

TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATION INDEX

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SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Work covered by the Contract Documents.
 - 2. Type of the Contract.
 - 3. Work under other contracts.
 - 4. Use of premises.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work consists of the following:
 - 1. The Work includes but is not limited to the following as shown on Contract Documents:
 - a. Removal of existing shingle roofing system and replacement with new shingle roofing system
 - b. Reframing of existing eaves and gable ends.
 - c. New fascia, soffit, rakes and gable end siding.
 - d. Roof ventilation.
 - e. New gutters and downspouts.

1.4 TYPE OF CONTRACT

- A. Project will be constructed under a single prime contract.

1.5 WORK UNDER OTHER CONTRACTS

- A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract. Coordinate the Work of this Contract with work performed under separate contracts, such as installation of utilities performed by others.

1.6 USE OF PREMISES

- A. General: The site is occupied. Contractor shall have limited use of OWNERS premises for construction operations during construction period. Staging and parking will be coordinated with the contractor of award.
- B. Keep access entrances serving the premises clear. Do not use these areas for parking

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 012000 - PROJECT MEETINGS

PRE-CONSTRUCTION CONFERENCE

Contractor shall be present and accompanied by his project coordinator, job superintendent and all major subcontractors including testing agencies.

PROGRESS MEETINGS

Contractor, subcontractors, material men and vendors whose presence is necessary or requested must attend meetings when called by the Owner or his representatives for purpose of discussing execution of work.

Meetings will be held at a time and place designated by the Owner or his representative.

Decisions, instructions and interpretations given by the Owner or his representative at these meetings, shall be binding and conclusive on the Contractor.

Proceedings of these meetings will be recorded and Contractor will be furnished one copy for his use. Contractor shall distribute copies to the various subcontractors, material men and vendors involved.

PRE-INSTALLATION MEETINGS

Contractor, subcontractors, material men and vendors whose presence is necessary or requested must attend the meetings for the purpose of discussing execution of work.

Decisions, instructions and interpretations given by the Owner or his representative at these meetings, shall be binding and conclusive on the Contractor.

Proceedings of these meetings will be recorded and Contractor will be furnished one copy for his use. Contractor shall distribute copies to the various subcontractors, material men and vendors involved.

The following pre-installation meetings shall be held prior to start of work.

1. Abatement
2. Roofing.

CONTRACT PROGRESS SCHEDULE

Contractor shall be required to complete and submit to the Owner a Contract Progress Schedule within 10 days after Notice to Proceed. This schedule will be required to be reviewed and approved prior to submission of first application for payment.

END OF SECTION

SECTION 013300 – SUBMITTAL PROCEDURES

CONSTRUCTION SCHEDULES

See General Conditions.

PROGRESS REPORTS

Keep progress reports on a daily basis to cover each facet of work. Keep these reports on file at field office and make available for the PHA or his representative's review upon request.

SCHEDULE OF VALUES

Submit schedule of values as required by General Conditions.

PROJECT RECORD DOCUMENTS

Submit project record documents as required by Project Closeout Section.

OTHER SUBMITTALS

Submit all other information required by Contract Documents.

SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
1. Submit shop drawings and samples for all items called for in the specifications.
 - a. Submit electronic (email) copy of shop drawing to Architect.
 - b. Submit (3) hard copies of each color sample, unless otherwise specified.
 - c. Electronic (email) copy of the shop drawing and brochure bearing "final action" stamp of the Architect will be returned to the Contractor.
 - d. One printed hardcopy of each drawing and one sample bearing "final action" stamp of the Architect shall be kept at project office and shall be maintained in good condition.
 - e. No shop drawing or sample shall be submitted directly to the Architect from a manufacturer, jobber or subcontractor.
 2. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 3. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - a. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.

4. Processing: To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for resubmittals. Advise the Architect on each submittal, as to whether processing time is critical to the progress of the Work, and if the Work would be expedited if processing time could be reduced.
 - a. Allow fourteen (14) working days for initial review. Allow additional time if the Architect must delay processing to permit coordination with subsequent submittals. The Architect will advise the Contractor promptly when it is determined that a submittal being process must be delayed for coordination.
 - b. Allow fourteen (14) working days for color selections to be made. Color selections will only be made after ALL materials have been "reviewed" with "no exceptions".
 - c. If an intermediate submittal is necessary, process the same as the initial submittal.
 - d. Allow seven (7) working days for reprocessing each submittal.
 - e. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.
 - f. The Contractor shall pay the Architect a review fee of \$300.00 per shop drawing sheet and a review fee of \$30.00 per page (letter and legal size) for third and subsequent resubmittals of shop drawings, product data and samples.
 - g. Copies of the Contract Documents SHALL NOT be used for submittals.
- B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
 1. Provide a space approximately 4 by 5 inches on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
 2. Include the following information on the label for processing and recording action taken.
 - a. Project name.
 - b. Data.
 - c. Name and address of the Consultant.
 - d. Name and address of the Contractor.
 - e. Name and address of the subcontractor.
 - f. Name and address of the supplier.
 - g. Name of the manufacturer.
 - h. Number and title of appropriate Specification Section.
 - i. Drawing number and detail references, as appropriate.
 3. Provide a space on the label for the Contractor review and approval markings, and a space for the Architect's "Action" marking.

C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from the Contractor to the Consultant using a transmittal form. The Consultant will not accept submittals received from sources other than the Contractor and will be returned to sender "without action".

1. On the transmittal, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

D. In checking shop drawings and samples, the Architect shall not be required to check dimensions, quantities, electrical characteristics, specific capacities or coordination with other trades, these being Contractor's responsibility.

1. Contractor shall attest, either in writing or by stamp or signature that all shop drawings and samples submitted for approval have been checked for compliance with Contract Documents prior to submission to the Architect; otherwise, they will be returned **REJECTED**.
2. If sample warranties of items requiring warranties are not included in submittals they will be returned **REJECTED**.
3. Incomplete submittals will be returned **REJECTED**.

E. Stamp on returned shop drawing and samples shall be interpreted as follows:

No Exceptions Taken: No corrections, proceed with work.

Revise and Resubmit: Items unacceptable as submitted, make corrections and resubmit.

Note Markings: Items marked up shall not be fabricated or furnished without incorporation of marks and notes.

Rejected: Item is rejected as not in accordance with contract requirements, or for other justified cause. Submission shall be revised and resubmitted. No item shall be fabricated or furnished under this stamp.

Comments attached: As noted.

CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Prepare a fully developed, horizontal bar-chart-type, contractor's construction schedule. Submit within 15 days after the date established for "Commencement of the Work".

1. Provide a separate time bar for each significant abatement, demolition or construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the "Schedule of Values".

2. Within each time bar, indicate estimated completion percentage in 10 percent increments. As Work progresses, place a contrasting mark in each bar to indicate Actual Completion.
 3. Prepare the schedule on a sheet, or series of sheets, of stable transparency, or other reproducible media, of sufficient width to show data for the entire construction period.
 4. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically the sequences necessary for completion of related portions of the Work.
 5. Coordinate the Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittal Schedule, progress reports, payment requests, and other schedules.
 6. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Consultant's procedures necessary for certification of Substantial Completion.
- B. **Work Stages:** Indicate important stages of construction for each major portion of the Work, including submittal review, testing, and installation.
- C. **Area Separations:** Provide a separate time bar to identify each major construction area involved in the work. Indicate where each element in an area must be sequenced or integrated with other activities.
- D. **Cost Correlation:** At the head of the schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of work performed as of the dates used for preparation of payment requests.
- E. **Distribution:** Following response to the initial submittal, print and distribute copies to the Consultant, PHA, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.
1. When revisions are made, distribute to the same parties and post in the same location. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.
- F. **Schedule Updating:** Revise the schedule after each meeting, event, or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

SUBMITTAL SCHEDULE

- A. After development and acceptance of the Contractor's Construction Schedule, prepare a complete schedule of submittals. Submit the schedule within 10 days of the date required for submittal of the Contractor's Construction Schedule.
1. Coordinate Submittal Schedule with the list of subcontracts, Schedule of Values, and the list of products as well as the Contractor's Construction Schedule.
 2. Prepare the schedule in chronological order. Provide the following information:

- a. Scheduled date for the first submittal.
- b. Related Section number.
- c. Submittal category (Shop Drawings, Product Data, or Samples).
- d. Name of the subcontractor.

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

CODES, STANDARDS AND INDUSTRY SPECIFICATIONS

Material or operations specified by reference to published specifications of a manufacturer, testing agency, society, association or other published standards shall comply with requirements in latest revisions thereof and amendments or supplements thereto in effect on date of Contract Award.

Discrepancies between referenced codes, standards, specifications and Contract Documents shall be brought to the attention of the Architect for interpretation.

Material or work specified by reference to conform to a standard, code, law or regulation shall be governed by Contract Documents when they exceed requirements of such references; referenced standards shall govern when they exceed Contract Documents.

Proof of Compliance

Whenever Contract Documents require that a product be in accordance with Federal Specification, ASTM designation, ANSI specification or other association standard, at the Architect's request, Contractor shall present an affidavit from manufacturer certifying that product complies therewith. Where requested or specified, submit supporting test data to substantiate. Provide documentation that products comply with the Buy American requirements of the American Reinvestment and Recovery Act.

MANUFACTURER'S DIRECTIONS

Utilize manufactured articles, materials and equipment as directed by manufacturers unless herein specified to contrary. Discrepancy between an installation required by Contract Documents, and manufacturer's instructions and recommendations shall be resolved by the Architect before work may proceed.

LINES AND MEASUREMENTS

Be responsible for properly laying out work and for lines and measurements for the work executed under Contract Documents. Verify figures indicated on Drawings before laying out work and report errors or inaccuracies in writing to the Architect before commencing work. The Architect or their representative will in no case assume responsibility for laying out work.

END OF SECTION 014000

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

1.3 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.
- B. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- C. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.4 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

1.5 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

PART 2 - PRODUCTS

2.1 TEMPORARY FACILITIES

- A. Field Offices, General: Not required.

2.2 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
 - 1. Toilets: Use of Owner's existing toilet facilities **WILL NOT** be permitted.
- C. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.
- D. Parking: parking areas for construction personnel are limited.

- E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction.

3.3 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- C. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- D. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- E. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
 - 1. Prohibit smoking in construction areas.
 - 2. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

3.4 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.

END OF SECTION 015000

SECTION 016000 – PRODUCT REQUIREMENTS

RELATED DOCUMENTS

General provisions of Contract, General and Supplementary Conditions and General Requirements apply to this Section.

TRANSPORTATION

Materials, products and equipment shall be properly containerized, packaged, boxed and protected to prevent damage during transportation and handling. More detailed requirements for transportation and handling are specified under technical sections.

STORAGE AND PROTECTION

Store and protect materials delivered at site from damage. Do not use damaged material on work.

IDENTIFYING MARKINGS

All fire rating labels and product certifications are to remain intact on the material.

MEASUREMENTS

All Contractors furnishing materials and equipment for this contract shall obtain exact dimensions at site.

Scale and figure dimensions on Drawings indicate correct size under ideal conditions and shall not under any circumstances be so construed as to relieve Contractor from responsibility of taking measurements at site and furnishing materials and equipment of correct size.

