CHAPTER 1.3

ASBESTOS MANAGEMENT

PROJECT ENVIRONMENTAL GUIDELINES

April 2008

New York State Department of Transportation
Environmental Science Bureau
1.3 ASBESTOS MANAGEMENT

TABLE OF CONTENTS

I. Summary
II. History/Uses/Manufacturing/Health Effects/Licenses/Medical Monitoring
III. Applicable Regulatory Overviews
IV. Assessment & Quantification of Asbestos-containing Materials
V. Abatement Design of Asbestos-containing Materials
VI. Abatement Construction Management
VII. Utilities
VIII. Attachments
   1.3.A. - Applicable Regulations
   1.3.B. - EI 06-027 Section 210 Standard Specification/Payment Items/BV14
   1.3.C. - EI 07-002 Asbestos Design Guidance
   1.3.D. - EI 07-003 Asbestos Construction Guidance
   1.3.E. - 12 NYCRR 56 Applicable Variances
   1.3.F. - 12 NYCRR 56 Blanket Variances
   1.3.G. - Asbestos Information Sheets for Bin Folders
   1.3.H. - NYSDOL Asbestos Asphalt Response
   1.3.I. - NYSDEC Regional Office Directory
   1.3.J. - Asbestos Management/Environmental Process Flow Chart

I. SUMMARY

Asbestos management is an integral part of design and project implementation for a substantial amount of bridge rehabilitation, roadway improvement and Right-of-Way (ROW) structure demolition work associated with transportation projects throughout New York State. The purpose of this chapter is to provide information required to select and implement appropriate asbestos management procedures in connection with the identification and abatement of asbestos-containing materials associated with transportation construction work.
Prior to initiating the design of any structure rehabilitation/demolition or roadway construction, a determination is required regarding whether any asbestos-containing materials, that currently exist as building, structure, roadway and/or utility components of the affected project site, will be disturbed as a result of the proposed work. This chapter provides the information needed to implement the appropriate measures for completing that determination and provides the technical descriptions and assessment strategies that are required when conducting asbestos identification investigations.

Once asbestos-containing material(s) have been identified and determined to require abatement as a result of a project, the project design must incorporate provisions for asbestos abatement and waste disposal. This chapter provides the resources for the selection and application of appropriate technical specifications associated with the various asbestos-containing materials encountered on transportation construction projects. Information is also provided concerning selection and application of regulatory variances in connection with abatement of these materials and potential project constraints.

Guidance is also provided regarding asbestos design using Department certified staff versus consultants on certain projects. Use of consultants for conducting compliance air monitoring and project monitoring during construction is also addressed.

Contracting for and managing asbestos abatement work in New York State involves project preparation in association with contractor qualifications confirmation, regulatory notification and work phasing. During and following abatement work there is also record keeping and project documentation required. This chapter provides the direction to appropriately initiate, manage and close out asbestos abatement work.

This chapter also includes copies of all appropriate current Department specifications and blanket variances, as well as current applicable state and federal regulations that apply to asbestos work. Applicable regulations are described in overviews and referred to specifically throughout the text. Also included in this chapter is expanded information and guidance concerning Department efforts associated with identification and abatement of asbestos-containing bridge coatings.

The information provided in this chapter is current as of the date of the last update to Chapter 1.3 of the EPM.

II. History/Uses/Manufacturing/Health Effects/Licenses/Medical Monitoring

Geology & Mineralogy of Asbestos

Asbestos is a generic name for identification of essentially two distinct forms of a natural occurring mineral made up of mostly silica and magnesium. These two groups are identified as Serpentine and Amphibole forms. The similarities between the Serpentine and Amphibole forms characterize why asbestos was manufactured into so many building materials throughout the
twentieth century. Those similarities include both physical and chemical resistance to high temperatures and applied force. Both groups also exhibit similar fibrous properties in that raw ore is actually made up of fiber strands. These strands will continue to divide into thinner and thinner fibers as disturbance continues and increases. Ore form asbestos will initially split into visible strands, fiber bundles and individual fibers. Those visible strands, bundles and fibers will continue to split into microscopic strands, bundles and fibers. This splitting process can continue to minute levels of microscopic detection. This process of fiber splitting is unique to asbestos mineral and defines partially why airborne asbestos exposure has become such a respiratory health concern. In addition to the health concerns related to asbestos fibers once they have entered the internal respiratory system, the fact that the fibers can become so small and thin increases their ability to remain airborne for longer periods and also bypass respiratory dust defenses.

The main difference between Serpentine and Amphibole asbestos is the physical characteristics of the fibers that make up each form. Serpentines split into wavy, curly fibers which exhibit little resistance to being bent or spiraled. Amphibole fibers are needlelike shards which exhibit significant resistance to being bent or curled. Serpentines are observed as similar to a man made mineral wool, while Amphiboles can be likened to a man made fiberglass in appearance.

There are six identified types of asbestos making up the two geological groups. Those six types include Chrysotile, Amosite, Crocidolite, Anthophylite, Actinolite and Tremolite. Chrysotile is the only Serpentine form. The remaining five are all Amphibole forms.

In the United States, approximately 85% of the manufactured asbestos-containing building and industrial materials contain Chrysotile. This is due to the Serpentine ore being the most prevalent in North American geology and therefore being mined and manufactured most economically throughout the twentieth century. The other 15% contain varying degrees of mostly Amosite with smaller percentages containing Crocidolite, Actinolite, Tremolite and Anthophylite. Also many materials are found to contain multiple types.

20th Century Manufactured Uses of Asbestos

Following the turn of the twentieth century up until the late 1970s asbestos was used in the production and manufacturing of numerous construction and industrial building materials. Additional materials and products previously not considered to contain asbestos are being tested and found to be positive for the fibrous mineral on a continual basis.

In an effort to provide an updated list of common commercial products and materials which are suspect of containing asbestos, please refer to the following groupings:

**TRANSITE (Asbestos Cement)**

This product is typically non friable (unable to pulverize or reduce to powder with hand pressure) with a high percentage asbestos content (>50%). The most representative products include:

1. Insulating Panels
2. Wallboard Sheets
3. Exterior Siding
4. Laboratory Hoods, Bench Tops, Sinks, etc.
5. Water & Sewer Conduit
6. Electrical Conduit & Panels

ROOFING MATERIALS

Roofing applications are typically nonfriable and low percentage in asbestos content (<15%). The most representative applications include:

1. Asphalt, Base, Finishing, Flashing & Waterproofing Felts
2. Reinforced Flashing Sheets
3. Flashing Tars
4. Flashing Cements
5. Waterproofing Flashings
6. Dampproofing
7. Sealers

FLOORING MATERIALS

Flooring applications are typically nonfriable and low percentage in asbestos content (<15%). The most representative applications include:

1. Asphalt Tile
2. Vinyl Tile
3. Vinyl Sheet (linoleum)
4. Vinyl Backer Material
5. Mastic
6. Stair Treads
7. Leveling Compounds & Fillers

THERMAL SYSTEM INSULATION (TSI)

Thermal System Insulation applications are typically friable and medium percentage in asbestos content (15 - 45%). The most representative applications include:

1. Pipe Insulation
2. Pipe Fitting Insulation
3. Valve Packing
4. Boiler Insulation
5. Breaching Insulation
6. Duct Insulation
7. HVAC Gaskets
8. HVAC Seam Tape
SURFACING MATERIALS

Surfacing System Materials vary in type of application, friability and asbestos percentage content. The most representative materials include:

1. Spray-On Fireproofing/Insulation
2. Base, Finish, Acoustical & Decorative Plasters
3. Interior Textured Coatings

MISCELLANEOUS MATERIALS

There are a wide variety of products and materials which are lumped under the miscellaneous type. There is a large variation in type of application, friability and percentage content. The most representative materials include:

1. Ceiling Tiles
2. Putty/Caulk
3. Door Insulation
4. Sheetrock/Wallboard
5. Taping Compounds
6. Blown-In Insulation
7. Various Packings & Ropes
8. Various Gaskets
9. Various Fabric Applications (Lab Gloves/Lab Blankets/Stage
10. Curtains/ Vibration Isolation Cloth, etc.)
11. Chalkboards
12. Wiring Insulation
13. Lighting Fixtures
14. Friction Shoes
15. Various Coating Applications
16. Various Asphalt Applications

Asbestos applications related to bridge and highway construction typically involve several of the materials and products delineated above. Many bridges carry asbestos cement pipes (transite pipes) as conduits for electrical and/or telephone feeds. These pipes are normally found as banks of pipes located beneath the bridge between the girders or encased in the deck or sidewalk of the bridge. Asbestos cement pipes can also be found passing through footings and/or abutments of bridges. Older structures extending over railroad tracks may contain sheets of transite applied to the underside of the deck.

