

ASBESTOS ABATEMENT & MANAGEMENT IN BUILDINGS

**MODEL GUIDE
SPECIFICATIONS**



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Preface

The National Institute of Building Sciences (NIBS) is pleased to provide this document, Model Guide Specifications, Asbestos Abatement in Buildings, for use by the sectors of the building community engaged in asbestos abatement activities.

The Institute would like to acknowledge the financial support of the following organizations and agencies in this work effort:

American Consulting Engineers Council
Association of the Wall and Ceiling Industries, International
Building Owners and Managers Association International
General Services Administration
National Asbestos Council
National Association of Demolition Contractors
National Training Fund
Naval Facilities Engineering Command
Safe Buildings Alliance
Sheet Metal and Air Conditioning Contractors' National Assoc.
U.S. Environmental Protection Agency
Veterans Administration

In addition, the NIBS Board of Directors is appreciative of the leadership and expertise brought to this project by Mr. Wayne P. Ellis, standards consultant, who served as Chairman of the Institute's Asbestos Task Force.

The understanding of methods of dealing with friable asbestos materials in buildings continues to evolve. Today, many aspects of asbestos abatement are primitive and poorly defined. Procedures involving air monitoring and microscopy are sophisticated and involve highly specialized and skilled professionals. Standards and regulations which address asbestos abatement are evolving and changing rapidly.

This consensus document attempts to set forth the "state-of-the-art" of asbestos abatement in buildings today. Experts from a broad cross-section of the building, scientific, and medical communities helped shape the guide specifications as a resource document. The Institute intends that design professionals, building owners, and contractors avail themselves of this reference tool and obtain the necessary expertise with which to make rational decisions concerning asbestos.

The Institute's Board of Directors recognizes the fine effort that went into this document developed from many sources, and is grateful to the many experts who contributed to this effort and to members of the Task Force Steering Committee and other members of the Task Force who reviewed and analyzed a vast quantity of information. A valuable public service has been performed by the Institute's Asbestos Task Force.



Thomas M. Moses
Chairman of the Board



Gene C. Brewer
President

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DISCLAIMER

THESE MODEL GUIDE SPECIFICATIONS WERE DEVELOPED IN RESPONSE TO A PRESSING NATIONAL NEED FOR GUIDANCE IN THE AREA OF ASBESTOS ABATEMENT EXPRESSED BY BOTH PUBLIC AND PRIVATE INTERESTS. THE NATIONAL INSTITUTE OF BUILDING SCIENCES (NIBS), IN AN EFFORT TO HELP TO FORMULATE SUCH GUIDANCE, PROVIDED A FORUM FOR A BALANCED GROUP OF PRIVATE AND PUBLIC REPRESENTATIVES TO BRING TO BEAR THEIR PROFESSIONAL JUDGMENT AND EXPERTISE TO THE ISSUES PRESENTED. THE GUIDE SPECIFICATIONS WERE DRAFTED BY A QUALIFIED INDEPENDENT CONTRACTOR, AND WERE REVIEWED, MODIFIED, REFINED AND APPROVED BY A VOLUNTEER TASK FORCE COMPOSED OF A BROAD CROSS SECTION OF EXPERTS, WHOSE WORK WAS FACILITATED THROUGH THE ADMINISTRATIVE SPONSORSHIP OF NIBS.

NEITHER NIBS, IN ITS CAPACITY AS THE FACILITATOR OF THE PROCESS THAT CULMINATED IN THE MODEL GUIDE SPECIFICATIONS, ASBESTOS ABATEMENT IN BUILDINGS, NOR ANY OF THE ORGANIZATIONS OR AGENCIES CONTRIBUTING FINANCIAL OR TECHNICAL SUPPORT MAKES ANY WARRANTY WITH RESPECT THERETO. NEITHER NIBS NOR ANY OF THE ORGANIZATIONS OR AGENCIES CONTRIBUTING FINANCIAL OR TECHNICAL SUPPORT ASSUMES ANY RESPONSIBILITY FOR ANY INJURY TO INDIVIDUALS OR PROPERTY SUSTAINED AS A RESULT OF THE USE OR APPLICATION OF THE MODEL GUIDE SPECIFICATIONS. IT SHOULD BE NOTED THAT:

- * ASBESTOS ABATEMENT ACTIVITIES INVOLVE POTENTIAL HEALTH RISKS TO THOSE IN PROXIMITY TO THE ABATEMENT SITE.
- * EXPERTS FROM THE BUILDING, SCIENTIFIC AND MEDICAL COMMUNITIES HAVE DIFFERING VIEWS AS TO MANY ASPECTS OF PROPER ASBESTOS ABATEMENT. THE PURPOSE OF THIS DOCUMENT IS TO BRING TOGETHER, FROM MANY SOURCES, INFORMATION AND VIEWPOINTS REFLECTING CURRENT KNOWLEDGE AND TECHNOLOGY.