PRODUCT APPROVAL STANDARDS

Term "product" shall include material, equipment, assembly methods, manufacturer, brand, trade name or other description.

Manufacturers

Wherever manufacturers and products are listed in Contract Documents they shall establish required quality. Products, which are equal in quality, suited to same use and are capable of performing same function, as those names will be acceptable. Burden of proof of equal quality or service shall be on Contractor.

Proof of inequality is not implied by Specifications and is not a burden of the Owner. His duty shall be to properly weigh proven facts of equality in fairness to all parties involved.

Inclusion of a certain make or type of material or equipment in Contractor's bid or estimate shall not obligate Owner to accept such material or equipment if it does not meet requirements of Contract Documents. The Owner will advise Contractor of acceptance and approval thereof, and of action to be taken.

If an item of material or equipment, or manufacturer, is specifically specified to have no approved equal, it shall be provided and no substitution will be entertained or allowed unless otherwise determined by the Owner.

SUBSTITUTIONS

Inclusion in Specifications of Non-specified Products Prior to Bid Date:

For inclusion of products other than those specified, does not require prior approval. Manufacturers listed in the specifications are used to establish a level of quality. Other manufacturers may be acceptable provided the product complies with the Construction Documents. Burden of proof shall be the bidder's responsibility.

Substitutions After Award of Contract

Substitution of products will be considered only under one of the following conditions:

When specified product is not available, a proposed substitution will not be considered unless proof is submitted within forty-five (45) days after contract is signed that firm orders were placed within ten (10) days after contract signing or unavailability is due to a strike, lockout, bankruptcy, discontinuance of manufacturer of a product or natural disasters.

When a guarantee of performance is required, and in judgment of Contractor, specified product or process will not produce desired results.

Make request for such substitutions in writing to within ten days of date that Contractor ascertains he cannot obtain product specified or that performance cannot be guaranteed.

Procedure Respecting Substitutions Prior to or After Bid Date

Should Contractor wish to substitute some product other than one previously approved, he shall request permission, in writing, from the Architect, giving the following information in his letter of request:

Name and manufacturer of product specified.

Name and manufacturer of product he wishes to substitute.

Complete descriptive and specification data and illustrations and samples of product he wishes to substitute and reasons for substitutions.

In consideration of proposed substitutions, Contractor shall supply the Architect with all information, which may be requested.

The Architect will approve or disapprove proposed substitution in writing and his decision will be final if within provisions of contract documents.

END OF SECTION 016000

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Installation of the Work.
 - 2. Cutting and patching.
 - 3. Progress cleaning.
 - 4. Starting and adjusting.
 - 5. Protection of installed construction.

1.3 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.4 PREINSTALLATION MEETINGS

- A. Cutting and Patching Conference: Conduct conference at Project site.
 - 1. Prior commencing work requiring cutting and patching, review extent of cutting and patching anticipated and examine procedures for ensuring satisfactory result from cutting and patching work. Require representatives of each entity directly concerned with cutting and patching to attend, including the following:
 - a. Contractor's superintendent.
 - b. Trade supervisor responsible for cutting operations.
 - c. Trade supervisor(s) responsible for patching of each type of substrate.
 - d. Subcontractors' supervisors, to the extent each trade is affected by cutting and patching operations.
 - 2. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.5 INFORMATIONAL SUBMITTALS

- A. Cutting and Patching Plan: Submit plan describing procedures at least [10] days prior to the time cutting and patching will be performed. Include the following information:
1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
 2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
 3. Products: List products to be used for patching and firms or entities that will perform patching work.
 4. Dates: Indicate when cutting and patching will be performed.
 5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.

1.6 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
 4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
 - 1. For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with sustainable design requirements.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of construction indicated as existing is not guaranteed. Before beginning, investigate and verify the existence and location of construction affecting the Work.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Examine roughing-in for systems to verify actual locations of connections before equipment and fixture installation.
 - 2. Examine walls, floors, etc., for suitable conditions where products and systems are to be installed.
 - 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field

measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

- B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect.

3.3 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal wiring in finished areas unless otherwise indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

3.4 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

- E. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 3. Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 4. Proceed with patching after construction operations requiring cutting are complete.
- F. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
 3. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a watertight condition and ensures thermal and moisture integrity of building enclosure.
- G. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.5 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
1. Remove liquid spills promptly.

2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 017419 "Construction Waste Management and Disposal."
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.6 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Final Completion.
- B. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.
- C. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Recycling nonhazardous demolition waste.
 - 2. Disposing of nonhazardous demolition waste.

1.3 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and materials, including the following:
 - 1. Demolition Waste: (As Applicable)
 - 2. Construction Waste:
 - a. Packaging: Regardless of recycle goal indicated in paragraph above, recycle 100 percent of the following uncontaminated packaging materials:

- 1) Paper.
- 2) Cardboard.
- 3) Boxes.
- 4) Plastic sheet and film.
- 5) Polystyrene packaging.
- 6) Wood crates.
- 7) Plastic pails.

1.5 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan not less than 10 days after the Preconstruction Meeting.

1.6 INFORMATIONAL SUBMITTALS

- A. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- B. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

1.7 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Waste Management Conference: Conduct conference to review methods and procedures related to waste management including, but not limited to, the following:
 1. Review and discuss waste management plan.
 2. Review requirements for documenting quantities of each type of waste and its disposition.
 3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
 4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
 5. Review waste management requirements for each trade.

1.8 WASTE MANAGEMENT PLAN

- A. General: Develop a waste management plan. Plan shall consist of waste identification, waste reduction work plan. Distinguish between demolition and construction waste. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

- B. Waste Identification: Indicate anticipated types and quantities of waste generated by the Work. Include estimated quantities and assumptions for estimates.
- C. Waste Reduction Work Plan: List each type of waste and whether it will be recycled, or disposed of in landfill or incinerator
 - 1. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
 - 2. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
- B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
 - 1. Distribute waste management plan to everyone concerned within three days of submittal return.
 - 2. Review plan procedures and locations established for recycling, and disposal.
- C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.

3.2 RECYCLING WASTE, GENERAL

- A. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Contractor.
- B. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.

- C. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.
 - 1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
 - a. Inspect containers and bins for contamination and remove contaminated materials if found.
 - 2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
 - 4. Store components off the ground and protect from the weather.
 - 5. Remove ALL waste off Owner's property and transport to recycling receiver or processor.

3.3 DISPOSAL OF WASTE

- A. General: Except for items or materials to be recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
 - 1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.
- C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION 017419

SECTION 017700 – CLOSEOUT PROCEDURES

RELATED DOCUMENTS

General provisions of the Contract, and General and Supplementary Conditions and General Requirements apply to this Section.

This Section shall be governed by alternates insofar as they affect this work.

CLEANING UP

Keep site free of combustible materials.

Do not dump debris, waste and excess earth on other property without prior permission of property owner.

Burning of waste materials on site will not be permitted.

Upon completion of work, remove temporary buildings and structures, fences, scaffolding, surplus materials, equipment and rubbish of every kind from site of work.

DOCUMENTS REQUIRED PRIOR TO FINAL PAYMENT

Prior to final payment and before issuance of a final certificate of payment in accordance with provisions of General Conditions, file the following papers with the Owner.

Warranties:

Three (3) copies of warranty required by General Conditions and other extended warranties stated in technical specification sections shall be bound and submitted in a 3-ring binder.

Release of Waiver of Liens:

Provide Release of Waiver of Liens for each subcontractor, trade and vendor.

Project Record Documents:

As work progresses, keep a complete and accurate record of all changes or deviations from Contract Documents including all addenda items. Changes shall be neatly and correctly indicated on respective portion of affected document, using blackline or blue line prints of Drawings affected or Project Manual with appropriate supplementary notes. This record set Drawings and Project Manual shall be kept at job site for inspection by Architect, Owner or their representatives.

The record drawings shall not be used as a construction set.

All Addenda, Architect's Supplemental Instructions, Field Orders and Change Orders issued for this project shall be included in the Record Drawings.

Records above shall be arranged in order in accordance with various sections of specifications and properly indexed. At completion of work, certify by endorsement thereof that each of revised prints of Drawings and Project Manual is complete and accurate. Prior to application for final payment, and as a condition to its approval by Owner, deliver Record Documents, arranged in proper order, indexed and endorsed as herein before specified. Provide suitable transfer cases and deliver records therein, indexed and marked for each division of work for the following:

A full set of shop drawings bearing the Architect's stamp

Contract Drawings

Project Manual (specifications) - Highlight or otherwise note each specific product used in this project, for each section of project manual.

Change Order drawings and field changes – place on back of previous drawing sheet in record drawings.

No review or receipt of such records by Owner shall be a waiver of any deviation from Contract Documents or shop drawings or in any way relieve Contractor from his responsibility to perform work in accordance with Contract Documents and shop drawings to extent they are in accordance with Contract Documents.

Certificate of Final Completion

Provide Release of Surety, as required by General Conditions

Operating and maintenance manuals to include the following information:

1. Each Contractor shall compile product data related to the maintenance and operation of products and equipment provided under the Contract. Provide O & M information for products specified in schedules and specific work sections of the Project Manual.

Prepare a typewritten table of contents for each volume, arranged in project manual order. Include for each product, the name, address and telephone number of subcontractor, maintenance contractor and parts vendor.

Supplement product data with drawings to clearly illustrate the relationship of component parts and control and flow diagrams.

Include a copy of each warranty, bond and service agreement.

2. Submit 3 copies of each manual.
3. For Materials and Finishes: Provide full information on products, including catalog number, size, composition, color and texture designations and information for reordering special-manufactured products.

Provide manufacturer's recommendations for cleaning agents/methods and recommended cleaning and maintenance schedules.

4. For Equipment and Systems: Provide operating characteristics and limiting conditions, performance curves, engineering data and tests.

Include operating procedures, start-up, break-in, routine and normal operating instructions; regulation, control, stopping, shutdown and emergency instructions; summer and winter operating instructions, maintenance procedures; servicing and lubrication schedules.

Provide manufacturer's operating and maintenance instructions; sequence of operation by control manufacturer, manufacturer's parts list, illustrations, assembly drawings and diagrams for maintenance, predicted life expectancy of parts subject to wear, recommended spare parts.

