



Zarzamora Pump Station Improvements Project  
SAWS Job No. 15-6101  
Solicitation No. CO-00144-DW

**ADDENDUM No. 4**

November 7, 2017

This addendum, applicable to work designated above, is an amendment to the proposal and specification documents and as such shall be a part of and included in the Contract. Acknowledge receipt of this addendum by entering the addendum number and issue date on the space provided in submitted copies of the proposal.

**1. Modifications to the Specifications**

**1.1.** Table of Contents:

Insert "02504 Asbestos Containing Materials Removal" in between Section 02503 and Section 02509 under Division 2 – Site Construction.

**1.2.** Specification 02504 – Asbestos Containing Materials Removal

Add the attached Section to the Contract Documents.

Tetra Tech, Inc.  
Texas Registered Engineering Firm F-3924  
700 N. Saint Mary's Street, Ste. 300  
San Antonio, TX 78205



**END OF ADDENDUM**

**SECTION 02504****ASBESTOS CONTAINING MATERIALS REMOVAL****PART 1 GENERAL**

- A. This item shall govern the removal, handling, disturbance, and disposal of asbestos containing materials (ACM). Materials sampled and found to be positive for ACM include the asbestos cement (AC) pipe work; heating, ventilation, and air conditioning (HVAC) system vibration damper; insulation on outmoded electrical wiring; window caulking; and parapet roof mastic. It is assumed that electrical wiring exiting the facility in an underground electrical duct bank is insulated with ACM. AC pipe is also known as transite pipe. Since buried AC pipe typically contains approximately 15% to 20% chrysotile and crocidolite asbestos, it is considered to be ACM and is classified as friable. Additionally, the window caulking and roof parapet mastic are ACM and considered non-friable. The removal and/or disturbance of these materials is governed by the National Emission Standards for Hazardous Air Pollutants (NESHAP) and the Occupational Safety and Health Administration (OSHA).

**1.01 DESCRIPTION OF WORK**

- A. This item shall consist of the handling, disturbance, removal and disposal of all ACM. In order to comply with NESHAP and OSHA regulations, this project will require workers with specialized training using wet work procedures to cut and remove ACM and surrounding materials or soils containing ACM. A Texas Department of Health (TDH)-licensed Asbestos Consultant shall develop the asbestos work practices and monitoring in the Contractor's Health & Safety Plan to be reviewed by SAWS and City of San Antonio (COSA) representatives. It is the contractor's responsibility to obtain the services of a licensed Asbestos Consultant authorized in the State of Texas and this work shall be considered subsidiary to this item. Any other ACM encountered that has not been identified by the SAWS inspector or not shown on SAWS plans will be not be authorized for payment. Any other disturbance, handling, or disposal of ACM that is necessary due to authorized work by any other agency will be paid for by that agency under a different special specification and a different bid item number.
- B. To meet and/or exceed NESHAP and OSHA guidelines, the contractor will subcontract the ACM handling to an Environmental Protection Agency (EPA)-accredited and TDH-licensed Asbestos Abatement Contractor and TDH-licensed Asbestos Consultants.
- C. An alternative method would entail the disturbance, handling, repair, and disposal of the ACM by an authorized TDH-licensed worker with the required course of an asbestos worker awareness class or a TDH-required asbestos training course preparing workers to handle disturbed ACM. Review of the asbestos work practices and monitoring in the Contractor's Health & Safety Plan will still need to be performed by a TDH-licensed Asbestos Consultant.
- D. NESHAP guidelines apply to projects with at least 260 linear feet or 35 cubic feet or 160 square feet. NESHAP also applies when ACM becomes or will become "regulated asbestos containing material" or RACM. This means that if at least 260 linear feet of the ACM has become crushed, crumbled, or pulverized, then the project is subject to the NESHAP. If

the TDH limit of 260 LF is exceeded, it will be the responsibility of the contractor to be responsible for the TDH administrative fee. The asbestos consultant shall be responsible for submitting the TDH notification with copies also submitted to SAWS and the CITY, if the quantity of 260 LF is exceeded.

- E. During the removal operation of ACM, only the portion that has become RACM would be counted toward the threshold amount if the debris caused by the operation is cleaned up so that it does not contaminate subsequent areas. If the scope of this project may involve the threshold amount (260 linear feet or greater), then a Demolition/Renovation Notification Form will need to be sent to TDH by the Contractor. This form will need to be post-marked no later than 11 working days prior to the start of any asbestos disturbance.
- F. All ACM projects will require that NESHAP and OSHA guidelines are met and/or exceeded in areas where ACM is to be disturbed. This means that all ACM disturbance will require a third party TDH licensed asbestos consultant and asbestos contractor on-site during ACM disturbance. An asbestos abatement work plan shall be provided to SAWS and City representatives by both the licensed asbestos consultant and asbestos contractor. Upon completion of the ACM removal project an air monitoring abatement report shall be required by the contractor's asbestos consultant. Copies of the final abatement report shall be prepared and submitted to SAWS representatives by the contractor's consultant. OSHA requires that during any ACM disturbance, regardless of amount, the asbestos worker(s) shall be properly protected during potential asbestos exposure, 29 CFR, Subpart Z, 1910.1101.

