

**SECTION 01 26 57
 CHANGE ORDER REQUESTS (COR)**

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PART 1 – GENERAL

1.1. SUMMARY

- 23 A. Except in cases of emergency, no changes in the Work required by the Contract Documents may be made
 24 by the General Contractor (GC) without having prior approval of the City Engineer or his representative.
 25 B. The City may at any time, without invalidating the Contract and without Notice to Sureties, order changes in
 26 the Work by written Change Order (CO). Such changes may include additions and/or deletions.
 27 C. Where the City desires to make changes in the Work through use of written Change Order Request (COR), the
 28 following procedures apply:
 29 1. If requested by the City, the GC shall prepare and submit a detailed proposal, including all cost and time
 30 adjustments to which the GC believes it will be entitled if the change proposed is incorporated into the
 31 Contract. The City shall be under no legal obligation to issue a Change Order for such proposal.
 32 2. The parties shall attempt in good faith to reach agreement on the adjustments needed to the Contract to
 33 properly incorporate the proposed change(s) into the Work. In the event that the parties agree on such
 34 adjustments, the City may issue a Change Order and incorporate such changes and agreed to
 35 adjustments, if any.
 36 3. In some instances, it may be necessary for the City to authorize Work or direct changes in Work for which
 37 no final and binding agreement has been reached and for which unit prices are not applicable. In such
 38 cases the following shall apply.
 39 a. Upon written request by the City, the GC shall perform proposed Work
 40 b. The cost of such change may be determined in accordance with this specification.
 41 c. In the event agreement cannot be accomplished as contemplated herein, the City may authorize
 42 the Work to be performed by City forces or to hire others to complete the Work. Such action on
 43 the part of the City shall not be the basis of a claim by the GC for failure to allow it to perform the
 44 changed Work.
 45 D. Where changes in the Work are made by the City through use of a force account basis, the GC shall as soon as
 46 practicable, and in no case later than ten (10) working days from the receipt of such order, unless another time
 47 period has been agreed to by both parties, give the City written Notice, stating:
 48 1. The date, circumstances and source of the extra work; and,
 49 2. The cost of performing extra work described by such Order, if any; and,
 50 3. Effect of the order on the required completion date of the Project, if any.
 51 E. The giving of each Notice by the GC as prescribed by this specification, shall be a requirement to liability of the
 52 City for payment of any additional costs incurred by the GC in implementing changes in the Work. Under this
 53 specification, no order or statement of the City shall be treated as a Change Order, or shall entitle the GC to an
 54 equitable adjustment of the terms of this Contract or damages for costs incurred by the GC on any activity for
 55 which the Notice was not given.

- 1 F. In the event Work is required due to an emergency as described in this specification the GC must request an
2 equitable adjustment as soon as practicable, and in no case later than ten (10) working days of the
3 commencement of such emergency.
4 G. All GC requests for equitable adjustment shall be submitted to the CPM per the specifications below. Such
5 requests shall set forth with specificity the amount of and reason(s) for the proposed adjustment and shall be
6 accompanied by supporting information and documents.
7 H. No adjustment of any kind shall be made to this Contract, if asserted by the GC for the first time, after the date
8 of final payment.
9 I. This specification shall be used by the GC when preparing documentation for any COR to ensure each has been
10 properly and completely filled out as required by the City of Madison.
11 J. All COR documentation will be processed through the Construction Administration-Change Order Request
12 Library on the Project Management Web Site (PMWS).
13

14 **1.2. RELATED SPECIFICATION SECTIONS**

- 15 A. Section 01 26 13 Request for Information (RFI)
16 B. Section 01 26 46 Construction Bulletins (CB)
17 C. Section 01 26 63 Change Order (CO)
18 D. Section 01 31 23 Project Management Web Site
19 E. Section 01 91 00 Commissioning
20 F. Parts of this specification will reference articles within “The City of Madison Standard Specifications for Public
21 Works Construction”.
22 1. Use the following link to access the Standard Specifications web page:
23 <http://www.cityofmadison.com/business/pw/specs.cfm>
24 a. Click on the “Part” chapter identified in the specification text. For example if the specification
25 says “Refer to City of Madison Standard Specification 210.2” click the link for Part II, the Part II
26 PDF will open.
27 b. Scroll through the index of Part II for specification 210.2 and click the text link which will take you
28 to the referenced text.
29

30 **1.3. DEFINITIONS AND STANDARDS**

- 31 A. LABOR: The amount of time and cost associated with the performance of human effort for a defined scope of
32 Work. Labor is further defined as follows:
33 1. Labor rate is the total hourly rate which includes the basic rate of pay, fringe benefits plus each
34 company’s cost of required insurance, also referred to as a reimbursable labor rate.
35 2. Unit labor is the labor hours anticipated to install the corresponding unit of material.
36 3. Labor cost is the labor hours multiplied by the hourly labor rates.
37 B. MATERIAL: Actual material cost is the amount paid, or to be paid, by the GC for materials, supplies and
38 equipment entering permanently into the Work, including cost of transportation and applicable taxes. The cost
39 shall not exceed the usual and customary cost for such items available in the geographical area of the project
40 C. LARGE TOOLS AND MAJOR EQUIPMENT: Large tools and major equipment are those with an initial cost greater
41 than \$1,500, whether from the GC or other sources.
42 1. Tool and equipment use and time allowed is only for extra work associated with change orders.
43 a. Rental Rate is the machine cost associated with operating a piece of equipment for a defined
44 length of time (hour, day, week, or month) and shall not exceed the usual and customary amount
45 for such items available in the geographical area of the project.
46 b. Rental cost is the rental rate multiplied by the anticipated duration the equipment shall be
47 required.
48 2. The GC shall provide a breakdown of all rental rates to indicate what items and costs are associated with
49 the rate. Examples of items to include in the breakdown would be fuel consumption, lubrication,
50 maintenance and other similar expenses but not including profit and overhead.
51 3. When large tools and equipment needed for Change Order work are not already at the job site, the
52 actual cost to get the item there is also reimbursable.
53 D. BOND COST: The cost shall be calculated at 1% of the total proposed change order.
54 E. SUB-CONTRACTOR COSTS: Sub-contractor costs are for those labor, material, and equipment costs required by
55 subcontracted specialties to complete the Change Order work including allowable markups as outlined within
56 this specification.

- 1 F. OVERHEAD AND PROFIT Markup: The allowable markup percentage to a COR by the GC and Sub-contractors for
2 overhead and profit. All of the following are expenses associated with overhead and profit and shall not be
3 reimbursable as individual items on any COR:
- 4 1. CHANGE ORDER PREPARATION: All costs associated with the preparing and processing of the change
5 order.
 - 6 2. DESIGN, ESTIMATING, AND SUPERVISION: All such efforts, unless specifically requested by Owner as
7 additional Work to be documented as a COR or portion thereof.
 - 8 3. INSTALLATION LAYOUT: The layout required for the installation of material and equipment, and the
9 installation design, is the responsibility of the GC.
 - 10 4. SMALL TOOLS AND SUPPLIES: The cost of small hand tools with an initial cost of \$1,500 or less, along
11 with consumable supplies and expendable items such as drill bits, saw blades, gasoline, lubricating or
12 cutting oil, and similar items.
 - 13 5. GENERAL EXPENSE: The general expense, which is those items that are a specific job cost not associated
14 with direct labor and material such as job trailers, foreman truck, and similar items.
 - 15 6. RECORD DRAWINGS: The preparation of record or as-built drawings.
 - 16 7. OTHER COSTS: Any miscellaneous cost not directly assessable to the execution of the Change Order
17 including but not limited to the following:
 - 18 a. All association dues, assessments, and similar items.
 - 19 b. All education, training, and similar items.
 - 20 c. All drafting and/or engineering, unless specifically requested by Owner as additional Work to be
21 documented as a Change Order proposal or portion thereof.
 - 22 d. All other items including but not limited to review, coordination, estimating and expediting, field
23 and office supervision, administrative work, etc.
- 24 G. Contract Extension: The necessary amount of time to be added to the contract deadlines for the completion of a
25 change order.
- 26

27 **1.4. CONTRACT EXTENSION**

- 28 A. The GC shall not assume that every COR will require a Contract Extension. If the GC feels a contract extension is
29 warranted he/she shall provide sufficient scheduling information that shows how the COR being requested
30 impacts the critical path of the project.
- 31 B. The City of Madison strongly encourages the GC to explore alternative methods and practices prior to submitting
32 a COR with a request for contract extension.
- 33

34 **1.5. OVERHEAD AND PROFIT MARKUP**

- 35 A. Pursuant to the City of Madison Standard Specifications for Public Works Construction, Section 104.7, Extra
36 Work, the following maximum allowable markups shall be strictly enforced on all change orders associated with
37 the execution of this contract.
- 38 1. The total maximum overhead and profit shall not exceed fifteen percent (15%) of the total costs.
 - 39 2. The total maximum overhead and profit shall be distributed as follows:
 - 40 a. For work performed and materials provided solely by the General Contractor, fifteen percent
41 (15%) of the total costs.
 - 42 b. For work performed and materials provided solely by Sub-contractors and supervised by the
43 General Contractor:
 - 44 i. Supervision of the GC, five percent (5%) of the total Sub-contractor cost.
 - 45 ii. Sub-contractors work and materials ten percent (10%) of the total Sub-contractor cost.
- 46

47 **1.6. PERFORMANCE REQUIREMENTS**

- 48 A. The GC shall become thoroughly familiar with this specification as it will identify procedures and expenses that
49 are or are not allowed under the Change Order and Change Order Request process.
- 50 B. The GC shall be responsible for all of the following:
 - 51 1. Carefully reviewing the CB that is associated with the COR.
 - 52 2. Collecting required supporting documentation from all contractors that quantify the need for a COR.
 - 53 a. Labor hours and wage rates
 - 54 b. Material costs
 - 55 c. Equipment costs
- 56 C. The following shall apply to establishing prices for labor, materials, and equipment costs:

- 1 1. Where Work to be completed has previously been established by individual bid items in the contract bid
2 proposal the GC shall use the unit bid prices previously established.
3 2. Where Work to be completed was bid as a Lump Sum without individual bid items the GC shall provide a
4 breakdown of all labor, materials, equipment including unit rates and quantities required.
5 D. The completion date is determined by Owner. The schedule, however, is the responsibility of the GC. Time
6 extensions for extra Work will be considered when a schedule analysis of the critical path shows that the Change
7 Order Request places the Work beyond the completion date stated in the Contract.
8