END OF SECTION 017700

TECHNICAL SPECIFICATION FOR THE REMOVAL OF ASBESTOS CONTAINING MATERIALS

PARKWAY PLACE HOUSING COMMUNITY
17 PATTON COURT (MGMT OFFICE)
LOUISVILLE, JEFFERSON CO., KENTUCKY

Pre-Renovation (Re-Roof) Asbestos Abatement
Louisville, Jefferson County, Kentucky

PART 1: GENERAL

1.01 WORK INCLUDED

- A. Furnish all labor, materials, services, insurance, appliances, permits, patents, decontamination facilities, and equipment in accordance with the most stringent requirements of the U.S. Environmental Protection Agency (EPA), the U.S. Occupational Safety and Health Administration (OSHA), these specifications, and all other applicable regulatory agencies to complete asbestos containing materials (ACM) abatement at the Parkway Place Housing Community (Parkway Place) 1737 Patton Street (Management Office Address) in Louisville, Jefferson County, Kentucky prior to the renovation of the structure. Parkway Place is a multi-family residential community consisting of 58 buildings.
- B. Partial enclosure methods of removal shall be employed, as deemed suitable by the consultant and the Owner, to ensure safe abatement of the asbestos. These methods are described herein.
- C. Removal of the following listed asbestos containing materials prior to the scheduled building renovation. **No asbestos containing materials are to remain in the scheduled work areas.**

ASBESTOS CONTAINING MATERIALS

ITEM	MATERIAL	APPROX QUANTITY*	LOCATION/NOTES
1	Caulk/Tar	Up to 60 LF Per Building*	Shingled Roof Deck to Deck Elevation Change Siding
2	White Caulk Between Metal Awning Flashing and Block`	Up to 25 LF Per Single Awning and Up To 45 LF Per Double Awning	Apartment Entrance Awnings

**All quantities of materials to be abated are approximate and must be field verified by the abatement contractor*

***See inspection report. This material was noted on one elevation change on building 11. It is possible it is located on other structures/areas; however, of the 9 building accessed during the inspection it was only noted on one roof section of one structure.*

- D. The designated locations of asbestos and hazardous materials removal will be further defined during the pre-bid meeting and site walk. The Contractor shall be responsible for verifying all

quantities of asbestos containing materials and locations of removal of the defined asbestos containing materials by performing a thorough site inspection prior to commencing work, including the obtaining of permits. The Owner and its representatives will not be held responsible for additional work caused by the Contractor not performing a thorough site inspection.

- E. This specification is not intended to describe nor illustrate the material, labor and equipment necessary to perform the work. These documents represent the Owner's and Owner's Representative's best estimate of the quantity of the defined ACM to be removed during this project. It is the responsibility of the Contractor to determine the precise linear footage and square footage of the defined ACM for bidding purposes. No extra compensation will be allowed for differences between the best estimate and actual quantities of material to be removed. Additionally, the inspection report and this specification are considered complete, and the collection of additional samples of materials not included within the original report (if any) will be completed by the owner's representative. The collection of samples for the purposes of demonstrating materials previously analyzed and demonstrated or assumed to be positive as non-asbestos containing is prohibited.
- F. Bidders shall inform themselves of the conditions under which the work is to be performed at the work-site and all obstacles which may be encountered during the work. Bidders shall also inform themselves of all other relevant matters concerning the work to be performed, and, the bidder, if awarded the contract, shall not be allowed any extra compensation by reason of any matter or thing concerning which the bidder might have fully informed themselves, but failed to do so prior to bidding.
- G. Work in all Areas shall be accomplished with workmen wearing respiratory protection that will ensure a fiber level of less than one fiber per 100 cubic centimeters of air inside the mask. Decontamination chambers will be required. Sealing off spaces with plastic and curtained doorways, airlocks, etc., will be required in work areas. Additionally, due to the age of the structure, lead-based paints are known to exist on the subject property. The Contractor must perform all abatement activities in accordance with applicable local, state, and federal regulations including, but not limited to, OSHA regulations. (OSHA lead construction standard 29 CFR 1926.62).
- H. Clearance and area air samples will be conducted by the Owner's representative as further discussed within this specification. This does *not* alleviate the contractor from performing all applicable OSHA personnel monitoring. All sampling results conducted by the Contractor must be provided to the Owner and the Owner's Consultant at frequent intervals throughout the project (no more than 72 hours after occurrence of sampling activities) as required by OSHA and any other applicable regulations.
- I. The Owner's Consultant reserves the right to discontinue the method of removal should just reason be shown through air testing or visual inspection that the Contractor's performance of these procedures is unsafe.

1.02 COORDINATION

- A. It is the Contractor's responsibility to ensure that the asbestos abatement work, described within this section, is completed prior to the performance of any other work of this contract that would otherwise disturb or potentially disturb asbestos containing materials or contaminated surfaces.
- B. The Contractor will be required to coordinate with the Owner, Owner's Consultant and other on-site contractors with regard to project related details including, but not limited to, safety issues, scheduling, timing, site access, and priority of abatement activities.
- C. The Contractor shall notify the landfill in advance of dumping to allow an area to be set aside for the wastes. The Contractor shall provide to the Owner's Consultant certification that the landfill is an approved asbestos waste depository.
- D. The Contractor shall meet or exceed all requirements required by federal, state, and local law and regulations. The contractor shall submit to the Owner's Consultant proof of possession of a current Kentucky asbestos license, in good standing, to perform asbestos related work issued by state regulatory agencies.
- E. The Contractor must receive written "Notice to proceed" for abatement from the Owner and the Owner's Consultant. This notice will be provided at the Pre-abatement conference if all matters are in order.

1.03 DEFINITIONS

Aggressive method - means removal or disturbance of building material by sanding, abrading, grinding or other method that breaks, crumbles, or disintegrates intact ACM.

Air Monitoring Professional – Contractor selected representative not affiliated with abatement firm who will perform third party air monitoring and document project related activities.

Amended water - means water to which surfactant (wetting agent) has been added to increase the ability of the liquid to penetrate ACM.

Asbestos - includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that has been chemically treated and/or altered. For purposes of this standard, "asbestos" includes PACM, as defined below.

Asbestos-containing material (ACM) - means any material containing more than one percent asbestos.

Assistant Secretary - the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.

Authorized person - any person authorized by the employer and required by work duties to be present in regulated areas.

Building/facility owner - is the legal entity, including a lessee, which exercises control over management and record keeping functions relating to a building and/or facility in which activities covered by this standard take place.

Certified Industrial Hygienist (CIH) – one who is certified in the practice of industrial hygiene by the American Board of Industrial Hygiene.

Class I asbestos work - activities involving the removal of TSI and surfacing ACM and PACM.

Class II asbestos work - activities involving the removal of ACM, which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.

Class III asbestos work - repair and maintenance operations, where "ACM", including TSI and surfacing ACM and PACM, is likely to be disturbed.

Class IV asbestos work - maintenance and custodial activities during which employees contact but do not disturb ACM or PACM and activities to clean up dust, waste and debris resulting from Class I, II, and III activities.

Clean room - an uncontaminated room having facilities for the storage of employees' street clothing and uncontaminated materials and equipment.

Closely resemble - the major workplace conditions, which have contributed to the levels of historic asbestos exposure, are no more protective than conditions of the current workplace.

Competent person - in addition to the definition in 29 CFR 1926.32 (f), one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32(f): in addition, for Class I and Class II work who is specially trained in a training course which meets the criteria of EPA's Model Accreditation Plan (40 CFR part 763) for supervisor, or its equivalent and, for Class III and Class IV work, who is trained in a manner consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92 (a)(2).

Contractor – for the purposes of this document means the firm that will be performing asbestos abatement activities

Critical barrier - one or more layers of plastic sealed over all openings into a work area or any other similarly placed physical barrier sufficient to prevent airborne asbestos in a work area from migrating to an adjacent area.

Decontamination area - an enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.

Demolition - the wrecking or taking out of any load-supporting structural member and any related razing, removing, or stripping of asbestos products.

Director - the Director, National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.

Disturbance - activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible debris from ACM or PACM. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or waste bag which shall not exceed 60 inches in length and width.

Employee exposure - exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.

Equipment room (change room) - a contaminated room located within the decontamination area that is supplied with impermeable bags or containers for the disposal of contaminated protective clothing and equipment.

Fiber - a particulate form of asbestos, 5 micrometers or longer, with a length-to-diameter ratio of at least 3 to 1.

Glovebag - not more than a 60x 60-inch impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which material and tools may be handled.

High-efficiency particulate air (HEPA) filter - a filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometers in diameter.

Homogeneous area - an area of surfacing material or thermal system insulation that is uniform in color and texture.

Industrial hygienist - a professional qualified by education, training, and experience to anticipate, recognize, evaluate and develop controls for occupational health hazards.

Intact - ACM has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix.

LF - linear feet of thermal system insulation or other ACM

Micron - unit of measure equal to one millionth of a meter (1 meter = 39.37 inches)

Modification - a changed or altered procedure, material or component of a control system, which replaces a procedure, material or component of a required system. Omitting a procedure or component, or reducing or diminishing the stringency or strength of a material or component of the control system is not a "modification" for purposes of this section.

Negative Initial Exposure Assessment - a demonstration by the employer, which complies with the criteria in paragraph 29 CFR 1926.1101(f)(2)(iii), that employee exposure during an operation is expected to be consistently below the PELs.

NESHAP - National Emissions Standards for Hazardous Air Pollutants

NIOSH - National Institute for Occupational Safety and Health

OSHA - Occupational Safety and Health Administration

Permissible exposure limits (PELS):

(1) *Time-weighted average limit (TWA)*. The employer shall ensure that no employee is exposed to an airborne concentration of asbestos in excess of 0.1 fiber per cubic centimeter of air as an eight (8) hour time-weighted average (TWA), as determined by the method prescribed in 29 CFR 1926.1101 Appendix A, or by an equivalent method.

(2) *Excursion limit*. The employer shall ensure that no employee is exposed to an airborne concentration of asbestos in excess of 1.0 fiber per cubic centimeter of air (1 f/cc) as averaged over a sampling period of thirty (30) minutes, as determined by the method prescribed in Appendix A to this section, or by an equivalent method.

PACM - "presumed asbestos containing material".

Presumed Asbestos Containing Material - thermal system insulation and surfacing material found in buildings constructed no later than 1980.

Project Designer - a person who has successfully completed the training requirements for an abatement project designer established by 40 U.S.C. 763.90(g).

Regulated area - an area established by the employer to demarcate areas where Class I, II, and III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulate; and a work area within which airborne concentrations of asbestos, exceed or there is a reasonable possibility they may exceed the permissible exposure limit.

Removal - all operations where ACM and/or PACM is taken out or stripped from structures or substrates, and includes demolition operations.

Renovation - the modifying of any existing structure, or portion thereof.

Repair - overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, including encapsulation or other repair of ACM or PACM attached to structures or substrates.

SF - Square feet, which are units of measure for area

Standard For Air Clearance - 0.01 fibers per cubic centimeter of air (f/cc) for asbestos under an aggressive environment

Surfacing material - material that is sprayed, troweled-on or otherwise applied to surfaces (such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, and other purposes).

Surfacing ACM - surfacing material, which contains more than 1% asbestos.

Thermal system insulation (TSI) - ACM applied to pipes, fittings, boilers, breeching, tanks, ducts or other structural components to prevent heat loss or gain.

Thermal system insulation ACM - is thermal system insulation, which contains more than 1% asbestos.

USEPA - United States Environmental Protection Agency

WSR- Waste Shipment Records

Work Areas - Areas where asbestos containing or contaminated materials are scheduled for removal

1.04 DISPOSAL SITES

- A. The asbestos materials and associated debris removed must be disposed of at an asbestos approved sanitary landfill. The Contractor selected for the work must make appropriate arrangements for disposal based on the notification requirements listed in subparagraph 1.07. The Contractor must also submit to the Owner and Owner's Consultant documentation stating the location of the disposed ACM in the landfill (degrees and minutes or sketch).
- B. The hazardous materials removed must be segregated, characterized, removed and properly disposed of in accordance with all applicable local, state, and federal regulations. The contractor must be trained to segregate, characterize, handle, transport, and dispose of the materials. Since limited amounts of lead-based paint are known to be present on the subject property, the contractor must conduct all onsite activities in compliance with the OSHA lead construction standard 29 CFR 1926.62. The Contractor must also submit to the Owner and the Owner's Consultant documentation of proper disposal including waste manifests and shipment documents of hazardous materials listed within Section 1.01.