## 1.02 DEFINITIONS

The following terms are defined for the nature of this work.

- A. Air Monitoring - The process of measuring the fiber concentration of a known volume of air collected during a specific period of time. The analysis procedure utilized for asbestos is the NIOSH Standard Analytical Method for Asbestos in Air, Method 7400. Transmission electron microscopy (TEM) may be utilized for lower detection limits and/or specific fiber identification.
- B. Air Monitoring Technician - The person licensed by the Texas Department of Health to conduct air monitoring for an asbestos abatement project or related activity. The Air Monitoring Technician may only obtain air samples, and may only perform analysis of air samples with an upgraded Air Monitoring Technician License, which includes completion of the NIOSH-582 equivalent course. The air-monitoring technician shall be an employee of a licensed asbestos laboratory or a licensed Asbestos Consultant agency.
- C. Amended Water - Water to which a surfactant has been added.
- D. Asbestos - The asbestiform varieties of serpentines and amphiboles. Specifically, chrysotile, crocidolite, grunerite, amosite, anthophyllite, actinolite, and tremolite.
- E. Asbestos Containing Material (ACM) - Material or products that contain more than 1.0% of any kind of asbestos.

- F. Asbestos Containing Waste Material - asbestos containing material or asbestos contaminated objects requiring disposal.
- G. Authorized Personnel - Any person authorized by the Contractor and required by work duties to be present in the work area or other regulated areas.
- H. Authorized Visitor – SAWS representatives, and any representative of a regulatory or other agency having jurisdiction over the project.
- I. Asbestos Consultant - That person licensed by the Texas Department of Health to perform the following asbestos related functions:
  - 1) Project design;
  - 2) Asbestos surveys and condition assessment of ACM;
  - 3) Asbestos Management Planning;
  - 4) The collection of bulk material samples, airborne substance samples and the planning of sampling strategies;
  - 5) Owner-representative services for asbestos abatement projects or O&M programs, including air monitoring and project management;
  - 6) Consultation regarding regulatory compliance and all aspects of technical specifications and contract documents; and
  - 7) The selection, fit testing, and appropriate use of personal protection equipment and the development of asbestos related engineering controls.
- J. Abatement Contractor - The company, agency, or entity licensed by the Texas Department of Health that has been retained by SAWS or the Contractor to perform asbestos abatement and other associated functions.
- K. Class II Asbestos Work (OSHA Standard) – 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.
- L. Competent Person – 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 the asbestos hazards.
- M. Encapsulant - A specific adhesive designed to lock down and minimize the fiber release of asbestos containing materials and asbestos contaminated materials.
- N. Friable Asbestos - Asbestos-containing material, which can be crumbled to dust, when dry, under hand pressure, and includes previously nonfriable material after such previously non-friable material becomes damaged to the extent that, when dry, it may be crumbled, pulverized, or reduced to powder by hand pressure.
- O. HEPA Filter - A high efficiency particulate air (HEPA) filter capable of removing particles > 0.3 microns in diameter with 99.97% efficiency.
- P. NESHAP - The National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61).

- Q. NIOSH - The National Institute for Occupational Safety and Health.
- R. OSHA - The Occupational Safety and Health Administration.
- S. Regulated Area – An area established by the contractor to demarcate areas where 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.
- T. Regulated Asbestos-containing Material (RACM) –  
1) Friable asbestos material;  
2) Category I non-friable ACM that has become friable;  
3) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading; or, (4) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by forces expected to act on the material in the course of the demolition or renovation operations regulated by 40 CFR Part 61, Subpart M. +
- U. Staging area – A pre-selected area where containerized asbestos containing waste material will be placed prior to removal from the project site.
- V. Surfactant - A chemical wetting agent added to water to improve penetration.

### 1.03 APPLICABLE STANDARDS AND GUIDELINES

All work under these specifications shall be done in strict accordance with all applicable Federal, State, and local regulations, standards, and codes governing asbestos abatement and any other trade work done in conjunction with the asbestos abatement. Work activities must also comply with these and other SAWS and City of San Antonio specifications related to health and safety. The most recent edition of any relevant regulation, standard, or code shall be in effect. Where there exists conflict between the regulations, standards, codes, or these specifications, the most stringent requirements shall be utilized. The Contractor shall comply with, at minimum, the following specific regulations:

- A. Occupational Safety and Health Administration (OSHA) including but not limited to:
1. Title 29 Code of Federal Regulations Section 1910.1001 – General Industry Standard for Asbestos.
  2. Title 29 Code of Federal Regulations Section 1910.134 – General Industry Standard for Respiratory Protection.
  3. Title 29 Code of Federal Regulations Section 1926 – Construction Industry.
  4. Title 29 Code of Federal Regulations Section 1910.1020 - Access to Employee Exposure and Medical Records.
  5. Title 29 Code of Federal Regulations Section 1910.1200 – Hazard Communication.
- B. Environmental Protection Agency (EPA) including but not limited to:

1. Title 40 Code of Federal Regulations Part 61 Subpart M – National Emission Standard for Asbestos.
- C. Texas Administrative Code including but not limited to:
1. Texas Administrative Code, Title 25, Chapter 295, Subchapter C - Texas Asbestos Health Protection.
  2. Texas Administrative Code, Title 30, Chapter 335, Texas Solid Waste Regulations.
  3. Texas Civil Statutes, Article 4477-A, Section 12, General Provisions 295.31 to 295.73.
- D. American National Standards Institute (ANSI)
- E. American Society for Testing and Materials (ASTM)
- F. Department of Transportation - HM 181

#### **1.04 SUBMITTALS AND NOTICES**

- A. Prior to the Pre-Construction Conference/Meeting, all training records, certifications, medical records, and laboratory qualifications will be submitted for review to SAWS representatives as well as the following:
1. In order to comply with the SAWS Project Construction Health and Safety Program requirements for any project with the potential to involve friable ACM, the Contractor will be responsible for developing and implementing an asbestos removal work plan in accordance with NESHAP, OSHA, SAWS Special Specifications, Item Number 3000, and state requirements. As such, Contractors submitting bids for the project must have a Texas Department of Health (TDH)-licensed Asbestos Consultant provide detailed asbestos specific safety and work plans for ensuring worker and community protection. Plans submitted by the Asbestos Consultant must include the person or firms name, address, phone number and TDH certification. Health and Safety plans for working with ACM must address the guidance provided in these special specifications. The guidance provided in this special specification is not intended and does not constitute asbestos abatement project design as described under TAC 25, Chapter 295.47 (TDH asbestos regulations).
  2. Submit documentation satisfactory to SAWS representatives that an Initial and/or Negative Exposure Assessment in accordance with OSHA Standard 29 CFR 1911 has or will be performed (as applicable).
  3. Submit documentation satisfactory to SAWS representatives that the Contractor's employees, including foremen, supervisors and any other company personnel or agents who may be exposed to airborne asbestos fibers or who may be responsible for any aspects of asbestos disturbance activities, have received adequate training in compliance with applicable rules and regulations.

4. Submit documentation to SAWS representatives of a respiratory protection program for affected employees as per OSHA Standard 29 CFR 1910.134.
  5. Submit documentation to SAWS representatives from a physician that all personnel who may be required to wear a respirator are medically monitored to determine whether they are physically capable of working while wearing the required respiratory protection without suffering adverse health effects. In addition, document that personnel have received medical monitoring as is required in compliance with applicable rules and regulations.
  6. Submit to SAWS representative's documentation of respirator fit testing for all Contractor employees and agents who must enter the work area. This fit testing shall be in accordance with qualitative procedures as detailed in the OSHA Standard 29 CFR 1910.134. Optionally, the fit testing may be quantitative in nature.
  7. Name of OSHA monitoring Consultant/Lab. The Contractor will be responsible for air monitoring as required to meet OSHA Requirements.
  8. Submit proof satisfactory to SAWS representatives that required permits, site location and arrangements for transport and disposal of asbestos containing waste materials have been made.
  9. Submit name, address and permit/qualifications of Landfill to be used to dispose of hazardous waste.
- B. During Asbestos Disturbance Activities:
1. Submit copies to SAWS representatives of all transport manifests, trip tickets, and disposal receipts for all asbestos waste materials removed from the work area during the project. The Contractor will sign manifests as the SAWS's representative (generator) for the ACM and provide copies to SAWS Construction Inspections for final payment.
  2. Upon completion of the ACM removal, an abatement report shall be required by the contractor's asbestos consultant. Copies of the final abatement report shall be prepared and submitted to SAWS representatives by the contractor's consultant.

## **PART 2 PRODUCTS (NOT USED)**

## **PART 3 EXECUTION**

### **3.01 CONSTRUCTION REQUIREMENTS**

- A. The Work includes all Work specified herein, to include mobilization and demobilization, labor, materials, overhead, profit, taxes, transportation, disposal fees, administrative fees incidental cost, etc. Estimating areas, quantities, weight, etc., are the sole responsibility of the Contractor.