THE MODEL GUIDE SPECIFICATIONS MUST BE CONSIDERED SOLELY AS A RESOURCE DOCUMENT REPRESENTING A CONSENSUS OF EXPERT OPINION. IT IS NOT THE PURPOSE OR BURDEN OF THIS DOCUMENT TO PROVIDE ALL-EMBRACING ANSWERS TO ALL ASBESTOS ABATEMENT PROBLEMS.

IT IS INTENDED THAT THE DOCUMENT SERVE AS A GUIDE FOR DESIGN PROFESSIONALS AND BUILDING OWNERS IN DEVELOPING CONTRACT DOCUMENTS FOR ASBESTOS ABATEMENT. USERS MUST BEAR ANY RISKS ASSOCIATED WITH RELIANCE ON THESE GUIDELINES AND SHALL HAVE THE SOLE RESPONSIBILITY TO EVALUATE THE INFORMATION CONTAINED HEREIN, TO FORM THEIR OWN INDEPENDENT JUDGMENTS AS TO USING IT, AND TO MODIFY OR ADAPT IT AS MAY BE APPROPRIATE TO SPECIFIC CIRCUMSTANCES.

THESE MODEL GUIDE SPECIFICATIONS ARE NOT LAWS. WHILE THIS DOCUMENT REFERS IN SOME CASES TO CERTAIN FEDERAL AND STATE LAWS AND REGULATIONS, IT IS NOT INTENDED TO SUPERSEDE OR SUPPLEMENT ANY LAW OR REGULATION OR TO IDENTIFY ALL LAWS AND REGULATIONS APPLICABLE TO ASBESTOS ABATEMENT IN BUILDINGS.

NIBS DOES NOT ASSUME RESPONSIBILITY FOR THE CURRENCY OF REFERENCED DOCUMENTS, REQUIREMENTS, OR OTHER PROVISIONS, OR THE MODELS OR NAMES OF MANUFACTURED EQUIPMENT INCLUDED IN THESE MODEL GUIDE SPECIFICATIONS.

Introduction

The National Institute of Building Sciences (NIBS) is pleased to provide these Model Guide Specifications, Asbestos Abatement in Buildings as a resource for persons interested in asbestos abatement in buildings. This material is offered in response to a national need for authoritative advice and guidance in the design and execution of abatement of asbestos-containing materials (ACM) in the following four categories of activity:

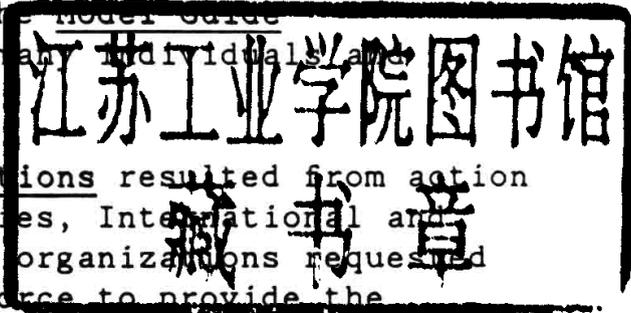
- 1) maintenance and repair
- 2) encapsulation
- 3) enclosure
- 4) removal

A number of user groups are expected to benefit from the direct use of this information. Of primary interest to design professionals (architects and engineers), building owners, and abatement contractors, this document provides an outline of important information on specifying asbestos abatement and maintenance and repair of ACM in buildings. Regulatory agencies may also find valuable information in the Model Guide Specifications. It is expected that, over time, a more consistent approach to asbestos abatement projects will evolve through the proper use of this guidance material.

