016-06402- 90	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 91A			2016-06402- 91	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 92A			2016-06402- 92	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 93A			2016-06402- 93	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 94A			2016-06402- 94	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # 95A			2016-06402- 95	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	

Sample # <u>96A</u>			2016-06402- 96	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>97A</u>			2016-06402- 97	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>98A</u>			2016-06402- 98	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>99A</u>			2016-06402- 99	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>100A</u>			2016-06402- 100	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>101A</u>			2016-06402- 101	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>102A</u>			2016-06402- 102	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>103A</u>			2016-06402- 103	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>104A</u>			2016-06402- 104	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>105A</u>			2016-06402- 105	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>106A</u>			2016-06402- 106	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>107A</u>			2016-06402- 107	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>108A</u>			2016-06402- 108	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>109A</u>			2016-06402- 109	Miscellaneous	Positive Layer? No
Layer # 1	yellow	paint		<i>no asbestos detected</i>	
Layer # 2	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>110A</u>			2016-06402- 110	Miscellaneous	Positive Layer? No
Layer # 1	yellow	paint		<i>no asbestos detected</i>	
Layer # 2	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>111A</u>			2016-06402- 111	Miscellaneous	Positive Layer? No
Layer # 1	yellow	paint		<i>no asbestos detected</i>	
Layer # 2	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>112A</u>			2016-06402- 112	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>113A</u>			2016-06402- 113	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # <u>114A</u>			2016-06402- 114	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	

* Apparent Sample Types and Apparent Layer Types are as they appeared to the analyst. Since many types of materials appear similar after sampling damage, the apparent type of material may not be the actual type of material.

PLM Analysis Details

Job Number:

201606402

MCDOT-TT345-75th-97th Ave MC85

Sample 1A **Lab Number** 2016-06402- 1 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Miscellaneous **Non-fibrous Solid**
Homogeneous No **# Layers** 2 **Pos Layer?** No **# Sub-Samples** 6
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	paint, textured	65	off-white	1	n.d.	-	-	-	-	-
2	asphalt	35	black	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	2	3	4	5	6	Oil	Col Par	Col Per	RI Par	RI Per			
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of cementitious components using acid.

Sample 2A **Lab Number** 2016-06402- 2 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Miscellaneous **Non-fibrous Solid**
Homogeneous No **# Layers** 2 **Pos Layer?** No **# Sub-Samples** 6
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	paint, textured	75	off-white	1	n.d.	-	-	-	-	-
2	asphalt	25	black	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	2	3	4	5	6	Oil	Col Par	Col Per	RI Par	RI Per			
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of cementitious components using acid.

Sample 3A **Lab Number** 2016-06402- 3 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Miscellaneous **Non-fibrous Solid**
Homogeneous No **# Layers** 2 **Pos Layer?** No **# Sub-Samples** 6
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	paint, textured	75	off-white	1	n.d.	-	-	-	-	-
2	asphalt	25	black	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	2	3	4	5	6	Oil	Col Par	Col Per	RI Par	RI Per			
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of cementitious components using acid.

PLM Analysis Details
Job Number: 201606402

MCDOT-TT345-75th-97th Ave MC85

Sample 4A **Lab Number** 2016-06402- 4 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Miscellaneous Non-fibrous Solid
Homogeneous No **# Layers** 2 **Pos Layer?** No **# Sub-Samples** 6
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	paint, textured	85	yellow	1	n.d.	-	-	-	-	-
2	asphalt	15	black	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of cementitious components using acid.

Sample 5A **Lab Number** 2016-06402- 5 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Miscellaneous Non-fibrous Solid
Homogeneous No **# Layers** 2 **Pos Layer?** No **# Sub-Samples** 6
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	paint, textured	85	yellow	1	n.d.	-	-	-	-	-
2	asphalt	15	black	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of cementitious components using acid.

Sample 6A **Lab Number** 2016-06402- 6 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Miscellaneous Non-fibrous Solid
Homogeneous No **# Layers** 2 **Pos Layer?** No **# Sub-Samples** 6
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	paint, textured	95	yellow	1	n.d.	-	-	-	-	-
2	asphalt	5	black	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of cementitious components using acid.

PLM Analysis Details
Job Number:
201606402

MCDOT-TT345-75th-97th Ave MC85

Sample 7A **Lab Number** 2016-06402- 7 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Adhesive/caulk Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): filler, polymer,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	mastic	100	black	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext
1	none							
2								
3								
4								
5								
6								

Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent.

Sample 8A **Lab Number** 2016-06402- 8 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Adhesive/caulk Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): filler, polymer,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	mastic	100	black	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext
1	none							
2								
3								
4								
5								
6								

Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent.

Sample 9A **Lab Number** 2016-06402- 9 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Adhesive/caulk Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): filler, polymer,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	mastic	100	black	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:				none						

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext
1	none							
2								
3								
4								
5								
6								

Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using solvent.

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Sample 10A **Lab Number** 2016-06402- 10 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 11A **Lab Number** 2016-06402- 11 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 12A **Lab Number** 2016-06402- 12 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:				none						

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 13A **Lab Number** 2016-06402- 13 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext
1	none							
2								
3								
4								
5								
6								

Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 14A **Lab Number** 2016-06402- 14 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext
1	none							
2								
3								
4								
5								
6								

Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 15A **Lab Number** 2016-06402- 15 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext
1	none							
2								
3								
4								
5								
6								

Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 16A **Lab Number** 2016-06402- 16 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers								Refractive Index Determinations					
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 17A **Lab Number** 2016-06402- 17 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 18A **Lab Number** 2016-06402- 18 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 19A **Lab Number** 2016-06402- 19 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 20A **Lab Number** 2016-06402- 20 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:				none						

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 21A **Lab Number** 2016-06402- 21 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 22A **Lab Number** 2016-06402- 22 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers								Refractive Index Determinations					
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 23A **Lab Number** 2016-06402- 23 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 24A **Lab Number** 2016-06402- 24 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 25A **Lab Number** 2016-06402- 25 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 26A **Lab Number** 2016-06402- 26 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 27A **Lab Number** 2016-06402- 27 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 28A **Lab Number** 2016-06402- 28 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers								Refractive Index Determinations					
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 29A **Lab Number** 2016-06402- 29 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 30A **Lab Number** 2016-06402- 30 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 31A **Lab Number** 2016-06402- 31 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 32A **Lab Number** 2016-06402- 32 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 33A **Lab Number** 2016-06402- 33 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 34A **Lab Number** 2016-06402- 34 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:				none						

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 35A **Lab Number** 2016-06402- 35 **Sampled:** 6/22/2016 **Condition:**
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 36A **Lab Number** 2016-06402- 36 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

PLM Analysis Details

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Sample 37A **Lab Number** 2016-06402- 37 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers								Refractive Index Determinations					
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 38A **Lab Number** 2016-06402- 38 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 39A **Lab Number** 2016-06402- 39 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

PLM Analysis Details

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Sample 40A **Lab Number** 2016-06402- 40 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers								Refractive Index Determinations					
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 41A **Lab Number** 2016-06402- 41 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 42A **Lab Number** 2016-06402- 42 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

PLM Analysis Details

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Sample 43A **Lab Number** 2016-06402- 43 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	2	3	4	5	6	Oil	Col Par	Col Per	RI Par	RI Per			
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 44A **Lab Number** 2016-06402- 44 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 45A **Lab Number** 2016-06402- 45 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

PLM Analysis Details

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Sample 46A **Lab Number** 2016-06402- 46 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers								Refractive Index Determinations					
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 47A **Lab Number** 2016-06402- 47 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 48A **Lab Number** 2016-06402- 48 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 49A **Lab Number** 2016-06402- 49 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 50A **Lab Number** 2016-06402- 50 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:				none						

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 51A **Lab Number** 2016-06402- 51 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none	Oil	Col Par	Col Per	RI Par	RI Per							
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

PLM Analysis Details

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Sample 52A **Lab Number** 2016-06402- 52 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Miscellaneous **Non-fibrous Solid**
Homogeneous No **# Layers** 2 **Pos Layer?** No **# Sub-Samples** 6
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	block	85	gray	1	n.d.	-	-	-	-	-
2	mortar	15	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of cementitious components using acid.