- B. The Contractor shall remove, seal, transport and dispose of all impacted asbestos-containing materials in compliance with all current Federal, State and local regulations, laws, ordinances, rules, standards and regulatory agency recommended requirements. Asbestos disturbance, removal and transport activities shall be conducted by the selected Licensed Asbestos Contractor using proper personal protective equipment.
- C. The Contractor shall notify SAWS and City representatives, if applicable, at least 72 hours in advance prior to beginning removal and/or disturbance of any ACM. ACM disturbance shall be conducted during regular business hours, Monday-Friday. No weekend work of ACM disturbance is allowed, unless special circumstances require the contractor to do so.
- D. Time is of the essence in removing the asbestos-containing materials from the project area. All work must be completed within the time period specified. SAWS and the COSA representative will be responsible for coordinating this work in high-density areas, such as schools, church facilities, and residential areas.
- E. All required notifications required to state regulatory agencies will be made by the Contractor with copies provided to SAWS and City representatives, including but not limited to the TDH Demolition/Renovation Notification Form. If 260 linear feet or greater of ACM will become crushed, crumbled or pulverized, then the project is subject to NESHAP regulations and a Demolition/Renovation Notification Form will need to be sent to TDH by the Contractor. This form will need to be post-marked no later than 11 working days prior to the start of any asbestos disturbance.
- F. The Contractor shall have an on-site supervisor, who is an OSHA Competent Person, present on the job site at all times that the work is in progress. This supervisor shall be thoroughly familiar with and experienced at asbestos disturbance and other related work and shall be familiar with and shall enforce the use of all safety procedures and equipment. He shall be knowledgeable of all applicable EPA, OSHA, NIOSH and TDH requirements and guidelines.
- G. Prior to commencing any preparation of the work areas for asbestos disturbance, the Contractor shall post all required documents, warning signs and, as necessary, erect physical barriers in order that the work area may be secured.
- H. The Contractor has sole and primary responsibility for the “means and/or methods” of the work and obligation to SAWS to make inspections of the work at all stages and has sole responsibility to supervise the performance of the work. Certain work practices for ACM disturbance are prohibited as per Section 3000.10.B.1.
- I. The Contractor shall be responsible for site safety and for taking all necessary precautions to protect the Contractor’s personnel, SAWS personnel and the public from asbestos exposure and/or injury. The Contractor shall be responsible for maintaining the integrity of the work area.
- J. The Contractor shall confine operations at the site to the area requiring disturbance of ACM and the general site area associated with the proximity of the project. Portions of the site beyond areas on which the indicated work is required are not to be disturbed. The Contractor will not unreasonably encumber the site with materials or equipment. If asbestos



containing waste materials are required to be stored overnight, it will be properly labeled, secured, and containerized to preclude unauthorized disturbance of the waste materials.

- K. The Contractor shall be responsible for the transport and disposal of asbestos containing waste materials to a duly licensed landfill facility permitted to accept asbestos waste. The Contractor shall be responsible for obtaining and coordinating waste disposal authorization from a TCEQ licensed landfill. Waste manifests shall be used to transport the RACM from the project site to the final landfill disposal site. The Contractor will sign manifests as the SAWS's representative (generator) for the RACM and provide copies to SAWS Construction Inspections prior to removal of waste from each project site.

### **3.02 SITE SECURITY**

- A. The Contractor shall demarcate the area of ACM disturbance as a regulated area with barrier tape and warning signs, as per OSHA regulation 29 CFR 1926.1101. Access to the regulated area will be limited to authorized personnel only. Authorized personnel, to include SAWS personnel, are required to have completed asbestos awareness training, respiratory training, etc.
- B. Entry into the work area by unauthorized individuals shall be reported immediately to SAWS representatives by the Contractor.
- C. A logbook shall be maintained immediately outside of the regulated area. Anyone who enters the regulated area must record name, affiliation, time in, and time out for each entry.

### **3.03 PERSONAL PROTECTIVE EQUIPMENT**

- A. All work which will or may disturb ACM as specified shall be accomplished utilizing, as a minimum, disposable Tyvek suits with protective head cover, gloves, boots, eye protection, proper respiratory protection, decontamination by HEPA vacuuming and/or wet methods and wet wiping all equipment. The Contractor shall provide hard hats and/or other protection as required for job conditions or by applicable safety regulations. Disposable Tyvek suits consisting of material impenetrable by asbestos fibers shall be provided to all workers and authorized visitors in sizes adequate to accommodate movement without tearing. Workers will be provided protective clothing from the time of first disturbance of asbestos-containing or contaminated materials until final cleanup is completed.
- B. Respiratory Protection: The Contractor shall use removal techniques, methods and equipment which will not permit the fiber count to exceed the OSHA Permissible Exposure Level (PEL) of 0.1 fibers per cubic centimeter (f/cc) of air as detected by personal air sampling methods. Any remedial measures taken by the Contractor to meet this requirement will be at the Contractor's expense.
  - 1. The Contractor's Competent Person shall ensure use of the appropriate respiratory protection for the work being performed. For minimum legal respiratory requirements, see OSHA Standards 29 CFR 1910.134, 29 CFR 1910.1001, and 29 CFR 1926.1101. All respiratory equipment, such as respirators, filters, etc. shall be certified by the National Institute of Occupational Safety and Health (NIOSH) for use in asbestos contaminated atmospheres.

2. The Contractor's Competent Person shall perform an Initial and/or Negative Exposure Assessment, which shall be performed on employees who have been trained in compliance with the OSHA regulations. Employees' exposures shall be collected using objective data that is to demonstrate whether the materials specified for removal can release airborne fibers in concentration levels exceeding 0.1 fibers per cubic centimeters (f/cc) during an eight-(8) hour time weighted average (TWA) and the excursion limit of 1.0 f/cc. For the purpose of the assessment, the work conditions should be those having the greatest potential for releasing asbestos fibers. Removal methods using conventional hand tools shall be performed in an area that requires a minimum of a seven-(7) hour work shift with employees performing functions normally required for a total project. Removal, for the purposes of the assessment, should be performed with methods most likely to release fibers and that do not render the asbestos containing materials friable. Properly trained employees shall wear proper protective clothing and respirators during the assessment. Initial and/or Negative Exposure Assessments shall be performed in accordance with OSHA Standard 29 CFR 1926.1101.