1.05 QUALITY ASSURANCE and ABATEMENT CONTRACTOR RESPONSIBILITY

- A. All asbestos removal and related work shall be accomplished by a Contractor specializing in, and having a record of, not less than two years successful experience in asbestos removal and related work. The Contractor's superintendent shall have not less than one year

of full-time experience in responsible charge of asbestos removal operations within the 24-month period preceding the start of this project. The training of the superintendent and all workers shall be in compliance with current local (Louisville, Jefferson County, Kentucky), state (Kentucky Division for Air Quality), and federal (EPA/OSHA) regulations. The Abatement Contractor shall assume full responsibility and liability for compliance with all applicable Federal, State and Local regulations related to any and all aspects of the abatement project. The contractor is responsible for providing and maintaining training and personal protective equipment as required by applicable Federal, state and local regulations. The Abatement Contractor shall hold the LMHA harmless for any failure of the Contractor to comply with any applicable abatement work, transporting, disposal, safety, health and environmental regulation /requirement on the part of himself, his employees, or his subcontractors. In the event of non/friable asbestos disturbance, the Abatement Contractor will incur all costs of the Consultant's Industrial Hygienist (IH) and Certified Industrial Hygienist (CIH), including all corrective abatement, sampling /analytical, and disposal costs to assure compliance with OSHA/EPA/State requirements.

- B. Additionally, the Contractor must be acceptable to the Louisville Metro Air Pollution Control District (LMAPCD) as a qualified contractor in good standing.

1.06 REGULATORY REQUIREMENTS

- A. All work shall be in strict compliance with the current issues of federal, state and local regulations, codes and standards including, but not limited to:
1. Asbestos/Lead Regulations:
 - a. LMAPCD asbestos regulations;
 - b. U.S. Environmental Protection Agency (EPA) Regulations for Asbestos (Code of Federal Regulations Title 40, Part 61, Sub-Part M);
 - c. U.S. EPA National Emissions Standards for Hazardous Air Pollutants (NESHAP);
 - d. Title 40, Code of Federal Regulations, Part 763, Asbestos;
 - e. U.S. Department of Labor Occupational Safety and Health Administration (OSHA) Asbestos Regulations (Code of Federal Regulations Title 29, Part 1926, Section 1926.1101);
 - f. Title 29, Code of Federal Regulations, Section 1910.1001. OSHA, U.S. Department of Labor;
 - g. Title 29 CFR 1926 - Construction Standard Requirements - Demolition Work;

- h. Title 29 CFR 1910.38(a);(b) - Emergency Action Plan;
- i. Title 29 CFR 1910.132 - Personal Protective Equipment;
- j. Title 29 CFR 1910.20 - Access to Employee Exposure and Medical Records;
- k. Title 29 CFR 1910.1200 - Hazard Communication;
- l. Title 29 CFR 1910.151 - Medical and First Aid;
- m. Title 29, Code of Federal Regulations, Section 1910.134. OSHA Respiratory Protection Standards;
- n. Section 6, Toxic Substance Control Act (TSCA);
- o. Title 29, Section 1910.1000, Occupational Safety and Health Standards;
- p. Title 29, Section 1910.120, Hazardous Waste Operations and Emergency Response;
- q. American National Standard Institute (ANSI) Publications: Z9.2-79 Fundamentals Governing the Design and Operation of Local Exhaust Systems;
- r. ANSI Publications: Z88.2-80 Practices for Respiratory Protection;
- s. Hazard Communication - Title 29, Part 1910, Section 1200 of the Code of Federal Regulations;
- t. Title 29, Code of Federal Regulations Section 1926.59, Construction Industry Standard for Hazard Communication;
- u. Title 40 CFR 61 Subpart A and M (Revised Subpart B) - National Emission Standard for Hazardous Air Pollutants – Asbestos;
- v. Title 40 CFR 763 - Asbestos Hazard Emergency Response Act (AHERA) and Asbestos School Hazard Abatement Reauthorization Act (ASHARA);
- w. Specifications for Accident Prevention Signs and Tags - Title 29, Part 1910, Section 145 of the Code of Federal Regulations;

- x. U.S. Department of Transportation (DOT), included, but not limited to: Hazardous Substance - Title 49, Part 171 and 172 of the Codes of Federal Regulations;
- y. All attachments, memorandums and information sheets submitted by Federal, State and Local agencies; and
- z. All State, County, and City codes and ordinances as applicable. Provide one copy of EPA, OSHA, State, and City Regulations governing the work available for review at the site.

2. Asbestos Guidance Documents:

- a. Asbestos-Containing Materials in School Buildings: A Guidance Document, Part 1. Office of Toxic Substances, U.S. EPA, Washington, D.C. 1979;
- b. Asbestos-Containing Materials in School Buildings: A Guidance Document, Part 2. Office of Toxic Substances, U.S. EPA, Washington, D.C. 1979;
- c. Guidance for Controlling Friable Asbestos-Containing Materials in Buildings: Washington, D.C. Office of Pesticides and Toxic Substances, U.S. EPA. 1983;
- d. Guidance for Controlling Asbestos-Containing Materials in Buildings: Washington, D.C. Office of Pesticides and Toxic Substances, U.S. EPA. 1985;
- e. Measuring Airborne Asbestos Following an Abatement Action: Washington, D. C., Office of Pesticides and Toxic Substances, U.S. EPA. 1985;
- f. Asbestos Waste Management/Guidance: Generation, Transport, and Disposal: Washington, D.C., Office of Solid Waste, U.S. EPA. 1985;
- g. Notification of Regulated Waste Activity. Office of Solid Waste (OS-312), Washington, D.C., U.S. EPA. 1990;
- h. ANSI - American National Standards Institute, ANSI Z 9.2, Fundamentals Governing the Design and Operation of Local Exhaust Systems; and
- i. NEC - National Electric Code. Any Work involving electrical equipment in a facility shall be performed in strict accordance with the National Electric Code.

1.07 SUBMITTALS

A. Meeting and Site walkover

1. At the time of notice to proceed, the Owner and Owner's Consultant will schedule a meeting at the subject property to discuss the project and allow the selected contractor to conduct a site walk over for the purposes of the pending asbestos abatement.
2. Prior to the site walkover, the Owner's Consultant will supply the LMAPCD with appropriate documentation and laboratory results to identify and quantify ACM to be abated within the structure and other suspect materials indicating non-ACM results. It remains the responsibility of the Contractor to verify all quantities and locations for removal by performing a thorough site inspection prior to commencing work, including the obtaining of permits. The Owner and its representatives will not be held responsible for additional work caused by the Contractor not performing a thorough site inspection.

B. Documents

The selected contractor will supply the following documentation not fewer than ten (10) business days prior to commencement of work to the Owner for the Owner's Consultant's review:

1. Copies of documentation, permits, site location, completed and signed landfill letter (subparagraph 1.14) and arrangements for transport and disposal of asbestos containing or contaminated materials. Submit certification that proposed landfill site to be used meets all appropriate regulatory requirements.
2. A copy of the employers Emergency Action Plan including, but not limited to, emergency planning for consideration of asbestos exposure, fire, explosion, hazardous atmospheres, electrical hazards, slips/trips and falls, confined spaces, and heat stress illness, as needed. Written procedures for response to anticipated emergency situations shall be developed. Emergency procedures shall be in written form and prominently posted. All personnel must be trained prior to entering regulated areas in these procedures and sign that they understand the emergency procedures.
3. The Abatement Contractor shall apply for and have on-site all required permits and licenses to perform abatement work as required by Federal, State, and Local regulations.
4. Written description, sketch or combination thereof, of the plans for construction of a worker and barrier/equipment decontamination enclosure

- system and for isolation of the work areas in compliance with the Contract Documents and all applicable regulations.
5. Project specific asbestos abatement work procedures or practices to be utilized (Contractor's Work Plan).
 6. Contractor's proof of experience with projects of this scope of work. A listing of asbestos abatement supervisory personnel (including foremen) and their experience, qualifications and training.
 7. Individually signed and Notarized "Certificates of Workers Acknowledgment Forms" (subparagraph 1.13) for all workers intended for this project.
 8. Individual documentation of the most recent respirator fit test (within previous six months) for each type of respiratory protection for each worker intended for this project. Physician's documentation that the worker is medically capable of wearing a respirator must also be submitted.
 9. Product data and Safety Data Sheets (SDS) for any equipment or materials to be used.
 10. Manufacturer's specifications for air cleaning, vacuum equipment, and air handling equipment, as well as any special tools or safety equipment to be utilized on this Project.
 11. Medical exams, worker release forms, asbestos training certification forms, and respirator training documentation of all employees performing asbestos abatement on the Project. As new employees are considered for work at the project site, submit the above for those employees prior (minimum of two working days prior) to entry at the project.
 12. A copy of all required Asbestos Contractor and Contractor personnel licenses required by the Louisville Metro Air Pollution Control District, and the Kentucky Division for Air Quality.
 13. Certificates of Insurance showing evidence of Workers' Compensation, Liability Insurance, and Asbestos Liability Insurance coverage.
 14. Descriptions of any asbestos hazard abatement activities conducted that have been prematurely terminated, including the circumstances surrounding the termination.
 15. Descriptions of any asbestos hazard abatement activities conducted that have been prematurely terminated, including the circumstances surrounding the termination.

16. A list of any contractual penalties that the Contractor has paid for breach of or noncompliance with Contract Specifications for asbestos hazard abatement activities, such as overruns of completion time or liquidated damages.
17. Identification of any citations levied against the Contractor by any Federal, State, or local government agencies for violations related to asbestos hazard abatement, including the name or location of the project, the date(s), and how the allegations were resolved.
18. A description, in detail, of all legal proceedings, lawsuits, or claims that have been filed or levied against the Contractor or any of the Contractor's past or present employees for asbestos-related activities, and how the allegations were resolved.

NOTE: If any or all of Submittals 14 through 18 do not apply, the Contractor shall provide a written statement expressing the same.

19. Provide estimated schedule for complete abatement activities. Provide breakdown by work area, including, at a minimum, the number of man-hours anticipated, number of days, and any assumptions.
20. Provide a total cost estimate for completion of abatement activities. Provide breakdown by work area and include unit rates for contingency purposes.

C. Pre-Job Commencement Activities and Post Contract Award

1. Submit written notice of impending commencement of removal of ACM work at least twenty (20) business days prior to project commencement to:

Louisville Metro Air Pollution Control District
701 West Ormsby Ave. #303
Louisville, Kentucky 40203

Comply with the applicable notice procedures set forth in EPA 40 CFR Part 61, National Emission Standards for Hazardous Air Pollutants; Appendix A to Subpart M of Part 61 – Interpretive Rule Governing Roof Removal Operations; Asbestos NESHAP Revision. Provide to the Owner and Owner's Consultant one copy of the notifications along with a Certified Mail Receipt (or equivalent) indicating the delivery of Notification to aforementioned agencies.

2. Upon receipt and review of LMAPCD Permit, provide copies to Owner and Owner's Consultant.

3. Conduct an additional pre-abatement meeting with Owner and Owner's Consultant to review LMAPCD Permit and project scope-of-work prior to commencement.