Sample 53A **Lab Number** 2016-06402- 53 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Miscellaneous **Non-fibrous Solid**
Homogeneous No **# Layers** 2 **Pos Layer?** No **# Sub-Samples** 6
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	block	85	gray	1	n.d.	-	-	-	-	-
2	mortar	15	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of cementitious components using acid.

Sample 54A **Lab Number** 2016-06402- 54 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Miscellaneous **Non-fibrous Solid**
Homogeneous No **# Layers** 2 **Pos Layer?** No **# Sub-Samples** 6
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	block	85	gray	1	n.d.	-	-	-	-	-
2	mortar	15	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of cementitious components using acid.

PLM Analysis Details
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Sample 55A **Lab Number** 2016-06402- 55 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 56A **Lab Number** 2016-06402- 56 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 57A **Lab Number** 2016-06402- 57 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 58A **Lab Number** 2016-06402- 58 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Miscellaneous Non-fibrous Solid
Homogeneous No **# Layers** 2 **Pos Layer?** No **# Sub-Samples** 6
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	block	75	gray	1	n.d.	-	-	-	-	-
2	mortar	25	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of cementitious components using acid.

Sample 59A **Lab Number** 2016-06402- 59 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Miscellaneous Non-fibrous Solid
Homogeneous No **# Layers** 2 **Pos Layer?** No **# Sub-Samples** 6
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	block	75	gray	1	n.d.	-	-	-	-	-
2	mortar	25	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of cementitious components using acid.

Sample 60A **Lab Number** 2016-06402- 60 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Miscellaneous Non-fibrous Solid
Homogeneous No **# Layers** 2 **Pos Layer?** No **# Sub-Samples** 6
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	block	75	gray	1	n.d.	-	-	-	-	-
2	mortar	25	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of cementitious components using acid.

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Sample 61A **Lab Number** 2016-06402- 61 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Miscellaneous Non-fibrous Solid
Homogeneous No **# Layers** 2 **Pos Layer?** No **# Sub-Samples** 6
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	block	75	gray	1	n.d.	-	-	-	-	-
2	mortar	25	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers								Refractive Index Determinations				
	Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none											
2												
3												
4												
5												
6												

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of cementitious components using acid.

Sample 62A **Lab Number** 2016-06402- 62 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers								Refractive Index Determinations				
	Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none											
2												
3												
4												
5												
6												

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 63A **Lab Number** 2016-06402- 63 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers								Refractive Index Determinations				
	Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none											
2												
3												
4												
5												
6												

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 64A **Lab Number** 2016-06402- 64 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 65A **Lab Number** 2016-06402- 65 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/28/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 66A **Lab Number** 2016-06402- 66 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:				none						

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 67A **Lab Number** 2016-06402- 67 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers								Refractive Index Determinations					
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 68A **Lab Number** 2016-06402- 68 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 69A **Lab Number** 2016-06402- 69 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 70A **Lab Number** 2016-06402- 70 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 71A **Lab Number** 2016-06402- 71 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 72A **Lab Number** 2016-06402- 72 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:				none						

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 73A **Lab Number** 2016-06402- 73 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers								Refractive Index Determinations					
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 74A **Lab Number** 2016-06402- 74 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 75A **Lab Number** 2016-06402- 75 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 76A **Lab Number** 2016-06402- 76 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious **Non-fibrous Solid**
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers								Refractive Index Determinations					
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 77A **Lab Number** 2016-06402- 77 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious **Non-fibrous Solid**
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 78A **Lab Number** 2016-06402- 78 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious **Non-fibrous Solid**
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 79A **Lab Number** 2016-06402- 79 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 80A **Lab Number** 2016-06402- 80 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 81A **Lab Number** 2016-06402- 81 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 82A **Lab Number** 2016-06402- 82 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext
1	none							
2								
3								
4								
5								
6								

Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 83A **Lab Number** 2016-06402- 83 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:				none						

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext
1	none							
2								
3								
4								
5								
6								

Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 84A **Lab Number** 2016-06402- 84 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	2-5%	-	-	-	-	-
Total %		100	Overall %		2-5%	-	-	-	-	-
Fiber Identification:					cellulose fiber					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext
1	cellulose fiber	W	F	N	N	H	+	U
2								
3								
4								
5								
6								

Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 85A **Lab Number** 2016-06402- 85 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	2	3	4	5	6	Oil	Col Par	Col Per	RI Par	RI Per			
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 86A **Lab Number** 2016-06402- 86 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 87A **Lab Number** 2016-06402- 87 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 88A **Lab Number** 2016-06402- 88 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious **Non-fibrous Solid**
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-

Fiber Identification:

none

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 89A **Lab Number** 2016-06402- 89 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious **Non-fibrous Solid**
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-

Fiber Identification:

none

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 90A **Lab Number** 2016-06402- 90 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious **Non-fibrous Solid**
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-

Fiber Identification:

none

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 91A **Lab Number** 2016-06402- 91 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	2	3	4	5	6	7	8	9	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 92A **Lab Number** 2016-06402- 92 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	2	3	4	5	6	7	8	9	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 93A **Lab Number** 2016-06402- 93 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	2	3	4	5	6	7	8	9	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 94A **Lab Number** 2016-06402- 94 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 95A **Lab Number** 2016-06402- 95 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 96A **Lab Number** 2016-06402- 96 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:				none						

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 97A **Lab Number** 2016-06402- 97 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 98A **Lab Number** 2016-06402- 98 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 99A **Lab Number** 2016-06402- 99 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:				none						

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 100A **Lab Number** 2016-06402- 100 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 101A **Lab Number** 2016-06402- 101 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 102A **Lab Number** 2016-06402- 102 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

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Sample 103A **Lab Number** 2016-06402- 103 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 104A **Lab Number** 2016-06402- 104 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 105A **Lab Number** 2016-06402- 105 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:				none						

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

PLM Analysis Details
Job Number: 201606402

MCDOT-TT345-75th-97th Ave MC85

Sample 106A **Lab Number** 2016-06402- 106 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 107A **Lab Number** 2016-06402- 107 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 108A **Lab Number** 2016-06402- 108 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

PLM Analysis Details
Job Number: 201606402

MCDOT-TT345-75th-97th Ave MC85

Sample 109A **Lab Number** 2016-06402- 109 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Miscellaneous Non-fibrous Solid
Homogeneous No **# Layers** 2 **Pos Layer?** No **# Sub-Samples** 6
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	paint	5	yellow	1	n.d.	-	-	-	-	-
2	concrete	95	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of cementitious components using acid.

Sample 110A **Lab Number** 2016-06402- 110 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Miscellaneous Non-fibrous Solid
Homogeneous No **# Layers** 2 **Pos Layer?** No **# Sub-Samples** 6
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	paint	5	yellow	1	n.d.	-	-	-	-	-
2	concrete	95	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of cementitious components using acid.

Sample 111A **Lab Number** 2016-06402- 111 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Miscellaneous Non-fibrous Solid
Homogeneous No **# Layers** 2 **Pos Layer?** No **# Sub-Samples** 6
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	paint	5	yellow	1	n.d.	-	-	-	-	-
2	concrete	95	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of cementitious components using acid.