Water pipes which are carried through many bridges may be found to have asbestos-containing insulation either on the straight runs of pipe, the joint fittings, or both. The insulation can be in the form of tar paper or woven material and may be encased with sheet metal, canvas, tar coating or a combination.
Other asbestos applications with regards to bridge construction include graphite-coated pads used as a breaker between the tops of the abutments and the bottom of the approach slabs. Asbestos caulking material was also used for numerous applications on railroad bridges and around railing base plates and in concrete joints on highway bridges. Asbestos can also be found in the form of waterproofing membranes used between concrete layers and/or asphalt layers on bridge decks or limited as a sealer surrounding bridge drainage scuppers.

In 1996 several upstate bridges were identified as having an asbestos-containing coating applied to structural steel members for purposes of thermal/salt/water protection (Dum-Dum for Metal). Typical experimental specification applications included steel members above rail lines and beneath open drain grates. In addition, and to a lesser extent, this coating has been applied to steel members 1.5 to 3 meters back from piers and abutments and beneath joints. Historical application dates range from the mid 1950s to the early 1970s.

A limited number of upstate bridges have also been found to have asbestos-containing masonry coatings applied to abutment backwalls, piers and bearing pedestals on steel girder bridges and universal application on concrete structures.

Asbestos was also utilized in 1960 series experimental specifications on a limited basis as a re-enforcement and/or strengthening additive to asphalt paving mixtures. This process involved very low percentages of asbestos and subsequent paving work has typically reduced overall asphalt asbestos content to percentages below regulatory thresholds.

**Asbestos Exposure Health Related Effects**

The health related concerns associated with asbestos exposure have been studied for some time. The primary conclusion to all of these studies is that inhalation of asbestos fibers may lead to an increased risk of contracting one or more diseases. The majority of the medical documentation which was utilized for these studies resulted from health related effects shown in mid-twentieth century shipyard workers, miners and manufacturing laborers. The majority of asbestos related fatalities are people who worked directly in the manufacturing and installation of the various products at a time when there was little or no personal protection.

The respiratory system, and specifically the lung, is the target system for asbestos exposure. Air which is breathed passes through the mouth and nose into the trachea. The trachea splits into two smaller bronchi which in turn continue division into smaller and smaller tubes which terminate into air sacs called alveoli. These air sacs provide the space for critical oxygen absorption into the blood and waste gas expulsion out of the blood. The pleural cavity, which the lung is located within, and the lung itself have a thin lining called the pleura. Both the cavity and the lung pleuras are in contact with each other and are very moist. As air is inhaled, the lung and chest cavity expand. Damage to these linings would cause improper breathing. They are what control both the lung and cavity expansion and contraction.

The body has several defense mechanisms which act to remove particulates from the air it
breathes. First, the mouth and nose remove very large particles. In addition many smaller particles become entrapped in the mucous-coated walls of the airways. The airways have small hair-like cells called cilia which flow in a outward motion and work to expel the mucous entrapped particles.

Despite the above mentioned defenses, a slight percentage of breathed particulate reach the alveoli. When a fiber or particle enters the alveoli, it is engulfed in large macrophage cells which attempt to digest the foreign intruder. Since asbestos is chemically resistant, macrophages are rarely successful. The cells then create a coating on the asbestos fibers and may begin forming scar tissue.

Asbestosis is a disease defined as fibrotic scarring of the lung. As increased numbers of asbestos fibers enter and paralyze more alveoli over long periods of exposure, the capacity of the lung is reduced. Clearly, there is a dose-response relationship between asbestos exposure and developing this disease. Both serpentine and amphibole forms of asbestos have been shown to cause asbestosis. The typical latency period (period between exposure and disease diagnosis) for asbestosis is 15 to 30 years.

Asbestos has been identified as a carcinogen. Asbestos has been identified as one of many causes of lung cancer. Statistics show that employees exposed to industrial concentrations of asbestos exposure have a five times greater risk of developing lung cancer than non-exposed people. Similarly, cigarette smokers have a ten times greater risk than non-smokers of developing lung cancer. However, industrial asbestos workers who smoke show a synergistic or multiplicative effect of 50 times greater risk of developing lung cancer. Although there does appear to be a dose-response relationship between asbestos exposure and lung cancer, there has been no determined safe level of exposure. Again there is typically a 30 year latency period with this relationship. There are a few recent studies which suggest that the lung cancer relationship is only attributable to certain types of asbestos exposure, but no documented conclusions have been reported as of yet.

Mesothelioma causes the greatest anxiety and concern among workers susceptible to exposure. Fortunately, it also happens to be the rarest disease related to asbestos exposure. Mesothelioma is a cancer of the chest cavity lining or in the lining of the abdominal cavity. This type of cancer spreads quickly and is always fatal. The exact nature of this disease remains unknown.

Worker Protection

In accordance with OSHA 1910.1001 and 1926.1101 regulations, the primary method of protecting workers from unacceptable levels of airborne asbestos focuses on the implementation of engineering controls (i.e., restricted/contained work areas, wet removal, filtered ventilation, etc.). When engineering controls are not adequate in minimizing worker exposures below OSHA standards, additional personal protective measures are required. Two of the most significant personal protective measures for asbestos workers are protective clothing and respiratory protection and are described as follows:
1.) **Protective Clothing** - Protective clothing is recommended when performing sampling and assessment work which involves areas with damaged suspect materials and/or visible suspect debris. Protective clothing is required during asbestos abatement work. The main purpose of protective clothing utilization is to avoid body contact with gross amounts of asbestos-containing debris and to minimize the chance of carrying suspect or confirmed materials to the home. Protective clothing usually includes disposable coveralls, foot covering, and head covering. The foot and head covering should be attached to the coveralls.

2.) **Respiratory Protection** - Respiratory hazards are generally divided into two categories; oxygen deficient and toxic contaminant. The potential for personal exposure to either or both must be factored when addressing respiratory protection.

Normal air contains approximately 21 percent oxygen. For breathing purposes, air should not contain less than 19.5 percent or greater than 23.5 percent oxygen. Examples of potential oxygen deficient circumstances related to asbestos and asbestos abatement include confined spaces such as steam tunnels, crawlspace, mechanical chases, boilers, ducts, etc. Other potential areas may include trenches, vaults, pits, etc., where chemicals may have altered oxygen concentrations.

The more prevalent respiratory hazard category related to asbestos work is toxic contaminants. Toxic contaminants are generally split into two subcategories; particulate and gaseous. Airborne asbestos fibers are a good example of hazardous particulates, and carbon monoxide is a good example of a hazardous gas. Both these hazards, as well as other chemicals, can be present on abatement and assessment projects.

Permissible limits of exposure for respiratory hazards are based on values documented through research by the American Conference of Governmental Industrial Hygienists (ACGIH), the National Institute for Occupational Safety & Health (NIOSH), and the Occupational Safety & Health Administration (OSHA). These organizations establish Permissible Exposure Limits (PELs) and Threshold Limit Values (TLVs) for a variety of toxic substances.

During abatement activities, workers tend to experience high personal exposure to asbestos. Assessment work also involves situations where exposure to asbestos can be elevated. Examples of those situations include entering areas of significant suspect material damage or where the likelihood of debris exists such as crawlspace, chases, or even above drop ceilings. Adequate procedures in assessing hazards, reducing hazards, and providing respiratory protection must be implemented.