D. Post-Job Submittals

The selected contractor will supply the following documentation, during the project and/or following completion of the work, to the Owner and the Owner's Consultant's for review:

1. Asbestos waste log showing date, type of container removed from work area, signature of recorder, time of day, waste shipment records (WSRs), and a sketch or written description of the location of the waste material in the landfill.
2. Hazardous materials waste log showing date, type of container removed from work area, signature of recorder, time of day, waste shipment records (WSRs), and a sketch or written description of the location of the waste materials in the landfill and/or documentation showing proof of recycling.
3. A copy of the asbestos materials abatement Sign In/Out Log showing the following: date, name, last four digits of social security number, entering and leaving time, company or agency represented and reason for entry for all persons entering the controlled areas.
4. An alphabetical listing of asbestos abatement employees used on the Project and exact dates on which each employee was present in asbestos abatement work areas.
5. A copy of asbestos abatement area and employee air monitoring results relative to this section and to OSHA respiratory protection level compliance. This must be provided within one (1) working day following onsite monitoring to the Owner's Consultant.
6. Static pressure (monometer) readings collected throughout the project. This must be provided on a weekly basis to the Owner's Consultant.
7. The Contractor is responsible for submitting the Post-Job Submittal items to the Owner's Consultant within thirty days of project completion.

1.08 DELIVERY AND STORAGE

- A. Coordinate with Owner and the Owner's Consultant to identify size of storage area required and location on site.

- B. Deliver materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name. SDS shall be required for all materials brought on site by the Contractor.
- C. Store material subject to damage off the ground, away from wet or damp surfaces, and under cover sufficient to prevent damage or contamination.
- D. Remove from the premises all damaged or deteriorating materials. Dispose of materials that become contaminated with asbestos in accordance with applicable regulatory standards.

1.09 GENERAL PROTECTION OF PERSONS

- A. Prior to commencement of work all workers shall be instructed and shall be knowledgeable in appropriate procedures of personnel protection during asbestos materials removal.
- B. Contractor shall be solely responsible for enforcing worker protection requirements.
- C. Contractor shall provide workers with personally issued and marked respiratory equipment approved by NIOSH and meeting specifications of OSHA. This respiratory equipment shall be suitable for the asbestos exposure level in the work areas according to OSHA Standard 29 CFR 1926.1101. Provide disposable HEPA filters as required, with sufficient filters for replacement.
- D. Contractor shall provide workers, the Owner, the Owner's Consultant and authorized visitors with sets of protective disposable clothing, head covers, gloves, eye protection and foot covers of sizes to properly fit individual workers and visitors whenever they are required to enter the work area. Provide a minimum of four sets per day for visitors and sufficient sets as required for workers and the Owner's Consultant. Eye protection, full body harness and lanyard, steel toe safety shoes and hard hats shall be provided as required by applicable safety regulations. Non-disposable protective clothing and footwear shall be left in the contaminated equipment room until the end of the abatement work, at which time such items shall be properly disposed.
- E. In addition, due to the age of the structure, it is possible that painted surfaces contain lead-based paints. The Contractor must perform all abatement activities in accordance with applicable local, state, and federal regulations including OSHA regulations. (OSHA lead construction standard 29 CFR 1926.62)
- G. Reporting Unusual Events: When an event of unusual and significant nature occurs at the site, prepare and submit a special report listing chain of events, persons participating, response and similar pertinent information. When such events are known or predictable in advance, advise the Owner's Consultant in advance, at the earliest possible date.
- H. Reporting Accidents: Prepare and submit reports of significant accidents at site and anywhere else work is in progress. For this purpose, a significant accident is defined to include events where personal injury is sustained, or property loss of substance is sustained.

- I. Post telephone numbers and locations of emergency services including, but not limited to, fire, ambulance and police at the entrance to the decontamination unit.

1.10 SIGN IN/OUT LOG

- A. Contractor shall maintain a sign in/out log in the immediate vicinity of the change room of any decontamination area. Log shall be maintained from the time the first activity is performed involving the disturbance of asbestos containing materials until acceptance of the final air test results and removal of the enclosure. All persons entering the controlled area, including the Contractor's workers, Air Monitoring Professional, Owner and Government Officials shall be required to sign in and out each time upon entering and leaving the work area. All persons shall indicate name, time, company or agency represented and reason for entering the containment area.
- B. Except for Governmental Inspectors having jurisdiction, no visitors shall be allowed in any controlled area, except as authorized by the Owner or Owner's Consultant.

1.11 SAFETY PROTECTION and OSHA COMPLIANCE

- A. The Contractor warrants that he is familiar with the codes and requirements applicable to asbestos materials abatement work and shall give all notices and comply with all laws, ordinances, rules and regulations applicable to the work. If the Contractor observes that the specifications or plans are at variance therewith, he shall give written notice to the Owner via the Owner's Consultant describing such variance. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without written notice to the Owner/Owner's Consultant, he shall bear all costs arising there from.

The Contractor's particular attention is directed to the "Safety and Health Regulations for Construction" and subsequent amendments promulgated by the Department of Labor identified as Chapter XVII of Title 29, Code of Federal Regulations (CFR), Part 1926 and the necessity of complying with the regulations in the progress of his work. Failure or omission on the part of the Owner, Owner's Consultant or any of their representatives either to discover or to bring to the attention of the Contractor shall not be used as defense for failure on his part to fulfill such requirements.

- B. The Contractor shall have a job superintendent present at all times work of this contract is in progress.
 1. Superintendent shall be thoroughly familiar and experienced with asbestos removal and related work and shall be familiar with and enforce the use of all safety procedures guidelines. Proof of superintendent's qualifications shall be available upon request.
 - a. Proof of this instruction shall also be provided to the Owner and Consultant prior to the pre-abatement conference.

2. In addition to the superintendent, Contractor shall furnish one or more foreman (a minimum of one foreman per work area being abated at any one time) who are familiar and experienced with asbestos removal and its related work, safety procedures, and equipment. Foreman shall have a minimum of AHERA accredited supervisory training in the removal of asbestos from a recognized school or university, and applicable certification from the Kentucky Division for Air Quality.
 - a. Proof of foreman's experience shall be provided to the Owner and Consultant prior to the pre-abatement conference.
3. It shall be required that the superintendent and/or one or more foreman be inside each work area at all times work is in progress and that either of them be outside the work area at all times or available to authorize persons outside the work area.
4. All workers shall be duly certified and/or accredited according to Kentucky Department for Air Quality Regulations. No workers will be allowed on the job site without prior verification by the Consultant of these accreditations/certifications.

1.12 SPECIFIC PROTECTION OF WORKERS

A. Exposure assessments and monitoring

1. General Monitoring Criteria:
 - a. All exposure and personnel monitoring is the responsibility of the Contractor.
 - b. Appropriate and required monitoring associated with the removal of hazardous materials is the responsibility of the Contractor.
 - c. The Contractor who has a workplace or work operation where exposure monitoring is required under this section shall perform monitoring to determine accurately the airborne concentrations of asbestos to which workers may be exposed.
 - d. Determinations of employee exposure shall be made from breathing zone air samples that are representative of the 8-hour TWA and 30-minute short-term exposures of each worker.
 - e. Representative 8-hour TWA worker exposure shall be determined on the basis of one or more samples representing full-shift exposure for workers in each work area. Representative 30-minute short-term worker exposures shall be determined on the basis of one or more samples representing 30 minute exposures associated with operations that are

most likely to produce exposures above the excursion limit for workers in each work area.

- f. The Owner shall employ an independent air monitoring consultant for outside work area air monitoring and clearance testing if deemed necessary.
- g. The use of an Owner furnished air monitoring consultant to conduct the specified clearance testing and ambient area monitoring does not relieve the Contractor of his responsibility for providing tests required by codes, regulations, and standards for the protection and safety of his employees and for any other purpose.
- h. Copies of all test results by the Contractor testing laboratory shall be provided to the Owner without cost. Contractor shall be provided, by the air monitoring consultant, copies of all air monitoring and clearance test results without cost.

2. Initial Exposure Assessment:

- a. The Contractor who has a workplace or work operation covered by this standard shall ensure that a "competent person" conducts an exposure assessment immediately before or at the initiation of the operation to ascertain expected exposures during that operation or workplace. The assessment must be completed in time to comply with requirements which are triggered by exposure data or the lack of a "negative exposure assessment," and to provide information necessary to assure that all control systems planned are appropriate for that operation and will work properly.
- b. Basis of Initial Exposure Assessment: Unless a negative exposure assessment has been made, the initial exposure assessment shall, if feasible, be based on monitoring conducted pursuant to paragraph (c) of General Monitoring Criteria. The assessment shall take into consideration the monitoring results and all observations, information or calculations which indicate employee exposure to asbestos, including any previous monitoring conducted in the workplace, or of the operations of the employer which indicate the levels of airborne asbestos likely to be encountered on the job. For Class I asbestos work, until the Contractor conducts exposure monitoring and documents that workers on that job will not be exposed in excess of the PELs, or otherwise makes a negative exposure assessment, the worker shall presume that workers are exposed in excess of the TWA and excursion limit.

3. Negative Exposure Assessment

- a. 29 CFR 1926.1101 states for any one specific asbestos job which will be performed by workers who have been trained in compliance with the standard, the Contractor may demonstrate that worker exposures will be below the PELs by data which conform to the following criteria;
 - i. Objective data demonstrating that the product or material containing asbestos minerals or the activity involving such product or material cannot release airborne fibers in concentrations exceeding the TWA and excursion limit under those work conditions having the greatest potential for releasing asbestos; or
 - ii. Where the Contractor has monitored prior asbestos jobs for the PEL and the excursion limit within 12 months of the current or projected job, the monitoring and analysis were performed in compliance with the asbestos standard in effect; and the data were obtained during work operations conducted under workplace conditions "closely resembling" the processes, type of material, control methods, work practices, and environmental conditions used and prevailing in the Contractor's current operations, the operations were conducted by employees whose training and experience are no more extensive than that of employees performing the current job, and these data show that under the conditions prevailing and which will prevail in the current workplace there is a high degree of certainty that worker exposures will not exceed the TWA and excursion limit; or
 - iii. The results of initial exposure monitoring of the current job made from breathing zone air samples that are representative of the 8-hour TWA and 30-minute short-term exposures of each employee covering operations which are most likely during the performance of the entire asbestos job to result in exposures over the PELs.
- B. The Contractor shall provide workers with approved respirators, as listed below. Non-disposable half-mask respirators with HEPA filters will be considered the minimum acceptable equipment for asbestos abatement and may only be used during controlled area preparation involving Class 1 (TSI or Surfacing) removal. Powered Air Purifying Respirators will be considered the minimum acceptable equipment during Class 1 ACM removal process, if Class 1 removal is being performed. The Contractor shall also provide a sufficient quantity of filters approved for asbestos work so that workers can change filters during the workday. Filters shall not be used any longer than one (1) work day or after they have been wetted in decontamination shower or until they become clogged by particles during work activities. The

respirator filters may be stored at the job site but shall be totally protected from exposure to asbestos prior to their use.