PLM Analysis Details
Job Number: 201606402
MCDOT-TT345-75th-97th Ave MC85

Sample 112A **Lab Number** 2016-06402- 112 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
1	none								Oil	Col Par	Col Per	RI Par	RI Per
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 113A **Lab Number** 2016-06402- 113 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:				none						

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
Oil	Col Par	Col Per	RI Par	RI Per									
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample 114A **Lab Number** 2016-06402- 114 **Sampled:** 6/22/2016 **Condition:** acceptable
Analyzed By MCJ 6/29/2016 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Refractive Index Determinations				
									Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Fr=Friability: 1=very non-friable; 2= non-friable; 3=friable; 4=highly friable

Colors: B=black;BL=blue;BR=brown;CL=clear;G=Green;GY=gray;OR=orange;OW=off-white;PN=pink;PU=purple;R=red;TN=tan;W=white;Y=yellow;V=various

Fiber Morphology: A=fine fibers/bundles, white, sinewy, flexible; B=fine fibers/bundles, w-br, straight, broomed ends; C=fine fibers/bundles, blue, straight, broomed ends; D=fine to coarse fibers, CL-B, brittle; E=coarse fibers,CL or dyed, striated; F=coarse fibers or splinters, W-BR, ribbon-like; G=lath-like or shards, low aspect ratio, may taper

Iso=isotropism - may be yes or no; Pleo=pleochroism - may be yes or no; Bi=birefringence - may be None, Low, Medium or High

Elg=sign of elongation - may be +, - or B (both); Ext=extinction - may be Parallel, Oblique, None or Undulating; Oil=medium used to for dispersion staining

Col Par=dispersion staining colors parallel to the fiber (fiber/halo): b/w=black/white; dg/py=dark gray/pale yellow; vg/y=violet gray/yellow; db/ly=dark blue/lemon yellow;

vb/g= vivid blue/gold; sb/o=sky blue/orange; pb/r=pale blue/red; gb/dr=gray blue/dark red; w/b=white/black. Col Perp=same only perpendicular to fiber.

RI Par=refractive index parallel to fiber; RI Perp=refractive index perpendicular to fiber



Analyst: MARK C. JEFFERSON

Printed: 29-Jun-16

Original Print Date: 29-Jun-16



Larry S. Pierre, Approved Accreditation Signatory

FIBERQUANT

ANALYTICAL SERVICES

Fiberquant Analytical Services 5025 S. 33rd St.;
Phoenix, AZ 85040; Phone: 602-276-6139; FAX: 602-276-4558;
info@fiberquant.com

Analysis Request/Chain-of-Custody Form

Submitted by (Company)	Maricopa County Risk Mngmt
Address	222 N. Central Ave #1110
City, State, Zip Code	Phoenix, AZ 85004
Phone	602-506-2891
FAX	
Email	mcabeem@mail.maricopa.gov

Invoice to (Company)	MCDOT - Accounts Payable
Address	2222 S. 27 th Avenue -- c/o Terry Ellwanger
City, State, Zip Code	Phoenix, AZ 85009
Phone	602-506-8645
FAX	

Contact (print)	Chris McAbee
Sampled by (signature)	<i>Chris McAbee</i> MC85
Job Number or Project Name	MCBOT - TT345 - 75 th & 17 th Ave
PO Number	Hugh Davidson

<Analysis Method Requested> ONLY ONE METHOD per COC		Turn-around-time (choose one)		
		Rush	Norm	Ext
Asbestos by PLM	Method > Improved <input checked="" type="checkbox"/> or Interim <input type="checkbox"/>	Urg. <input type="checkbox"/>	3 days <input checked="" type="checkbox"/>	15-30 days <input type="checkbox"/>
	Analyze > All <input checked="" type="checkbox"/> or ATPF <input type="checkbox"/>	Rush <input type="checkbox"/>		
	If ATPF then > by Layer <input type="checkbox"/> or by Sample <input type="checkbox"/>	<3 hrs <input type="checkbox"/>		
Single Layer Protocol > Yes <input type="checkbox"/> or No <input type="checkbox"/>				
Fibers by PCM	Method > 7400(Area) <input type="checkbox"/> ORM (Personal) <input type="checkbox"/>	<4 hr <input type="checkbox"/>	24hr <input type="checkbox"/>	-
Asbestos by TEM	in Air > AHERA <input type="checkbox"/> Mod. AHERA <input type="checkbox"/>	<6hr <input type="checkbox"/>	24 hr <input type="checkbox"/>	3-5d <input type="checkbox"/>
	in Water > Water <input type="checkbox"/> Sludge <input type="checkbox"/>	1-2d <input type="checkbox"/>	3-5d <input type="checkbox"/>	N/A
	in Bulk (Annex2) > Chatfield <input type="checkbox"/> Full Quanti <input type="checkbox"/>			
	in Dust > Vacuum Dust (ASTM D-5755) <input type="checkbox"/>	3-5d <input type="checkbox"/>	5-10d <input type="checkbox"/>	N/A
Pb by FLAA	Analyte > Pb <input type="checkbox"/> Other <input type="checkbox"/>	<6 hrs <input type="checkbox"/>	2-3 days <input type="checkbox"/>	N/A
	Matrix >	Filter > MCE <input type="checkbox"/>		
		Paint > by Area (mg/cm2) <input type="checkbox"/>		
		by Weight (ppm) <input type="checkbox"/>		
		Soil > <input type="checkbox"/>		
	Wipe > <input type="checkbox"/>			
Check here certifying wipes used are ASTM E1792 compliant <input type="checkbox"/>				
Fungi	Air Sample > Zef <input type="checkbox"/> Aller <input type="checkbox"/> Oth <input type="checkbox"/>	<6 hrs <input type="checkbox"/>	1-2 days <input type="checkbox"/>	N/A
	Bulk > Sample <input type="checkbox"/> Swab <input type="checkbox"/>			
	Tape Lift > Qualitative (%& type) <input type="checkbox"/> or Quantitative (type/cm2) <input type="checkbox"/>			
Soot	ASTM D6602-03B	Optical <input type="checkbox"/>	<6 hrs <input type="checkbox"/>	1-2 days <input type="checkbox"/>
		Optical & TEM <input type="checkbox"/>	1-2 days <input type="checkbox"/>	3-5 days <input type="checkbox"/>
Other		Call	Call	

Sample # (1 per line)	Description/Location	Sample Date	Sample Time	Vol. or Area
1) 1A	White Roadway Paint - MC85	6-22-16		
2) 2A				
3) 3A				
4) 4A	Yellow Roadway Paint - MC85			
5) 5A				
6) 6A				
7) 7A	Black Seam Mastic - MC85			
8) 8A				
9) 9A				
10) 10A	Concrete Curb - (R1-R8) N			
11) 11A	Gutter			
12) 12A				
13) 13A	Concrete Ditch Lining (R3) S			
14) 14A				
15) 15A				
16) 16A	Concrete Headwalk (R3) S			
17) 17A				
18) 18A				
19)				
20)				

1) Relinquished by:	Date: 6-23-16	Time:	3) Relinquished by:	Date:	Time:
2) Received by:	Date: 6-24-16	Time: 7:00	4) Received by:	Date:	Time:
* TEM Water: Sampler's name Required by State of Arizona		Print Name: D. IB	Fiberquant assigned Job Number:		201606402
Review of Analysis Request (Initials):				Page	of

Note: Data completed by client (including number and identity of samples) is assumed to be correct until it is verified at time of sample preparation.