9 **1.7. QUALITY ASSURANCE**

- 10 A. The GC shall be responsible for ensuring that all COR supporting documentation meets the following
11 requirements prior to completing the COR form on the Project Management Web Site:
12 1. Sufficiently indicates labor, material, and other expenses related to completing the intent of the CB.
13 2. No costs exceed the usual and customary amount for such items available in the geographical area of the
14 project, and no costs exceed those established under the contract.
15 B. The Project Architect (PA), Commissioning Agent (CxA), City Project Manager (CPM), other members of the
16 consulting staff, and city staff shall review all COR requests to ensure that the intent of the CB will be met under
17 the proposal of the COR or request additional information as necessary.
18

19 **PART 2 – PRODUCTS**

20
21 **2.1. CHANGE ORDER REQUEST FORM**

- 22 A. The COR form is located on the Project Management Web Site. The GC shall click the link in the left margin of
23 the project web site opening a new form. Follow additional instructions below in the execution section for filling
24 out the form.
25

26 **PART 3 - EXECUTION**

27
28 **3.1. ESTABLISHING A CHANGE ORDER REQUEST**

- 29 A. Upon receipt of a Construction Bulletin (CB) where the GC believes a significant change in contract scope
30 warrants the submittal of a COR the GC shall do all of the following within ten (10) working days after receipt of
31 the CB:
32 1. Review the CB with all necessary trades and sub-contractors required by the change in scope.
33 a. Additions or deletions to the contract scope shall be as directed within the CB.
34 b. Additions or deletions of labor and materials shall be determined by the GC based on the
35 directives of the CB.
36 2. Assemble all required back-up documentation for additions and deletions of materials, labor and other
37 related contract costs as previously outlined in this specification.
38 3. Submit a COR request form on the Project Management Web Site.
39 B. Submitting a COR does not obligate the GC to complete the work associated with the COR nor does it obligate
40 the Owner to approve the COR as a change to the contract.
41

42 **3.2. SUBMIT A CHANGE ORDER REQUEST FORM**

- 43 A. This specification shall provide a subject overview only. In depth instructions shall be provided to the awarded
44 Contractor in a PDF Instructional Manual.
45 B. The GC shall select the "Submit a COR" link on the Project Management Web Site.
46 C. The software will open a new COR form and the GC shall provide all of the following information:
47 1. DO NOT perform any calculations on this worksheet, only provide the raw data as requested below. All
48 calculations, totals, and markups shall be computed as described within this specification.
49 2. Provide a summary description of the COR request, and justification for any requested time extension to
50 the contract, indicate the number of calendar days being requested for the extension and add any
51 attachments to the form as needed.
52 3. Provide all GC self performance data including all of the following:
53 a. Materials description, quantities, and unit costs.
54 b. Labor hours and rates for all Foremen, Journeymen, and Apprentices by trade.
55 c. Equipment descriptions, quantities, unit costs and rates.
56 4. Provide all Sub-contractor data including all of the following:
57 a. Materials description, quantities, and unit costs.

- 1 b. Labor hours and rates for all Foremen, Journeymen, and Apprentices by trade.
- 2 c. Equipment descriptions, quantities, unit costs and rates.
- 3 5. Ensure all calculations performed by the form have been completed correctly. Contact the CPM directly
- 4 if you suspect an error before hitting the save button.
- 5 C. At any time after creating a COR you must at a minimum click “Save as Draft” to save your work.
- 6 D. When all data has been entered and verified click on the “Submit COR” button. This will kick off the COR Review
- 7 and Approval process.

8
9 **3.3. CHANGE ORDER REQUEST REVIEW, APPROVAL, AND PROCESSING**

- 10 A. The PA and CPM shall review all CORs submitted by the GC.
- 11 1. Additional consulting staff and city staff having knowledge of the components of the COR shall review
- 12 and advise the PA and CPM as to the accuracy of the items, quantities, and associated costs of the COR as
- 13 directed by the CB.
- 14 2. The CPM shall review the COR with the Owner.
- 15 B. If required the PA and CPM, shall in good faith, further negotiate the COR with the GC as necessary. All
- 16 amendments to any COR shall be documented within the Project Management Web Site software.
- 17 C. After final review of the COR the CPM and Owner may accept the COR.
- 18 D. The CPM shall prepare the COR in the form of an official Board of Public Works Change Order for final review and
- 19 approval as outlined in Section 01 26 63 Change Order (CO).
- 20 E. The GC shall not act upon any accepted COR until it has received final approval through the Public Works process
- 21 as an official CO to the Work unless instructed to do so by the CPM. Proceeding without the final approval of a
- 22 fully authorized Change Order is at the GC’s own risk.

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24 **3.4. EMERGENCY CHANGE ORDER REQUEST**

- 25 A. In the event Work is required due to an emergency as described in the Contract Documents, the GC must
- 26 request an equitable adjustment as soon as practicable, and in no case later than ten (10) working days of the
- 27 commencement of such emergency.
- 28 B. The GC shall provide full documentation of all labor, materials and equipment used during the period of
- 29 emergency as part of the COR submittal.

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33 **END OF SECTION**
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**SECTION 02 82 13
ASBESTOS ABATEMENT
BASED ON DFD MASTER SPECIFICATION DATED 7/15/05(Rev10/1/2012)**

PART 1 - GENERAL

SCOPE

Perform all operations in connection with asbestos abatement, encapsulation, removal and related work as shown on drawings and/or specified herein.

PART 1 - GENERAL

- Related work
- Description of Work
- References
- Qualifications
- Definitions
- Submittals and Notices
- Site Security
- Emergency Planning
- Preconstruction Meeting
- Delivery, Storage and Handling

PART 2- PRODUCTS

- Materials
- Equipment

PART 3 - EXECUTION

- General Compliance Measures
- Preparations of Regulated Area
- Decontamination Enclosure System
- Temporary Isolation Partitions
- Maintenance of Enclosure System
- Workplace Entry and Exit Procedures
- Waste Container Pass-Out Procedure
- Water Collection and disposal
- Wet Removal Procedure
- Ceiling System Removal
- Pipe Tunnel or Crawl Space Removal Work
- Flooring Removal
- Small Scale - Short Duration Removal Procedure
- Encapsulation Procedures
- Enclosure Procedure
- Air Monitoring
- Cleanup Procedure
- Disposal Procedures
- Reestablishment of Regulated Area

RELATED WORK

See City of Madison Special Provisions, Section D of the contract documents.

DESCRIPTION OF WORK;

Removal; The Contractor shall remove all asbestos related items as noted in the contract documents. In the event additional items ore quantities are found in the field the contractor shall notify the City Project Manager immediately and items shall also be removed under the contract.

Encapsulation; this section not used

Enclosure; this section not used

Special Precautions:

Coordinate all work with the City Project manager and A&A Environmental.

1 The Contractor shall proceed with preparing the work site for the General Contractor’s personnel to mobilize the
2 site and perform required boiler shutdown operations. Work site shall be inspected and cleared by A&A
3 Environmental prior to allowing General Contractor’s personnel to enter the site.
4

5 The Contractor shall continue with removal operations after maintenance personnel have completed the the boiler
6 shut down. The abatement contractor shall be include this mobilization in his/her contract schedule.
7

8
9 Contractor is responsible for Electrical work and permit as needed
10

11
12 Restoration: Refer to section 107.2 of the Special Provisions, Section D of the contract documents.
13

14
15 **REFERENCES**

16 General Reference:

17
18 All work under this contract shall be done in strict accordance with all applicable General and
19 State regulations, standards and codes governing asbestos abatement and any other trade work
20 done in conjunction with the abatement.
21

22 The most recent edition of any relevant regulation in force at the time of bid opening shall be in
23 effect. Where conflict among the laws, rules, and regulations or with these specifications exists
24 the most stringent requirements shall be utilized.
25

26 The Contractor shall make available, in the clean change area of the worker decontamination
27 system, copies of this specification and all standards, regulations, and codes listed hereinafter.
28

29 Specific Reference:

30 Occupational Safety and Health Administration (OSHA):

31
32 Title 29 Code of Federal Regulations, Section 1910.134(d) - air Quality.
33

34
35 Title 29 Code of Federal Regulations, Section 1926.1101- Construction Industry,
36 including the mandatory appendices;
37

38 Appendix A - OSHA Reference Method.
39

40 Appendix C - Qualitative and Quantitative Fit Testing Procedures.
41

42 Appendix D - Medical Questionnaires.
43

44 Appendix E - Interpretation and Classification of Chest Roentgenograms.
45

46 Nonmandatory appendices:
47

48 Appendix B - Detailed Procedures for Asbestos, Tremolite, Anthrophyllite, and
49 Actinolite Sampling and Analysis.
50

51 Appendix F - Work Practices and Engineering Controls for Major Asbestos Removal,
52 Renovation, and Demolition Operations.
53

54 Appendix G - Work Practices and Engineering Controls for Small Scale, Short
55 Duration Asbestos Renovation and Maintenance Activities.
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57 Appendix H - Substance Technical Information for Asbestos.
58

59 Appendix I - Medical Surveillance Guidelines for Asbestos, Tremolite,
60 Anthrophyllite, and Actinolite.
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Title 29 Code of Federal Regulations, Section 1926.59 - Hazard Communication Standard. Requires employers to inform their workers of the hazards of any chemicals used on the project and to train their employees in proper safeguards.

Environmental Protection Agency (EPA): Title 40 Code of Federal Regulations (CFR) Part 763 Subpart G - Asbestos Abatement Projects; worker Protection (effective March 27, 1987).

Environmental Protection Agency (EPA) Title 40 Code of Federal Regulations (CFR) Part 61 - National Emission Standards for Hazardous Air Pollutants; Asbestos NESHAP Revision; Final Rule effective November 20, 1990.

Department of Health Services (H & SS) State of Wisconsin Administrative Rule, Chapter HSS 159, Asbestos Certification and Training.

Department of Natural Resources (DNR) State of Wisconsin Administrative Rule, Chapter NR 447, procedures for preventing emissions of particulate asbestos material to outside air, warning signs and waste disposal of asbestos materials.

Compressed Gas Association, Inc., New York, Pamphlet G-7, "Compressed Air for Human Respiration", and Specification G-7.1 "Commodity Specification for Air".

Department of Natural Resources (DNR) State of Wisconsin Administrative Rule Chapter NR 506, Landfill Operations Criteria for Disposal of Asbestos Containing Material.

QUALIFICATIONS

The prospective Contractor who is proposed to actually perform the asbestos abatement work, shall submit to the Architect/Engineer the data hereinafter requested within ten (10) days after Bid Opening. The proposed asbestos abatement Contractor will be awarded a Contract, only if data submitted is determined to be favorable in all instances, by the Architect/Engineer, and the prospective Contractor further meets the qualifications requirements specified in the Instructions to Bidders.

