



FDM 21-5-1 Asbestos

November 15, 2019

1.1 Applicability

It is the Department's policy not to use asbestos-containing materials in the construction, renovation or rehabilitation of any structure. The following procedure shall be applied to all highway bridges, structures and buildings being rehabilitated, renovated, moved or demolished as part of a federal or state funded project.

1.1.1 Background

Asbestos was once widely used in the construction industry and is known for its ability to withstand fire, heat, and acid, has great tensile strength and acts as both an effective thermal insulator and sound-proofing material. All forms of asbestos are proven human carcinogens. In 1989, EPA issued a final rule banning most asbestos-containing products. However, in 1991, this regulation was overturned federal courts. As a result of the Court's decision the regulation continues to ban the use of asbestos in products that have not historically contained asbestos, otherwise referred to as "new uses" of asbestos. Asbestos-containing products continue to be imported including floor tiles, ceiling tiles, pipe, insulation, siding, joint compounds, roofing felts, cement, drywall, packing, gaskets, and brake pads.

1.1.2 Exemptions

The following projects are exempt from asbestos inspection requirements when the described work is the only work being done on the structure:

- Bridge Repainting
- Attachment of guard rail or thrie beam when the attachment does not require disturbance of bridge railings, joints, caulk or other potential ACM (EXCEPT in Florence and Marinette counties, where the concrete must be tested.)
- Structures that have been previously inspected and have had no abatement, repair, or maintenance work done subsequent to inspection. (e.g. No patch repairs, no new caulk, no railing replacements, no joint sealer, no deck or parapet sealing or replacement). However, if the original asbestos inspection did not include concrete, and the structure is in Florence or Marinette County, the concrete on the structure must be inspected.
- Box culverts and other culverts (those that **do not have** a B- or P- bridge number). However, if a suspected asbestos containing material is identified on a culvert, the culvert should be inspected. (See [21-5-1.4.1](#) for a list of suspect materials).
- Retaining Walls
- Polymer overlay, EXCEPTIONS Florence and Marinette Counties, where the concrete must be sampled, and those locations where caulk or expansion joint exists in the area to be cleaned and overlaid. Fugitive dust control during deck preparation is required.
- Wooden deck replacement
- Beam/Steel plate reinforcement
- Retaining Walls
- Fiber reinforced polymer overlays EXCEPT in Florence and Marinette Counties, where the concrete must be tested.

1.1.3 Timing

Bridges and tender houses shall be inspected during the environmental documentation phase of a project. Bridges are inspected by an environmental consulting firm under contract to the Department's Bureau of Technical Services, Environmental Services Section (ESS).

Buildings acquired for a project shall be inspected prior to demolition or sale and movement of the building. This means that the inspection might not take place until after the environmental document for a project is completed. Buildings which are acquired are inspected during the acquisition process by inspectors hired by the region. Regions may choose to use the consultant under contract to ESS, rather than contracting for inspections independently. See section 45.6 for the appropriate language to include in the environmental document.

1.1.4 Notification for Traffic Control - Bridge Inspections

Prior to scheduling work on any bridge asbestos inspection project or hazmat project which requires traffic control, the environmental consultant must contact the region permit coordinator to determine if there are special

restrictions or conditions for performing work on that particular roadway. The current contact list can be found on the WisDOT internet website at <https://wisconsin.gov/Pages/doing-bus/real-estate/permits/default.aspx.pdf>. Consultants under contract to WisDOT are not required to obtain a right-of-way permit when they are working for the department and acting as WisDOT's agents to conduct the work.

There are restrictions on various STH, USH and local roads regarding lane closures and allowable times of work. The permit coordinators take the information you provide them regarding the work to be done and the necessity for lane closures or restrictions and communicate that to the emergency services, news outlets and law enforcement as necessary. *The permit coordinators need at least one week notice in advance of any lane restrictions.*

1.1.5 Requesting an Inspection

As of April 2005, all bridge asbestos inspections for any project that will be administered by WisDOT, including local road bridges, projects designed by consultants under contract to WisDOT, and projects designed in-house by WisDOT will be conducted through a contract administered by the Bureau of Technical Services, Environmental services section.