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ANALYTICAL SERVICES

Fiberquant Analytical Services 5025 S. 33rd St.;
Phoenix, AZ 85040; Phone: 602-276-6139; FAX: 602-276-4558;
info@fiberquant.com

Analysis Request/Chain-of-Custody Form

Submitted by (Company) Maricopa County Risk Mngmt	
Address 222 N. Central Ave #1110	
City, State, Zip Code Phoenix, AZ 85004	
Phone 602-506-2891	FAX
Email mcabeem@mail.maricopa.gov	

Invoice to (Company) MCDOT - Accounts Payable	
Address 2222 S. 27th Avenue -- c/o Terry Ellwanger	
City, State, Zip Code Phoenix, AZ 85009	
Phone 602-506-8645	FAX

Contact (print) Chris McAbee
Sampled by (signature) <i>Chris McAbee</i> MC85
Job Number or Project Name TT345 - 75th & 17th Ave
PO Number Hugh Davidson

<Analysis Method Requested> ONLY ONE METHOD per COC		Turn-around-time (choose one)		
		Rush	Norm	Ext
Asbestos by PLM	Method > Improved <input checked="" type="checkbox"/> or Interim <input type="checkbox"/>	Urg. <input type="checkbox"/>	1-3 days <input checked="" type="checkbox"/>	15-30 days <input type="checkbox"/>
	Analyza > All <input checked="" type="checkbox"/> or ATPF <input type="checkbox"/>	Rush <input type="checkbox"/>	1-3 days <input checked="" type="checkbox"/>	15-30 days <input type="checkbox"/>
	If ATPF then > by Layer <input type="checkbox"/> or by Sample <input type="checkbox"/>	<3 hrs <input type="checkbox"/>	1-3 days <input checked="" type="checkbox"/>	15-30 days <input type="checkbox"/>
Fibers by PCM	Method > 7400(Area) <input type="checkbox"/> ORM (Personal) <input type="checkbox"/>	<4 hr <input type="checkbox"/>	24hr <input type="checkbox"/>	-
Asbestos by TEM	In Air > AHERA <input type="checkbox"/> Mod. AHERA <input type="checkbox"/>	<8hr <input type="checkbox"/>	24 hr <input type="checkbox"/>	3-5d <input type="checkbox"/>
	In Water > Water <input type="checkbox"/> Sludge <input type="checkbox"/>	1-2d <input type="checkbox"/>	3-5d <input type="checkbox"/>	N/A
	In Bulk (Annex2) > Chatfield <input type="checkbox"/> Full Quant <input type="checkbox"/>	1-2d <input type="checkbox"/>	3-5d <input type="checkbox"/>	N/A
	In Dust > Vacuum Dust (ASTM D-5755) <input type="checkbox"/>	3-5d <input type="checkbox"/>	5-10d <input type="checkbox"/>	N/A
Pb by FLAA	Analyte > Pb <input type="checkbox"/> Other <input type="checkbox"/>	<6 hrs <input type="checkbox"/>	2-3 days <input type="checkbox"/>	N/A
	Matrix >	Filter > MCE <input type="checkbox"/>		
		Paint > by Area (mg/cm2) <input type="checkbox"/>		
		by Weight (ppm) <input type="checkbox"/>		
		Soil > <input type="checkbox"/>		
Check here certifying wipes used are ASTM E1792 compliant <input type="checkbox"/>				
Fungi	Air Sample > Zef <input type="checkbox"/> Alder <input type="checkbox"/> Oth <input type="checkbox"/>	<6 hrs <input type="checkbox"/>	1-2 days <input type="checkbox"/>	N/A
	Bulk > Sample <input type="checkbox"/> Swab <input type="checkbox"/>			
	Tape Lift > Qualitative (% & type) <input type="checkbox"/> or Quantitative (type/cm2) <input type="checkbox"/>			
Soot	ASTM D6602-03B	Optical <input type="checkbox"/>	<6 hrs <input type="checkbox"/>	1-2 days <input type="checkbox"/>
		Optical & TEM <input type="checkbox"/>	1-2 days <input type="checkbox"/>	3-5 days <input type="checkbox"/>
Other		Call	Call	

Sample # (1 per line)	Description/Location	Sample Date	Sample Time	Vol. or Area
1) 19A	Concrete Ditch Lining (R4-8) S	6-22-16		
2) 20A				
3) 21A				
4) 22A	Concrete Headwall Headwall (R4) S			
5) 23A				
6) 24A				
7) 25A	Concrete Drain Pipe (R3) S			
8) 26A				
9) 27A				
10) 28A	Concrete Drain Pipe #2 (R3) S			
11) 29A				
12) 30A				
13) 31A	Concrete Ditch Patch (R4) S			
14) 32A				
15) 33A				
16) 34A	Concrete Headwall (R8) S			
17) 35A				
18) 36A				
19)				
20)				

1) Relinquished by <i>Chris McAbee</i>	Date: 6-23-16	Time:	3) Relinquished by:	Date:	Time:
2) Received by <i>Ruth Knies</i>	Date: 6-24-16	Time: 7:00	4) Received by:	Date:	Time:
* TEM Water: Sampler's name Required by State of Arizona		Print Name	Fiberquant assigned Job Number >		
Review of Analysis Request (Initials): <i>KLK</i>				Page of	

Note: Data completed by client (including number and identity of samples) is assumed to be correct until it is verified at time of sample preparation.

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ANALYTICAL SERVICES

Fiberquant Analytical Services 5025 S. 33rd St.;
Phoenix, AZ 85040; Phone: 602-276-6139; FAX: 602-276-4558;
info@fiberquant.com

Analysis Request/Chain-of-Custody Form

Submitted by (Company)	Maricopa County Risk Mngmt
Address	222 N. Central Ave #1110
City, State, Zip Code	Phoenix, AZ 85004
Phone	602-506-2891
FAX	
Email	mcabeem@mail.maricopa.gov

Invoice to (Company)	MCDOT - Accounts Payable
Address	2222 S. 27 th Avenue -- c/o Terry Ellwanger
City, State, Zip Code	Phoenix, AZ 85009
Phone	602-506-8645
FAX	

Contact (print)	Chris McAbee
Sampled by (signature)	<i>Chris McAbee</i> MC85
Job Number or Project Name	TT345 - 75 th & 17 th Ave
PO Number	Hugh Davidson

<Analysis Method Requested> ONLY ONE METHOD per COC		Turn-around-time (choose one)		
		Rush	Normal	Ext.
Asbestos by PLM	Method > Improved <input checked="" type="checkbox"/> or Interim <input type="checkbox"/>	Urg. Rush <3 hrs	1-3 days	15-30 days
	Analyze > All <input checked="" type="checkbox"/> or ATPF <input type="checkbox"/>			
	If ATPF then > by Layer <input type="checkbox"/> or by Sample <input type="checkbox"/>			
	Single Layer Protocol > Yes <input type="checkbox"/> or No <input type="checkbox"/>			
Fibers by PCM	Method > 7400(Area) <input type="checkbox"/> ORM (Personal) <input type="checkbox"/>	<4 hr	24hr	
Asbestos by TEM	In Air > AHERA <input type="checkbox"/> Mod. AHERA <input type="checkbox"/>	<6hr	24 hr	3-5d
	In Water > Water <input type="checkbox"/> Sludge <input type="checkbox"/>	1-2d	3-5d	N/A
	In Bulk (Annex2) > Chatfield <input type="checkbox"/> Full Quant <input type="checkbox"/>			
	In Dust > Vacuum Dust (ASTM D-5755) <input type="checkbox"/>	3-5d	5-10d	N/A
Pb by FLAA	Analyte > Pb <input type="checkbox"/> Other <input type="checkbox"/>	<6 hrs	2-3 days	N/A
	Matrix > Filter > MCE <input type="checkbox"/>			
	Paint > by Area (mg/cm2) <input type="checkbox"/>			
	by Weight (ppm) <input type="checkbox"/>			
	Soil > <input type="checkbox"/>			
	Wipe > <input type="checkbox"/>			
Check here certifying wipes used are ASTM E1792 compliant <input type="checkbox"/>				
Fungi	Air Sample > Zef <input type="checkbox"/> Aler <input type="checkbox"/> Oth <input type="checkbox"/>	<6 hrs	1-2 days	N/A
	Bulk > Sample <input type="checkbox"/> Swab <input type="checkbox"/>			
	Tape Lift > Qualitative (% & type) <input type="checkbox"/> or Quantitative (type/cm2) <input type="checkbox"/>			
Soot	ASTM D6602-03B	<6 hrs	1-2 days	N/A
	Optical & TEM	1-2 days	3-5 days	N/A
Other		Call	Call	