The proposed asbestos abatement Contractor shall, if requested:

Demonstrate prior experience on asbestos abatement projects of similar nature and scope of that being bid, through the submission of letters of reference from building owners including the name, address, and telephone numbers of the contact persons who are specifically familiar with the referenced projects. At least three previous users of this service shall be submitted. Include descriptions of projects and records of all air monitoring data that was generated during the projects.

Submit a description of all major Asbestos Abatement Equipment owned by the prospective Contractor which is available for use on this project such as:

- Respiratory protection equipment.
- HEPA vacuum equipment.
- Negative air pressure equipment.
- Spray equipment for amended water.
- Equipment used for shower facilities in decontamination enclosure system.

Submit a list of names, work responsibilities and evidence of certification for all employees that will be assigned to this project:

At least one firm principal, the firm's "competent person" and any other personnel performing supervisory duties must be certified by the Wisconsin Department of Health

1 Services as having successfully completed a comprehensive 5-day course for Asbestos
2 Abatement Contractors and Supervisors in conformance with Wisconsin Administrative
3 Code DHS 159.

4
5 Contractor's employees who perform asbestos abatement activities must be certified by
6 the Wisconsin Department of Health Services as having successfully completed a
7 comprehensive 4-day course for Asbestos Abatement Workers in conformance with
8 Wisconsin Administrative Code DHS 159.

9
10 **DEFINITIONS**

11 **ACGIH:** American Conference of Governmental Industrial Hygienists

12
13 **AIHA:** American Industrial Hygiene Association

14
15 **Air Monitoring:** The process of measuring the fiber content of a known volume of air collected during a
16 specific period of time shall conform with Appendix A to OSHA 29 CFR 1926.1101 The procedure
17 normally utilized for asbestos follows the NIOSH Standard Analytical Method 7400 for Asbestos in Air.
18 For clearance air monitoring, electron microscopy methods may be utilized for lower detectability limit
19 and specific fiber identification.

20
21 **Air Sampling Professional:** The Professional contracted or employed by the Division to supervise and
22 conduct air monitoring and analysis schemes. This individual shall not be affiliated in any way other than
23 through this contact with the Contractor performing the abatement work.

24
25 **ANSI:** American National standards Institute

26
27 **Asbestos:** Means the asbestiform varieties of chrysotile (serpentine); crocidolite (riebeckite); amosite
28 (cummingtonite-grunerite); tremolite; anthrophyllite, and actinolite.

29
30 **Asbestos Containing Material (ACM):** Material composed of asbestos of any type and in an amount
31 greater than 1%, either alone or mixed with other fibrous or nonfibrous materials.

32
33 **Asbestos Containing Waste Material:** Asbestos containing material or asbestos contaminated objects
34 requiring disposal.

35
36 **ASTM:** American Society for Testing and Materials

37
38 **Authorized Visitor:** The Building Owner (and designated representatives) and any representative of a
39 regulatory agency having jurisdiction over the project.

40
41 **Certified Industrial Hygienist (CIH):** An industrial hygienist certified in Comprehensive Practice by the
42 American Board of Industrial Hygiene.

43
44 **Competent Person:** Means an employee of the asbestos abatement contractor who is capable of
45 identifying existing asbestos hazards in the workplace and who has the authority to take prompt corrective
46 measures to eliminate them pursuant to OSHA 1926.1101(b).

47
48 **Decontamination Enclosure:** A decontamination system consisting of a clean room, a shower room, and
49 an equipment room separated from each other and from the regulated area by airlocks. This system is
50 used for all workers to enter and exit the regulated area and may also serve as equipment and waste pass
51 out on small jobs.

52
53 **Department of Natural Resources (DNR):** A Wisconsin state agency that is responsible for enforcement
54 of Chapter NR 447.

55
56 **Encapsulation:** The application of a bridging or penetrating liquid material to asbestos containing
57 materials to control the release of asbestos fibers into the air. The bridging liquid material creates a
58 membrane over the surface and the penetrating liquid material seeps through the surface and binds all
59 components together.

60
61 **Enclosure:** The construction of an airtight, impermeable, permanent barrier around asbestos containing
62 material to control the release of asbestos fibers into the air.

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EPA: U. S. Environmental Protection Agency

Glovebag Technique: A method with limited applications for removing small amounts of friable asbestos-containing material from ducts, short piping runs, valves, joints, elbows, and other nonplanar surfaces in a noncontained (plasticized) regulated area. The glovebag is constructed and installed in such a manner that it surrounds the object or material to be removed and contains all asbestos fibers released during the process.

HEPA Filter: A high efficiency particulate air filter capable of removing particles 0.3 microns in diameter with 99.97% efficiency.

HEPA Vacuum: A vacuum system equipped with HEPA filtration.

NESHAPS National Emission Standards for Hazardous Air Pollutants

OSHA: The Occupational Safety and Health Administration

Permissible Exposure Limits (PELS): No personnel associated with asbestos abatement work shall be exposed to an airborne concentration of asbestos in excess of the following limits, as determined by the method prescribed in Appendix A to OSHA 29 CFR 1926.1101, or by an equivalent method:

P.E.L. is 0.1 fiber per cubic centimeter of air as an eight (8) - hour time-weighted average.

Excursion Limit (EL) 1.0 fiber per cubic centimeter of air as averaged over a sampling period of thirty (30) minutes.

Regulated Area: An area identified by specific boundaries where airborne concentrations of asbestos exceed, or can reasonably be expected to exceed the P.E.L. and/or Excursion Limit. The regulated area may take the form of:

A temporary negative-pressure enclosure, or

An area specifically identified and segregated in any manner that minimizes the number of employees exposed to asbestos.

Surfactant: A chemical wetting agent added to water to improve penetration.

Visible Emissions: Any emissions containing particulate asbestos material that is visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.

Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning utensils which have been dampened with water and afterwards thoroughly decontaminated or disposed of as asbestos contaminated waste.

SUBMITTALS AND NOTICES

The Contractor shall submit a completed Asbestos/Lead Abatement Certification (Form #DOA-4509) no later than the end of the seventh calendar day after the bid opening date.

Prior to Commencement of Work, Contractor shall:

File a "Notification of Demolition and/or Renovation Form 4500-113" with the parties named hereinafter, when required, at least 10 working days prior to commencement of demolition or renovation project involving any asbestos-containing material.

Air Management Asbestos Coordinator
Department of Natural Resources
P.O. Box 7921
Madison WI 53707-7921

1 File a "Asbestos Project Notification Form 00041" with the parties named hereinafter, when
2 required, at least 2 working days prior to commencement of renovation project involving any
3 asbestos-containing material.
4

5 Department of Health Services
6 Asbestos/Lead Section, Room 137
7 P.O Box 2659
8 Madison, WI 53701-2659
9

10 Submit the following documentation attached to completed form DOA-4523 prior to commencing work:

11
12 Manufacturer's information and MSDS for the mastic remover that the Contractor intends to use
13 for floor tile mastic removal. Mastic remover shall be low odor and shall not contain known
14 carcinogens.
15

16 A copy of the asbestos training certification card issued by Wisconsin Department of Health and
17 Family Services pursuant to DHS 159 for all Contractor employees that will be working on the
18 project.
19

20 Submit the following documentation at completion of the work:

21
22 Copies of all completed "Transportation and Disposal Manifest" forms for all asbestos waste
23 materials removed from the regulated area during the abatement process.
24

25 Project Log per DHS 159.21(2)
26

27 Occupant Protection Plan per DHS 159.21(3).
28

29 During Abatement Activities, Contractor shall submit to the Owners Project Representative, if requested:

30
31 Shop drawings for layout and construction of decontamination enclosure systems and barriers for
32 isolation of the regulated area as detailed in this specification and required by applicable
33 regulations. If work is to be phased, a phasing schedule shall also be submitted.
34

35 Weekly (or as required) job progress reports detailing abatement activities. Include review of
36 major problems and action taken, injury reports, equipment breakdown.
37 Logs documenting filter changes on respirators, HEPA vacuums, negative pressure ventilation
38 units, local exhaust ventilation systems, and other engineering controls.
39

40 Results of bulk material analysis and air sampling data collected during the course of the
41 abatement including OSHA compliance air monitoring results.
42

43 Results of materials testing conducted during the abatement for purposes of utilization during
44 abatement activities (e. g., testing of encapsulant for depth of penetration, testing of materials for
45 adherence to encapsulated surfaces).
46

47 Contractor shall post at the entrance to the regulated area a list containing the names, addresses,
48 and telephone numbers of the Contractor, Fire Department and any other personnel who may be
49 required to be contracted during abatement activities.
50

51 **SITE SECURITY**

52 Contractor shall be responsible for the security of the regulated area(s) during abatement operations in
53 order to protect work efforts and equipment.
54

55 The regulated area shall be restricted to only authorized, trained, and protected personnel. These may
56 include the Contractor's employees, employees of subcontractors, state representatives, and any other
57 designated individuals. A list of authorized personnel shall be established prior to job start and posted in
58 the clean room of the decontamination facility.
59

1 Contractor shall immediately decontaminate (if required) and evict any unauthorized individual entering
2 the regulated area and notify the Construction Representative of action taken and identity of the
3 unauthorized individual.
4

5 A log book shall be maintained in the clean room area of the decontamination system. Anyone who
6 enters the regulated area must record name, affiliation, time in, and time out for each entry.
7

8 Access to the regulated area shall be through a single decontamination system located where shown on
9 approved Shop Drawings. All other means of access (doors, windows, hallways, etc.) shall be blocked or
10 locked so as to prevent entry to or exit from the regulated area. The only exceptions to this rule are the
11 waste pass-out air lock which shall be sealed except during the removal of containerized asbestos waste
12 from the regulated area, and emergency exits in case of fire or accident. Emergency exits shall not be
13 locked from the inside, however, they shall be sealed with polyethylene sheeting and tape until needed.
14

15
16 **EMERGENCY PLANNING**

17 Written emergency plan shall be submitted through the Owners Project Representative and approved by
18 the Architect/Engineer prior to the initiation of abatement activities.
19

20 Emergency procedures shall be in written form and prominently posted in the clean change area and
21 equipment room of the worker decontamination area. Everyone prior to entering the regulated area must
22 read and sign these procedures to acknowledge receipt and understanding of work site layout, location of
23 emergency exits and emergency procedures.
24

25 Emergency planning shall include notification of police, fire and emergency medical personnel of planned
26 abatement activities, work schedule and layout of regulated area, particularly barriers that may affect
27 response capabilities.
28

29 Emergency planning shall include considerations of fire, explosion, toxic atmospheres, electrical hazards,
30 slips, trips and falls, confined spaces and heat related injury. Written procedures shall be developed and
31 employee training in procedures shall be provided.
32