As a consensus document, these Model Guide Specifications reflect the concerns and viewpoints of many members of the Institute's Asbestos Task Force who contributed time and effort to define model procedures that may be used to achieve quality and consistency in asbestos abatement work. This document was developed by the consulting firm of ENTEK, Environmental & Technical Services, Inc., under contract to the Institute. Refinements to materials prepared by the contractor were made over a twelve month period through a series of highly technical review sessions and written correspondence. Experts from a broad cross-section of building science disciplines helped shape the Model Guide Specifications and special recognition is due many individuals and organizations.

The development of these Model Guide Specifications resulted from action by the Association of Wall and Ceiling Industries, International and other building community organizations. These organizations requested the Institute to form the NIBS Asbestos Task Force to provide the leadership necessary to develop and publish these Model Guide Specifications as a building community wide effort. The Institute and all others involved in bonafide asbestos abatement efforts are indebted to the initiative and participation of these organizations.

The many contributors who participated in various stages of the preparation of the document are listed in Appendix A, Participants, NIBS' Asbestos Task Force. A vast quantity of technical data and sample specifications were reviewed by the Task Force, the contractor, and the Institute's staff during the formulation of the final text.



Background

Airborne asbestos in buildings can be a significant environmental problem. Various health effects have been linked with industrial exposure to airborne asbestos, and the extensive use of asbestos-containing materials in buildings has raised concerns about exposure to asbestos in non-industrial settings. Surveys conducted by the United States Environmental Protection Agency (EPA) estimate that asbestos containing materials can be found in approximately 31,000 schools and 733,000 other public and commercial buildings in this country.

In buildings, ACM is typically found in four forms: (1) sprayed or troweled on ceilings and walls (surfacing material); (2) in thermal insulation around pipes, ducts, boilers, tanks (pipe and boiler insulation); (3) fire proofing on structural members; (4) in a variety of other products such as ceiling and floor tiles, roofing felts and shingles, and wall boards. In general, ACM in the first two categories is of greatest concern, especially if it is friable. Friable means material that can be crumbled, pulverized, or reduced to powder by hand pressure when dry.

The presence of asbestos in a building, if not air-borne, does not mean that the health of building occupants is necessarily endangered. The historical concern about exposure to asbestos in buildings is based on evidence linking various respiratory diseases with occupational exposure in the shipbuilding, mining, milling, and fabricating industries. As long as ACM in buildings remains in good condition and is not disturbed, exposure is unlikely. When building maintenance, repair, renovation or other activities disturb ACM, or if it is damaged, asbestos fibers may be released creating a potential hazard to workers engaged in or in the proximity of these activities and, if performed without proper safety precautions, building occupants. Although not required to do so by federal law, the prudent building owner may wish to take steps to limit building occupants' exposure to airborne asbestos.

In 1983 the EPA prepared and distributed "Guidance for Controlling Friable Asbestos-Containing Materials in Buildings" (USEPA 1983a). Since this guidance was published, the EPA has gathered additional information and has gained valuable experience through its continuing Asbestos-in-Buildings Program. In June of 1985, EPA substantially revised and re-issued the guidance document to reflect comments and suggestions of building owners, architects, engineers, contractors, hygienists, physicians, academicians and others. (EPA 560/5-85-024, June 1985). This document is widely known as the "Purple Book."

The National Institute of Building Sciences contributed to the 1985 revisions to the EPA's document. The resulting EPA publication is a comprehensive document with background data that would also be useful to users of this document. The NIBS' Model Guide Specifications are technically consistent with the EPA's document and should be considered complementary to the procedures and recommendations set forth by the EPA.

Proliferation of guide specification materials concerning asbestos abatement in buildings has occurred as a result of heightened public concern over the unknown risks posed by asbestos. Variations in style, format and content in these specifications, and uncertainty as to applicable procedures, standards and regulations have caused confusion among architects, engineers, contractors, public health professionals, and building owners and users. Some agencies have developed asbestos abatement guide specifications with format, organization, and content unfamiliar to building owners, design professionals, and contractors. This has contributed to the need for action by NIBS to prepare accurate and comprehensive guidance in a format usable by the building community.