Sample # (1 per line)	Description/Location	Sample Date	Sample Time	Vol. or Area
1) 37A	Concrete Add-On Ditch (R-4-8) S	6-22-16		
2) 38A				
3) 39A				
4) 40A	Concrete Add-On Patch (R4-8) S			
5) 41A				
6) 42A				
7) 43A	Concrete Irrigation Box (SW CORNER)			
8) 44A				
9) 45A				
10) 46A	Extra Concrete Wall S of Ditch (R4-8)			
11) 47A				
12) 48A				
13) 49A	Concrete Irrigation Ditch (R30-33)			
14) 50A				
15) 51A				
16) 52A	Concrete Headwall (R33)			
17) 53A				
18) 54A				
19)				
20)				

1) Relinquished by: <i>Chris McAbee</i>	Date: 6-23-16	Time:	3) Relinquished by:	Date:	Time:
2) Received by: <i>Keith K...</i>	Date: 6-24-16	Time: 7:00	4) Received by:	Date:	Time:
* TEM Water: Sampler's name Required by State of Arizona		Print Name	Fiberquant assigned Job Number >		
Review of Analysis Request (Initials): <i>KLK</i>			Page of		

Note: Data completed by client (including number and identity of samples) is assumed to be correct until it is verified at time of sample preparation.

FIBERQUANT

ANALYTICAL SERVICES

Fiberquant Analytical Services 5025 S. 33rd St.;
Phoenix, AZ 85040; Phone: 602-276-6139; FAX: 602-276-4558;
info@fiberquant.com

Analysis Request/Chain-of-Custody Form

Submitted by (Company)	Maricopa County Risk Mngmt
Address	222 N. Central Ave #1110
City, State, Zip Code	Phoenix, AZ 85004
Phone	602-506-2891
FAX	
Email	mcabeem@mail.maricopa.gov

Invoice to (Company)	MCDOT - Accounts Payable
Address	2222 S. 27 th Avenue -- c/o Terry Ellwanger
City, State, Zip Code	Phoenix, AZ 85009
Phone	602-506-8645
FAX	

Contact (print)	Chris McAbee
Sampled by (signature)	<i>Chris McAbee</i> MC85
Job Number or Project Name	MC801 - TT345 - 75 th & 17 th Ave
PO Number	Hugh Davidson

<Analysis Method Requested> ONLY ONE METHOD per COC		Turn-around-time (choose one)			
		Rush	Normal	Ext.	
Asbestos by PLM	Method > Improved <input checked="" type="checkbox"/> or Interim <input type="checkbox"/>	Urg. Rush <1 hrs	4-5 days	15-30 days	
	Analyze > All <input checked="" type="checkbox"/> or ATPF <input type="checkbox"/>				
	If ATPF then > by Layer <input type="checkbox"/> or by Sample <input type="checkbox"/>				
	Single Layer Protocol > Yes <input type="checkbox"/> or No <input type="checkbox"/>				
Fibers by PCM	Method > 7400(Area) <input type="checkbox"/> ORM (Personal) <input type="checkbox"/>	<4 hr	24hr		
Asbestos by TEM	In Air > AHERA <input type="checkbox"/> Mod. AHERA <input type="checkbox"/>	<6hr	24 hr	3-5d	
	In Water > Water <input type="checkbox"/> Sludge <input type="checkbox"/>	1-2d	3-5d	N/A	
	In Bulk (Annex2) > Chatfield <input type="checkbox"/> Full Quant <input type="checkbox"/>				
	In Dust > Vacuum Dust (ASTM D-5755) <input type="checkbox"/>	3-5d	5-10d	N/A	
Pb by FLAA	Analyte > Pb <input type="checkbox"/> Other <input type="checkbox"/>	<6 hrs	2-3 days	N/A	
	Matrix >	Filter > MCE <input type="checkbox"/>			
		Paint > by Area (mg/cm2) <input type="checkbox"/>			
		by Weight (ppm) <input type="checkbox"/>			
		Soil > <input type="checkbox"/>			
	Wipe > <input type="checkbox"/>				
Check here certifying wipes used are ASTM E1792 compliant <input type="checkbox"/>					
Fungi	Air Sample > Zef <input type="checkbox"/> Aller <input type="checkbox"/> Oth <input type="checkbox"/>	<6 hrs	1-2 days	N/A	
	Bulk > Sample <input type="checkbox"/> Swab <input type="checkbox"/>				
	Tape Lift > Qualitative (%& type) <input type="checkbox"/> or Quantitative (type/cm2) <input type="checkbox"/>				
Soot	ASTM D6602-03B	<6 hrs	1-2 days	N/A	
	Optical & TEM	1-2 days	3-5days	N/A	
Other		Call	Call		

Sample # (1 per line)	Description/Location	Sample Date	Sample Time	Vol. or Area
1) 55A	Concrete Headwall (R32)	6-22-16		
2) 56A	↓ ↓ water Block			
3) 57A	↓ ↓			
4) 58A	Concrete Headwall (R31) Pima & 91st			
5) 59A	↓ ↓			
6) 60A	↓ ↓			
7) 61A	Concrete Headwall (R11) JBS Driveway			
8) 62A	↓ ↓ N			
9) 63A	↓ ↓			
10) 64A	Concrete Ditch Lining (R11) JBS			
11) 65A	↓ ↓			
12) 66A	↓ ↓			
13) 67A	Concrete Ditch Lining (R20-24) S			
14) 68A	↓ ↓			
15) 69A	↓ ↓			
16) 70A	Concrete Headwalls (R20-24) S			
17) 71A	↓ ↓			
18) 72A	↓ ↓			
19)				
20)				

1) Relinquished by: <i>MLL</i>	Date: 6-23-16	Time:	3) Relinquished by:	Date:	Time:
2) Received by: <i>Rat</i>	Date: 6-24-16	Time: 7:00	4) Received by:	Date:	Time:
* TEM Water Sample's name Required by State of Arizona		Print Name	Fiberquant assigned Job Number		
Review of Analysis Request (Initials): <i>MLL</i>				Page of	

Note: Data completed by client (Including number and identity of samples) is assumed to be correct until it is verified at time of sample preparation.

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Phoenix, AZ 85040; Phone: 602-276-6139; FAX: 602-276-4558;
info@fiberquant.com

Analysis Request/Chain-of-Custody Form

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Address	222 N. Central Ave #1110
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Phone	602-506-2891
FAX	
Email	mcabeem@mail.maricopa.gov

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Address	2222 S. 27 th Avenue -- c/o Terry Ellwanger
City, State, Zip Code	Phoenix, AZ 85009
Phone	602-506-8645
FAX	

Contact (print)	Chris McAbee
Sampled by (signature)	<i>Chris McAbee</i>
Job Number or Project Name	TT345 - 75 th & 7 th Ave
PO Number	Hugh Davidson