The development of the Health and Safety Plan by the Contractor's TDH licensed Asbestos Consultant shall include determining the adequacy of the Contractor's air monitoring data (which must be performed within the previous 12 months of the project start date) for the Initial and/or Negative Exposure Assessment, based in part on site-specific factors such as changes in personnel or work methods used during ACM removal. If this type of air monitoring data needs to be reviewed during the course of a project, the Contractor's Asbestos Consultant shall review the data in order to determine if it is adequate. Any downgrade in personal protective equipment related to asbestos exposure shall be requested in writing to SAWS Health and Safety Department, the COSA Environmental Services Department, and approved by a TDH-licensed Asbestos Consultant. This request may be granted only when all regulations and pertinent sections of this special specification for respiratory protection are met.

3. The Contractor shall begin ACM removal operations (i.e. breaking, sawing, cutting, or repairing the materials) in powered air purifying respirators (PAPRs) equipped with dual HEPA filters. PAPRs will be utilized until such time that air monitoring results indicate that half-face respirators may be used. Any changes (downgrade or upgrade) in respiratory protection will be based upon an 8-hour time weighted average (TWA) of fiber concentrations in the regulated area. Eight hour TWAs will be calculated daily by the Contractor's OSHA monitoring firm, for personal samples. The highest calculated 8-hour TWA shall be used to determine the type of respirator to be worn. The type of respirators worn will be selected in accordance with 29 CFR 1926.1101(h)(3).

The Contractor may request a respiratory protection downgrade, approved by a TDH licensed Asbestos Consultant, in writing to SAWS Health and Safety Department when all regulations and pertinent sections of this special specification for respiratory protection are met.

4. Workers shall be provided with individually issued and identified respirators.
5. No one wearing a beard shall be permitted to wear a respirator.

### 3.04 AIR MONITORING

- A. Personal Air Monitoring: The Contractor shall provide personal air sampling as required by OSHA regulations. The OSHA TWA permissible exposure limit (PEL) for asbestos (0.1 f/cc) shall not be exceeded. Personal air samples shall be obtained by a TDH-licensed Asbestos Air Monitoring Technician and analyzed by an accredited, independent TDH-licensed Phase Contrast Microscopy (PCM) laboratory. OSHA monitoring results shall be posted at the project site and made available to all affected Contractor personnel on a daily basis.
- B. The Contractor shall provide, as a minimum, personal air monitoring on each worker who is cutting, (wet) sawing, breaking, repairing or handling the ACM.
- C. Area Air Monitoring: At any time that visible airborne fibers are generated or that wet work procedures are not used, all work will immediately cease until air monitoring by a TDH-licensed Asbestos Consultant Agency has started. The Contractor's on-site Competent Person shall be responsible for making this determination; however, periodic, random site visits by SAWS Inspectors will field-verify the objectivity of the Competent Person in these matters. Once initiated, the sampling and frequency of the area air monitoring will be dependent upon on the specific work practices being used by the workers at that time. However, the area air monitoring shall include, as a minimum, samples collected inside the regulated area, and upwind and downwind of the regulated area. The TDH-licensed Asbestos Consultant Agency hired by the Contractor shall determine the need for additional samples and shall amend the Health and Safety Plan (with a copy to SAWS) to include sampling protocols.
- D. Area air monitoring shall be conducted in accordance with applicable Federal, State, and local requirements. The cost of area air monitoring due to failure to use adequate wet work procedures will be borne by the Contractor. Copies of all results will be provided to SAWS representatives.
- E. Area air sampling shall be mandatory in high density areas such as schools, residential areas, and certain other locations as determined by SAWS representatives and made clear in individual SAWS bid documents/plans.

### 3.05 EMPLOYEE TRAINING

- A. Training shall be provided by the Contractor to all employees or agents who may be required to disturb asbestos containing or asbestos contaminated materials for ACM handling and auxiliary purposes and to all supervisory personnel who may be involved in planning, execution or inspection of such projects. The training shall be in accordance with OSHA Standard 29 CFR 1926.1101 for "Class II asbestos work".
- B. At a minimum, Contractor employees who will be potentially exposed to asbestos shall have completed within the last 12 months, an 8-hour Asbestos Awareness training course taught by a TDH-licensed Asbestos Training Provider. The training course shall cover topics including, but not be limited to, the health effects of asbestos and work practices related to the handling of ACM.

- C. The Contractor's Competent Person shall have completed within the last 12 months, a 40-hour Asbestos Contractor Supervisor training course taught by a TDH-licensed Asbestos Training Provider. The training course shall cover topics including, but not be limited to: the health effects of asbestos, employee personal protective equipment, medical monitoring requirements for workers, air monitoring procedures and requirements for workers, work practices for asbestos abatement, personal hygiene procedures, special safety hazards that may be encountered, and other topics as required.