The Institute's Model Guide Specifications for asbestos abatement in buildings are provided in response to a national need for authoritative advice and guidance. The building community at large recognized the void that existed in its knowledge base concerning treatment of asbestos containing materials. Through NIBS, a highly qualified building community Task Force was formed to develop this document to fill that void. Information provided in the Model Guide Specifications has been developed by the building community for use by the building community and its many sectors. The Institute, in its convening and monitoring role, is pleased to assist architects, engineers, building owners, industrial hygienists, contractors, and others as they attempt to determine proper abatement actions and maintain a healthy and safe built environment.

Regulatory Concerns

In response to federal statutes, testing for ACM is required in primary and secondary schools only. At present, no federal regulations require testing for other public or commercial buildings. Further, although asbestos abatement related legislation has been introduced in the Congress, no federal current federal statutes or regulations require abatement actions (removal, enclosure, or encapsulation) or repair unless the building containing asbestos containing materials in stipulated quantities is to be demolished. Decisions to take specific abatement actions are generally the responsibility of each owner.

OSHA (Occupational Safety and Health Administration) regulations specifying work practices and the EPA rules governing the handling and disposal of asbestos apply to abatement actions. State regulations on these issues vary and may be more stringent than federal requirements. Statutes and regulations are rapidly being promulgated and revised at all levels of government. It is imperative that owners, architects, engineers, abatement contractors, and others research federal and applicable state and local regulations before undertaking any asbestos abatement. The Model Guide Specifications do not supersede any provision of federal or state law and should be used only in conjunction with appropriate requirements of federal and applicable state and local regulations. In many instances, the Model Guide Specifications point out specific clauses and provisions where the owner, architect, or contractor must refer to federal or state requirements in writing or amending specification materials for project use.

Asbestos Abatement

An asbestos abatement project is essentially a construction project with some components that are similar to highly specialized demolition or renovation work. However, asbestos abatement is not a typical demolition or renovation project. Great care must be taken by everyone involved and asbestos-related work should be approached as environmental decontamination. Asbestos abatement should be undertaken only after the identification of ACM in a building and the development of a management plan which establishes the appropriate type of actions to be taken.

Once a building owner determines the need for abatement action, the process usually starts with the owner engaging the services of a qualified architect or engineer to determine the project requirements. These project requirements are defined in the contract documents. The contract documents should include the form of agreement, general, supplementary and other conditions, drawings, specifications, addenda, and amendments. It is imperative that the various documents comprising the contract be carefully coordinated.

Portions of the contract documents are issued, as a bid package, for competitive bidding or for negotiation with a pre-selected contractor. The qualified low bidder, if the job is bid rather than negotiated, is usually selected and becomes the contractor responsible for providing the labor, equipment, and materials necessary to complete the project.

Roles and Responsibilities

It is unusual for an architectural/engineering (A/E) firm to have the expertise needed for all of the technical aspects of an asbestos abatement project; thus, an environmental consultant may be needed. It is critical to the success of a project that both the contract document preparation skills of an A/E and the specialized technical knowledge of an environmental consultant be obtained. Qualified certified industrial hygienists, risk assessment specialists, air sampling technicians, indoor air quality experts, and chemists are among the broad range of professionals whose services may be necessary for an abatement project.

It is important that the building owner seeking qualified A/E and environmental services thoroughly evaluate candidate consultants through review of the firm's past work and other qualifications. Similarly, the owner should determine the qualifications of potential contractors before or during the bidding process. The owner may seek information from organizations for which a contractor has performed similar work and evaluate information about the contractor's staff, equipment, experience, and other relevant information categories.

Although the participants may vary somewhat in an asbestos abatement project, the contractual relationships among building owners, architects and engineers, and contractors are similar to the time-honored relationships in other, more traditional, types of construction.

During the construction phase, the design professional usually certifies the contractor's payment requests, processes change orders and ultimately certifies the project's completion. The roles and responsibilities which exist among the involved parties are usually expressed in great detail in a series of contracts. For most projects the contracts used are standard forms issued by a professional organization, such as the American Institute of Architects. To act in his interest during the construction phase, the owner may hire a project representative, who will remain on the job on a full time basis to determine whether the work is performed in accordance with the contract requirements as technically defined by the drawings and specifications. This person may be authorized to make decisions with regard to the work or give directions to the contractor on the owner's behalf.

The history of asbestos abatement includes numerous problems that have arisen from improper technical specifications and other contract documents issued by either environmental consultants or architects/engineers working alone. The Model Guide Specifications are intended to provide a basis for the preparation of technical project specifications as a part of a comprehensive set of contract documents.