<Analysis Method Requested> ONLY ONE METHOD per COC		Turn-around-time (choose one)		
		Rush	Norm	Ext
Asbestos by PLM	Method > Improved <input checked="" type="checkbox"/> or Interim <input type="checkbox"/>	Urg. Rush <input type="checkbox"/>	3 days <input checked="" type="checkbox"/>	15-30 days <input type="checkbox"/>
	Analyze > All <input checked="" type="checkbox"/> or ATPF <input type="checkbox"/>			
	If ATPF then > by Layer <input type="checkbox"/> or by Sample <input type="checkbox"/>			
	Single Layer Protocol > Yes <input type="checkbox"/> or No <input type="checkbox"/>			
Fibers by PCM	Method > 7400(Area) <input type="checkbox"/> ORM (Personal) <input type="checkbox"/>	<4 hr <input type="checkbox"/>	24hr <input type="checkbox"/>	-
Asbestos by TEM	In Air > AHERA <input type="checkbox"/> Mod. AHERA <input type="checkbox"/>	<6hr <input type="checkbox"/>	24 hr <input type="checkbox"/>	3-5d <input type="checkbox"/>
	In Water > Water <input type="checkbox"/> Sludge <input type="checkbox"/>	1-2d <input type="checkbox"/>	3-5d <input type="checkbox"/>	N/A
	In Bulk (Annex2) > Chatfield <input type="checkbox"/> Full Quant <input type="checkbox"/>			
	In Dust > Vacuum Dust (ASTM D-5755) <input type="checkbox"/>	3-5d <input type="checkbox"/>	5-10d <input type="checkbox"/>	N/A
Pb by FLAA	Analyte > Pb <input type="checkbox"/> Other <input type="checkbox"/>	<6 hrs <input type="checkbox"/>	2-3 days <input type="checkbox"/>	N/A
	Matrix > Filter > MCE <input type="checkbox"/>			
	Paint > by Area (mg/cm2) <input type="checkbox"/>			
	by Weight (ppm) <input type="checkbox"/>			
	Soil > <input type="checkbox"/>			
	Wipe > <input type="checkbox"/>			
Check here certifying wipes used are ASTM E1792 compliant <input type="checkbox"/>				
Fungi	Air Sample > Zef <input type="checkbox"/> Aher <input type="checkbox"/> Oth <input type="checkbox"/>	<6 hrs <input type="checkbox"/>	1-2 days <input type="checkbox"/>	N/A
	Bulk > Sample <input type="checkbox"/> Swab <input type="checkbox"/>			
	Tape Lift > Qualitative (% & type) <input type="checkbox"/> or Quantitative (type/cm2) <input type="checkbox"/>			
Soot	ASTM D6602-03B	<6 hrs <input type="checkbox"/>	1-2 days <input type="checkbox"/>	N/A
	Optical & TEM			
Other		Call	Call	

Sample # (1 per line)	Description/Location	Sample Date	Sample Time	Vol. or Area
1) 73A	Concrete Drain Pipes (R20-24) S	6-22-16		
2) 74A				
3) 75A				
4) 76A	Concrete Pitch Patch (R20-24) S			
5) 77A				
6) 78A				
7) 79A	Concrete Base @ Metal Gate N			
8) 80A				
9) 81A				
10) 82A	Concrete Headwall (R22) N			
11) 83A				
12) 84A				
13) 85A	Concrete Headwall (R20) N			
14) 86A				
15) 87A				
16) 88A	Concrete Sidewalk/Entrance (1st)			
17) 89A				
18) 90A				
19)				
20)				

1) Relinquished by: <i>Chris McAbee</i>	Date: 6-23-16	Time:	3) Relinquished by:	Date:	Time:
2) Received by: <i>Kathy Knapp</i>	Date: 6-24-16	Time: 7:00	4) Received by:	Date:	Time:
* TEM Water: Sampler's name Required by State of Arizona			Fiberquant assigned Job Number:		
Review of Analysis Request (Initials): <i>KLL</i>			Page of		

Note: Data completed by client (including number and identity of samples) is assumed to be correct until it is verified at time of sample preparation.

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Phone	602-506-2891
FAX	
Email	mcabeem@mail.maricopa.gov

Invoice to (Company)	MCDOT - Accounts Payable
Address	2222 S. 27 th Avenue -- c/o Terry Ellwanger
City, State, Zip Code	Phoenix, AZ 85009
Phone	602-506-8645
FAX	

Contact (print)	Chris McAbee
Sampled by (signature)	<i>Chris McAbee</i> MC85
Job Number or Project Name	TT345 - 75 th & 17 th Ave
PO Number	Hugh Davidson

<Analysis Method Requested> ONLY ONE METHOD per COC		Turn-around-time (choose one)			
		Rush	Normal	Ext.	
Asbestos by PLM	Method > Improved <input checked="" type="checkbox"/> or Interim <input type="checkbox"/>	Urg. Rush	1-3 days	15-30 days	
	Analyze > All <input checked="" type="checkbox"/> or ATPF <input type="checkbox"/>				
	If ATPF then > by Layer <input type="checkbox"/> or by Sample <input type="checkbox"/>				
	Single Layer Protocol > Yes <input type="checkbox"/> or No <input type="checkbox"/>				
Fibers by PCM	Method > 7400(Area) <input type="checkbox"/> ORM (Personal) <input type="checkbox"/>	<4 hr	24hr		
Asbestos by TEM	In Air > AHERA <input type="checkbox"/> Mod. AHERA <input type="checkbox"/>	<6hr	24 hr	3-5d	
	In Water > Water <input type="checkbox"/> Sludge <input type="checkbox"/>	1-2d	3-5d	N/A	
	In Bulk (Annex2) > Chatfield <input type="checkbox"/> Full Quant <input type="checkbox"/>				
	In Dust > Vacuum Dust (ASTM D-5755) <input type="checkbox"/>	3-5d	5-10d	N/A	
Pb by FLAA	Analyte > Pb <input type="checkbox"/> Other <input type="checkbox"/>	<6 hrs	2-3 days	N/A	
	Matrix >	Filter > MCE <input type="checkbox"/>			
		Paint > by Area (mg/cm2) <input type="checkbox"/>			
		by Weight (ppm) <input type="checkbox"/>			
		Soil > <input type="checkbox"/>			
	Wipe > <input type="checkbox"/>				
Check here certifying wipes used are ASTM E1792 compliant <input type="checkbox"/>					
Fungi	Air Sample > Zef <input type="checkbox"/> Aller <input type="checkbox"/> Oth <input type="checkbox"/>	<6 hrs	1-2 days	N/A	
	Bulk > Sample <input type="checkbox"/> Swab <input type="checkbox"/>				
	Tape Lift > Qualitative (%& type) <input type="checkbox"/> or Quantitative (type/cm2) <input type="checkbox"/>				
Soot	ASTM D6602-03B	<6 hrs	1-2 days	N/A	
	Optical & TEM	1-2 days	3-5days	N/A	
Other		Call	Call		

Sample # (1 per line)	Description/Location	Sample Date	Sample Time	Vol. or Area
1) 91A	Concrete Light Pole Base (91st)	6-22-16		
2) 92A				
3) 93A				
4) 94A	Concrete Cabinet Box Base (91st)			
5) 95A				
6) 96A				
7) 97A	Concrete Sidewalk/Ramp (83rd)			
8) 98A				
9) 99A				
10) 100A	Concrete Light Pole Base (83rd)			
11) 101A				
12) 102A				
13) 103A	Concrete Sidewalk - 91st/MC85			
14) 104A				
15) 105A				
16) 106A	Concrete Drain Pipe - 91st @ middle			
17) 107A	Headwalk			
18) 108A	(55A-57A)			
19)				
20)				

1) Relinquished by: <i>Chris McAbee</i>	Date: 6-23-16 Time:	3) Relinquished by:	Date:	Time:
2) Received by: <i>Hugh Davidson</i>	Date: 6-24-16 Time: 7:00	4) Received by:	Date:	Time:
* TEM Water: Sampler's name Required by State of Arizona		Print Name	Fiberquant assigned Job Number >	
Review of Analysis Request (Initials): <i>MC85</i>			Page	of

Note: Data completed by client (including number and identity of samples) is assumed to be correct until it is verified at time of sample preparation.