Selection of a respirator directly relates to the level of asbestos exposure to be encountered either during abatement or assessment activities. OSHA specifies maximum 8-hour Time Weighted Average (TWA) and 30 minute excursion concentrations for each type of respirator. Those concentrations are as follows:
<table>
<thead>
<tr>
<th>TYPE</th>
<th>MAXIMUM CONCENTRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>0.1 fibers/cc - 8 hour TWA (PEL)</td>
</tr>
<tr>
<td>Half Face Negative Pressure</td>
<td>1.0 fibers/cc or 10 X PEL</td>
</tr>
<tr>
<td>Full Face Negative Pressure</td>
<td>5.0 fibers/cc or 50 X PEL</td>
</tr>
<tr>
<td>Powered Air Purifying Resp. (PAPR)</td>
<td>100.0 fibers/cc or 1000 X PEL</td>
</tr>
<tr>
<td>Type C Continuous Flow</td>
<td>100.0 fibers/cc or 1000 X PEL</td>
</tr>
<tr>
<td>Type C Positive Pressure/Pressure Demand</td>
<td>&gt;100.0 fibers/cc</td>
</tr>
<tr>
<td>with Escape Tank</td>
<td></td>
</tr>
</tbody>
</table>

OSHA mandates that any abatement or assessment worker who needs to wear a negative pressure respirator must have a medical exam for determination on whether that worker is medically fit to wear one. The exam checks for respiratory related illnesses that could possibly be brought on by the added exertion of wearing a respirator. Typically the exam includes a full medical history review, physical examination and pulmonary function test. Initial examinations will include a chest x-ray for a baseline assessment on lung and chest condition. These exams are to be conducted annually thereafter until termination from employment. Employers are required to maintain this information for 30 years following employment termination. These medical monitoring and documentation requirements are applicable to Department staff, as well as consultants and contractors.

**Department Asbestos License & Personnel Certifications**

A NYSDOL asbestos handling license has been obtained for the entire Department including the Main Office and all the Regions. The responsibility for maintaining this license rests with ESB. In addition, several Main Office and Regional staff have completed accredited training which enables them to obtain Project Designer and/or Building Inspector certification(s). Maintaining the project designer and building inspector certifications in the Regions provides benefits in association with simple assessment and design work that does not warrant use of consultant resources. The responsibility for obtaining and maintaining these certifications rests with each appropriate Region and Main Office functional unit.

Together with the responsibility of maintaining the Department asbestos handling license by ESB, it is important that all Department personnel involved with asbestos issues comply with 12 NYCRR 56. If an abatement contractor or consultant on a project violates the regulation, then their license can be revoked. Similarly, if Department personnel violate this regulation (i.e., removing asbestos without certification, entering regulated work areas without certification, etc.) fines can be assessed and the license for the entire Department can be revoked.

**Medical Surveillance**

Asbestos workers, including Department employees who maintain NYSDOL asbestos certification and utilize respiratory protection, are required to be included in a medical surveillance program. This program shall involve the following components:
1. A medical evaluation or a medical questionnaire containing the same information as listed in the OSHA Standard 29 CFR 1910.134, Part A of Section C, Sections 1 and 2.

2. A written recommendation regarding the employee's ability to use a respirator from a Professional Licensed Health Care Professional (PLHCP) which includes all of the following:
   - Whether or not the employee is medically able to wear a respirator.
   - Limitations on respirator use related to the medical condition of the employee.
   - The need, if any, for follow-up medical evaluations.
   - A statement that the PLHCP has provided the employee with a copy of the written recommendation made.

3. At a minimum, the employer shall provide additional medical evaluations that comply with the requirements of the referenced OSHA section if any of the following occur:
   - An employee reports medical signs or symptoms that are related to ability to use a respirator.
   - A PLHCP, supervisor or the respirator program administrator informs the employer that an employee needs to be reevaluated.
   - Information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for employee reevaluation.
   - A change occurs in the workplace conditions (i.e., physical work effort, protective clothing, temperature, etc.) that may result in a substantial increase in the physiological burden placed on an employee.

III. APPLICABLE REGULATORY OVERVIEWS

Copies of the full regulations described in this section are provided in Attachment 1.3.A.


Subpart M of the NESHAPS regulation outlines and defines asbestos specific standards for asbestos milling and manufacturing operations, roadways, demolition and renovation work, spraying and fabricating operations, and for insulating materials. Standards for waste disposal associated with asbestos mills, manufacturing, fabrication, demolition, renovation and spraying operations are also outlined in this federal regulation. This part also sets standards for inactive waste disposal sites associated with asbestos mills, manufacturing and fabrication operations. Standards for use of air filtration as an engineering control and reporting requirements are also defined in this part. Active waste disposal sites are regulated under this regulation and standards are defined for operations associated with converting asbestos waste into non-asbestos material.
OSHA Construction Standard - 29 CFR 1926.1101

The OSHA Construction Standard for asbestos regulates worker asbestos exposure associated with demolition or salvage of structures where asbestos is present, removal or encapsulation of asbestos containing material, and installation of products containing asbestos. Also included are exposure and work practice standards associated with construction, alteration, repair or renovations of structures or structure substrates/ portions that contain asbestos. Additional requirements are defined for asbestos spills and emergency clean-ups. Additional exposure standards are outlined for transportation, disposal, storage, containment and housekeeping activities involving asbestos or asbestos-containing products and construction activities.

Typical Department construction operations that can involve activities covered by this regulation include, but are not limited to, bridge repair/demolition, highway reconstruction, utility relocation and building demolition.


The OSHA General Industry Standard applies to all occupational exposures to asbestos in all industries covered by the Occupational Safety & Health Act with the exception of construction work which is covered by 1926.1101. Typical Department maintenance operations that can involve activities covered by this regulation include, but are not limited to, bridge maintenance, vehicle brake and clutch work and residency building maintenance/renovation work.

Application of OSHA asbestos regulations to all Department employees is enforced through Public Employee Safety & Health (PESH) of NYSDOL.

This standard helps to define employer responsibilities regarding employee exposure to asbestos. Some of the more important provisions defined in the standard include the responsibility of the employer to conduct personnel monitoring, and to establish regulated areas wherever the personnel monitoring results indicate exposure levels greater than the excursion limit. Also included are provisions for employee training, medical surveillance, record keeping, building inspection/assessment and engineering controls during abatement.

New York State Industrial Code Rule 56 - 12 NYCRR 56

Industrial Code Rule 56 (ICR 56) was promulgated by the New York State Department of Labor under the Labor Law for purposes of protecting the public and workers from exposure to asbestos during asbestos abatement, building/structure renovation and building/structure demolition. Also intended was conformity to both the Asbestos Hazard Emergency Response Act (AHERA) and OSHA regulations, promulgated at the federal level.

The code also includes specific provisions for procedural standards to be followed when removing, enclosing, encapsulating, or disturbing asbestos-containing material. Also inclusive of those provisions is the handling of asbestos or asbestos materials in a way that may result in the release of asbestos fiber.
Other provisions include certification of persons employed in asbestos abatement work, licensure of abatement contractors, requirements for asbestos surveys, abatement project notifications and reporting/record keeping provisions.

**New York City Asbestos Control Program Regulations - Title 15, Chapter 1**

Title 15, Chapter 1 was originally promulgated by the City of New York prior to New York State adopting ICR 56. The purpose of the city law is for the protection of the public from exposure during asbestos related abatement, building renovation and building demolition. Similar to ICR 56, Title 15, Chapter 1 mandates appropriate training and certification of people employed in asbestos abatement work.