33 Employees shall be trained in evacuation procedures in the event of workplace emergencies under the
34 following conditions:
35

36 For non-lifethreatening situations, employees injured or otherwise incapacitated shall
37 decontaminate following normal procedures with assistance from fellow workers if necessary,
38 before exiting the workplace to obtain proper medical treatment.
39

40 For life-threatening injury or illness, worker decontamination shall take least priority, after
41 measures to stabilize the injured worker, remove the worker from the workplace and secure
42 proper medical treatment.
43

44 Telephone numbers of all emergency response personnel shall be prominently posted in the clean change
45 area and equipment room, along with the location of the nearest telephone.
46

47 **PRECONSTRUCTION MEETING**

48 The Contractor shall attend a preconstruction meeting to be conducted at a time and place designated by
49 the Owners Project Representative. All parties having an active role in asbestos abatement will be in
50 attendance.
51

52 The Contractor, Contractor's competent person and other supervisory personnel who will provide on-site
53 direction of the abatement activities must attend.
54

55 At this meeting the Contractor shall provide all documentation as required by Article entitled:
56 "Submittals and Notices," herein. In addition, the Contractor shall be prepared to provide detailed
57 information concerning:

- 1
- 2 Preparation of regulated area.
- 3
- 4 Personal protective equipment including respiratory protection and protective clothing.
- 5
- 6 Employees who will participate in the project, including delineation of experience, training,
- 7 certification, and assigned responsibilities during the project.
- 8
- 9 Decontamination procedures for personnel, regulated area and equipment.
- 10
- 11 Abatement methods and procedures to be utilized.
- 12
- 13 Required air monitoring procedures.
- 14
- 15 Procedures for handling and disposing of waste materials.
- 16
- 17 Procedures for final decontamination and cleanup.
- 18
- 19 A sequence of work and performance schedule.
- 20
- 21 Procedures for dealing with heat stress.
- 22
- 23 Emergency procedures.
- 24
- 25 Methods of adhering plastic sheeting to the surfaces to be covered.

26
27 **DELIVERY, STORAGE AND HANDLING**

28 Deliver all materials in the original packages, containers or bundles bearing the name of the manufacturer
29 and the brand name.

30
31 Damaged, deteriorating or previously used materials shall not be used and shall be removed from the
32 work site and disposed of properly.

33
34
35 **PART 2 - PRODUCTS**

36
37 **MATERIALS**

38 Polyethylene sheeting for walls and stationary objects shall be a minimum of four (4) mil thick. For
39 floors and all other uses sheeting of at least six (6) mil thickness shall be used in widths selected to
40 minimize the frequency of joints.

41
42 Polyethylene sheeting utilized for decontamination enclosure shall be opaque white or black in color.

43
44 Flame retardant polyethylene sheeting shall be utilized when working near heat sources.

45
46 Hardboard or plywood, minimum 1/4 inch thick shall be furnished to protect finished floor surfaces such
47 as carpet or hardwood floors to prevent damage from scaffolds or falling objects. Such protection shall
48 also be provided for polyethylene sheeting under the scaffold area if the material being removed has sharp
49 projections which could readily puncture the enclosure material.

50
51 Disposal bags shall be of six (6) mil polyethylene, preprinted with labels as required by OSHA
52 Requirement 29 CFR 1926.1101 (k) (8).

53
54 Disposal drums for transporting disposal bags shall be metal or fiberboard with locking ring tops.

55
56 Stick-on labels as per EPA, OSHA or DNR requirements for disposal containers.

57
58 Surfactant (Wetting Agent):
59

1 For use with materials containing asbestos identified as "Amosite", shall be a 50/50 mixture of
 2 polyoxyethylene ether and polyoxyethylene ester, mixed in a proportion of one (1) fluid ounce to
 3 five (5) gallons of water or as specified by manufacturer.

4
 5 For all materials containing asbestos identified as "chrysotile", "crocidolite", or types other than
 6 Amosite, shall consist of soapy water mixed in a proportion of two (2) fluid ounces of liquid soap
 7 to five (5) gallons of water.

8
 9 Where regulated area temperature may cause freezing of the amended water solution, the addition
 10 of ethylene glycol in amounts sufficient to prevent freezing is permitted.

11
 12 Asbestos Removal Encapsulant (substitute for surfactant): In lieu of using a wetting agent in water to
 13 control airborne fibers, and asbestos removal encapsulant may be used. Products that meet these needs
 14 are: Serpiflex Shield manufactured by International Protective Coatings Carol 725 Carol Ave., Ocean, NJ
 15 07710; and BWE 5000, by Better Working Environments, Inc., 3716 Scripps Way, Las Vegas, NV
 16 89103; or an approved equal.

17
 18 **Encapsulating Material:**

19
 20 Bridging type encapsulant (for sealing masonry and concrete walls, barrier surfaces during
 21 cleanup phase and asbestos containing surfaces to remain in place) shall be capable of being
 22 applied with airless spray equipment, able to withstand light impact or abrasion without releasing
 23 fibers, water insoluble when cured, and must retain sufficient integrity after six (6) years to allow
 24 recoating. Products that meet these requirements are: Cable Coating No. 2B by American
 25 Coating Corporation and Decadix Fire Check by Pentagon Plastics.

26
 27 Penetrating type encapsulant (for sealing scratch coat plaster, wood grounds and wood blocking
 28 which have been in contact with asbestos containing material and also exposed ends of pipe
 29 insulation) shall not be noxious or toxic to applicator or subsequent occupants, shall have high
 30 flame retardance and low toxic fume and smoke emission ratings, shall have some permeability to
 31 water vapor to prevent condensation accumulation. Acceptable products are Cafco-Bond-Seal by
 32 U.S.I Mineral, Protector Sealant (32-20 and 32-21) by H.B. Fuller Co., and SK-13 Emulsion by
 33 National Cellulose.

34
 35 **EQUIPMENT**

36 **Negative Pressure Ventilation Units:**

37
 38 A sufficient quantity of negative pressure ventilation units equipped with HEPA filtration and
 39 operated in accordance with ANSI Z9.2-79 (local exhaust ventilation requirements) and EPA
 40 guidance document EPA 560/5-83-002 Guidance for Controlling Friable Asbestos-Containing
 41 Material in Buildings Appendix F: Recommended Specifications and Operating Procedures for
 42 the Use of Negative Pressure Systems for Asbestos Abatement shall be utilized so as to provide
 43 one workplace air change every 15 minutes.

44
 45 To calculate total air flow requirement:

46
 47
$$\text{Total Ft}^3/\text{Min.} = \frac{\text{Volume of Regulated area (in Ft}^3\text{)}}{15 \text{ Min.}}$$

48
 49
 50 To calculate the number of units needed for the abatement:

51
 52
$$\text{Number of Units Needed} = \frac{\text{Total Ft}^3/\text{Min.}}{0.75(\text{Capacity of Unit in Ft}^3/\text{Min.})}$$

53
 54
 55 The air filtering equipment shall be capable of filtering asbestos fibers at 0.3 um at 99.9 percent
 56 efficiency. Prefilters, which protect the final filter by removing the larger particles, are required
 57 to prolong the operating life of the HEPA filter. Two stages of prefiltration are required. The
 58 first-stage prefilter shall be a low efficiency type (e.g., for particles 10 um and larger). The
 59 second-stage (or intermediate) filter shall have a medium efficiency (e.g., effective for particles
 60 down to 5 um). Prefilters and intermediate filters shall be installed either on or in the intake grid
 61 of the unit and held in place with special housings or clamps.
 62

1 Exhaust air from the regulated area shall maintain a negative pressure of 0.02 inches of water
2 (head). The ventilation shall operate on a 24 hours basis throughout the abatement process until
3 final clearance has been approved.
4

5 Air Purifying Respirators:

6
7 Respirator bodies shall be of half face or full face type with removable cartridges. Single use,
8 disposable or quarter face respirators shall not be used. Full face respirators shall be equipped
9 with a nose cup or other anti fogging devices as would be appropriate for use in air temperatures
10 less than 32 degrees F.

11
12 Filter cartridges shall, at a minimum, be HEPA type filters certified by NIOSH under 30 CFR
13 Part 11 or with filters certified for particulates under 42 CFR Part 84.
14

15 Supplied Air Respirator System:

16
17 The equipment used shall be capable of producing air of the quality and volume required by
18 OSHA Standard (29 CFR 1910) Section 1910.134 and Compressed Gas Association, Inc., New
19 York, Pamphlet G-7, "Compressed Air for Human Respiration", and Specification G-7.1
20 "Commodity Specification for Air", applied to the job site conditions and crew size. The
21 standards above shall be augmented by provisions of this specification with the more stringent
22 standard governing.
23

24 Face piece and hose shall be by same manufacturer and shall be certified by NIOSH/MSHA as an
25 approved Type "C" respirator assembly for continuous flow or pressure demand with a positive
26 pressure face piece.
27

28 Backup air supply shall be provided that is adequate to allow a minimum of one-half hour escape
29 time for each six man crew. The one-half hour shall be based upon all connections to the backup
30 air supply being in use by an average sized adult male engaged in moderately strenuous activity
31 or by the air requirements of the particular respirator in use is greater.
32

33 Warning device shall be located in the regulated area which will be clearly audible in all parts of
34 the regulated area and can be heard above the noise level produced by equipment and work
35 procedures in use. This warning device shall warn of:

36
37 Compressor shutdown or other fault requiring use of backup air supply.

38
39 Carbon Monoxide (CO) levels in excess of 50 PPM/V over 8 hours.

40
41 Carbon Monoxide (C)) levels shall be continually monitored and recorded. This monitor shall be
42 placed in the air line between backup air supply and workers and shall also sound an alarm as
43 specified under "Warning Devices".
44

45 The compressor shall automatically be shutdown and the alarms sounded if any of the following
46 occur:

47
48 Carbon Monoxide (CO) concentrations exceed 500 PPM/V in the air line between the
49 filter bank and backup air supply.

50
51 Compressor temperature exceeds normal operating range.