### 3.06 ACM HANDLING

- A. General: The Contractor shall properly remove, handle, transport and dispose of all ACM specified in the SAWS bid documents/plans for this project. All work involving ACM products must be addressed in Health and Safety Program documents submitted to SAWS representatives. To comply with the SAWS Project Construction Health and Safety Program, Contractors submitting bids for the project must have a TDH-licensed Asbestos Consultant provide detailed asbestos specific safety and work plans for ensuring worker and community protection. Health and Safety Program plans are to include provisions for the discipline of any worker failing to use wet work procedures or failing to use designated personnel protective equipment.

The Contractor shall remove ACM with wet methods or by other controlled techniques approved by the TDH, EPA, and OSHA and in accordance with these specifications and the Contractor-provided Health and Safety Plan. Alternative removal methods must be approved at time of the Contractor's submittals. The Contractor shall take special care to prevent damage to the adjacent structures, materials and finished materials not required for demolition to access ACM.

The Contractor shall limit his use of the premises to the work area indicated. Access to the work area shall be controlled by the Contractor. All electrical equipment, etc., shall have ground fault circuit interrupter (GFCI) protection. The Contractor shall properly demarcate, barricade and contain the work and/or regulated areas.

The work consists of providing GFCI protection, the use of approved equipment with engineering controls, sufficiently wetting the asbestos containing materials using a surfactant or lock-down encapsulant, removing the asbestos-containing materials, HEPA vacuuming the work area, wet wiping the work area, double-bagging/double-wrapping the waste and removing carefully as indicated herein and in accordance with the Contractor-provided Health and Safety Plan.

- B. Equipment: Equipment used to cut, break, or otherwise disturb asbestos-containing materials may include, but are not limited to: wet-cutting saws, saws equipped with point of cut ventilator (saw equipped with a water mister) or enclosures with HEPA-filtered exhaust air, snap cutters, manual field lathes, pressure and non-pressure tapping devices.

Equipment used to either control visible emissions of fibers, contain the work area, or facilitate the clean-up of debris may include, but are not limited to: airless spray equipment, pump-up sprayers, surfactant, lockdown encapsulant, HEPA vacuums, brushes, brooms, shovels, disposable rags, 6-mil thick polyethylene (poly) sheeting, moisture resistant duct tape, asbestos warning signs, notices and barrier tape.

Alternative dismantling equipment may be substituted for the materials indicated herein, but must be approved by the SAWS Health and Safety Office and/or COSA Environmental Service Department.

1. Prohibited Work Practices and Engineering Controls: the following work practices and engineering controls shall not be used for work related to asbestos or for work which disturbs ACM, regardless of asbestos exposure or the results of Initial Exposure Assessments:
  - a. High-speed abrasive disc saws that are not equipped with point of cut ventilator or enclosures with HEPA-filtered exhaust air.
  - b. Other high-speed abrasive tools, such as disk sanders.
  - c. Carbide-tipped cutting blades.
  - d. Electrical drills, chisels, and rasps used to make field connections in AC pipe.
  - e. Shell cutters used to cut entry holes in AC pipe.
  - f. A hammer and chisel used to remove couplings or collars on AC pipe.
  - g. Compressed air used to remove asbestos, or materials containing asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud generated by the compressed air.
  - h. Dry sweeping, dry shoveling or other dry clean-up of dust and debris containing ACM.
  - i. Employee rotation as a means of reducing employee exposure to asbestos.
  
- C. General Removal Work Practices: AC pipe, window caulking and roof mastic has been identified as a nonfriable ACM with the potential to become friable ACM. The material is classified as non-friable, unless broken at which time its classification changes to friable. NESHAP guidelines apply to projects with at least 260 linear feet or 35 cubic feet or 160 square feet. NESHAP also applies when ACM becomes or will become “regulated asbestos containing material” or RACM. This means that if at least 260 linear feet of the ACM has become crushed, crumbled, or pulverized, then the project is subject to the NESHAP. During the disjoining operation of AC pipe and ACM removal, only the portion that has become RACM would be counted toward the threshold amount if the debris caused by the disjoining and/or removal operation is cleaned up so that it does not contaminate a greater amount of materials or adjoining areas. If the generated ACM debris is not properly cleaned up, then the adjoining ACM must be considered contaminated, and the whole length is treated as asbestos-containing waste material. If the scope of this project may involve the threshold amount (260 linear feet or greater), then a Demolition/Renovation Notification Form will need to be sent to TDH by the Contractor. This form will need to be post-marked no later than 11 working days prior to the start of any asbestos disturbance.

All ACM projects will require that NESHAP and OSHA guidelines are met and/or exceeded in areas where ACM is to be disturbed. This means that all ACM disturbance will require a third party TDH licensed asbestos consultant and asbestos contractor on-site during ACM disturbance. An asbestos abatement work plan shall be provided to SAWS and City representatives by both the licensed asbestos consultant and asbestos contractor. Upon completion of the ACM project, an air monitoring abatement report shall be required by the contractor's asbestos consultant. Copies of the final abatement report shall be prepared and submitted to SAWS representatives by the contractor's consultant. OSHA requires that during any ACM disturbance, regardless of amount, the asbestos worker(s) shall be properly protected during potential asbestos exposure, 29 CFR, Subpart Z, 1910.1101.