Specific to the five boroughs of New York City and enforced by the Department of Environmental Protection (NYCDEP), this local regulation outlines many of the equivalent procedural standards found in ICR 56 for removal, enclosure, encapsulation and disturbance of asbestos containing materials. Although some of the technical requirements may differ on some of the procedures, the content is essentially the same. However, NYCDEP asbestos regulations do not apply to State-owned property within city limits. Department bridges, ROW and building demolition projects on State-owned property are regulated under the State regulations (ICR-56). City-owned projects are regulated under local regulations (Title 15, Chapter 1).

**IV. ASSESSMENT & QUANTIFICATION OF ASBESTOS-CONTAINING MATERIALS**

**Asbestos Screening**

The initial asbestos screening should be performed by Department personnel that are experienced, have had training or are otherwise certified in association with assessment/inspection work. The purpose of this screening is to determine whether or not a consultant contracted assessment for asbestos identification, including suspect material sampling and quantification, is warranted. This determination is based upon whether the project involves rehabilitation or demolition work which may disturb suspect asbestos-containing building, structural, roadway or utility materials.

The asbestos screening should not be considered as a requirement to physically enter and inspect project site structures and/or utility accesses in order to determine whether suspect materials exist. The majority of involved structures can simply be screened for suspect materials by considering their function. For example, there is a high probability that any residential or commercial structure will contain at least several suspect materials. There will typically be some application of roofing, flooring, insulation, etc., that will be considered suspect in residential and commercial buildings. In addition, although ICR-56 exempts buildings/structures constructed after January 1, 1974 from survey requirements and the OSHA Construction Standard has a similar exemption for various materials installed after 1980, these dates should not be considered definitive limits for all suspect asbestos construction materials. Construction materials that are considered non-suspect under OSHA include solid metal, wood, glass and PVC plastic. In
addition EPA lists concrete as a non-suspect material under the Asbestos Hazard Emergency Response Act (AHERA) for school inspections. Therefore, solid metal, wood, glass and concrete materials should typically not be considered suspect as asbestos-containing.

In the case of utility conduit (electric, gas, telephone, telegraph, water, sewer, etc.) that will be impacted as a result of a roadway construction project, there is again a high probability that a percentage of those utilities will include suspect materials. Depending on the number of utility companies involved and the quantity of utility conduits affected by the project, this determination can be made by either Department personnel or consultant staff. A small rehabilitation that will impact only one or two municipal service lines on a rural byway should only involve limited inquiries to local public works or utility companies in order to determine if suspect materials exist. This task could easily be accomplished by Department personnel. In the situation where municipalities or utility companies cannot confirm the existence of these materials through their records or when the project involves significant numbers of various utility parties, such as is the case for numerous metropolitan areas, then this part of the screening should be incorporated under the responsibilities of the consultant contracted for the asbestos assessment. In cases where utility record plans lack specifics on asbestos presence and consultant forces are unable to access the suspect utilities, the sampling may have to be performed during the construction phase of the project.

Asbestos screenings associated with bridge rehabilitation or replacement typically will involve review of original construction record plans. Record plans can be useful in indicating whether some of the materials used during original construction were asbestos-containing. The problem with these plans and material descriptions is that they may not account for materials which were used during maintenance, subsequent improvement projects or utility installations done by work permit. In many instances it may be necessary to visit the structure and visually confirm if suspect materials are present. Depending on the size of the project and accessibility of the suspect materials, it may be more appropriate to incorporate these responsibilities into a consultant contracted asbestos assessment.

Suspect materials can be assumed positive by Department staff conducting screenings, but should not be assumed negative with the exceptions of solid metal, glass, wood, PVC plastic and concrete. Determination of what other materials may be suspect in a project and the ultimate sampling of those materials should be performed by a certified asbestos building inspector.

**Asbestos Assessment**

Following determinations made during the asbestos screening which conclude that suspect asbestos-containing materials do exist in association with either structural building materials or utility components and the scope of the project is such that these materials will need to be abated prior to further construction, an asbestos assessment will need to be performed using NYS(DOL certified asbestos inspection staff. If the project is being designed by a consultant, the asbestos assessment work should be done by that consultant or a qualified sub-consultant. If the project is being designed by in-house staff, asbestos assessment services can be furnished via asbestos term agreements which are managed by the Consultant Management Bureau or by use of certified Department staff. The purpose of the asbestos assessment is to definitively confirm,
through laboratory analyses, whether the suspect building materials or utility conduits are asbestos-containing. Asbestos-containing material is defined as any homogeneous matrix (uniform texture, color and application) containing greater than one percent asbestos by weight. In addition, this investigation can be contracted as a means to obtain other critical information useful for contractors bidding the abatement work. The results of the asbestos assessment shall be documented in an asbestos assessment report which shall include, at a minimum, the following:

1. the data collection techniques and analysis procedures used;
2. quantity estimates of confirmed asbestos-containing materials (>1%);
3. a condition assessment of confirmed asbestos-containing materials with a clear determination of friability;
4. written descriptions and structure or site drawings indicating the location of confirmed asbestos-containing materials;
5. determination and recommendation of the standard asbestos specification, associated payment items and available blanket and/or applicable variances.

It is also beneficial to provide adequate logistical and structural descriptive text regarding the affected structures.

Along with the report, under separate cover, cost estimates for abatement and recommendations for site specific variances which are either required due to regulatory constraints or are beneficial for reasons relating to cost, scheduling, project phasing, etc. shall be provided. Special notes associated with the need for a variance, logistics, construction phasing, etc. shall also be included under this separate cover.

All work shall be performed by NYSDOL certified personnel working for a NYSDOL licensed firm and following appropriate protocols. Laboratories used for analysis of bulk samples collected during the investigation/inspection shall be accredited by the New York State Department of Health Environmental Laboratory Approval Program for analysis of friable and nonfriable organically bound asbestos samples.

Following Department approval of the scope of services submission, consultant staff should visit the site(s) to be investigated and develop an accurate description and estimate of the number of suspect materials which require sampling. Sample quantities shall also be indicated with estimates provided for both friable analyses (Polarized Light Microscopy - PLM) and nonfriable organically bound analyses (Gravimetric Reduction & PLM with negative confirmation by Transmission Electron Microscopy - TEM).

The consultant shall consider the following applications in figuring the sample quantity estimate:

1. Separate structures and separate vintages of a single structure shall be sampled individually.
2. A minimum of three (3) samples shall be collected of each homogeneous material.
4. All sampling and laboratory analysis shall conform to the multi-layered provisions.
described in NESHAPS 40 CFR Part 61.

5. Samples in a homogeneous group shall be analyzed by Polarized Light Microscopy (PLM) individually until either the entire group has been analyzed and all results are negative or a positive result is obtained. A positive result would cause analysis to be terminated for the remaining samples in the group.

6. Transmission Electron Microscopy (TEM) confirmation on a group of nonfriable organically bound samples, found to be all negative for asbestos by gravimetric reduction and PLM analysis, shall also be performed on individual samples until either the entire group has been determined negative or a positive result is obtained.

Following Department approval of the proposed sampling plan, consultants can progress with the actual asbestos assessment. Bridge rehabilitation and demolition projects involving asbestos assessments sometimes involve suspect materials that are identified in record plans but are not easily accessible during the assessment. Such materials can include buried utilities, internal bond breakers, subsurface sealers/membranes, etc. Consultants need to clearly identify these materials to Regional staff during the assessment field work so that the feasibility of accessing these materials for sampling can be assessed. For suspect materials that cannot be accessed prior to construction, Regions would want to incorporate some form of design safeguard which would prevent potential costly project delays that might occur if contractors encountered the materials during construction. Such safeguards could include assuming the material(s) positive and providing for their removal in the design up front. This approach should incorporate confirmation sampling at the point of least impact to construction in order to provide for work deduction if the material(s) are found negative and to minimize downtime during the period the samples are being analyzed.

If consultant forces are used, an alternative assessment approach might include reducing the field visits by the consultant by eliminating the sampling plan step referenced above. This may make sense for straightforward or smaller sized projects where Regional staff already have a good idea of what suspect materials exist.