52
53 Compressor motor shall be an electric motor. Compressors driven by gas or diesel engines shall
54 not be used.
55

56 An after cooler shall be provided at the entry to the filter system which is capable of reducing
57 temperatures to outside ambient air temperatures.
58

- 1 System configuration shall permit the recharging of 1/2 hours 2260 PSI SCBA cylinders.
2
3 Compressed air systems shall be designed to provide air volumes and pressures to accommodate
4 respirator manufacturer's specifications. The compressed air systems shall have a receiver of adequate
5 capacity to allow escape of all respirator wearers from contaminated areas in the event of compressor
6 failure. Compressors must meet the requirements of 29 CFR 1910.134 (d). Compressors must have an
7 in-line carbon monoxide monitor; periodic inspection of the carbon monoxide monitor must be evidenced.
8 Documentation of adequacy of compressed air systems/respiratory protection system must be retained on
9 site. This documentation will include a list of compatible components with the maximum number and
10 type of respirators that may be used with the system. Periodic testing of compressed air shall insure that
11 systems provide air of sufficient quality (Grade D breathing air as described in Compressed Gas
12 Association Commodity Specifications G-7.1).
13
14 Full body disposable protective clothing, including head, body and foot coverings consisting of material
15 impenetrable by asbestos fibers (Tyvek^R or equivalent) shall be provided to all workers and authorized
16 visitors in sizes adequate to accommodate movement without tearing.
17
18 Additional safety equipment, such as hard hats meeting the requirements of ANSI Standard Z89.1-1981,
19 eye protection meeting the requirements of ANSI Standard Z87.1-1979, safety shoes meeting the
20 requirements of ANSI Standard Z41.1-1967, disposable PVC gloves, as necessary, shall be provided to
21 all workers and authorized visitors.
22
23 Nonskid footwear shall be provided to all abatement workers. Disposable clothing shall be adequately
24 sealed to the footwear to prevent body contamination.
25
26 Provide sufficient supply of disposable mops, rags and sponges for work area decontamination.
27
28 Provide scaffolds, ladders, lifts and hand tools such as scrapers, wire cutters, brushes, utility knives, wire
29 saws, as the work requires.
30
31 Sprayers with pumps capable of providing 14-15 pounds per square inch (psi) at the nozzle tip at a flow
32 rate of 2 gallons per minute for spraying amended water.
33
34 Rubber dust pans and rubber squeegees shall be provided for cleanup.
35
36 Brushes utilized for removing loose asbestos containing material shall have nylon or fiber bristles, not
37 metal.
38
39 A sufficient supply of HEPA filtered vacuum systems shall be available during cleanup.
40
41 Airless spray equipment with an adjustable low pressure nozzle shall be provided for spraying
42 encapsulants. Nozzle tip size and pressure adjustment shall conform to encapsulant manufacturers written
43 recommendations.
44
45 Heavy duty power cables for temporary electrical service and a portable electric generator for maintaining
46 negative pressure in the work area in case of power failure.
47
48 Warning Signs and Labels: As required OSHA Regulation 29 CFR 1926.1101(k).
49
50 Other equipment the Contractor deems necessary for asbestos abatement work shall be submitted to the
51 Architect/Engineer for approval prior to their use.
52
53

54 **PART 3 - EXECUTION**

55 **GENERAL COMPLIANCE MEASURES**
56

1 Mandatory Protection Conditions: Contractor's employees shall wear appropriate respiratory protection
2 and protective clothing under the following conditions:

3
4 During installation or implementation of engineering work practices and control measures.

5
6 During maintenance and repair activities for which control measures, hereinafter described, are
7 not feasible.

8
9 Whenever the control measures are not yet sufficient to reduce exposure below the Permissible
10 Exposure Limits (TWA and/or Excursion Limits).

11
12 Whenever emergency conditions exist.

13
14 Control Measures: The Contractor shall use one or any combination of the following control methods to
15 achieve compliance with the "Permissible Exposure Limits" defined hereinbefore:

16
17 Local exhaust ventilation equipped with HEPA filter dust collection systems.

18
19 General dilution ventilation equipped with HEPA filtration systems on both exhaust and return
20 air.

21
22 Vacuum cleaners equipped with HEPA filters.

23
24 Enclosure or isolation of processes producing airborne asbestos fibers and dust.

25
26 Use of wet methods, wetting agents or removal encapsulants to control employee exposures
27 during their performance of asbestos abatement activities. Where wet methods would result in
28 equipment damage or a safety hazard, dry removal is allowed with written approval from WDNR
29 pursuant to NR447.08(3)(b).

30
31 Prompt disposal of wastes contaminated with asbestos in leak-tight containers.

32
33 Supplement to Control Measures: Whenever the control measures described above are not sufficient to
34 reduce the employee exposure to or below the "Permissible Exposure Limits" (TWA and/or Excursion
35 Limit), the Contractor shall continue to use the control measures to maintain the employee exposure to the
36 lowest levels attainable and supplement them with the use of appropriate respiratory protection and
37 protective clothing.

38
39 Negative-Pressure Enclosure: A negative-pressure enclosure shall be employed whenever feasible, prior
40 to commencing removal, demolition and renovation operations involving asbestos containing materials.

41
42 Types of Respiratory Protection: The following Table represents the minimum respiratory protection
43 required for given airborne concentrations of asbestos:

44

Airborne Concentration of Asbestos,
Tremolite, Anthophyllite, Actinolite,
or a Combination of These Minerals

Required Respirator

Not in excess of 1 f/cc (10 X PEL)	1. Half-mask air purifying respirator equipped with high-efficiency filters.
Not in excess of 5 f/cc (50 X PEL)	1. Full faceplate air purifying respirator equipped with high-efficiency filters.
Not in excess of 10 f/cc (100 X PEL)	1. Any powered air purifying respirator equipped with high efficiency filters. 2. Any supplied air respirator operated in continuous flow mode.
Not in excess of 100 f/cc (1000 X PEL)	1. Full face piece supplied air respirator operated in pressure demand mode.
Greater than 100 f/cc (1,000 X PEL) or unknown concentration	1. Full face piece supplied air respirator operated in pressure demand mode equipped with an auxiliary positive pressure self-contained breathing apparatus.

1 NOTE: Respirators assigned for higher environmental concentrations may be used at lower
2 concentrations.

3
4 A high-efficiency filter means a filter that is at least 99.97 percent efficient against mono-
5 dispersed particles of 0.3 micrometers in diameter or larger.
6

7 Employee Rotation: The Contractor shall not use employee rotation as a means of compliance with
8 Permissible Exposure Limits (TWA and/or Excursion Limit).
9

10 Supervision: The Contractor shall have a project supervisor on site at all times that only supervises the
11 project and is responsible to assure contract and regulatory compliance.
12

13 **PREPARATION OF REGULATED AREA**

14 Post the following warning signs at all approaches to a regulated area per OSHA 1926.110(k)(7). Signs
15 shall be posted at a distance sufficiently far enough away from the regulated area to permit any person to
16 read the sign and take the necessary protective measures before entering the area marked by the signs.
17

18
19 **DANGER**

20
21 **ASBESTOS**

22
23 **CANCER AND LUNG DISEASE HAZARD**

24 **AUTHORIZED PERSONNEL ONLY**

25 Post the Occupant Protection Plan at the entrance to the regulated area per DHS 159.21(3).
26

27 Post at the entrance to the regulated area a list containing the names, addresses and telephone numbers of
28 the Contractor, Fire Department and any other personnel who may be required to be
29 contacted during abatement activities.
30

31 Maintain Project Log per DHS 159.21(2).
32

1 Shutdown and lock out all heating, cooling and air conditioning system (HVAC) components that are in,
2 supply or pass through the regulated area. Appropriate equipment and control measures shall be utilized
3 to prevent contamination of building spaces. Seal all intake and exhaust vents in the work area with tape
4 and two layers of 6 mil polyethylene. Also seal any seams in system components that pass through the
5 regulated area.

6
7 All electrical circuits to the area in which asbestos abatement work is to take place must be disconnected.
8 The regulated area and other uncontaminated areas that were dependent on the disconnected electrical
9 circuits shall be serviced by a temporary electrical service provided by owner. In accordance with the
10 latest issue of the National Electrical Code, temporary electrical service shall be equipped with
11 combination ground fault interrupted and circuit breakers meeting the requirements of UL for Class A,
12 Group 1 devices. The ground fault interrupter portion shall be solid state type, insulated and isolated
13 from the breaker mechanism. A test mechanism shall provide overload and short circuit protection and
14 shall be operated by a toggle switch with over-center switching mechanism so that contact cannot be held
15 closed.

16
17 Preclean all movable objects within the regulated area using a HEPA filtered vacuum or wet cleaning
18 methods as appropriate. After cleaning, these objects shall be removed from the regulated area and
19 carefully stored in an uncontaminated location.

20
21 Preclean all fixed objects in the regulated area using HEPA filtered vacuums or wet cleaning techniques
22 as appropriate, if contamination is visibly covering them. Careful attention must be paid to machinery
23 and behind grills or gratings where access may be difficult but contamination significant. Also pay
24 particular attention to wall, floor and ceiling penetrations behind fixed items. After precleaning, enclose
25 fixed objects in four (4) mil polyethylene sheeting and seal securely in place with tape.

26
27 Preclean all surfaces in the regulated area using HEPA filtered vacuums and/or wet cleaning methods as
28 appropriate. Do not use any methods that would raise dust such as dry sweeping or vacuuming with
29 equipment not equipped with HEPA filters. Do not disturb asbestos containing materials during the
30 precleaning phase.

31
32 Seal off all windows, doorways, elevator openings, corridors, tunnels, entrances, drains, ducts, grills,
33 grates, diffusers, skylights and any other openings between the regulated area and uncontaminated areas
34 outside of the regulated area (including the outside of the building, tunnels and crawl spaces) with four (4)
35 mil polyethylene sheeting and tape.

36
37 **Wall Covering:**

38
39 Where surfacing materials are being removed from overhead, walls shall be covered with two (2) layers
40 of four (4) mil polyethylene sheeting, starting at top of wall and extending down and across the floor area
41 until it meets in the center of the floor. Here the covering sheets shall be taped together to form a
42 monolithic covering which completely encases the regulated area.

43
44 Polyethylene sheets shall be sized to minimize seams. Seams shall be staggered and separated by a
45 distance of at least six (6) feet.

46
47 Wall sheeting shall be secured adequately to prevent it from falling away from the walls. This may
48 require additional support/attachment when negative pressure ventilation systems are utilized.

49
50 **Floor Covering:**

51
52 The floor area which has previously been covered with sheeting extended from the walls, shall be covered
53 with one additional layer of six (6) mil (minimum) sheeting. Provide additional protection such as
54 plywood, canvas, or extra plastic sheeting for floors requiring special protection such as carpeting,
55 hardwood flooring and tile floors which may be damaged by water leakage, ladder feet or scaffold
56 wheels. Additional layers of sheeting may be utilized as drop cloths to aid in cleanup of bulk materials.

57

1 Polyethylene sheets shall be sized to minimize seams. If the floor area necessitates seams, those on
2 successive layers of sheeting shall be staggered to reduce the potential for water to penetrate to the
3 flooring material. A distance of at least six (6) feet between seams is sufficient. Do not locate any
4 parallel seams at wall/floor joints.