To request an inspection, fill out the [asbestos worksheet](#) and email it, along with a bridge location map, and photos of the structure (if available) to [DOT Hazmat Unit](#).

Scheduling of the inspections will be prioritized by environmental document date, and PS&E date. The inspections are grouped to reduce overall costs and mobilization charges.

1.2 Purpose

The purpose of this procedure is to allow the Department to

- Determine if asbestos-containing material is present on or in a structure by obtaining representative samples of suspect material for laboratory analysis;
- Report the results in a standard format;
- Include the information in the environmental document for the project; and
- Prepare special provisions for inclusion in the moving, demolition, or let contract

1.3 Definitions

Asbestos is an incombustible, chemical resistant fibrous form of magnesium silicate. When mined and processed, asbestos is typically separated into very thin bundles of fibers and then commonly mixed with a binder during processing. Asbestos can become separated from that binder and become an airborne contaminant with the potential to cause Asbestosis, Mesothelioma, and increased risk of lung cancer.

Asbestos Containing Material (ACM): Materials containing more than 1% asbestos by area as determined by Polarized Light Microscopy (PLM).¹

Category I Non-Friable ACM: "...packings, gaskets, resilient floor covering & asphalt roofing...containing...asbestos...that...cannot be crumbled...to powder by hand pressure." Category I ACM is pliable (not brittle), breaks by tearing rather than fracturing, and does not easily release asbestos fibers upon breaking.²

Category II Non-Friable ACM: "any material, excluding category I nonfriable ACM, containing...asbestos...that...cannot be crumbled...to powder by hand pressure." This includes rigid exterior siding and boards known by the trade name "transite." Category II ACM is not pliable, breaks by fracturing rather than tearing, and does release some asbestos fiber release upon breaking³. Under [40 CFR 61.141](#), Bridge concrete is considered Category II nonfriable ACM if it contains more than 1 percent asbestos that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Friable ACM: "any material containing...asbestos... that...can be crumbled...to a powder by hand pressure. " Common types of friable ACM include pipe insulation and sprayed on or tiled sound insulation materials. Friable ACM has little structural strength and contains asbestos fibers that are readily released upon breaking.⁴

¹ [http://docs.legis.wisconsin.gov/document/administrativecode/NR%20447.02\(1\)](http://docs.legis.wisconsin.gov/document/administrativecode/NR%20447.02(1))

² [http://docs.legis.wisconsin.gov/document/administrativecode/NR%20447.02\(1\)\(a\)](http://docs.legis.wisconsin.gov/document/administrativecode/NR%20447.02(1)(a))

³ [http://docs.legis.wisconsin.gov/document/administrativecode/NR%20447.02\(1\)\(b\)](http://docs.legis.wisconsin.gov/document/administrativecode/NR%20447.02(1)(b))

⁴ [http://docs.legis.wisconsin.gov/document/administrativecode/NR%20447.02\(16\)](http://docs.legis.wisconsin.gov/document/administrativecode/NR%20447.02(16))

Regulated Asbestos Containing Material (RACM)⁵

- Friable asbestos material;
- Category I nonfriable ACM that has become friable;
- Category I nonfriable ACM that will be or has been subject to sanding, grinding, cutting, or abrading; or
- Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations regulated by NR 447, Wis. Adm. Code.

1.4 Potential Asbestos Containing Material Identification

Each structure to be moved, demolished or rehabilitated shall be inspected by a licensed Asbestos Inspector to verify the locations of suspect material. The inspector will also identify and photograph all homogeneous areas of material that potentially could contain asbestos. Photographs shall be referenced by number on the inspector's Asbestos Sampling Log. The region will provide a copy of plans for existing bridges and a map showing the location of the structures to the Asbestos Inspector. Before initiating sampling, the licensed Asbestos Inspector shall review these plans to make a preliminary identification of potential asbestos-containing material.