Asbestos assessments associated with building demolition shall include destructive testing methods, when feasible, in order to access concealed suspect materials. Confirmed asbestos-containing materials located within walls, chases or any other concealing feature of the building to be demolished shall be identified and described in the report. In addition, any site specific impedances to performing the abatement work should be identified in the report including lack of structural integrity, confined space entry, lack of onsite utilities, etc.

Assessment Documentation

In accordance with the requirements in 12 NYCRR 56-5.1(g) a copy of all asbestos demolition and renovation survey reports must be transmitted by either the building/structure owner or his agent to NYSDOL through the Division of Safety & Health, Asbestos Control Bureau. A copy of every demolition/renovation inspection report is required to be sent to the NYSDOL office closest to the project (addresses of Regional NYSDOL offices are provided as the last page of Attachment 1.3.A.4.). This transmittal shall be the responsibility of the consultant forces, if
performing assessment work for the Department.

Copies of all asbestos building and bridge survey reports must be maintained in each Region. Asbestos bridge survey reports are particularly important because they provide documented reference information that will be used with future rehabilitation or reconstruction work. Copies of the bridge reports or report summaries should be maintained in the Regional BIN folders/files or other existing electronic or manual filing system. An example of an asbestos information sheet that can be used to summarize the information is provided as Attachment 1.3.G.

**Assessment Authority**

The Department's personnel and/or its agents (consultants) have the legal authority to collect bulk samples from buildings for asbestos determination in conjunction with highway projects or planned highway projects.

Section 30, Subdivision 17 of the Highway Law gives the Department of Transportation, its officers, agents or contractors engaged on highway projects, the authority to enter upon property for the purpose of "making surveys, test pits, test borings, or other investigations..." In addition, Section 404 of the Eminent Domain Procedure Law reiterates the language found in the Highway Law and further provides that the "condemner" (NYSDOT) shall be liable to the owner for any damages caused by the condemner as a result of the entry, but such damages shall not entail duplicate payment of damages to be compensated for by the "condemner" pursuant to Article 3 of the Eminent Procedure Law.

As a courtesy, adequate notification to the property owners should be given prior to the assessment by either correspondence or personal contact.

**Use of Historical Records/Previous Investigations**

It is not uncommon to discover during the asbestos assessment that there exists either construction documentation or records of previous material sampling for the affected structures.

If these records or sampling results specifically confirm or negate asbestos content in any suspect materials, then they should be incorporated into the asbestos assessment and final report. If the historical records are general in their indication of asbestos content or if previous sampling and analysis performed is determined to be deficient, confirmation sampling and analysis should be performed. Examples of deficient sampling could include a lack of appropriate sample quantity for a homogeneous material showing a negative result, a lack of layer separation prior to analysis within one material application, etc. Examples of deficient analysis could include results reported in ranges of percentage content at or near 1%, inappropriate or outdated analysis methods, etc. In addition, it is not uncommon practice for many asbestos inspectors to assume
positive obvious asbestos-containing materials as part of their assessments. A few of the most obvious asbestos-containing materials easily identified by their application include transite, aircell pipe insulation and woven gaskets. Department personnel and consultant inspectors should not feel the need to confirm by analysis what is readily apparent for some materials. However, any question or doubt should be confirmed through laboratory analysis.

Asbestos Modified Asphalt Concrete Pavement

Small percentages of asbestos fibers were used as a reinforcement for asphalt paving mixtures in the mid 1960s and early 1970s. Asbestos modified asphalt concrete pavement may have been constructed under experimental item 51EX or other special asphalt items. These asbestos asphalt pavement courses typically contained 1.5% asbestos by weight, which, when considered by themselves would classify the material as asbestos-containing and be subject to 12 NYCRR 56 during removal. If the record plans for projects involving disturbance of pavement indicate that an asbestos modified asphalt concrete pavement was used, then the pavement should be sampled and analyzed to determine asbestos confirmation. Samples collected of the asphalt should be representative of the entire depth of what was put down. In accordance with the response from NYSDOL regarding this matter and provided in Attachment 1.3.H., the asbestos content measured by weight percentage should be representative of the entire material which was put down, including all courses. If the results indicate weights of 1% asbestos or less, then the requirements of 12 NYCRR 56 would not apply to the project. If the results indicate asbestos content, but less than 1%, then the work should specify removal either under a heated state or by bucket loader or similar equipment with the application of water during removal. Dry cold milling, grinding or sawing should be avoided altogether for pavements containing any percentage of asbestos. If the results indicate weights of greater than 1% asbestos then alternative options for the work should be considered, including overlayment. Options that include removal of confirmed asbestos-containing asphalt will require approval of a site specific variance from NYSDOL.

Dum Dum for Metal - Asbestos Bridge Coating

In 1996 during the design phase for several upstate bridge rehabilitation and painting projects, an asbestos-containing protective coating was identified on the steel members of a few structures. This coating, known as Dum Dum for Metal, was primarily applied as a thermal, salt and/or water protective coating on steel spanning railroad lines and below open deck grating. A more detailed description of this material is provided in Section II. under MISCELLANEOUS MATERIALS.

All steel structures with existing paint applied prior to 1981 are currently considered suspect for having residual asbestos-containing coating unless sampling and analytical testing has confirmed otherwise or if previous 100% paint removal or asbestos abatement can be documented. Likely application locations include the following:

1. Beneath open steel grates on interior girders, cross members and girder fascias
2. Beneath joints and on girders 5 to 10 feet back in a longitudinal direction from piers and abutments

Sample collection by either in-house or consultant certified staff shall be conducted in accordance with the following protocol:

- Execute separate bulk sampling strategies for each suspect structure
- Minimum sample quantity shall include three (3) bulk samples per homogeneous area
- Sample locations shall be random and be representative of likely applications (see above)
- Samples collected shall be comprised of entire coating(s) application thickness
- Coating samples shall be analyzed in accordance with NYSDOH ELAP-NOB procedures
- If all samples in a group are found negative by PLM, TEM confirmation analysis shall be performed on all three samples in the homogeneous group

Regional bridge inspection and asbestos consultant forces have completed initial assessment sampling on most suspect state and local bridges for presence of dum-dum. Prior to conducting any additional asbestos testing that may be necessary in association with planned rehabilitation or demolition work, project designers and/or inspectors shall review existing sample results that are available from these initial assessments. Regional Environmental Unit Supervisors should be contacted for access to this data.

Masonry Coatings

Presence of asbestos has also been found in a limited number of bridge masonry coating applications over the past few years by our consultant forces. Applications confirmed positive by sampling have been identified in bridge record plans by item numbers 310B and 310D, Textured Concrete Finish Paint. However, material descriptions for these items do not reference use of asbestos. The limited applications of positive masonry coatings that have been identified thus far have mostly been found to be thick in application and rough in appearance as compared to much of the thin/smooth protective sealers typically applied on some of our bridges. Application locations can include abutment walls and piers on steel girder structures and possible universal application on concrete structures. Sample collection and analysis shall be conducted similarly to the coating protocol listed previously (above).

Public Works Specifications

The Public Works Specification books which list and provide descriptions for many of the construction materials historically used for highways, parkways, bridges and similar work are typically referenced by Department and consultant staff during asbestos investigation assessment for projects. These documents provide valuable information regarding likely asbestos containing materials used which were specified by individual items for projects.

Asbestos Encounters in the Field

Department personnel may, on occasion, come in contact with asbestos-containing materials
while in the field. These encounters can include bridge maintenance activities, construction inspections, project design scoping, project environmental screening, etc. Asbestos-containing materials do not typically pose a health concern unless there is a degree of damage to them and/or there exists a mechanism for fibers to become airborne (i.e., physical disturbance, erosion, lack of integrity, etc.). If intact suspect materials are encountered in the field, effort should be made not to disturb them in carrying out field related tasks. Also, documentation should be generated that informs other project personnel of the suspected existence of these materials. If these suspect materials will be disturbed as a result of a project, then an asbestos assessment is warranted. If damaged suspect materials are encountered in the field, access to the locations of damage should be restricted until a consultant contracted or in-house assessment is completed. If the damaged materials are found to be asbestos-containing, access to the areas of damage should remain restricted until abatement has been completed. Again, documentation should be generated that informs other project personnel of the suspected existence of these materials. If these damaged materials are determined to be the responsibility of others (i.e., utility, municipality, etc.), then those entities should be contacted by Department personnel.