In order to comply with SAWS Project Construction Health and Safety Program requirements for any project with the potential to involve friable ACM, the Contractor will be responsible for developing and implementing an asbestos removal work plan in accordance with NESHAP, OSHA, and state requirements. As such, Contractors submitting bids for the project must have a TDH licensed Asbestos Consultant provide detailed asbestos specific safety and work plans for ensuring worker and community protection. Health and Safety plans for working with ACM must address the guidance provided in these special specifications.

- D. A sufficient supply of disposable rags for work area decontamination shall be available.
- E. Disposal bags for RACM shall be of true 6-mil poly, pre-printed with labels as required by EPA regulation 40 CFR 61.152 (b)(i)(iv) or OSHA requirement 29 CFR 1926.1101(k)(8).
- F. Stick-on labels identifying the Generator's name (SAWS) and address and the project site location shall be applied to any asbestos waste bags that contain RACM, as per EPA or OSHA and Department of Transportation HM 181 requirements.
- G. Work Area Preparation: Post warning signs and barrier tape meeting the specification of OSHA 29 CFR 1910.1001 and 40 CFR 61 at any location and approaches to a location where airborne concentrations of asbestos may exceed the PEL. Signs shall be posted at a distance sufficiently far enough away from the work area to permit an employee to read the sign and take the necessary protective measures to avoid exposure. Maintain constant security against unauthorized entry past warning signs and barrier tape. Signs will be in both English and Spanish.
- H. Personnel Exit Procedures
  1. Before leaving the work area, all personnel shall remove gross contamination from the outside of respirators and protective clothing by brushing and/or wet wiping procedures. (Small HEPA vacuums with brush attachments may be utilized for this purpose.) Adequate washing facilities shall be provided and utilized on-site.
  2. Upon completion of the work, contaminated gloves shall be disposed of as asbestos contaminated waste. Disposable cloth gloves may be substituted for leather gloves, at the Contractor's discretion. (Rubber boots may be decontaminated at the completion of the project.)

## I. Specific Removal Work Practice Requirements

### 1. Asbestos Containing Pipe

- 1.1. The Contractor has sole and primary responsibility for the “means and/or methods” of the work and obligation to SAWS to make inspections of the work at all stages and has sole responsibility to supervise the performance of the work.
- 1.2. The Contractor shall isolate the regulated area with barrier tape and asbestos warning signs.
- 1.3. The Contractor shall lay and secure 6-mil poly sheeting on the ground on both sides of the AC pipe for the length of the work area.
- 1.4. Working within the regulated area using wet removal methods, the Contractor shall thoroughly soak each section of AC pipe to be disturbed prior to any removal activity with a surfactant or lockdown encapsulant. The Contractor shall use equipment capable of producing a “mist” application to reduce the potential for release of fibers. The Contractor shall take care to use as much encapsulant or surfactant as needed in order to lockdown possible fallout debris from edges and joints during removal. The Contractor shall provide continuous wetting of the materials throughout the entire removal process. The Contractor shall take care to limit the breakage of ACM and remove these materials as intact as possible.
- 1.5. Any AC pipe debris on adjacent surfaces shall be removed. The Contractor shall promptly clean up asbestos wastes and debris following AC pipe disturbance. The Contractor shall remove and containerize all visible accumulations of ACM and AC debris by hand. Asbestos debris mixed with soil may be picked up with shovels with the contaminated soil being containerized as a regulated ACM waste. Clean-up activities may also involve vacuum cleaners equipped with HEPA filtration or wet-wiping surfaces with disposable rags. Contaminated rags shall be containerized as a regulated ACM waste.
- 1.6. After disturbance and clean-up activities and prior to removal of the AC pipe from the regulated area, the Contractor shall encapsulate damaged and exposed areas and ends of the AC pipe with a lock-down encapsulant.
- 1.7. The Contractor may now remove the Category II non-friable ACM “that is not in poor condition and is not friable” as defined in NESHAP regulations. The Contractor shall remove all AC pipe “intact” and in whole complete sections by carefully lifting the AC pipe to the disposal container using approved equipment. The Category II non-friable AC pipe must not become “friable” (crumbled, pulverized, or reduced to a powder). The Contractor shall not drop, break, and/or otherwise make the AC pipe susceptible to release asbestos fibers. If these procedures are followed and

debris is cleaned up properly, then the Category II non-friable AC pipe may be disposed of as non-regulated asbestos-containing waste material.

- 1.8. Pieces of AC pipe debris shall be considered RACM and handled as regulated ACM waste. The debris shall be placed in two 6-mil poly asbestos bags or double wrapped, with proper labeling.

2. Wire Covering and Vibration Damper

- 2.1 **Option 1 - Mini Containment**

Pre-clean the room by removing debris and HEPA vacuuming. Establish a “mini-containment” to include 6-mil thick poly draped from the ceiling to the floor and 6-mil thick poly on the floor. Place under negative pressure. Remove the electrical wires and/or vibration damper. Remove as much without breaking/disturbance as possible.