1. Respirator Requirements:	<u>MAXIMUM ALLOWABLE FIBER CONCENTRATIONS</u>
- Half Mask with HEPA Cartridge	<0.5 f/cc
- Full Mask with HEPA Cartridge	<1.0 f/cc
- Powered Air Purifying Respirator (PAPR) with HEPA Cartridge	<2.5 f/cc
- Full Face Supplied Air Operating in Continuous Flow Mode	<10.0 f/cc
- Full Face Supplied Air Operating Positive Pressure Mode	<100.0 f/cc
- Full Face Supplied Air Operating in Positive Pressure Mode with Auxiliary Self-Contained Breathing Apparatus	>100.0 f/cc

C. In all ACM Removal Areas

1. Workers shall always wear a respirator properly fitted on the face while in the removal areas. Workers wearing tight-fitting face pieces shall be clean-shaven to the extent that the hair does not interfere with the sealing surface of the respirator. This must be documented by a standard respirator fit test.
2. The Contractor shall instruct and train workers in proper respirator use.
3. Workers shall wear disposable, full-body cover-alls and disposable head covers and footwear suitable for asbestos work in the removal areas.
4. Workers shall not eat, drink, smoke, chew gum and/or apply cosmetics in the removal areas.
5. The Contractor shall provide a fit tested respirator and disposable cover-alls, head cover, and footwear to any official representative of the Owner or Owner's Consultant who inspects the project.
6. All persons entering the removal areas shall wear an approved respirator and disposable cover-alls, head cover and footwear.
7. The Contractor shall instruct and train workers in the nature of asbestos, and the hazards related to asbestos exposure during abatement work.
8. The Contractor shall set up a decontamination unit consisting of separate male and female change rooms, shower and equipment room, enclosed and

separated by triple-flap polyethylene air locks, connected to the controlled areas. This shall be done in accordance with OSHA Regulations 29 CFR 1926.1101. All workers, without exception, shall:

- a. Remove and properly store street clothes in the change room and put on new disposable cover-alls, head covers, footwear and cleaned respirators before entering the decontamination chamber entrance to the work area.
 - b. Remove gross contamination from clothing before leaving the work area. Remove the disposable cover-alls, head covers and footwear in the equipment room and dispose of them in an appropriate waste container. Still wearing their respirators, workers shall proceed naked to the shower and clean the respirator with soap and water while showering; remove their respirators while thoroughly showering with soap and tempered water. Wetted HEPA respirator cartridges shall be disposed of in appropriate containers. The inside of the respirator face piece should be washed and rinsed. Water from the shower shall be filtered with an acceptable asbestos filtering system prior to discharge to the sewer
 - c. Following showering and drying off, each worker and authorized visitor shall proceed directly to the clean change room and dress in clean clothes at the end of each day's work, or before eating or drinking.
 - d. This procedure shall be followed each time a worker enters or leaves the work area.
 - e. Contaminated work footwear shall be stored in the equipment room when not in use in the work area. After the asbestos abatement process is completed, footwear shall be disposed of as contaminated waste or cleaned thoroughly inside and out with soap and water before being removed from the work area.
 - f. Workers shall be fully protected with respirators and protective clothing immediately prior to the first disturbance of asbestos or contaminated material, and until final cleanup is completed and approved.
9. The Contractor shall set up an equipment decontamination unit consisting of a washroom, constituting an airlock, with a curtained doorway to a designated area of the work area and a curtained doorway to the holding area. This area shall be the same as the equipment room in the worker decontamination enclosure system. The washroom wastewater shall be drained, collected, and filtered through a system with at least 5 to 10 micron particle size collection capability. **NOTE:** A system containing a

series of several filters with progressively smaller pore sizes is recommended to avoid rapid clogging of filtration system by large particles. All expended filters shall be discarded as contaminated waste. Filtered water may be discharged to a sanitary or storm sewer drain. This shall be done in accordance with OSHA Regulations 29 CFR 1926.1101. All workers, without exception, shall:

- a. Remove waste containers from the equipment decontamination enclosure by entering the holding area from outside wearing a respirator and dressed in clean coveralls. Workers shall not use this system as a means to leave or enter the work area.
- b. Clean external surfaces of contaminated containers and equipment thoroughly by wet mopping, or using a HEPA-filtered vacuum before moving such items into the decontamination enclosure system washroom for final cleaning and removal to uncontaminated areas. Ensure that personnel do not leave work areas through the equipment decontamination enclosure system.

1.13 CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

PROJECT NAME _____
DATE _____
PROJECT ADDRESS _____
CONTRACTOR'S NAME _____

WORKING WITH ASBESTOS CAN BE DANGEROUS. INHALING ASBESTOS FIBERS HAS BEEN LINKED WITH VARIOUS TYPES OF DISEASES. IF YOU SMOKE AND INHALE ASBESTOS FIBERS, THE CHANCE THAT YOU WILL DEVELOP AN ASBESTOS RELATED DISEASE IS GREATER THAN THAT OF THE NON-SMOKING PUBLIC.

Your employer's contract with the Owner for the above project requires that: You be supplied with the proper respirator and be trained in its use. You will be trained in safe work practices and in the use of the equipment found on the job. You will receive a medical examination. These things are to have been done at no cost to you. By signing this certificate, you are assuring the Owner that your employer has met these obligations to you.

RESPIRATOR PROTECTION: I have been trained in the proper use of respirators, and informed of the type respirator to be used on the above-referenced project. I have a copy of the written respiratory protection manual issued by my employer. I have been equipped, at no cost, with the respirator to be used on the above project.

TRAINING COURSE: I have been trained in the dangers inherent in handling asbestos and breathing asbestos fibers and in proper work procedures, and personal and area protective measures. The topics covered in the course included the following:

- physical characteristics of asbestos
- health hazards associated with asbestos
- respiratory protection
- negative air systems
- work practices including hands-on or on-job training
- personal decontamination procedures
- air monitoring, personnel and area

MEDICAL EXAMINATION: I have had a medical examination within the past 12-months, which was paid for by employer. This examination included: health history, pulmonary function tests, and may have included an evaluation of chest X-ray. I have been notified of the results of my examination.

Signature _____
Printed Name _____
Social Security Number ***_** _____
Witness _____

1.14 LANDFILL LETTER

Date

[Name of Disposal Facility]

RE: [PROJECT NAME] ("Project Site")

Dear Sir/Madam:

In accordance with the requirements of the environmental insurance policy, we must verify certain basic factual information concerning facilities to which wastes or other materials are delivered. Therefore, before material is delivered to [Name of Facility] (the "Facility"), we need to confirm the following:

1. The Facility has received and reviewed the following documents regarding characterization of the soil/waste at the [Project Name] to be delivered to the Facility.

[list documents here or attach copies of relevant data tables or laboratory results]

2. Based upon the documentation described in the above paragraph, the Facility will accept soil/waste for purposes of:

- ._Disposal
- ._Treatment
- ._Daily Cover
- ._Recycling
- ._Other (explain below)

3. The Facility is operating under valid permits, licenses, and other regulatory approvals which allow the Facility to lawfully accept the soil/waste for the purposes stated above.
4. The Facility is not insolvent or in bankruptcy.
5. The Facility is not subject to any action under CERCLA or a similar state action.
6. The Facility has never been listed and is not currently listed on the federal National Priorities List (NPL) or any state superfund list.
7. The Facility will promptly notify Louisville Metro Housing Authority in writing if any of circumstances 2 through 6 change during the time that soil/waste from project site is being delivered to the Facility. Such notification will be made to me at the above-referenced address via first class mail.

If statements 2 through 7 above are true and accurate, please acknowledge by signing and dating the Acknowledgment following my signature on this page and return to me in the stamped, self-addressed envelope. Again, we are unable to deliver any material to the Facility until such time as this acknowledgment is received, so please return it at your earliest convenience.

Very truly,

ACKNOWLEDGED AND AGREED:

Date

Name and Title

[Signature of a Corporate Officer or Manager of the Facility]

cc: Bernard Pincus, Louisville Metro Housing Authority
Norma Ward, Louisville Metro Housing Authority
Suzanne Arnzen, TriEco

PART 2: PRODUCTS

2.01 MATERIAL

- A. 6-mil Polyethylene sheets in sizes to minimize the frequency of joints.
- B. Tape: Glass fiber or other type capable of sealing joints of adjacent plastic sheets and for attachment of plastic sheet to finished or unfinished surfaces of dissimilar materials under both dry and wet conditions.
- C. Surfactant (Wetting Agent): Shall consist of materials, which are non-toxic and non-irritating to skin and eyes, and non carcinogenic. The wetting agent shall be 50-percent polyoxyethylene ester and 50-percent polyoxyethylene ether (AQUA-GRO), or equivalent, in a concentration of one (1) ounce in five (5) gallons of water.
- D. Sealant: For substrates other than structural steel, the following products have been accepted for use in asbestos removal areas:
 - 1. American Coating Corporation - Cable Coating No. 22P.
 - 2. Arpin Engineering, Inc. - Asbestite 2000.
 - 3. H. B. Fuller Co., Foster Products Division - Protektor 32-22.
 - 4. Matheson Chemical Corporation - Dust-Set Asbestos Encapsulant.
 - 5. National Cellulose Corporation - SK-13.
- E. Impermeable Containers: Air and water-tight, suitable to receive and retain any asbestos containing or contaminated materials until disposal at an approved site, and labeled in accordance with OSHA Regulation 29 CFR 1910.1001 and 29 CFR 1926.1101, as well as EPA regulation 40 CFR Part 61 (asbestos), 29 CFR 1910.145, and 49 CFR 171, 172, 173, 178 and 179. Two types of impermeable containers shall be used:
 - 1. Six mil plastic bags sized to fill within the drum.
 - 2. Metal or fiber drums with tightly fitting lids.
- F. Warning Labels and Signs: In conformance with OSHA regulation 29 CFR 1926.1101 (asbestos), DOT regulation 49 CFR 171, 172, 173, 178 and 179 Regulations for Labeling, Mailing and Transporting Hazardous Waste, EPA regulation 40 CFR 260, 261, 262, 263, 264 and 265 Hazardous Waste Regulations, and EPA regulation 40 CFR, Part 61, Subpart M.
- G. Other Materials: Provide all other materials, such as lumber, nails, and hardware, which may be required to construct and dismantle the decontamination area and the barriers that isolate the controlled area.

- H. Air Purifying Equipment: Equipped with HEPA filters for pulling fresh air from the building, through the decontamination chamber, into the containment area where asbestos fibers are becoming airborne during removal, through the HEPA filters where 99.97 percent of asbestos fibers greater than 0.3 microns in length are removed and exhausted to the atmosphere outside the building. No air movement system or air filtering equipment shall discharge unfiltered air outside the enclosure at any time. The equipment shall remain in operation twenty-four hours a day until decontamination of the work area and final air sampling and analysis is completed
- I. Scaffolding: Provide all scaffolding, ladders and/or staging, etc., as necessary to accomplish the work of this contract. Scaffolding may be suspension type; or standing type such as metal tube and coupler, tubular welded frame, pole or outrigger type or cantilever type. The type, erection and use of all scaffolding shall comply with all applicable OSHA provisions.

PART 3: EXECUTION

3.01 WORK AREA DEFINITIONS

The contractor shall have the capability, experience, and means required to perform the services contemplated by this contract. Services will be performed using personnel, equipment and material qualified and/or suitable to do the work requested.