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info@fiberquant.com

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FAX	
Email	mcabeem@mail.maricopa.gov

Invoice to (Company)	MCDOT - Accounts Payable
Address	2222 S. 27 th Avenue -- c/o Terry Ellwanger
City, State, Zip Code	Phoenix, AZ 85009
Phone	602-506-8645
FAX	

Contact (print)	Chris McAbee
Sampled by (signature)	<i>Chris McAbee</i> MC85
Job Number or Project Name	TT345 - 75 th & 17 th Ave
PO Number	Hugh Davidson

<Analysis Method Requested> ONLY ONE METHOD per COC		Turn-around-time (choose one)		
		Rush	Normal	Ext.
Asbestos by PLM	Method > Improved <input checked="" type="checkbox"/> or Interim <input type="checkbox"/>	Urg. Rush <3 hrs	1-3 days	15-30 days
	Analyze > All <input checked="" type="checkbox"/> or ATPF <input type="checkbox"/>			
	If ATPF then > by Layer <input type="checkbox"/> or by Sample <input type="checkbox"/>			
	Single Layer Protocol > Yes <input type="checkbox"/> or No <input type="checkbox"/>			
Fibers by PCM	Method > 7400(Area) <input type="checkbox"/> ORM (Personal) <input type="checkbox"/>	<4 hr	24hr	
Asbestos by TEM	In Air > AHERA <input type="checkbox"/> Mod. AHERA <input type="checkbox"/>	<8hr	24 hr	3-5d
	In Water* > Water <input type="checkbox"/> Sludge <input type="checkbox"/>	1-2d	3-5d	N/A
	In Bulk (Annex2) > Chatfield <input type="checkbox"/> Full Quant <input type="checkbox"/>			
	In Dust > Vacuum Dust (ASTM D-5755) <input type="checkbox"/>	3-5d	5-10d	N/A
Pb by FLAA	Analyte > Pb <input type="checkbox"/> Other <input type="checkbox"/>	<6 hrs	2-3 days	N/A
	Matrix > Filter > MCE <input type="checkbox"/>			
	Paint > by Area (mg/cm2) <input type="checkbox"/>			
	by Weight (ppm) <input type="checkbox"/>			
	Soil > <input type="checkbox"/>			
	Wipe > <input type="checkbox"/>			
Check here certifying wipes used are ASTM E1792 compliant <input type="checkbox"/>				
Fungi	Air Sample > Zef <input type="checkbox"/> Aller <input type="checkbox"/> Oth <input type="checkbox"/>	<6 hrs	1-2 days	N/A
	Bulk > Sample <input type="checkbox"/> Swab <input type="checkbox"/>			
	Tape Lift > Qualitative (%& type) <input type="checkbox"/> or Quantitative (type/cm2) <input type="checkbox"/>			
Soot	ASTM D6602-03B	<6 hrs	1-2 days	N/A
	Optical & TEM	1-2 days	3-5days	N/A
Other		Call	Call	

Sample # (1 per line)	Description/Location	Sample Date	Sample Time	Vol. or Area
1) 109A	Concrete Yellow Paint Median	6-22-16		
2) 110A				
3) 111A				
4) 112A	Concrete Around Salt River Water Mon-			
5) 113A	Hole			
6) 114A				
7) Concrete				
8)				
9)				
10)				
11)				
12)				
13)				
14)				
15)				
16)				
17)				
18)				
19)				
20)				

1) Relinquished by:	Date: 6-23-16	Time:	3) Relinquished by:	Date:	Time:
2) Received by:	Date: 6-24-16	Time: 7:00	4) Received by:	Date:	Time:
* TEM Water Sampler's name Required by State of Arizona		Print Name	Fiberquant assigned Job Number >		
Review of Analysis Request (Initials):				Page of	

Note: Data completed by client (including number and identity of samples) is assumed to be correct until it is verified at time of sample preparation.



Polarized Light Microscope (PLM) Analysis for Asbestos in Bulk Sample

JobNumber: 201302253

Client:

KLEINFELDER

1335 W AUTO DR

TEMPE, AZ

85284-0000

Office Phone:

(480) 763-1200

FAX:

(480) 763-1212

Samples: 7 **PLM** **Rec:** 3/8/2013 **Method:** EPA 600/R-93/116

The "New" Method; see below

Client Job: 133021

PO Number:

Report Date: 3/12/2013

Date Analyzed: 3/11/2013

Routing Number: -

Method and Analysis Information:

Fiberquant Internal SOP: PLMn

Each bulk sample is first dissected under a 7-30x magnification stereo-microscope. This examination is used to determine the general type of sample, how many and what type of layers it has, and initial estimates of fiber types and quantities. Second, liquid media mounts are made of each layer - such mounts may be of selected fibers (used solely for identification purposes) or may be representative of the layer as a whole (used for quantitation purposes). The mounts may be made in a synthetic Canadian balsam, one of several solvents, or in refractive index oils (media of known refractive index). Generally, a variety of different mounts are made: some optimized for fiber visibility, some optimized for fiber identification, and some optimized for fiber quantitation. The mounted slides are then examined at 50-400x magnification on a Nikon Labphot-pol microscope. Optical characteristics are used to identify each observed fiber type; the optical data are contained for each sample on its detail analysis sheet, attached.

Current EPA and NESHAP regulations designate a result of $\leq 1\%$ asbestos as "negative" and $> 1\%$ asbestos as "positive". Samples containing layers that have been determined to be "positive" may have to be handled differently during a renovation or demolition than samples whose layers have been determined to be "negative."

The method of fiber identification and quantitation is the "Standard Operating Procedures for the Analysis of Asbestos in Bulk Samples using Polarized Light Microscopy", Chapter 7 of the Quality Assurance and Management Manual. This SOP and its associated reporting have been designed to satisfy all requirements in both EPA Method 600/M4-82-020 (The Interim Method) and EPA Method 600/R-93/116 (The New Method). The Interim Method is the required method for AHERA (US EPA 40 CFR Pt. 763), but this method calls for the reporting of composited results of multi-layered samples that is no longer an acceptable reporting practice in most circumstances. Current EPA rules, such as NESHAP (US EPA 40CFR Pt. 61), as well as NVLAP accreditation policies, call for separate reporting for each layer of multi-layered samples. The New Method contains the same procedures for identification and quantification of asbestos as does the Interim Method, except that multi-layered samples are reported to comply with the latest US EPA rule. Fiberquant not only reports the asbestos content of each layer of multi-layered samples separately (satisfying current EPA and NVLAP reporting requirements), but Fiberquant also reports what percentage of the sample each layer comprises. Therefore, the results may be arithmetically composited to satisfy the reporting requirements of the Interim Method. The method of fiber quantitation is an estimation technique in which the analysts quantitation is routinely calibrated by reference quantitation standards, and which has been shown to be equivalent in precision and accuracy to point counting. Friability is estimated for the purposes of deciding when to point count. Friabilities determined in the field take precedence over those determined in the laboratory. Those sample layers which are friable and estimated by the analyst to contain $\leq 1\%$ asbestos are point counted using 400 points. Such point counting is required by NESHAP (National Emission Standards for Hazardous Air Pollutants, Nov. 1990) in order to rely on analytical results that are $\leq 1\%$. The coefficient of variation for the estimation quantitation technique is 100% in the range 0-5%. This means that PLM analysis is not capable of conclusively determining whether a layer containing close to 1% asbestos is actually "positive" or "negative". For this reason, Fiberquant refers to results where asbestos was detected but $\leq 1\%$ as "borderline negative", and results where asbestos was $> 1\%$ but $\leq 2\%$ as "borderline positive" to indicate the uncertainty in assigning a "positive" or "negative" label. In the sample summary, "ND" means that no asbestos was detected during the analysis. A "Tr" or "Trace" of asbestos reported is defined for our purposes as the detection of several asbestos fibers during the analysis; this level would be right at the limit of detection for the method. Trace is only reported on the analysis detail - in the summary a trace would be reported as $\leq 1\%$. The limit of detection (the smallest % of asbestos that can be detected) varies greatly depending on the matrix in which the asbestos is found. As little as 0.001% asbestos can be detected in favorable samples, while detection in unfavorable samples may approach the detection limit of 1% stated in the method. During the analysis, the analyst, for Fiberquant identification purposes only, determines the "apparent sample type" and "apparent layer types." It must be emphasized that these types are only what is apparent. Often, different materials appear similar or identical after sampling, so the analyst may assign a type other than what was sampled.