V. ABATEMENT DESIGN OF ASBESTOS-CONTAINING MATERIALS

Standard Specification & Payment Item Selection

All Department standard specification and payment item selection/recommendation must be performed by a NYSDOL asbestos licensed firm using NYSDOL certified asbestos project designer staff. This can be accomplished using either certified consultant or Department staff.

Asbestos specifications and payment items provided in Section 210 of the Construction & Materials Standard Specifications issued by NYSDOT, dated May 4, 2006, have been updated and are currently provided in EI 06-027. A copy of EI 06-027 is provided as Attachment 1.3.B. Additional asbestos project design guidance was previously provided in EI 07-002, provided as Attachment 1.3.C. Payment item categories, as listed in this updated Section 210, are described as follows:

**Roofing (Buildings)**

Unit price, Lump Sum and Fixed Price Lump Sum payment items are provided in association with use of the standard specification with no regulatory variance designations. Asbestos-containing roofing materials designated for abatement under these payment items include, but are not limited to, built-up roofing, rolled roofing, roofing shingles, roof flashing, roofing cement, etc.

**Siding (Buildings)**

Unit price, Lump Sum and Fixed Price Lump Sum payment items are provided in association with use of the standard specification with no regulatory variance designations. Asbestos-containing siding materials designated for abatement under these payment items include, but are not limited to, asphalt shingles, transite siding, galbestos
siding, tar paper, etc.

**Window Caulking and/or Glazing (Buildings)**

Unit price, Lump Sum and Fixed Price Lump Sum payment items are provided in association with use of the standard specification with no regulatory variance designations. Asbestos-containing window caulk and/or glazing materials designated for abatement under these payment items include, but are not limited to, entrance/window caulk, window pane glazing, etc.

**Flooring/Mastic (Buildings)**

Unit price, Lump Sum and Fixed Price Lump Sum payment items are provided in association with use of the standard specification with no regulatory variance designations. Asbestos-containing flooring materials designated for abatement under these payment items include, but are not limited to, floor tile, sheet flooring, mastics, etc.

**Ceilings (Buildings)**

Unit price, Lump Sum and Fixed Price Lump Sum payment items are provided in association with use of the standard specification with no regulatory variance designations. Asbestos-containing ceiling materials designated for abatement under these payment items include, but are not limited to, ceiling tile, plaster ceiling, transite ceiling, sheetrock/spackel on ceilings, etc.

**Thermal System Insulation (Buildings)**

Unit price, Lump Sum and Fixed Price Lump Sum payment items are provided in association with use of the standard specification with no regulatory variance designations. Asbestos-containing thermal system insulation materials designated for abatement under these payment items include, but are limited to, boiler insulation, pipe insulation, breaching insulation, duct wrap insulation, etc.

**Miscellaneous (Buildings)**

Unit price, Lump Sum and Fixed Price Lump Sum payment items are provided in association with use of the standard specification with no regulatory variance designations. Asbestos-containing miscellaneous materials designated for abatement under these payment items include, but are not limited to, wall plaster, transite wall material, sheetrock/joint compound on walls, blown-in insulation, gasket material, patch cement, sealers, grouts, wiring insulation, loose debris, etc.

**Concrete Encased Pipe (Bridges & Highways)**
Unit price, Lump Sum and Fixed Price Lump Sum payment items are provided in association with use of the standard specification with either no regulatory variance or NYSDOT Blanket Variance 14 designations. Asbestos-containing concrete-encased pipe materials designated for abatement under these payment items include, but are not limited to, transite conduit, epoxy wrapped conduit, tar paper wrapped conduit, etc.

**Underground Pipe (Bridges & Highways)**

Unit price, Lump Sum and Fixed Price Lump Sum payment items are provided in association with use of the standard specification with either no regulatory variance or NYSDOT Blanket Variance 14 designations. Asbestos-containing underground pipe materials designated for abatement under these payment items include, but are not limited to, transite conduit, epoxy wrapped conduit, tar paper wrapped conduit, etc.

**Suspended Pipe (Bridges & Highways)**

Unit price, Lump Sum and Fixed Price Lump Sum payment items are provided in association with use of the standard specification with either no regulatory variance or NYSDOT Blanket Variance 14 designations. Asbestos-containing suspended pipe materials designated for abatement under these payment items include, but are not limited to, transite conduit, epoxy wrapped conduit, tar paper wrapped conduit, etc.

**Bond Breakers and/or Joint Fillers (Bridges & Highways)**

Unit price, Lump Sum and Fixed Price Lump Sum payment items are provided in association with use of the standard specification with either no regulatory variance or NYSDOT Blanket Variance 14 designations. Asbestos-containing bond breaker and/or joint filler materials designated for abatement under these payment items include, but are not limited to, bearing pads, slip-sheet packing, vapor barrier, expansion joint material, membranes, crack fillers, sealers etc.

**Caulking (Bridges & Highways)**

Unit price, Lump Sum and Fixed Price Lump Sum payment items are provided in association with use of the standard specification with either no regulatory variance or NYSDOT Blanket Variance 14 designations. Asbestos-containing caulk materials designated for abatement under these payment items include, but are not limited to, various bridge, hand rail and guide rail caulks.

**Miscellaneous (Bridges & Highways)**

Unit price, Lump Sum and Fixed Price Lump Sum payment items are provided in association with use of the standard specification with either no regulatory variance or NYSDOT Blanket Variance 14 designations. Asbestos-containing miscellaneous
materials designated for abatement under these payment items include, but are not limited to, coatings, transite electrical box panels, wiring insulation, loose debris, etc.

Specification recommendation and payment item selection by consultant, or DOT personnel who are certified, is typically performed as an inclusive design process. The standard specification was developed and implemented as a means of simplifying the abatement design process. Once identified, the standard specification, combined with project specific notes and diagrams, typically provides the overall project description and requirements needed for contract bidding and abatement completion. Special notes in asbestos design provide specific information to the contractor that are not provided in the standard specification or indicated variance(s). In addition to reaffirming regulatory requirements, special notes can be used to appropriately identify variances, estimated material quantities and project constraints to the contractor. Such constraints could include schedule, lack of on-site utilities, logistics, etc.

As indicated previously, the Department has trained and certified a number of Design and Environmental staff as EPA and NYS accredited asbestos project designers. This certification along with Department licensure allows in-house design of asbestos abatement in connection with our construction and maintenance projects. In-house certified staff can be used to perform standard specification recommendation, payment item selection, determine variance application and develop special notes for incorporation into PS&E packages. Use of consultant or Department staff generally depends on whether a consultant contracted asbestos assessment needs to be performed or if a site specific variance petition needs to be prepared and submitted to NYSDOL for approval. If a consultant is required to perform an assessment on a project, the scope will typically include design functions.

Also, if the design requires a site specific variance petition to NYSDOL, the petition process is more easily accomplished by consultants. Generally, certified Department staff may be used on projects where the work can be performed either by applicable or blanket variance, or without a variance at all. Minor project work should typically not require any regulatory variance.

Assessment of the feasibility of variance application to each project and identification of the appropriate corresponding payment item for the work should be performed during the design phase of the project. When materials requiring removal are not specifically listed, the item for the removal and disposal of miscellaneous asbestos containing materials (either Buildings or Bridges & Highways) should be used.

All Maintenance and Protection of Traffic devices outside the regulated asbestos work area required by any NYSDOL regulatory variance shall be paid for separately. Other work area delineation materials (i.e., construction fence, visual barrier, etc.) that may be required under a variance shall be included in the bid price for the associated asbestos pay item.

Blanket Variance(s) associated with identified payment items in the contract documents shall be listed in the SUPPLEMENTAL INFORMATION AVAILABLE TO BIDDERS (CONR9).