5
6 Floor sheeting shall extend at least 24" up the side walls of the work area.
7

8 9 **DECONTAMINATION ENCLOSURE SYSTEM**

10 A decontamination enclosure system shall be provided at each location where workers will enter or exit a
11 regulated area.
12

13 Plans for construction, including materials and layout, shall be submitted as shop drawings and approved
14 by the Architect/Engineer prior to work initiation. Decontamination enclosure systems constructed at the
15 work site shall utilize six (6) mil opaque black or white polyethylene sheeting or other acceptable
16 materials for privacy. Detailed descriptions of portable, prefabricated units, if used, must be submitted
17 for the Architect/Engineer's approval. Plans must include floor plan with dimensions, materials, size,
18 thickness, plumbing and electrical utilities.
19

20 The decontamination enclosure system shall consist of at least a clean room, a shower room, and an
21 equipment room, each separated from each other and from the regulated area by air locks.
22

23 Entry to and exit from all airlocks and decontamination enclosure system chambers shall be through
24 curtained doorways consisting of two sheets of overlapping six (6) mil polyethylene sheeting. The curtain
25 doorway sheets shall be secured at the top and one side opposite each other. All curtains shall have
26 weights attached to the bottom to insure that they hang straight and maintain a seal over the doorway
27 when not in use. Doorway designs, providing equivalent protection and acceptable to the
28 Architect/Engineer may be utilized.
29

30 Access between any two rooms in the decontamination enclosure system shall be through an airlock with
31 at least three (3) feet separating each curtained doorway. Pathways into (from clean to contaminated) and
32 out from (contaminated to clean) the regulated area shall be clearly designated.
33

34 Clean room shall be sized to adequately accommodate the work crew. Clean disposable clothing,
35 replacement filters for respirators, disposable towels and other necessary items shall be provided in
36 adequate supply at the clean room. A location for postings shall also be provided in this area. Whenever
37 possible, a lockable door shall be used to permit access into the clean room from outside the regulated
38 area.
39

40 Shower room shall contain one or more shower heads as necessary to adequately accommodate workers.
41 Each shower head shall be supplied with hot and cold water adjustable at the tap. The shower enclosure
42 shall be constructed to insure against leakage of any kind. An adequate supply of soap and disposable
43 towels shall be supplied by the Contractor and available at all times. Shower water shall be drained,
44 collected and filtered as specified in the Article entitled: "Water Collection and Disposal," herein.
45

46 The equipment room shall be used for storage of equipment and tools at the end of a shift after workers
47 have been decontaminated using a HEPA filtered vacuum and/or wet cleaning techniques as appropriate.
48 Replacement filters (in sealed containers until used) for HEPA vacuums and negative pressure ventilation
49 equipment, extra tools, containers or surfactant and other materials and equipment that may be required
50 during the abatement may also be stored here as needed. A walk-off pan (a small children's swimming
51 pool or equivalent filled with water) shall be located in the regulated area just outside the equipment room
52 for workers to clean off foot coverings after leaving the regulated area and prevent excessive
53 contamination of the worker decontamination enclosure system. A drum lined with a labeled six (6) mil
54 polyethylene bag for collection of disposable clothing shall be located in this room. Contaminated rubber
55 boots or other reusable footwear shall be stored in this area for reuse the following workday.
56

57 Waste Container Pass-Out Airlock:

1
2 The waste container pass-out airlock shall be constructed at some location away from the worker
3 decontamination enclosure system. Wherever possible, this shall be located where there is direct access
4 from the regulated area to the outside of the building.

5
6 This airlock system shall consist of an airlock, a container staging area, and another airlock with access to
7 outside the regulated area.

8
9 The waste container pass-out airlock shall be constructed in similar fashion to the worker
10 decontamination enclosure system using similar materials and airlock and curtain doorway designs.

11
12 This airlock system shall not be used to enter or exit the regulated area. The airlock system shall be
13 tightly sealed when not in use.

14
15 Emergency exits shall be established and clearly marked with duct tape arrows or other effective
16 designations to permit easy location from anywhere within the regulated area. They shall be secured to
17 prevent access from uncontaminated areas, but still permit emergency exiting. These exits shall be
18 properly sealed with polyethylene sheeting which can be cut to permit egress if needed. These exits may
19 be through the decontamination enclosure, the waste pass-out airlock, other alternative exits satisfactory
20 to fire officials.

21 22 **TEMPORARY ISOLATION PARTITIONS**

23 Large rooms or open areas that require temporary air tight barriers to separate a contaminated regulated
24 area from an uncontaminated area shall be provided with temporary partitions, constructed in the
25 following manner:

26
27 Walls shall be constructed of wood or metal framing to support barriers in all openings larger than 4' x 8'.

28
29 A sheathing material (plywood, drywall) of at least 3/8" thickness shall be applied to work side of barrier.

30
31 Cover the work side of partition with a double layer of four (4) mil polyethylene sheeting with staggered
32 joints and seal in place.

33
34 Provide at least one (12" x 12") window in the barrier system, where feasible, for the purpose of viewing
35 into the regulated area. The window shall consist of heavy gauge plastic or clear safety glass. Panes shall
36 be framed into the barrier system and completely sealed to prevent any leakage of air through the unit.

37 38 **MAINTENANCE OF ENCLOSURE SYSTEM**

39 Following completion of the construction of all polyethylene barriers and decontamination system
40 enclosures, initiate negative pressure system and allow overnight settling to insure that barriers will
41 remain intact and secured to walls and fixtures before beginning actual abatement activities.

42
43 All polyethylene barriers and decontamination enclosure systems shall be inspected at least twice daily by
44 the Contractor's competent person prior to the start of each day's abatement activities and following the
45 completion of the day's abatement activities. Document inspections and observations in the daily project
46 log.

47
48 Damage and defects in the enclosure system are to be repaired immediately upon discovery.

49
50 Use smoke tubes to test the effectiveness of the barrier system when directed by Owners Project
51 Representative.

52
53 Anytime during the abatement activities, if visible construction related dust or debris is observed outside
54 of the regulated area or if damage occurs to barriers, work shall immediately stop, repairs shall be made to
55 barriers, and debris/residue cleaned up using appropriate HEPA vacuuming and wet mopping procedures.

56

1 Openings made in the enclosure system to accommodate negative air pressure system shall be made
2 airtight with tape and caulking as needed. If more than one unit is installed, they should be turned on one
3 at a time, checking the integrity of wall barriers for secure attachment and need for additional
4 reinforcement. Insure that adequate power supply is available to satisfy the requirements of the
5 ventilating and exhaust units. Negative pressure units shall be exhausted to the outside of the building.
6 They shall not be exhausted into occupied areas of the building. Careful installation and daily inspections
7 shall be done to insure that the ducting does not release fibers into uncontaminated building areas.

8
9 Use of enclosure system shall not commence until the following has been accomplished:

10
11 Enclosure systems have been constructed, inspected, and tested.

12
13 Negative pressure systems are functioning adequately.

14
15 All preabatement submissions, notifications, postings and permits have been provided and approved by
16 the Architect/Engineer, or Construction Representative, as applicable.

17
18 All equipment for abatement, cleanup and disposal are on hand.

19
20 All worker training is completed.

21
22 Contractor has received written notice to commence abatement work from the Division, based on
23 recommendation of the Owners Project Representative.

24
25 **WORKPLACE ENTRY AND EXIT PROCEDURES**

26 All workers and authorized personnel shall enter the regulated area through the decontamination
27 enclosure system.

28
29 All personnel who enter the regulated area must sign the registration log, located in the clean room, both
30 upon entry and exiting the area.

31
32 All personnel shall proceed first to the clean room, remove all street clothes, and appropriately don
33 respiratory protection (as approved for the job conditions) and disposable coveralls, head covering and
34 foot covering. Hard hats, eye protection and gloves shall also be utilized if required. Clean respirators
35 and protective clothing shall be provided and utilized by each person for each separate entry into the
36 regulated area.

37
38 Personnel wearing designated personal protective equipment shall proceed from the clean room through
39 the decontamination enclosure system to the regulated area.

40
41 Before leaving the regulated area all personnel shall remove gross contamination from the outside of
42 respirators and protective clothing by brushing or wet wiping procedures. (Small HEPA vacuums with
43 brush attachments may be utilized for this purpose.) Each person shall clean bottoms of protective
44 footwear in the walk-off pan just prior to entering the equipment room.

45
46 Personnel shall proceed to equipment room where they remove all protective equipment except
47 respirators. Deposit disposable clothing into appropriately labeled containers for disposal.

48
49 Reusable, contaminated footwear shall be stored in the equipment room when not in use in the regulated
50 area. Upon completion of abatement it shall be disposed of as asbestos contaminated waste. Rubber
51 boots may be decontaminated at the completion of the abatement for reuse.

52
53 Still wearing respirators, personnel shall proceed to the shower area, clean the outside of the respirators
54 and the exposed face area under running water prior to removal of respirator and shower and shampoo to
55 remove residual asbestos contamination. Various types of respirators will require slight modification of
56 these procedures. An airline respirator with HEPA filtered disconnect protection may be disconnected in
57 the equipment room and worn into the shower. A powered air purifying respirator face piece will have to

1 be disconnected from the filter/power pack assembly which is not waterproof, upon entering the shower.
2 Cartridges must be in place for each new entry into the regulated area.

3
4 After showering and drying off, proceed to the clean room and don street clothing even though there will
5 be later reentry into the regulated area or street clothes if it is the end of the work shift.

6
7 Workers shall NOT eat, drink, smoke, chew gum or tobacco in the regulated area. To eat, drink or smoke,
8 workers shall follow the procedure described above, then dress in street clothes before entering the
9 nonregulated areas of the building.

10
11 These procedures shall be posted in the clean room and equipment room.

12 13 **WASTE CONTAINER PASS-OUT PROCEDURE**

14 Asbestos contaminated waste that has been containerized shall be transported out of the regulated area
15 through the waste container pass-out airlock (or through the decontamination enclosure if a separate
16 airlock has not been constructed).

17
18 The inside team wearing protective clothing and respirators appropriate for the contaminated regulated
19 area shall clean the entire surface, including bottoms, of properly labeled bags, using HEPA vacuums and
20 wet wiping techniques and transport them into the waste container pass-out airlock where they will be
21 placed into another properly labeled bag. No worker from the inside team shall further exit the regulated
22 area through this airlock.

23
24 Workers from outside the regulated area wearing appropriately assigned respirators, shall enter the airlock
25 from outside the regulated area. No worker from the outside team shall further enter the regulated area
26 through this airlock.

27
28 The exit from this airlock shall be secured to prevent unauthorized entry.