Floor tiles present a special problem for PLM asbestos analysis. Floor tile can contain chrysotile fibers so thin that they cannot be resolved by optical methods. In such a case, we may observe a percentage of asbestos which is lower than the actual percentage, or not observe asbestos at all when some is present. For this reason, floor tiles reported as negative should be confirmed to be negative using transmission electron microscope (TEM) analysis. Likewise, vermiculite insulation materials containing traces of asbestiform asbestos present a problem for routine PLM analysis - the amphiboles are sometimes present in trace amounts inhomogeneously distributed. For this reason, loose vermiculite samples reported as negative should be confirmed to contain no amphibole using hydroseparation techniques.

The samples were analyzed under the following ongoing quality assurance program: Blank samples are routinely analyzed to maintain contamination-free materials. Each analyst has at least a bachelor's degree in physical science, and has also completed extensive training specific to asbestos analysis for 1-3 months before being allowed to analyze client samples. Qualitative reference samples are routinely analyzed to assure that analysts can identify asbestos and asbestos-look-alike fibers. Quantitative reference samples are routinely analyzed to calibrate and characterize the

estimation procedure. Microscope alignment is checked each day. Refractive index oils are calibrated at least quarterly. At least 10% of client samples are re-analyzed from scratch by a different analyst than the original, and any discrepancies are resolved for the sample and similar sample types before the results are reported. All quality checks performed for these samples were in control except as detailed in the "Analytical Notes" below. All analysts participate in interlab round robins and proficiency testing to assure competence. Fiberquant is accredited by NVLAP (Lab #101031) for the analysis of bulk samples for asbestos using PLM. Accreditation does not imply endorsement by the EPA, any other United States governmental agency or any private agency or association. Each lab analysis refers only to the sample tested, and may not, due to the sampling process, be representative of the material sampled. This report may not be reproduced except in full, without the approval of Fiberquant Analytical Services.

Some results may have been calculated using client supplied data, such as volume or area sampled, for which Fiberquant assumes no liability for accuracy.

Job Analysis Notes:

Note: Samples were in un-approved nor-resealable sample containers.

PLM Analysis Summary:

Job Number: 201302253 133021

Sample Number			Lab Number	Apparent Sample Type *	Positive Layer Yes or No
Layer	Color	Apparent Layer Type *	Asbestos Results		
Sample # C1			2013-02253- 1	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # C4			2013-02253- 2	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # C8			2013-02253- 3	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # C9			2013-02253- 4	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # C10			2013-02253- 5	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # C16			2013-02253- 6	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	
Sample # C17			2013-02253- 7	Cementitious	Positive Layer? No
Layer # 1	gray	concrete		<i>no asbestos detected</i>	

* Apparent Sample Types and Apparent Layer Types are as they appeared to the analyst. Since many types of materials appear similar after sampling damage, the apparent type of material may not be the actual type of material.

PLM Analysis Details

Job Number: 201302253

133021

Sample C1 **Lab Number** 2013-02253- 1 **Sampled:** **Condition:** acceptable
Analyzed By RAM 3/12/2013 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample C4 **Lab Number** 2013-02253- 2 **Sampled:** **Condition:** acceptable
Analyzed By RAM 3/12/2013 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample C8 **Lab Number** 2013-02253- 3 **Sampled:** **Condition:** acceptable
Analyzed By RAM 3/12/2013 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

PLM Analysis Details

Job Number: 201302253

133021

Sample C9 **Lab Number** 2013-02253- 4 **Sampled:** **Condition:** acceptable
Analyzed By RAM 3/12/2013 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample C10 **Lab Number** 2013-02253- 5 **Sampled:** **Condition:** acceptable
Analyzed By RAM 3/12/2013 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Sample C16 **Lab Number** 2013-02253- 6 **Sampled:** **Condition:** acceptable
Analyzed By RAM 3/12/2013 **An?** OK **Apparent Smp Type** Cementitious Non-fibrous Solid
Homogeneous Yes **# Layers** 1 **Pos Layer?** No **# Sub-Samples** 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers									Refractive Index Determinations				
		Color	Mrph	Iso	Pleo	Bi	Elg	Ext	Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

PLM Analysis Details

Job Number: 201302253 133021

Sample C17 Lab Number 2013-02253- 7 Sampled: Condition: acceptable
Analyzed By RAM 3/12/2013 An? OK Apparent Smp Type Cementitious Non-fibrous Solid
Homogeneous Yes # Layers 1 Pos Layer? No # Sub-Samples 3
Non-Fibrous Components (in approx. decreasing order): powder, rock,

Layers					Percents of Each Fiber					
#	Layer Type	%	Color	Friability	Fib 1	Fib 2	Fib 3	Fib 4	Fib 5	Fib 6
1	concrete	100	gray	1	n.d.	-	-	-	-	-
Total %		100	Overall %		n.d.	-	-	-	-	-
Fiber Identification:					none					

Fibers									Refractive Index Determinations				
	Color	Mrph	Iso	Pleo	Bi	Elg	Ext		Oil	Col Par	Col Per	RI Par	RI Per
1	none												
2													
3													
4													
5													
6													

Sample Analytical Note

Procedure: tweased apart using forceps. Procedure: dissolution of matrix using dilute HCl acid.

Fr=Friability: 1=very non-friable; 2= non-friable; 3=friable; 4=highly friable

Colors: B=black;BL=blue;BR=brown;CL=clear;G=Green;GY=gray;OR=orange;OW=off-white;PN=pink;PU=purple;R=red;TN=tan;W=white;Y=yellow;V=various

Fiber Morphology: A=fine fibers/bundles, white, sinewy, flexible; B=fine fibers/bundles, w-br, straight, broomed ends; C=fine fibers/bundles, blue, straight, broomed ends;

D=fine to coarse fibers, CL-B, brittle; E=coarse fibers,CL or dyed, striated; F=coarse fibers or splinters, W-BR, ribbon-like; G=lath-like or shards, low aspect ratio, may taper

Iso=isotropism - may be yes or no; Pleo=pleochroism - may be yes or no; Bi=birefringence - may be None, Low, Medium or High

Elg=sign of elongation - may be +, - or B (both); Ext=extinction - may be Parallel, Oblique, None or Undulating; Oil=medium used to for dispersion staining

Col Par=dispersion staining colors parallel to the fiber (fiber/halo): b/w=black/white; dg/py=dark gray/pale yellow; vg/y=violet gray/yellow; db/ly=dark blue/lemon

yellow; vb/g= vivid blue/gold; sb/o=sky blue/orange; pb/r=pale blue/red; gb/dr=gray blue/dark red; w/b=white/black. Col Perp=same only perpendicular to fiber.

RI Par=refractive index parallel to fiber; RI Perp=refractive index perpendicular to fiber



Analyst: ROBERT A. MCCORMICK

Printed: 12-Mar-13

Original Print Date: 12-Mar-13



Larry S. Pierce, Approved Accreditation Signatory

APPENDIX B

MCRM Certification

THE ASBESTOS INSTITUTE

Certifies that

Chris McAbee

has attended and received instruction in the EPA approved course

AHERA Building Inspector Refresher

on

October 09, 2017

and successfully completed and passed the competency exam.

4646-495-100917

Date of Examination:

9-Oct-2017

Date of Expiration:

09-Oct-2018



William T. Cavness,
Director



Approved Instructor

THE ASBESTOS INSTITUTE

20033 N. 19th Ave, Building 6, Phoenix, AZ 85027
602-864-6564 – www.theasbestosinstitute.com

This training meets all requirements for asbestos certification under Toxic Substance Control Act Title II.

APPENDIX C

MCDOT Provided Information

The functional space locations identified in Table 1 Results incorporate the coordinates listed in the “Maricopa County Department of Transportation plans for the construction of MC85 center lane expansion (MC85: 97th Avenue to 75th Avenue)” which is too large for this document. The R# listed in the Table 1 Functional Spaces (location of sampling) correlates to the “Summary of Estimated Quantities” table on page G15 of G34 within the project plans. Additional sample location maps can be provided if required at a later date.