**NYSDOL Applicable Variances to 12 NYCRR 56**
The 2006 amendment to 12 NYCRR 56 includes abatement procedures for almost all previously existing applicable variances. Abatement procedures for roofing, siding, floor tile, ceiling tile, gloverbag operations, wrapped piping, etc. have all been incorporated into the 2006 regulation amendment. Currently there are only four applicable variances that have been approved by NYSDOL following the adoption of the regulation amendment. A brief description of each existing applicable variance is provided as follows and copies of each are provided in Attachment 1.3.E

1. **AV-A-1, Controlled Demolition of Municipally-Owned Vacant Residential Buildings/Structures Up to 3-Stories in Height** – Provisions included under this variance allow for Municipalities to demolish vacant residential buildings/structures without prior abatement of some non-friable ACMs. All friable ACM and Non-friable ACM that is likely to become friable during demolition is required to be removed in accordance with the regulation prior to demolition activities. State agencies and authorities are not considered municipalities and are not allowed to utilize this variance for their projects. However, similar provisions may be obtained for State projects through submission and approval of a SSV.

2. **AV-A-2, Negative Air Ventilation Exhaust Greater then 25 Foot in Length** – Provisions included under this variance allow for increased negative air exhaust duct size(s) and use of booster fan units by the abatement contractor in situations that require greater than 25 feet of ventilation exhaust duct.


4. **AV-A-4, Removal or Cleanup of Intact, Minor Size Non-friable ACM Floor Tile** – Provisions included under this variance allow for minimal engineering controls associated with the removal and disposal of intact floor tiles that have become detached from their substrate and amount to less than ten (10) square feet of area.

The complete individual variances provided in Attachment 1.3.E. list all of the required conditions set forth by NYSDOL. Since AV-A-1 cannot be used by NYSDOT and AV-A-2, AV-A-3 and AV-A-4 will be implemented by abatement contractors in the field, there are currently no payment items in the revision to Section 210 that reference these variances.

In addition, with regard to abatement of interior ACM walls, the amended regulation incorporates language that now allows for removal of wall plaster, wallboard, materials attached to walls, materials buried in walls, etc.

**NYSDOT Blanket Variances to 12 NYCRR 56**

As of September 6, 2006, the effective date of the amended State asbestos regulation, NYSDOT
Blanket Variances (BV) 1 through 13 are all considered null and void. The amended regulation now incorporates new provisions for exterior, nonfriable ACMs in Special Projects Section 56-11.6. However, the amended regulation still does not specifically address abatement of asbestos materials which are located underneath the ground, buried in concrete, suspended from a bridge, etc. Although Section 56-11.6 will apply to most building exterior nonfriable ACMs (i.e., roofing, siding, window caulk, etc.), the parameters and criteria outlined throughout the regulation still lack specific applicability to asbestos abatement in connection with bridge and roadway ACM abatement.

Blanket Variance 14 was approved by NYSDOL on June 14, 2006 for use in association with bridge, right-of-way and highway asbestos abatement. BV 14 can be used by NYSDOT, the NYS Thruway Authority, the NYS Canal Corporation and County Highway Departments statewide.

Payment items for asbestos-containing bridge and highway material removals reference use of BV 14. Site specific application of BV 14 depends on several logistical factors and decisions on the application of BV 14 to a particular project must be determined in connection with selection of the corresponding payment item for associated material abatement work. A brief description of BV 14 is provided as follows and a copy is provided in Attachment 1.3.F.

**Blanket Variance 14, Statewide Bridges & Highways**
Provisions included under this variance allow for the removal of a variety of non-friable materials from surfaces and substrates on bridges. These include various bond breakers, joint fillers, caulks, grouts, sealers, utility conduits, and similar type applications. In addition, provisions are included for removal of buried non-friable pipe in the ROW in connection with construction projects. Also included are provisions for removing asbestos coatings from structural steel on bridges during both rehabilitation/demolition work and during bridge painting.

The complete BV 14 is provided as Attachment 1.3.F. and lists all of the required conditions set forth by NYSDOL. If any of these conditions cannot be met, then the project must either comply with the regulation as written or have a site specific variance approved for the work. Typically economic and feasibility factors associated with full compliance of the regulation determine the need to have a site specific variance petition prepared and submitted to NYSDOL for approval. Most bridge and roadway abatement projects, unless they are minor in scope, which do not meet the criteria of BV 14 will require a site specific variance mainly due to offsetting the abatement cost.

**Project Site Specific Variances to 12 NYCRR 56**

The Labor Law permits the Commissioner of Labor to grant variances to the procedures delineated in 12 NYCRR 56 when a petitioner can demonstrate, for either a statewide application or a specific project, that full compliance with 12 NYCRR 56 constitutes a hardship and that the petition procedures will ensure equivalent or greater public health and safety during the work. Statewide application of a variance petition is considered blanket in type because it can be used
on multiple projects and typically does not expire for several years. Individual project application of a variance petition is considered site specific in type because it can be used only for a single project site or structure and typically expires following completion of the work.

Project site specific variances are typically required for projects where the criteria of either an applicable variance or blanket variance cannot be feasibly met. In many instances that involve materials or applications which are not covered by either an applicable or blanket variance and it is either not feasible or cost prohibitive to comply with 12 NYCRR 56, a project site specific variance must be obtained.

The preparation of a site specific variance petition is typically performed by the party who has performed the asbestos assessment and made the recommendations for the appropriate payment items. The determination for the need to petition NYSDOL for a project site specific variance should have been completed as part of the assessment. The asbestos assessment should have included review of existing applicable and blanket variances and concluded in a determination for the need to obtain a project site specific variance for the work.

Project site specific variances involve preparation of a petition application and a review fee of $350.00 to be submitted to the NYSDOL Office of Engineering Services. The review period can be expected to involve anywhere between two and eight weeks by NYSDOL. The late Spring and early Summer months typically involve longer review periods due to the backlog of variance petitions caused by summer school construction work. It is critical that if consultant inspections determine the need to obtain a project specific variance for the work, those petitions should be prepared and submitted directly following review of the inspection report by the Region so that the approved variance can be provided with the Plans, Specifications and Estimates (PS&Es) during project bidding.

If the variance petition has not been approved by PS&E completion, then a copy of the petition application should be provided in the PS&E.

Many asbestos abatement contractors bid asbestos work based on their ability to obtain a less cost prohibitive project specific variance for the work. There currently is no restriction on abatement contractors performing Department work from petitioning NYSDOL for their own project specific variance. Although contractors are permitted to petition NYSDOL for these variances, the Region should require review of these applications prior to submission for NYSDOL approval. Either Regional or consultant staff should verify that the information in the contractor petition is correct and applicable to the project.

VI. **ABATEMENT CONSTRUCTION MANAGEMENT**

Construction guidance associated with the 2006 amendments to 12 NYCRR 56 was previously provided in EI 07-003 (see attachment 1.3.D.).

**Compliance Air Quality Monitoring**
12 NYCRR 56 now requires that all compliance air quality monitoring associated with asbestos abatement activities be contracted independently by the Department. Contractors and/or asbestos subcontractors are no longer allowed to provide these services under their work. Compliance air monitoring is required during asbestos abatement as follows:

- On small and large size asbestos projects (greater than 10 square feet or 25 feet of ACM) involving removal/abatement inside negative pressure enclosures
- For minor sized asbestos project(s) (less than 10 square feet or 25 feet of ACM) if the project consists of multiple minor size work areas that in total amount to greater than the small/large project size and involve removal/abatement inside a negative pressure enclosure
- For projects involving asbestos debris clean-up interior to a building or structure
- For projects being performed under a NYSDOL regulatory variance that specifies compliance air quality monitoring

All compliance air quality monitoring services shall be provided through the Asbestos Services Term Agreement contracts. These contracts cover Upstate West (Regions 3, 4, 5 & 6), Upstate East (Regions 1, 2, 7 & 9) and Downstate (Regions 8, 10 & 11). Requests for these services should be directed to Consultant Management Bureau through the Regional Construction Group at least two months prior to the start-up of any asbestos work on the contract.