The preparation of the balance of the contract documents (eg. drawings, owner-contractor agreement, general, supplementary, or other conditions, addenda, and modifications issued after execution of the contract) is a typical professional service available by architect/engineer firms and as such is not discussed in detail in this publication.

Defining the scope of the work is the responsibility of the design team. The owner should be aware that he is contracting for services specifically defined in the contract documents, and not for simply removing all asbestos, or, "making the building safe." The contractor is entitled to rely on the contract documents as the basis for his work.

In arriving at a contract price, the contractor is entitled to rely on the accuracy of the scope of work defined by the contract documents. If work has been omitted from the drawings and specifications, or is improperly described, the contractor is entitled to an equitable change order in accordance with terms of the contract.

The contractor's responsibility is to supply the labor, materials and equipment necessary to complete the work. He is not called upon to determine whether a building presents a health hazard or is safe to re-enter after abatement work is complete. These are determinations made by the owner's professional representatives.

Cautions

It is recognized that every building owner may not make use of licensed and qualified design professionals or qualified environmental consultants in the assessment and design of an abatement project. However, it is unlawful in most states for anyone other than a licensed architect or

engineer to design, specify, or administer construction or renovation projects. In such states, where it is unlawful for building renovation work to be conducted without a licensed design professional, building owners must comply with applicable laws and regulations. If there is a question as to these requirements, contact the state's regulatory authority having jurisdiction over the project.

The Model Guide Specifications are not to be photocopied directly from this document and issued to a contractor as the basis for performing asbestos abatement work. Careful review and editing by a qualified design professional, with the assistance of qualified environmental consultants, of all applicable specification sections are necessary to achieve accuracy and coordination of work required and correct application to particular projects. Using material directly from this publication will be counterproductive and contractors may be misguided by such action. Consult with qualified design professionals in the use of this document to develop project-specific asbestos abatement specifications.

Based on recent reports by design professionals, contractors, insurers, and government representatives, liability insurance covering asbestos abatement work is either scarce or unavailable. For the foreseeable future, such insurance may not be available for architects and engineers practicing asbestos abatement design. Although alternative solutions such as indemnification have been discussed, current law does not permit federal agencies to indemnify A/E's or contractors. Although ad hoc solutions may be available for some projects, suitable long term solutions have not yet been identified.

Because of the unavailability of this insurance, many A/E's have elected not to perform asbestos abatement design work. However, because there is an increasing need for these services, the unavailability of insurance notwithstanding, other A/E firms have decided to specialize in asbestos abatement design. As a result, building owners may decide to contract with one design team for asbestos abatement work and another team for traditional building design services, all for a single building project.

It must be understood that asbestos-containing materials used in buildings were originally specified for their durability, thermal or acoustical properties. The use of asbestos as a building material was accepted and common practice prior to 1973. Building owners which happen to have asbestos in their buildings should clearly understand that the ACM was originally specified and installed for important functional or life-safety reasons. Removing the ACM or in some way modifying the ACM (encapsulating, enclosing, or encasing) may present serious problems regarding the performance of certain building elements related to fire safety or other functions. Care should be taken to consult with building, fire and other applicable officials to assure that the building remains in compliance with applicable laws and regulations before, during, and after an asbestos abatement project.

There has been extensive litigation arising from the use of asbestos in buildings. Similar risks may arise from the asbestos abatement process.

In order to minimize such risks, building owners and their architects, engineers, consultants and contractors must use accurate technical information, and prudent judgment in choosing and implementing an abatement procedure.

Project Administration

In asbestos abatement projects, the standard contractual relationships among the owner, design professional and contractor vary from traditional construction practice in the area of on-site project administration. The duties, responsibilities and limits of authority of an owner's project representative have been well defined by past construction practice as a passive observer who reports to the design professional or owner. In an asbestos abatement contract this individual should have a much more active role with greater authority and responsibility. The project administrator is extremely important to the project. The owner should take great care in selecting a qualified individual for this position.

In a matter of minutes, serious violations of proper asbestos abatement procedures can occur with the possibility of contamination of the building outside the work area or danger to the worker. In an abatement project, the owner is paying for a procedure rather than a finished project for which compliance can be determined by inspection only at completion. If the procedure is improperly carried out, asbestos fibers can be disseminated beyond the work site or asbestos contamination could remain after completion of work. The only protection the owner has is continuous on-site monitoring of the work by a professional able to make judgments at the work site. This professional is essentially responsible to the owner for contract enforcement.