All material sampled shall be documented with photos showing the location of the material sampled and clearly identifying the material. Photos shall include a standard 6" ruler for scale. The addition of arrows or circles or other means of identifying the material in the photo is acceptable.

If the inspector believes a material found on a bridge structure to be suspect but it is not identified in either of the lists in 45.4.1 or 45.4.2, the inspector shall sample and analyze the material using the standard sample collection and analysis techniques listed below. The inspector shall collect one additional sample of this suspect material and place it in a sealed and securely taped 50 ml clear glass jar, clearly labeled with the bridge number, project ID, description of the material sampled, and location on the bridge or structure. When the analysis results are received, the % asbestos content, and analytical method shall be added to this label. This sample shall be submitted to WisDOT BTS-ESS attn: Hazardous Materials Specialist, PO Box 7965 Room 451, Madison, WI 53707-7965, with an electronic copy of the inspection report.

1.4.1 Bridge Materials Requiring Sampling

Materials requiring sampling:

- Concrete – sampling of bridge concrete is limited to Florence and Marinette counties.⁶
- Parapet or sidewall expansion joint caulk
- Gasket or grout material underneath guard rail or railing bolt plates
- Caulk or sealant in expansion joints
- Tar or sealant on wooden timbers
- All standard suspect building materials such as insulation, floor tile, cork, brake pads, transite siding, etc. in bridge tender houses and bridge gear units
- Paint
- Bridge deck caulk
- Inactive utility conduit where WisDOT is the owner, or when the owner cannot be identified.

Utilities are responsible for their own inspection and abatement.

1.4.2 Bridge Tender Houses

Any suspect ACM in the bridge tender house shall be sampled. If sampling of the material would substantially affect the safe operation of the structure (for instance, taking a sample of a brake pad from the lift mechanism), then the suspect material may be assumed to be ACM. All other materials will be sampled.

1.4.3 Bridge Materials That Do Not Require Sampling:

- Rubberized expansion joint material
- Fiber mats
- Asphalt
- Waterproofing membrane

⁵ [http://docs.legis.wisconsin.gov/document/administrativecode/NR%20447.02\(33\)](http://docs.legis.wisconsin.gov/document/administrativecode/NR%20447.02(33)) sections (a through d)

⁶ WisDOT conducted extensive sampling of bridge concrete materials statewide in 2015. Sampling of concrete is limited to the two counties with known sources of asbestos which might be incorporated into the concrete in the form of aggregate.

- Active or discontinued utility conduit not owned by WisDOT. Utilities are responsible for their own inspection and abatement.

1.4.4 Residences and Other Buildings

Any suspect ACM in the building shall be sampled. Quantity, type and location of material will be noted, and all suspect materials will be photographed for identification. If building plans are available, indicate location of samples on plan.

In buildings that are unoccupied and not scheduled to be sold and moved, leased or rented to an occupant, write the sample numbers directly on the material being sampled. (e.g., write the sample number in permanent marker on the floor tile being sampled).

Asbestos inspections of gas stations or other buildings with freestanding overhead signs or canopies or awnings should include the awning or canopy, and the mounting brackets of the overhead signs for any suspect ACM.

1.4.5 Vermiculite Insulation

Vermiculite insulation must be treated as suspected asbestos containing material.⁷ For inspection purposes, it should be reported as a suspected asbestos containing material. There is currently no EPA approved sampling method for determining whether or not vermiculite is free from asbestos. However, for disposal purposes, DNR recommends point counting. See 5.7.1.

1.5 Sample Collection

A licensed asbestos inspector shall collect samples following standard protocols and procedures described below.

Collect a minimum of three randomly distributed samples of each type of material identified as homogeneous (same type, color, age of application). If portions of a material involved appear to have been installed at different times, each such area must be sampled. If there is any reason to suspect that materials might be different, even though they appear uniform, they should be sampled separately.

For each sample collection operation, sufficient water shall be applied before and during sample collection to prevent generation of airborne dust as a result of the scraping, chipping, prying, coring, or other methods used to remove the sample.