29 30 **WATER COLLECTION AND DISPOSAL**

31 All water resulting from precleaning operation, excess from floor of regulated area and the final cleaning
32 operation shall be collected and placed in sealed containers for disposal as contaminated material.

33
34 Water from the decontamination shower shall be collected in a holding tank and filtered to remove
35 particles of 0.5 microns or larger size before draining water into sanitary sewer system. The drainage and
36 filtering system shall consist of the following:

37
38 A centrifugal pump capable of pumping at least 25 gallons/minute.

39
40 Two filter cartridge housings, one serving as a prefilter, utilizing at least 6 cylindrical 100 micron filters
41 (reusable type) and the other serving as final filter with 6 cylindrical 0.5 micron filters.

42
43 Maintain two sets (6 cylinders per set) of 100 micron filters, to allow one set to be cleaned while the other
44 set is in use.

45
46 A common garden hose may be connected to final filter housing to drain water to sanitary sewer system.

47 48 **WET REMOVAL PROCEDURE**

49 Wet all asbestos containing material with an amended water solution, or removal encapsulant, using
50 equipment capable of providing a fine spray mist, in order to reduce airborne fiber concentrations when
51 the material is disturbed. Saturate the material to the substrate. Keep all removed material wet to prevent
52 fiber release until it can be containerized for disposal. If regulated area temperatures are below 32°F. and
53 amended water is subject to freezing, modify as specified for surfactant in Article entitled: "Materials,"
54 herein. Maintain a high humidity in the regulated area by misting or spraying to assist in fiber settling
55 and reduce airborne concentrations.

56

1 Saturated asbestos containing material shall be removed in manageable sections. Removed material
2 should be containerized before moving to a new location for continuance of work. Surrounding areas
3 shall be periodically sprayed and maintained in a wet condition until visible material is cleaned up.
4

5 Material removed from building structures or components shall not be dropped or thrown to the floor.
6 Material should be removed as intact sections or components whenever possible and carefully lowered to
7 the floor. If this cannot be done for materials greater than 50 feet above the floor, a dust-tight chute shall
8 be constructed to transport the material to containers on the floor or the material may be containerized at
9 elevated levels (e.g. on scaffolds) and carefully lowered to the ground by mechanical means. For
10 materials between 15 and 50 feet above the ground they may be containerized at elevated levels or
11 dropped onto inclined chutes or scaffolding for subsequent collection and containerization.
12

13 Bags shall be considered full when half their capacity have been filled. They should be securely sealed to
14 prevent accidental opening and leakage by tying tops of bags in an overhand knot or by taping in
15 gooseneck fashion. Do not seal bags with wire or cord.
16

17 Large components removed intact may be wrapped in two (2) layers of six (6) mil polyethylene sheeting
18 secured with tape for transport to the approved disposal site.
19

20 Asbestos containing waste with sharp edged components (e.g., nails, screws, metal lath, tin sheeting) shall
21 be placed into drums for disposal in lieu of polyethylene bags. Drums shall be marked to differentiate
22 contents from those drums containing bagged material.
23

24 After completion of all stripping work, surfaces from which asbestos containing materials have been
25 removed such as plaster base coat or metal deck, etc., the surfaces shall be wet brushed and sponged to
26 remove all visible residue.
27

28 **CEILING SYSTEM REMOVAL**

29 Remove, clean and enclose in polyethylene the ceiling mounted objects such as lights and other items that
30 may interfere with the abatement process and were not previously cleaned and sealed off. Utilize
31 localized spraying of amended water, or HEPA vacuums, to reduce fiber dispersal during the removal of
32 these fixtures.
33

34 Remove ceiling (tiles) (panels) within the regulated area carefully. If panels are to be reused, vacuum
35 them with a HEPA filtered vacuum cleaner and carefully damp sponge and wrap cleaned (tiles) (panels)
36 in four (4) mil polyethylene sheeting and seal with tape. Store as designated by Owners Project
37 Representative (preferably outside of the regulated area). If (tiles) (panels) are to be discarded it is not
38 necessary to clean them, but wrap in a similar fashion and stage for disposal in the waste container pass-
39 out airlock.
40

41 Where suspended ceiling T-grid components must be removed to perform the abatement, HEPA vacuum
42 and wet sponge each piece after removal from hangers. Wrap clean grid pieces in four (4) mil
43 polyethylene sheeting and seal with tape. Store as designated by Owners Project Representative or in
44 waste staging area if designated for disposal.
45

46 When removal of ceiling grid suspension system is not necessary for accessibility, to the asbestos
47 containing materials leave the system in place and clean properly following completion of abatement, as
48 specified in the Article of this section entitled: "Cleanup Procedure."
49

50 Remove plaster/drywall ceilings including lath, furring channel system, wire mesh, ties, clips, screws,
51 nails and other accessory items as necessary and dispose of them as asbestos contaminated waste material.
52 As work progresses, spray ceiling materials and debris with amended water to keep wet until
53 containerized for disposal.
54

55 **PIPE TUNNEL OR CRAWL SPACE REMOVAL WORK**

1 A decontamination enclosure shall be provided at the entrance to the pipe tunnel or crawl space. All
2 requirements for regulated area entry and exit procedures and waste container pass-out procedures, as
3 hereinbefore specified, shall apply to this work.

4
5 All openings within the pipe tunnel or crawl space shall be sealed with four (4) mil polyethylene and tape.
6 The existing surfaces within the space will not be required to be covered with polyethylene sheeting.

7
8 A negative pressure system shall be required to maintain the security of the work space and the integrated
9 decontamination enclosure.

10
11 All loose and fallen asbestos-containing material shall be very carefully cleaned up with an industrial
12 vacuum equipped with HEPA filter.

13
14 After asbestos abatement work has been completed in the crawl space or pipe tunnel, all ceiling, wall and
15 floor surfaces shall be cleaned with the HEPA equipped vacuum. All cleaned surfaces shall be sealed
16 with an approved encapsulant.

17
18 **FLOORING REMOVAL**

19 Where flooring removal is specified with the use of solvents to remove flooring adhesive, the substrate
20 shall have no adhesive residue or debris remaining. Contractor shall wash the substrate with soap and
21 water to remove all solvent. Contractor shall be responsible for the cost of repair or replacement of any
22 building components damaged by excessive use of solvents.

23
24 Where flooring removal is specified without the use of solvents to remove flooring adhesive, the
25 contractor shall diligently remove adhesive by scraping process so that all trowel marks are removed and
26 a uniform substrate, smooth to the touch, is attained. Contractor shall coordinate with the flooring
27 installer to insure that the remaining substrate is suitable for replacement flooring installation.

28
29 **SMALL SCALE - SHORT DURATION REMOVAL PROCEDURE**

30 Glovebag Method:

31
32 All workers who are permitted to use the glovebag technique must be trained, experienced and skilled in
33 this method.

34
35 All tools and materials that will be required during the removal procedure, shall be placed into the tool
36 pouch.

37
38 Glovebag shall be installed so that it completely encompassed the surface where removal work will take
39 place. The side seams of the glovebag shall be cut the appropriate length to accommodate a size that will
40 fit over the removal area. The bag shall be placed in position, the edges of the bag shall be folded
41 together and sealed with tape. All openings in the bag shall be sealed with duct tape (or equivalent
42 material). The bottom seam of the bag must also be sealed with tape to prevent leakage.

43
44 Workers performing asbestos removal with glovebag shall wear (as a minimum) half mask dual--cartridge
45 HEPA--equipped respirator, and full protective clothing to protect against the possibility of accidental
46 leakage.

47
48 All material removed within the glovebag shall be thoroughly wetted with wetting agent, or removal
49 encapsulant, applied with airless sprayer through the side port provided in the bag. After asbestos
50 containing material has been removed, the exposed base surface must be thoroughly cleaned and wet
51 wiped until all traces of asbestos-containing material is removed.

52
53 Create constant negative pressure by running a HEPA vacuum hose into bag.

54
55 Any exposed edges of asbestos-containing that will remain after bag is removed, shall be encapsulated
56 with a bridging encapsulant to seal the material from releasing fibers to the atmosphere. Provide neatly
57 beveled and coated terminations where insulation terminates suitable for a butt joint with new insulation.

1
2 In all glovebag removal settings, all doors, windows and other openings to the functional space must be
3 sealed with a minimum of four (4) mil polyethylene sheeting. The HVAC system must be shut down.
4 Once the area is completely sealed off, negative air pressure must be introduced to the entire functional
5 space.

6
7 In glove bag settings which involve small scale short duration removal the immediate area shall be
8 prepared using the following techniques; polyethylene drop cloths (minimum 6 mil) on floor and walls in
9 a 12 foot perimeter of the removal area, negative air machine present and running in the immediate area.
10 Glove bag must be placed under variable negative pressure during removal stages. A centralized five
11 stage decontamination system must be established in the building for this method of glovebag removal.

12
13 **Mini-Enclosure Method:**

14
15 A mini-enclosure may be built around an area which is too large for glovebag method, but is of small-
16 scale and short duration work and would not warrant large enclosure.

17
18 The mini-enclosure can be small enough to restrict the space to use by one worker. A small change room
19 shall be contiguous to the mini-enclosure. The change room shall be a minimum of three (3) feet square.

20
21 The mini-enclosure shall be constructed by affixing plastic sheeting to existing walls and covering the
22 floor with plastic sheeting which shall extend up walls at least 24 inches and sealed with tape. If existing
23 walls are not available, a 2 x 4 wood frame shall be constructed and two (2) layers of six (6) mil
24 polyethylene sheeting applied to the interior side of frame to allow clean "take-down," at completion.
25 Sheeting shall be sealed with tape.

26
27 The change room shall be constructed of 2 x 4 wood framing to which shall be applied two (2) layers of
28 six (6) mil polyethylene sheeting to interior side of frame and sealed with tape. The change room shall be
29 provided with double six (6) mil polyethylene curtains at the exit and the entrance to the mini work
30 enclosure. Both curtains in each opening shall be secured at the top and one side opposite from the other.

31
32 A hose from a HEPA vacuum shall be extended through the wall of the Mini-Enclosure and the opening
33 around the hose shall be sealed with tape. The HEPA vacuum shall run continuously during the time
34 asbestos abatement work is taking place.

35
36 All abatement work shall be conducted using the wet removal method and all debris from such work shall
37 be bagged and disposed of as contaminated material. Upon completion, the interior surfaces of the
38 regulated area shall be cleaned and sprayed with an encapsulant.

39
40 Worker using the mini-enclosure method shall wear two (2) Tyvek^R or equivalent disposable work suit
41 and the appropriate HEPA filtered dual cartridge respiratory protection. Upon completion of the work
42 and before leaving the change area, worker shall remove outer work suit and then proceed to a shower
43 that is not contiguous with the work area.