- 2.1.1 Wire – wrap tape around the area to be removed and cut through the tape or remove by disconnecting.
    - 2.1.2 Vibration Damper – spray with glue and remove the screws holding the damper in place. Wrap the large pieces in two layers of 6-mil thick poly. Wipe the poly with a wet (amended water) cloth. Pass the removed pieces to the bag accumulation area. Place the small pieces into 6-mil thick poly bags. Do not fill more than 1/3 full. Wipe bag with a wet (amended water) cloth. Place first bag into second 6-mil thick poly bag, seal, and gooseneck. Pass the bags to the bag accumulation area.

- 2.2 **Option 2 - Glove Bag**

Install glove bag under negative pressure

- 2.2.2 Wire – wrap tape around the area to be removed and cut through the tape or remove by disconnecting.
    - 2.2.3 Vibration Damper – spray with glue and remove the screws holding the damper in place. Place the glove bag into 6-mil thick poly bags. Do not fill more than 1/3 full. Wipe bag with a wet (amended water) cloth. Place first bag into second 6 mil thick poly bag, seal, and gooseneck. Pass the bags to the bag accumulation area

**NOTE: The removal of the window glazing and roofing falls exclusively under NESHAP and OSHA.**

3. Window Glazing.

- 3.1 **Option 1: Remove the window in total.**

Place poly on the interior of the room/hall/etc. with two layers of 6-mil thick poly. Place 6 mil thick poly on the ground beneath the window. Remove the window and wrap in two layers of 6-mil thick poly. Scrape the remaining window glazing from the building and place in a 6-mil thick poly bag for removal. Fold up the exterior poly and place into the 6-mil



thick poly bag with the window glazing. Remove the interior poly and place into a 6-mil thick poly bag. HEPA vacuum the floor below where the windows were removed.

**3.2 Option 2. Remove the window glazing prior to removing the windows.**

Place poly on the interior of the room, hall, etc. with two layers of 6-mil thick poly. Place 6-mil thick poly on the ground beneath the window. Remove the window glazing and wrap in two layers of 6-mil thick poly. Using a HEPA vacuum, vacuum the edges of the windows. Fold up the exterior poly and place into the 6-mil thick poly bag with the window glazing. The windows can now be demolished with the walls as appropriate.

4. Parapet Roofing Mastic.

The Contractor will remove the parapet roofing mastic in accordance with OSHA's 29 CFR 1926.1101 paragraphs (g)(8)(ii). Roofing material shall be removed in an intact state to the extent feasible. Wet methods should be used to remove roofing materials that are not intact, or that will be rendered not intact during removal, unless such wet methods are not feasible or will create safety hazards. Cutting machines shall be continuously misted during used. All dust resulting from the cutting operation shall be collected by a HEPA dust collector, or shall be HEPA-vacuumed by vacuuming along the cut line.

- J. Abandonment of AC water pipes or Electrical Duct Banks: The Contractor is responsible for isolating the existing mains to remain in service by capping, plugging and blocking as necessary. The opening of an abandoned AC water main, duct banks, and all other openings or holes shall be blocked off by manually forcing cement grout or concrete into and around the openings in sufficient quantity to provide a permanent watertight seal. Abandonment of old, existing AC water mains or duct banks will be considered subsidiary to the work required, and no direct payment will be made.
- L. Abandonment of Valves that contain ACM: Valves to be abandoned in the execution of the work shall have the valve box and extension packed with sand to within eight (8") inches of the street surface. The remaining eight (8") shall be filled with 2,500 psi concrete or an equivalent sand-cement mix and finished flush with the adjacent pavement or ground surface. The valves covers shall be salvaged and return to SAWS. The abandonment of valves containing ACM will be considered subsidiary to the work required, and no direct payment will be made.
- M. Verification of Removal & Clean-up Procedures: The Contractor's on-site Competent Person shall inspect the work area and ensure that all surfaces are free of ACM dust and debris.
- N. Disposal Procedures
  - 1. If a dumpster/trailer is used for temporary storage it will be secured and closed at all times except when loading. It will be properly marked and critical barrier tape will be in place.

2. Asbestos-contaminated items shall be properly double bagged, labeled and loaded in a fully enclosed, lined, locked and placard transport container and transported and disposed of in compliance with all regulatory requirements as RACM.
3. After being removed from the regulated area, Category II nonfriable ACM shall be transferred to a polyethylene-lined container. Remove all containers as soon as practical, but no later than the end of the work shift.
4. When the dumpsters/trailers are full, they will be hauled away to the closest EPA approved landfill for proper disposal. The Contractor may dispose of the Category II non-friable waste material as non-regulated waste in a municipal solid waste landfill as defined in the NESHAP and TCEQ Rule (Type I Landfill). Written approval to transport and accept the Category II non-friable material shall be obtained from a pre-approved transporter and landfill and submitted to SAWS representatives prior to disposal.
5. Submit copies to SAWS representatives of all transport manifests, trip tickets, and disposal receipts for all asbestos waste materials removed from the work area during the project. The Contractor will sign manifests as the SAWS representative (generator) for the ACM and provide copies to SAWS Construction Inspections for final payment.

**END OF SECTION 02504**

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