Samples shall be collected from suspect materials in such a way that potential surface contamination from airborne sources is not included in the sample.

Samples of caulking, grout, etc will typically be collected by hand methods using hammers, chisels, and utility knives to chip or cut material to collect representative samples.

Upon removal of the sample, each shall immediately be placed in a re-sealable plastic sample bag. For bridges, each sample bag shall be labeled with the project ID, structure number (B-XX-XXX); highway name, water body or facility crossed; and sample number as referenced in the inspector's Asbestos Sampling Log. For buildings, signs, awnings and other structures, the sample bag shall be labeled with the project ID, structure identification, sample location on or in the structure, and sample number as referenced in the Inspector's Asbestos Sampling log.

1.5.1 Sample Analysis

Samples will be submitted to a lab certified to perform asbestos analysis. The samples will be tested using Polarized Light Microscopy (PLM).

When the results of one or more of the samples of a given material are reported to contain greater than 1% asbestos by PLM, the material will be considered ACM.

Samples that contain 1% or less asbestos but have some quantity greater than the PLM detection limit will be re-analyzed by point counting to determine if the material is ACM. If a sample is determined to contain more than 1% asbestos by point counting, the other samples of that material do not need to be point counted, and the material will be considered ACM.

1.5.2 Reporting

1.5.2.1 Bridge Inspection Reports

Follow the format outlined below. See [Attachment 1.1](#) for an example report.

- WisDOT project ID:
- Structure Number:
- Route on structure and feature structure is over:
- County

⁷ [http://docs.legis.wisconsin.gov/document/administrativecode/DHS%20159.04\(50\)](http://docs.legis.wisconsin.gov/document/administrativecode/DHS%20159.04(50))

- Date of inspection
- Asbestos Inspector's Name and License number
- Inspection Firm Name (if applicable)
- Asbestos Containing Material (ACM) (IS/IS NOT) present on this structure.
- Location map.
- Results in table format in the following order:
 - Sample #
 - Description (what material was the sample taken from)
 - Sample location (where on the bridge or where in the tender house)
 - Results of Analysis (indicate analytical method for positive results)
 - Category I or Category II Non-Friable or Friable or no ACM present
 - Total amount of material (in square feet, or in linear feet for pipe insulation). If computation is necessary to determine total amount, show computation (e.g. 6"x 6" of grout/bracket = .25 ft2 of grout/bracket x 24 brackets = 6 ft2 of caulk).
- A disclaimer indicating that WisDOT standard sampling procedures were followed according to [FDM 21-1](#). If standard procedures were not followed, describe the sampling procedures used and the reason for varying from the standard.
- A bridge plan indicating sampling locations and any ACM present.
- Photos of structure and sampling locations. Photos of sampling locations should include a 6-inch ruler for scale.
- Laboratory analytical report.

Naming standard for electronic reports: DOT PROJECT ID_Bridge-Number_Route_on_Bridge_route or feature under bridge_County.

For Example: 0655-01-00_B-12-0027_USH 18 STH 27-60 over Mississippi River_Crawford County

1.5.2.2 Building Inspection Reports

Follow the format outlined in DNR publication AM 401-2010 (or subsequent revisions) (located at <https://dnr.wi.gov/files/PDF/pubs/am/AM401.pdf>).

1.5.2.3 Report Distribution

Region: One copy will be kept with the hazardous materials file in the region office.

ESS: One electronic copy (in pdf file format)

BOS: BOS will retain an electronic copy of the report in HSIS. BOS will obtain that copy from the ESS electronic files.

Electronic copies shall be locked to prevent accidental changes. See [Attachment 1.1](#) for an example report.

1.5.2.4 Report Expiration

Asbestos reports are valid until the structure is repaired or replaced. The addition of a new material or the removal of material from a structure invalidates existing reports. (e.g. patching a wing wall, railing removal, redecking, removal of flooring, addition of flooring, re-roofing, taking down or adding a wall).