The following category of Controlled Area will exist during the execution of this contract. The categories and the asbestos containing materials that may be removed under each category are mandated by all applicable local, state, and federal regulations.

- A. Partial Containment

3.02 WORK AREA PREPARATION

- A. In ALL Controlled Areas, the Contractor shall:

1. Ensure that all ventilating systems or any other system bringing air into or out of the work area is disabled. Disable systems by disconnecting wires, removing circuit breakers, lockable switches or other positive means that will prevent accidental restarting of the equipment.
2. Lockout power to circuits running through the work area whenever possible by switching off all breakers or removing fuses serving these circuits. Label breakers with tape over breaker with notation, "DANGER circuits being worked on." Lock panel and have all keys under control of Contractor's superintendent. If circuits cannot be shut down for any reason, label at intervals 4-feet 0-inches on center with tags reading, "DANGER live electric circuit. Electrocutation Hazard." Label circuits that are in hidden locations but which may be affected by the work in a similar manner. Provide ground fault circuit interrupters (GFCI) receptacles for equipment used in the work areas.

3. Isolate the controlled area to prevent entry by unauthorized personnel into the area by placing opaque polyethylene barriers at each entrance to the area and by providing warning signs at each locked door leading into the work area. The signs shall be 1'-2" X 1'-8" in dimension, and shall read as follows:

LEGEND

DANGER

ASBESTOS

**CANCER AND LUNG DISEASE HAZARD
RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED
IN THIS AREA**

The graphic symbol for "No Admittance," which depicts a circled open hand, shall be attached near the "Danger" command on this sign.

4. Construct any and all necessary, temporary walls to completely isolate the area of asbestos disturbance.
5. Critical Barriers: Seal all openings (doors, windows, vents, duct, floor drains, and other openings within the work area, etc.) **with two (2) independent** layers of 6-mil (minimum) polyethylene containment barrier to prevent leakage of air into the outside environment or other portions of the building.
6. Pre-clean immovable objects, such as mechanical and electrical equipment within any proposed removal area, using HEPA vacuum equipment and/or wet cleaning methods as appropriate.
7. Carefully dismantle any fan covers, grilles or other mechanical items necessary to remove or clean asbestos-containing or contaminated finishes. Place the removed items back in their appropriate locations after removal is completed unless otherwise instructed by the Air Monitoring Professional.
8. Prior to placing plastic sheeting, clean the work area(s) using HEPA vacuum equipment or wet cleaning methods as appropriate. Do not use methods that raise dust such as broom or standard vacuum sweeping.
9. Seal off all openings to areas not receiving asbestos removal with plastic sheeting sealed with tape. Seal electrical panels with two layers of plastic prior to placement of wall plastic.

- B. In Full Containment areas, the Contractor shall prepare the area in accordance with the following procedures:
1. Cover the floor of the Work Area with a minimum of two (2) individual layers of clear polyethylene sheeting, each at least 6-mil in thickness with seams overlapping at least 12 inches and turned up walls at least 12 inches. Form a sharp right angle bend at junction of floor and wall so that there is no radius which could be stepped on causing the wall attachment to be pulled loose. Both spray-glue and duct tape all seams in floor covering. Locate seams in top layer six feet from, or at right angles to, seams in bottom layer. Install sheeting so that top layer can be removed independently of bottom layer.
 2. Cover all walls in the Work Area, including "Critical Barrier" sheet plastic barriers, with a minimum of two (2) layers of polyethylene sheeting, at least 6-mil in thickness with seams overlapping at least 12 inches and mechanically supported and sealed with duct tape. Tape all joints including the joints joining with the floor covering with duct or fiber tape. Install sheeting so that the layers can be removed independently.
 3. Stairs and Ramps: Do not cover stairs or ramps with unsecured sheet plastic. Where stairs or ramps are covered with plastic, provide 3/4-inch exterior grade plywood treads securely held in place, over plastic. Do not cover rungs or rails with any type of protective materials.
 4. The Contractor shall set up a decontamination facility connected to the work area that will consist of a change room, shower area and equipment area. This shall be done in accordance with OSHA Regulations 29 CFR 1926.1101. Water from the shower shall be filtered with an acceptable asbestos filtering system prior to discharge to the sewer
 5. Provide sufficient HEPA air filtration units to maintain an airflow of at least four complete air changes per hour in the removal area and a static pressure of greater than or equal to 0.02 inches of water. All pressure differential manometer (or equivalent) readings shall be documented prior to removal of any ACM and continually throughout the duration of the removal. Collection of this data is the sole responsibility of the Contractor.
 6. The Contractor shall establish emergency exits and procedures for the removal area, satisfactory to fire officials.
 7. Ensure that barriers and plastic enclosures remain effectively sealed and taped. Inadvertent tears in plastic shall be repaired with fiber tape and the tear covered by plastic applied with spray adhesive, overlapping the tear by six inches on all sides.

- C. In Partial Containment areas, the Contractor shall prepare the area in accordance with the following procedures:
1. Place a layer of 4-mil (minimum) polyethylene on all wall surfaces of the contained area, exposing only the asbestos-containing or contaminated materials. Wall polyethylene should extend to the floor level and be completely taped down with water resistant duct or fiber tape. Spray adhesive is recommended to assist hanging of wall plastic.
 2. The Contractor shall set up a decontamination facility outside of the work area that will consist of a change room, shower area and equipment area. This shall be done in accordance with OSHA Regulations 29 CFR 1926.1101. Water from the shower shall be filtered with an acceptable asbestos filtering system prior to discharge to the sewer.
 3. Provide sufficient HEPA air filtration units to maintain an airflow of at least four complete air changes per hour in the removal area, or a static pressure of greater than or equal to 0.02 inches of water. All pressure differential manometer (or equivalent) readings shall be documented prior to removal of any ACM and continually throughout the duration of the removal. Collection of the data is the sole responsibility of the Contractor.
 4. The Contractor shall establish emergency exits and procedures for the removal area, satisfactory to fire officials.
 5. Ensure that barriers and plastic enclosures remain effectively sealed and taped. Inadvertent tears in plastic shall be repaired with fiber tape and the tear covered by plastic applied with spray adhesive, overlapping the tear by six inches on all sides.

3.03 ASBESTOS REMOVAL

- A. In Full Containment areas, the Contractor shall:
1. The Contractor shall provide the Owner's Consultant with at least 24 hours prior notice to conduct an inspection of the work areas prior to removal activities.
 2. Thoroughly wet asbestos-containing materials prior to removal to reduce fiber dispersal into the air. Accomplish wetting by using a fine spray (mist) of amended water or removal encapsulant. Mist the area sufficiently to wet the material without causing excessive dripping or breaking. Allow time for water or removal encapsulant to penetrate material thoroughly.

3. If amended water is used, spray material repeatedly during the work process to maintain a continuously wet condition. If a removal encapsulant is used, apply in strict accordance with manufacturer's written instructions.
4. If applicable, perforate the outer covering of any material that has been painted and/or jacketed in order to allow penetration of amended water, or where necessary, carefully strip away the outer covering while simultaneously spraying amended water on the insulation, to minimize dispersal of asbestos fibers into the air.
5. Remove materials in a manner, which will minimize breakage. Materials should not be sanded or sawed.
6. Mist the entire work area during removal procedures with amended water to reduce airborne fiber levels.
7. Remove wetted asbestos-containing materials in small sections. Do not allow the ACM to dry out. Upon removal, immediately place the ACMs and associated debris into a 6-mil bag with asbestos "Danger" labels on the outside surface, and seal the bag opening with tape.
8. Evacuate air from disposal bags with HEPA filtered vacuum cleaner before sealing. Twist neck of bags, bend over (goose neck) and seal with minimum three wraps of duct tape.

B. In Partial Containment areas, the Contractor shall:

1. The Contractor shall provide the Owner's Consultant with at least 24 hours prior notice to conduct an inspection of the work areas prior to removal activities.
2. Utilize water delivered in a fine mist from a hose or garden sprayer during removal of the materials. The mist should cover the immediate removal areas and should not be excessive to a point where standing or ponding water is present.
3. Remove materials in a manner which will minimize breakage. Materials should not be sanded or sawed.
4. Mist the work area continuously with amended water to reduce airborne fiber levels.
5. Upon removal, immediately place the ACMs and associated debris into a 6-mil bag with asbestos "Danger" labels on the outside surface. Twist neck of bags, bend over (goose neck) and seal with minimum three wraps of duct tape. Do not allow the material to dry out.

6. Remove the mastic adhesive by mechanical devices or use of a non-toxic mastic remover.
7. After removal of the ACMs, surface shall be wet-cleaned and wire brushed to remove residual accumulated material. After wet-cleaning, surface shall appear free to visible material.

3.04 CLEAN-UP FOR CONTROLLED AREAS

- A. The asbestos containing materials shall be sealed in plastic bags or shall be wrapped in a minimum of two (2) polyethylene sheets (6-mil minimum). Initial bagging of waste shall be supplemented by a secondary containment, either by use of a second bag (6-mil minimum) or by use of a fiber or metal drum. If it appears likely that the waste material will tear the plastic, the bag must be placed into a drum for disposal. Bags and drums shall be marked with the OSHA label prescribed by the OSHA Regulations referenced in this section. The outside of all containers shall be cleaned before leaving the work area.
- B. The Contractor shall again provide the Owner's Consultant with at least 24 hours prior notice to conduct the inspection of the work areas after removal operations have been completed but prior to application of the lockdown sealant. The Air Monitoring Professional shall perform a visual inspection of the areas. Upon completion of the inspection, and subsequent approval, final air clearance shall be performed by the Air Monitoring Professional. When the Air Monitoring Professional is ready to conduct the final air clearance testing according to the pre-established schedule, but is prevented from testing due to incompleteness of the work, all extra charges attributable to the delay shall be borne by the Contractor.
- C. Controlled areas and all other decontamination areas and cleaned areas shall be considered clean when air testing performed (following 24-hour waiting period) by the Air Monitoring Professional, and reviewed by the Owner's Consultant, shows .01 fibers per cubic centimeter (f/cc) or less of air (under an aggressive environment) using standard test methods of Phase Contrast Microscopy (PCM) for the asbestos. All air samples must comply with the above referenced standard of clearance.

Note: An aggressive environment is accomplished by the use of a leaf blower which will agitate the air. Airflow shall begin at floor level and shall extend to the ceiling at each corner of the area. This procedure shall continue for 30-minutes, at which time final air clearance sampling shall begin.

- D. Areas which do not comply with the standard of cleaning for final clearance on the first clearance test shall be completely re-cleaned. Upon approval by the Owner's Consultant, a second clearance air test shall be performed by the Owner's Consultant, using standard test methods of PCM. The Contractor shall reimburse the Owner for any additional clearance testing required beyond the first clearance test. This procedure shall continue until clearance levels are achieved.

- E. When the standards of cleaning are achieved and an inspection determines that the area has been visually decontaminated, the decontamination enclosure systems shall be removed, the area thoroughly wet cleaned (wet mopping and/or wiping), and materials from the equipment room and shower disposed of as contaminated waste. The remaining barriers between contaminated and clean areas and all seals on openings into the work area shall be removed and disposed of as contaminated waste.
- F. All plastic sheeting tape, cleaning material, clothing, and all other disposable material used in the asbestos removal operation or items used in the work area shall be packed into sealable plastic bags (6-mil minimum). These bags must be marked with the OSHA label prescribed by the OSHA Regulations.