44
45 The polyethylene enclosure, comprising the regulated area and the change room, shall be collapsed
46 inwardly, bagged and disposed of as contaminated material.

47
48 **ENCAPSULATION PROCEDURES**

49 Clean and isolate the regulated area as specified in Article entitled: "Preparation of Regulated Area",
50 hereinbefore.

51
52 Repair damaged and missing areas of existing materials with nonasbestos-containing substitutes.
53 Material must adhere adequately to existing surfaces and provide an adequate base for application of
54 encapsulating agents. Filler material shall be applied in accordance with manufacturer's recommended
55 specifications.

56

1 Spray apply with airless equipment with low nozzle pressure to all surfaces where asbestos is removed or
2 surfaces containing asbestos that are to remain in place. Spray must completely encapsulate any
3 remaining asbestos, permanently locking it in place.

4
5 Apply a minimum of one (1) coat with coverage in strict accordance with manufacturer's
6 recommendations. Surfaces must be dry and free of dirt, oil and dust.

7
8 **ENCLOSURE PROCEDURE**

9 Clean and isolate the regulated area as specified in Article entitled: "Preparation of Regulated Area"
10 hereinbefore.

11
12 Spray areas that will be disturbed during the installation of hangers or other support/framing materials for
13 the enclosure with water containing the specified surfactant. Keep these areas damp to reduce airborne
14 fiber concentrations.

15
16 Remove loose or hanging asbestos containing materials.

17
18 After installation of hangers and other fixing devices and before installation of enclosure, repair damaged
19 areas of fireproofing/thermal insulation materials as required using a nonasbestos-containing replacement
20 material. Prepare surfaces and apply replacement material in accordance with manufacturer's
21 recommendations.

22
23 **AIR MONITORING**

24 Daily Personal Air Monitoring (OSHA Compliance):

25
26 Daily determination of employee exposure shall be made by collecting one or more breathing
27 zone samples that are representative of the 8-hour TWA, full-shift exposure for each employee in
28 each regulated area; and one or more breathing zone air samples that are representative of 30-
29 minute exposures associated with operations that are most likely to produce exposures above the
30 excursion limit for employees in each regulated area.

31
32 OSHA P.E.L. As required by 29CFR 1926.1101(c). Within the breathing zone of each worker
33 category (i.e., wetter, receiver, bagger) 25% of the crew or one per job category.

34
35 All samples collected shall be analyzed by a laboratory accredited by the American Industrial Hygiene
36 Association.

37
38 The Owners Project Representative has the authority to stop the abatement work under the provisions of
39 the General Conditions of this contract at anytime the Construction Representative determines either
40 personally or through the services of an air sampling professional that conditions are not in compliance
41 with the specifications and applicable regulations. The stoppage of work shall continue until conditions
42 have been corrected and corrective steps have been taken to the satisfaction of the Construction
43 Representative. Standby time required to resolve violations shall be at the Contractor's expense.

44
45 **CLEANUP PROCEDURE**

46 Remove and containerize all visible accumulations of asbestos containing material and asbestos
47 contaminated debris utilizing rubber dust pans and rubber squeegees to move material around. Do not use
48 metal shovels to pick up or move accumulated waste. Special care shall be taken to minimize damage to
49 floor sheeting.

50
51 Wet clean all surfaces in the regulated area using rags, mops and sponges as appropriate. (Note: Some
52 HEPA vacuums might not be wet-dry vacuums.)

53
54 Prior to removing the inner layer of plastic sheeting, the sheeting shall be sprayed with an encapsulant, so
55 that any residue remaining will be adhered to the plastic sheeting.

56

1 Remove the cleaned inner layer of plastic sheeting from walls and floors. Windows, doors, HVAC
2 system vents and all other openings shall remain sealed. The negative pressure ventilation units shall
3 remain in continuous operation. Decontamination enclosure systems shall remain in place and be utilized.

4
5 Remove all containerized waste from the regulated area and waste container pass-out airlock.

6
7 The DFD's Project Representative, DNR Representative and the Contractor shall inspect the regulated
8 area for visible residue. If any accumulation of residue is observed, it will be assumed to be asbestos and
9 the cleaning cycle shall be repeated.

10
11 After cleaning the regulated area the Contractor may either spray the remaining barrier material with
12 encapsulant or, wait at least 24 hours to allow fibers to settle and HEPA vacuum and wet clean all objects
13 and surfaces in the regulated area again.

14
15 Decontaminate all tools and equipment and remove at the appropriate time in the cleaning sequence.

16
17 **DISPOSAL PROCEDURES**

18 As the work progresses to prevent exceeding available storage capacity onsite, sealed and labelled
19 containers of asbestos-containing waste shall be removed and transported directly to the prearranged
20 disposal location, which must be an authorized site in accordance with regulatory requirements of
21 NESHAP and Wisconsin Administrative Rule NR 447.13 and NR 506.10. Use of intermediate storage
22 locations is not accepted disposal procedure. Mark vehicles used to transport asbestos-containing waste
23 in accordance with Nr 447.12(4)(a)1 to 3. Comply with US DOT Hazardous Material regulations, 49
24 CFR 171-180.

25
26 The Contractor shall provide documentation in the form of a transportation and disposal manifest that will
27 provide a chain-of-custody record of all asbestos-containing waste from project site to the disposal site.
28 All asbestos-containing waste generated must be accounted for by these records and copies of all such
29 records shall be delivered to the Construction Representative.

30
31 **Transportation to the Landfill:**

32
33 Contractor shall provide an enclosed lockable waste container, consisting of a truck, trailer or
34 dumpster, for storage and transportation of waste. The waste container shall be locked while
35 unattended and during transportation of waste. Once bags have been removed from the regulated
36 area, they shall be loaded directly into the waste container for transportation.

37
38 The waste container shall be free of debris and lined with six (6) mil polyethylene sheeting to
39 prevent contamination from leaking or spilled containers. Floor sheeting shall be installed first
40 and extend up the side walls. Wall sheeting shall be overlapped and taped into place.

41
42 Drums shall be placed on level surfaces in the waste container and packed tightly together to
43 prevent shifting and tipping. Large components shall be secured to prevent shifting and bags
44 placed on top. Do not throw containers into waste container.

45
46 Personnel loading asbestos containing waste shall be protected by disposable clothing including
47 head, body and foot protection and at a minimum, half-face piece, air-purifying, dual cartridge
48 respirators equipped with HEPA filters.

49
50 Any debris or residue observed on containers or surfaces outside of the regulated area resulting
51 from cleanup or disposal activities shall be immediately cleaned up using HEPA filtered vacuum
52 equipment and/or wet methods.

53
54
55 **Disposal at the Landfill:**

1 Upon reaching the landfill, trucks are to approach the dump location as closely as possible for
2 unloading of the asbestos containing waste.

3
4 Bags, drums and components shall be inspected as they are off-loaded at the disposal site.
5 Damaged containers shall be very carefully taped shut and repacked into drums or bags as
6 applicable.

7
8 Waste containers shall be placed on the ground at the disposal site, not pushed or thrown out of
9 trucks (weight of wet material could rupture bags).

10
11 Personnel off-loading containers at the disposal site shall wear protective equipment consisting of
12 disposable head, body and foot protection and, at a minimum, half-face piece, air-purifying, dual
13 cartridge respirators equipped with HEPA filters.

14
15 Following the removal of all containerized waste, the truck cargo area shall be decontaminated
16 using HEPA vacuums and wet methods to meet the no visible residue criteria. Polyethylene
17 sheeting shall be removed and discarded along with contaminated cleaning materials and
18 protective clothing, in bags or drums at the disposal site.

19
20 **REESTABLISHMENT OF REGULATED AREA**

21 Reestablishment of the regulated area shall occur only after completion of cleanup procedures and
22 documentation has been performed to the satisfaction of the Project Representative.

23
24 Resecure mounted objects removed from their former positions during area preparation activities.

25
26 Resecure and relocate objects that were removed to temporary locations back to their original positions.

27
28 Reestablish HVAC, mechanical and electrical systems in proper working order. Remove potentially
29 contaminated HVAC system filters and dispose of as asbestos contaminated waste. Decontaminate filter
30 assembly using HEPA vacuums and wet cleaning techniques.

31
32
33
34
35
36
37

END OF SECTION

State of Wisconsin
Department of Administration
DOA-4509 (R03/2003)
Chapters HSS 159 & 163



Division of Facilities Development
Mailing Address: Post Office Box 7866, Madison, WI
53707-7866
Street Addr: 101 E. Wilson Street, 7th Floor,
Madison, WI 53702
Phone: 608 / 266-2731; FAX: 608 / 267-2710
<http://www.doa.state.wi.us/dfd>

Asbestos/Lead Abatement Certification

The apparent low bidder on any project involving asbestos and/or lead abatement activity must provide the following statement notarized and signed by an officer of the firm, before the end of the seventh calendar day after the bid opening.

Note: For certified statements 1-3 below: If no exceptions exist, state "None"; otherwise include project(s), date(s), description and resolution for each (attach additional sheets if necessary).

This is to certify that _____
Firm Name

- 1) has not been issued any citations by federal, state or local regulatory agencies relating to asbestos or lead abatement activity, except as follows:

- 2) has not had an asbestos or lead abatement contract terminated prior to completion, except as follows:

- 3) has not been named in any asbestos or lead related legal proceedings/claims in which the firm (or employees scheduled to participate in this project) was involved as contractor or subcontractor, except as follows:

- 4) has all employees or agents who may be exposed to airborne asbestos in excess of the OSHA PEL medically determined to be physically capable of working while wearing the respirator
- 5) will utilize only HEPA vacuums, negative pressure ventilation units and other local exhaust ventilation equipment conforming to ANSI Z9.2-79 and that water filtration unit(s) are used in conformance with manufacturer's specifications
- 6) has notified rental agencies that rental equipment will be used in abatement areas or to transport asbestos contaminated waste, if contractor intends to use rented equipment
- 7) will utilize only NIOSH approved respiratory protective devices and that respirator fit-testing for all contractor employees and agents, who must enter the regulated area, are performed in accordance with procedures as detailed in Title 29 CFR 1926.1101, Appendix C, Qualitative and Quantitative Fit Testing Procedures
- 8) maintains a written hazard communication program indicating how the contractor plans to meet the requirements of OSHA 29 CFR 1926.59 relative to labeling, handling of material safety data sheets and training of employees.

The undersigned states that all of the above information is true and correct to the best of his/her knowledge.

Dated _____

Authorized Signature

Printed Name

Title

State of Wisconsin
County _____

Firm Name

Signed or attested before me on _____ day _____, _____

By: _____ County, WI

Notary Public

(STAMP OR SEAL)

My Commission Expires _____, 20____.