Compliance air quality monitoring for asbestos work involves collection of a known volume of air through a filtered cassette and analyzed for fiber concentrations. Sample results are required to be reported within 72 hours from the time of collection unless otherwise specified by a variance. The analytical criteria that is used in evaluating the performance of the contractor during abatement activities and following abatement work for each work area is 0.01 fibers per cubic centimeter of air or the highest background sampling result, whichever is greater. If the results indicate exceedances of this criteria during the abatement work, the contractor is required to cease removal activities and to make the corrections required in either his work practices or engineering controls in order to bring the work back into compliance. If the results indicate exceedances of this criteria during post-abatement sampling, the contractor is required to reclean the work area as many times as required in order to meet the criteria. A copy of all clearance sample results are required to be sent to the NYSDOL office closest to the project (addresses of Regional NYSDOL offices are listed on the last page of 12 NYCRR 56 provided as Attachment 1.3.A.4.).

**Project Monitoring**

12 NYCRR 56 now requires that, prior to collection of any set of work area final clearance air sampling (on projects that require compliance air sampling) or prior to work area teardown (on contracts that do not require compliance air monitoring), a visual inspection of the work area be performed by a NYSDOL certified Asbestos Project Monitor. These required visual inspections are currently the only regulatory requirement associated with use of a project monitoring during asbestos abatement work.
Contracting for a project monitor, who can assist Construction project staff with documentation and abatement oversight for the entire asbestos work duration continues to be an option for the Department. A project monitor is currently the only method of Department-interest abatement supervision in association with contractor submittal reviews, abatement supervision, regulatory compliance, project documentation, etc. Typically Department staff are not trained or certified to review asbestos contractor submittals, enter abatement regulated work areas or otherwise direct asbestos abatement operations. 12 NYCRR also now requires that a project record be available onsite during the abatement activities and maintained by the Department. If a project monitor is not assigned to the contract for all of the abatement activities, the project record is still required to be maintained by the Department on a daily basis. This daily project record includes the following:

1. Copies of NYSDOL Asbestos Handling Licenses for all asbestos contractors involved in the project (abatement contractor or subcontractor, compliance air monitoring, project monitor)
2. Copies of abatement contractor or subcontractor NYSDOL supervisor and handler certifications
3. Copies of NYSDOL and USEPA project notifications
4. Copies of all NYSDOL regulatory variances being used on the contract
5. Copies of all compliance air sampling results and air sampling technician sample log (if compliance air sampling is required for asbestos work)
6. Copies of the project monitor daily logs and visual inspection reports
7. Copies of the abatement contractor supervisor daily log with worker entry/exit logs for each work area
8. Copies of all bulk sample data and survey report(s) completed during the assessment for the project

The abatement contractor supervisor logs have historically been provided to project Construction staff as part of the abatement contractor post-submittal package explicitly required in the standard specification, however 12 NYCRR 56 now requires this documentation on a daily basis in addition to the air sampling technician and project monitoring logs. The remainder of the documentation listed above shall be submitted to project construction staff before any abatement work takes place.

Asbestos project monitoring has always been and continues to be an independent contractual arrangement by the Department. All asbestos project monitoring services shall be provided through the Asbestos Services Term Agreement contracts. These contracts cover Upstate West (Regions 3, 4, 5 & 6), Upstate East (Regions 1, 2, 7 & 9) and Downstate (Regions 8, 10 & 11). Requests for these services should be directed to Consultant Management Bureau through the Regional Construction Group at least two months prior to the start-up of any asbestos work on the contract.

**Waste Disposal**

The disposal of removed asbestos-containing material must conform to the requirements of 40
CFR Part 61. Under this part, friable asbestos-containing material and asbestos collected in pollution control devices must be disposed of at a waste disposal site operated in accordance with the provisions of §61.156. Non-friable asbestos-containing material may be disposed of at a site approved to accept construction and demolition debris (Non-friable asbestos waste does not require regulatory shipment records, however Regions may request disposal receipts in order to verify proper C&D disposal). The handling and disposal of the removed asbestos-containing material is covered by NYSDEC Rules & Regulations 6 NYCRR Part 360. Under this part friable asbestos waste must be transported by a 6 NYCRR Part 364 permitted hauler and disposed of in an approved solid waste facility. NYSDEC has a listing of approved solid waste facilities for friable asbestos waste. The list is constantly being updated and it is recommended that the local NYSDEC Regional Office be contacted to obtain a current listing of approved facilities in the project area (current NYSDEC directory provided as Attachment 1.3.K.). On many projects, friable asbestos waste is transported out of state to less costly approved solid waste facilities. These facilities, if proposed for the project, should also be verified for asbestos disposal approval through similar environmental out-of-state agencies.

Record keeping Documentation

Record keeping is a significant requirement of state and federal regulations in connection with asbestos abatement. Contractors performing asbestos abatement work, including compliance air quality and project monitoring, are required to record their individual activities during the work on a daily basis and maintain those records for at least 30 years following each project. Employee medical monitoring, training and certification records are also required to be maintained by asbestos abatement contractors.

Specific activities associated with the actual abatement work that are required to be recorded by the removal company on a daily basis include work hours, worker entry/exit documentation, engineering control (i.e., isolation barriers, ventilation, decontamination, etc.) maintenance & performance integrity, waste generation, and work area security. Visual inspections by the onsite supervisor during work area preparation, removal, cleaning and clearance are additionally required to be recorded on a daily basis. These daily records are also required to document modifications to either the work area or work practices implemented as a result of engineering control failure and/or compliance air quality monitoring criteria exceedances.

Specific activities associated with the compliance air quality monitoring that are required to be recorded by the sampling company on a daily basis include phase of work project is currently being sampled for, sample duration and sample locations. Previous sample results are also required to be distributed to the removal company and the project monitor on a daily basis. Sample turn-around is required in 12 NYCRR 56 to be a minimum of 72 hours and variances may require shorter periods of time.

Specific activities associated with the project monitoring that are required to be recorded by the project monitoring company on a daily basis include the same activities that are listed for the removal company in addition to the required work area clearance inspections.
Following the completion of the abatement work, copies of all documentation along with original sample results and waste manifests should be submitted to the Department for project record. This documentation should be kept by each Region. Without this documentation on record the Department has no written verification of what work took place, who performed the work, or what waste was generated and land-filled. In addition, copies of all asbestos bridge abatement reports must be maintained in each Region. Asbestos bridge abatement reports are particularly important because they provide documented reference information that will be used in association with future rehabilitation or reconstruction work. These reports or report summaries should be generated by the project monitor for Regional staff. Copies of the bridge reports or report summaries should be maintained in the Regional BIN folders/files until such time that the bridge(s) are totally replaced. An example of an asbestos information sheet that can be used to summarize the information for the BIN folders/files is provided in Attachment 1.3.G.

**VII. UTILITIES**

Many of the asbestos cement conduits, pipes and insulated lines encountered on bridges and underneath the ground are owned by utilities. The following guidance is provided regarding the utility asbestos removal in association with Department projects:

1. **BV 14** has been approved for restricted use by Department, NYSTA, NYSCC and County contractors. This variance is non-transferable in that a utility owner cannot perform asbestos abatement work utilizing our BV provisions and conditions. However, copies of Department blanket variance(s) may be shared with a utility owner for their use as guidance in preparing and submitting petitions for either blanket or site specific variances from NYSDOL.

2. Project asbestos abatement work which is the Department's responsibility will include the asbestos removal work in our contract, as bid items rather than agreed price or force account items.

3. Project asbestos abatement work which is the utility's responsibility will include early notification, during the design process, to the utility owner that there is a need to remove asbestos-containing material. If the utility desires or when the utility's schedule would delay our contractor, the Region should include the work under the Department contract and back charge the utility company pursuant to a betterment agreement. The removal work should be performed using lump sum - force account/agreed price items.