3.05 FIELD QUALITY CONTROL

- A. The Owner's Consultant will perform pre-abatement, during abatement, and final clearance air monitoring throughout the duration of the project. The Contractor must perform necessary tests required by regulations or codes and standards for the protection of his workers, or other purpose. These tests include but are not limited to 8-hr and Excursion personal air monitoring during abatement activities. Prior to any work the Contractor shall also provide an Exposure Assessment to the Air Monitoring Professional. The Contractor's testing firm must be approved by the Owner's Consultant prior to any work.
- B. For the purposes of confirmation and quality control, the Contractor will supply the Owner's Consultant with representative, duplicate samples of not less than 10 percent of the total samples collected by the Owner's Consultant, under Chain-of-Custody for testing. Testing conducted by the Owner's Consultant will be at Owner's expense. Owner's Consultant will report testing results to the Owner and the Contractor's Superintendent, along with recommendations, if necessary.
- C. Test results shall be reported in terms of f/cc for asbestos and collected in accordance with EPA, OSHA, and NIOSH-recommended sampling volumes for appropriate detection limits. All results must be posted at the job site no later than 24 hours from sample collection.
- D. Testing Laboratory shall perform all air testing according to the method prescribed by Section 1910.1001, 1926.1101 and 1926.62 of OSHA CFR Title 29 and analyzed in accordance with procedures outlined in NIOSH 7400 Method (PCM).
- E. The Owner reserves the right to perform its own air monitoring at any time during the project without notifying the Contractor.

F. Air Sampling Schedule

During Work Activities, Per Shift

Minimum of 2 air sample inside the work areas

Minimum of 2 exterior air samples

Minimum of 1 HEPA exhaust sample

Blanks - 10% of total

Final Clearance (PCM)

Minimum of 5 samples per work area

Blanks - 10% of total

NOTE: All locations of air tests are subject to review and change by the Owner's Consultant

3.06 SCHEDULE

- A. The Owner will provide details with regard to required schedule for completion.
- B. All work shifts shall be done during administrative hours (7:00 AM to 6:00 PM) Monday-Friday excluding LMHA observed Holidays as described on Section L, #2.B, pages 1 and 2. Any change in the work schedule must be approved in writing by the Owner.
- C. The Contractor will be required to coordinate abatement activities with other redevelopment activities (that do not disturb asbestos or hazardous material) being performed simultaneously.

END OF SECTION

Attached – Inspection Report

ASBESTOS CONTAINING MATERIALS INSPECTION – GABLED ROOF SYSTEMS

**Parkway Place Housing Community
Louisville, Jefferson Co., Kentucky 40210**



Prepared for:



Louisville Metro Housing Authority
420 South Eighth Street
Louisville, Kentucky 40203

Prepared by:



TriEco, LLC
7710 Springvale Drive, Suite 201
Louisville, Kentucky 40241-2745
Project No. 200112-G

REPORT DATE

March 2, 2020

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1.0 FOCUSED ASBESTOS CONTAINING MATERIALS INSPECTION

1.1 INTRODUCTION

TriEco, LLC (TriEco), on behalf of the Louisville Metro Housing Authority (LMHA), has compiled this report following an inspection for asbestos containing materials (ACM) associated with the gabled roofing systems of the residential structures at the Parkway Place Housing Community in Louisville, Kentucky.

The subject property is a multi-family residential community consisting of 58 buildings with 654 individual apartment units. Each building consists of concrete masonry unit (CMU) block construction with a pitched shingled roof over a concrete roof deck and a full concrete basement. The housing community was constructed in 1943 and is located within downtown Louisville, Kentucky near the intersection of South 13th Street and West Hill Street. Selected site photographs are included within Appendix A.

The objective of this project was to collect materials to assist in the identification of ACM prior to the proposed gabled roofing system repair and renovation activities at the subject property. This assessment included an inspection for ACM which could be disturbed during the aforementioned activities. All inspection and sampling activities were conducted in accordance with the National Emissions Standard for Hazardous Air Pollutants (NESHAP) General Inspection Procedures found within 40 CFR 61, Subpart M. Historic records and previous ACM inspection reports were reviewed and information contained therein is incorporated within this report. Copies of incorporated historic documents are included in their entirety within Appendix B.

All on-site assessment activities were conducted on February 20, 2020. This report provides background information, limitations and exceptions, scope-of-work performed, assessment results, findings and conclusions, and recommendations

1.2 BACKGROUND AND SITE SUMMARY

The LMHA requested this focused asbestos inspection as a component of the preparatory activities prior to the repair / renovation / re-roof activities associated with the gabled roofing systems of the residential buildings at the subject property. A comprehensive list of all samples taken from the subject property can be found in Appendix C.

Asbestos is a general term for a group of fibrous minerals (primarily chrysotile, amosite, and crocidolite) that have long been used as a fireproof insulation and as a strengthener in pipe insulation, roofing tiles, floor tiles, mastic, wall coverings, and other materials. Undisturbed ACM is not dangerous. However, when ACMs are broken or torn (such as during remodeling or demolition) the fibers can be spread into the air, especially if the material is friable. A material is considered an ACM if it is found to contain greater than 1% of asbestos. Studies have shown that inhaling these fibers over time can cause diseases such as asbestosis, lung cancer, and mesothelioma. The Louisville Metro Air Pollution Control District requires all asbestos containing materials be removed prior to demolition or renovation regardless of friability or

quantity. Therefore, any exemptions for abatement based on friability or reportable quantities are not applicable when dealing with demolition or renovations in the Louisville Metropolitan Area.

1.3 LIMITATIONS AND EXCEPTIONS

This assessment pertains directly to those areas observed and sampled on the gabled roofing systems and the adjacent materials that could potentially be disturbed during repair / renovation activities.

None of the work performed hereunder shall constitute or be represented as a legal opinion of any kind or nature, but shall be a representation of findings from the site visit. There are no warranties or guarantees, expressed or implied, included or intended by the report, except that it has been prepared in accordance with the current generally accepted practices and standards consistent with the level of care and skill exercised under similar circumstances by professional consultants or firms performing the same or similar service.

Changes in the condition of the building may occur with time due to either natural processes or human activities. The findings presented in this report are based on site conditions existing at the time of the investigation.

This report was compiled for the sole use of the LMHA. This report is not intended to be distributed or relied upon by third parties without the written permission of TriEco.

1.4 SCOPE OF WORK

TriEco performed the following scope-of-work, which was based, in part, upon information provided by persons deemed knowledgeable of the property and our experience with similar projects.

An assessment for ACM was conducted on February 20, 2020. The survey was performed to identify ACM on the gabled roofing systems and adjacent materials prior to repair / renovation activities. Gregory Bailey, accredited asbestos inspectors, conducted survey activities. A copy of the Kentucky certifications for TriEco personnel are included in Appendix D.

Samples of potential ACM were collected from homogeneous areas (HA) that will be potentially disturbed during renovation activities, which consisted of materials that were similar in color, texture, and size. Suspect ACM samples were delivered under chain-of-custody protocols to San Air Laboratory, Inc (San Air) of Powhatan, Virginia for Polarized Light Microscopy (PLM). The National Voluntary Laboratory Accreditation Program (NVLAP) accredits San Air for asbestos fiber analysis.

1.5 RESULTS

A copy of the San Air Laboratory analytical results for the ACM assessment is included in Appendix E. A summary of analytical results positive for ACM are noted in the following table:

ASBESTOS SAMPLE LOCATIONS AND RESULTS

SAMPLE #	LOCATION	MATERIAL	ASBESTOS (%)
R-09A	Shingled Roof Deck to Deck Elevation Change Siding – Building 11	Caulk/Tar	5% Chrysotile
R-10A	Apartment Entrance Awning Building 3	White Caulk Between Metal Awning Flashing and Block	5% Chrysotile

RED—Considered an ACM as defined by the EPA

1.6 FINDINGS AND CONCLUSIONS

TriEco has performed this focused ACM inspection on the gabled roofing systems and adjacent materials of the Parkway Place Housing Community in Louisville, Jefferson County, Kentucky according to the scope of services as defined in this report. Our assessment has revealed the following:

- ACM was indicated in the tar material underneath a top layer of black caulking on the gabled roof deck elevation transition between the shingles and siding on building 11. The tar material and the caulk adhered to the tar are considered a Category I non-friable material and are currently in intact condition.
- ACM was indicated in the white caulking located between the metal awning flashing and the block wall of the buildings. In various locations the white caulking is present beneath a layer of white or brown non-ACM caulking. The caulk is considered a Category II non-friable material and is currently in intact condition

1.7 RECOMMENDATIONS

Based upon the results of this focused assessment, TriEco recommends the following:

- Since ACM was present in the above mentioned material, care should be taken to keep ACM in good condition through proper handling and maintenance. Should ACM become damaged, removal should occur in accordance with local, state, and federal regulations.
- Abatement is required prior to any planned renovation activities that will disturb the ACM. All defined quantities must be field verified by the abatement contractor.

Asbestos abatement should occur in accordance with local, state, and federal regulations including those of the Louisville Metro Air Pollution Control District.

- Should potential ACMs be discovered during renovation activities that have not previously been sampled, all renovation activities which disturb the potential ACM should cease until the material(s) have been sampled. If asbestos is discovered during renovation activities, appropriate asbestos abatement should occur in accordance with federal, state, and local regulations.
- All contractors and employees should be alerted to the presence and location of the identified and presumed ACM and hazards, in accordance with applicable Occupational and Safety Health Administration regulations.

2.0 SIGNATURES AND QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS

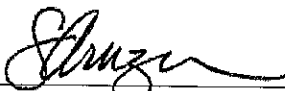
Prepared by:



Gregory Bailey
Environmental Scientist

March 2, 2020

Mr. Bailey is an Environmental Site Supervisor for TriEco and has more than eleven years of environmental management, industrial hygiene and remediation experience. Mr. Bailey holds a Bachelor's degree in Environmental Science and Industrial Hygiene from Western Kentucky University. Mr. Bailey is a Kentucky Accredited Asbestos Inspector and Lead Hazard Risk Assessor with additional experience including characterization, profiling, coordination, and disposal of hazardous and nonhazardous waste. Mr. Bailey has experience performing Phase I and Phase II Environmental Site Assessments as well as managing soil, lead, asbestos, mold and infectious microbial remediation projects.



Suzanne Arnzen
Project Manager

March 2, 2020

Ms. Suzanne Arnzen is a Project Manager for TriEco and has over fifteen years of experience in the environmental field. Ms. Arnzen's experience includes performing various hazardous materials assessments, asbestos containing materials assessments, lead-based paint risk assessments, microbial assessments, and other various consulting services for commercial and governmental clients. She also has experience performing Phase I and Phase II Environmental Site Assessments for a wide variety of residential and commercial sites and has experience designing and managing soil, water, lead, asbestos, and mold remediation projects.

3.0 APPENDICES

- 3.1 Appendix A: Site Location Figure & Selected Site Photographs
- 3.2 Appendix B: Historic Documents
- 3.3 Appendix C: Asbestos Field Sample Log
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- 3.5 Appendix E: Asbestos Laboratory Analytical Results