The project administrator needs to be an air-monitoring technician and microscopist trained in contract administration and asbestos abatement techniques. This individual will take air samples and analyze them in a lab set up at the job site. This air monitoring is carried out to insure that airborne fiber levels in the work-site remain under control and asbestos fibers do not drift out of the work and into the rest of the building or outdoors. Frequently, an almost immediate turn around time on air sample analysis is needed if airborne fiber counts are high or contamination beyond the work-site threatens.

As the abatement process proceeds, there is generally continuous interaction between the project administrator, as the owner's quality control agent, and the contractor. During this interaction, the project administrator must be aware of his responsibility and authority with respect to the contract between the owner and contractor. It is possible for the project administrator to compromise the owner's contract by becoming over involved with direction to the contractor or even assisting in the work.

It is critical that the project administrator be aware of the line between quality control for the owner and usurping the contractor's responsibility to perform the work. If this line is crossed, the

responsibility and corresponding liability for successful abatement could in part be transferred from the contractor to the owner.

The project administrator will usually be the most technically knowledgeable individual on the job site and will continually be called upon to interpret the contract requirements to meet specific conditions that arise during the work. As such, this person must be an expert in the reasons and purpose for the procedures specified so that they can be adapted to a particular situation and still maintain the intent of the contract.

To protect the owner's interest, the project administrator should have specific authority from the owner to stop all work if a hazardous situation arises. This guide specification contains performance requirements in specific areas (eg. airborne fiber counts, integrity of work place isolation) that call for work to stop if the requirements are not met.

Use of other Documents

This Model Guide Specification is coordinated with and formatted in a way consistent with "MASTERSPEC"¹, a subscription guide specification service available from the American Institute of Architects Service Corporation. To the extent possible, this guide specification contains necessary "boiler-plate" language from certain MASTERSPEC sections, reproduced and incorporated herein with the permission of the AIA Service Corporation. Where reference is made to the AIA's written specification or contract materials not contained in this document, users should contact the American Institute of Architects Service Corporation for required materials.

The following sections are essentially "MASTERSPEC" sections edited and with material added.

01043	Project Coordination - Asbestos Abatement
01091	Definitions and Standards - Asbestos Abatement
01313	Schedules, Reports, Payments - Asbestos Abatement
01340	Shop Drawings, Product Data & Samples
01632	Products and Substitutions
01701	Project Closeout - Asbestos Abatement
09251	Gypsum Drywall - Asbestos Enclosures

¹. MASTERSPEC is a registered trademark of the American Institute of Architects Service Corporation.

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The Institute is grateful for the excellent work of the Asbestos Task Force which evolved this document and is indebted to the fine leadership of Wayne P. Ellis, former Chairman of ASTM, for serving as chairman of the Task Force, presiding over the meetings, and insuring that the many points of view were adequately addressed throughout the project. In addition, the Institute wishes to recognize the active participation and technical contribution made by the Task Force Steering Committee comprised of the following individuals:

Albert L. Apter	Hercules Demolition Corporation of Virginia
Bruce Atlas	City of New York, Department of General Services
William Baker	National Association of Demolition Contractors
John Biechman	BOMA, International
Brian Bramell	Alternative Ways Inc.
John S. Bush, Jr.	USG Corporation
Gene Erwin	Assn. of the Wall & Ceiling Industries, International
Steve Hays	The Project Management Group
Stewart Huey	National Asbestos Council
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Chris Matthews	U.S. Naval Facilities Engineering Command
Sheldon Steinbeck	American Council on Education
James Parker	General Services Administration
Robert L. Petterson	AIA Service Corporation
Stephen Schanamann	Environmental Protection Agency
Charles F. Tarr, Jr.	New Jersey, Dept. of Community Affairs
Frederick C. Treadway	Specialty Systems, Inc.
John F. Welch	Safe Buildings Alliance

Contractor: ENTEK, Environmental & Technical Services, Inc. Key members of the contractor's team were:

Roger G. Morse, AIA
Robert N. Sawyer, M.D., FACPM

General Legal Reviewer: Arthur T. Kornblut, Esquire.