1.6 Environmental Documentation

The results of the asbestos inspection for bridge structures will be included in the Hazardous Materials section of the environmental document.

1.6.1 Standard Language to Include in the Environmental Document Hazmat Section

For bridge only:

An asbestos inspection of structure (B or P-XX-XXX) was conducted on (date) by (inspector's name and license number). Asbestos-containing material (is/is not) present on this structure.

For bridge with tender house:

An asbestos inspection of structure (B or P-XX-XXX) and its associated tender house was conducted on (date) by (inspector's name and license number). Asbestos-containing material (is/is not) present on these structures.

For projects with expected acquisition of buildings:

Asbestos inspections of any structures acquired for this project will be conducted prior to demolition or sale and movement of the structure.

1.6.2 Standard Language to Include in the "Environmental Commitments" Section

If a project has multiple bridges, use the appropriate language for each structure.

If asbestos is present on a bridge:

Asbestos-containing material is present on structure(s) (B or P-xx-xxxx). Standard special provision (insert #) shall be included in the plans, and the contractor will be responsible for completion of the Notification of Demolition and/or Renovation (DNR form 4500-113) if required. A copy of the inspection report is available from the region office.

If no asbestos is present on a bridge, and the bridge is scheduled for demolition:

No asbestos-containing material has been found on structure(s) (B or P-xx-xxxx). Standard special provision 107-125 shall be included in the plans. The contractor will be responsible for completion of the Notification of Demolition and/or Renovation (DNR form 4500-113) if required. A copy of the inspection report is available from the region office.

For projects with expected acquisition of building, awnings, or other structures:

Asbestos inspection of any structure acquired for this project will be conducted prior to demolition, or sale and movement of the structure. Region Real Estate staff will be responsible for completion of this commitment.

1.7 Handling and Disposal of Asbestos Containing Materials**1.7.1 Vermiculite Insulation**

1.7.1.1 Demolition Projects – If point count results indicate that there is <1% ACM, the vermiculite is considered non-regulated and can be landfilled at a licensed C&D landfill. If the point count results in >1% ACM, the vermiculite is considered RACM and can only be disposed of at a landfill licensed to accept asbestos.

1.7.1.2 Buildings to be Sold and Moved

Vermiculite in Attic: If the building contains vermiculite insulation in the attic, seal all openings in the attic, cover any vents or other openings with plastic to prevent contamination of the living spaces prior to removing the building from the foundation.

Vermiculite in Walls: If the building contains vermiculite insulation in the walls, the insulation must be removed by a licensed abatement contractor prior to removing the building from the foundation. Removal must be done by a qualified abatement contractor.

1.7.1.3 Cinder Blocks or Concrete Blocks

Cinder blocks or concrete blocks that have been filled with vermiculite insulation cannot be reused or recycled or used for clean fill. They must be disposed of at a landfill. If the vermiculite was tested and contained <1% asbestos, the cinder blocks can be disposed of at any licensed C&D landfill. If the vermiculite was tested and is RACM (>1% asbestos) the blocks must be disposed of at a landfill licensed to accept asbestos.

1.7.2 Bridge Concrete

Bridge concrete which is RACM (contains >1% asbestos) must be disposed of at a landfill licensed to accept asbestos, and cannot be buried onsite in embankments, used within the project limits, used as riprap on toe slopes, or recycled off site.

1.7.3 All Other Asbestos Containing Material

Any other material which is RACM (Contains >1% asbestos) must be disposed of at a landfill licensed to accept asbestos, and cannot be buried onsite, used within project limits, recycled offsite, or disposed of at any non-licensed facility.

1.8 References

[1] Wisconsin Administrative Code, NR 447

[2] Asbestos Storage, Transport and Disposal, WDNR publication PUB-WA 1012 2006, located at <http://dnr.wi.gov/files/pdf/pubs/wa/wa1012.pdf>.

LIST OF ATTACHMENTS

[Attachment 1.1](#) Sample Asbestos Analytical Report