**SECTION 4.1**

**TECHNICAL SPECIFICATION FOR**

**REMOVAL, HANDLING, CUTTING, DISTURBANCE AND DISPOSAL**

**OF ASBESTOS CEMENT PIPE**

**NOVEMBER 2000**

**Part 1: General**

* 1. **Scope of Work**

This item shall govern the removal, handling, disturbance, cutting, and disposal of asbestos cement (AC) pipe and other asbestos containing materials (ACM) related to the AC pipe work. AC pipe is also known as transite pipe. Any buried pipe typically containing approximately 15 to 20 percent chrysotile and crocidolite asbestos, is considered to be ACM. The material is classified as non-friable unless broken, at which time its classification changes to friable ACM. The removal and/or disturbance of this material is governed by the National Emissions Standards for Hazardous Air Pollutants (NESHAP) and the Occupational Safety and Health Administration (OSHA).

* 1. **Description:**

This item shall consist of the removal, handling, cutting, disturbance, and disposal of AC water pipe, joints, wrappings, and other ACM. To comply with NESHAP and OSHA regulations, this project requires workers with specialized training using wet work procedures to cut and remove AC pipe, AC pipe joints, valves (any type) containing ACM, and surrounding soils containing ACM. A Texas Department of Health (TDH) licensed Asbestos Consultant shall develop the asbestos work practices and the monitoring in the Contractor’s Health and Safety Plan to be reviewed by the Owner’s Representative. It is the Contractor’s responsibility to obtain the services of a licensed Asbestos Consultant authorized in the State of Texas; this work shall be considered subsidiary to this item.

To meet and/or exceed NESHAP and OSHA guidelines, the Contractor shall subcontract the AC water pipe handling to an Environmental Protection Agency (EPA) accredited and TDH licensed Asbestos Abatement Contractor, and TDH Licensed Asbestos Consultant.

NESHAP guidelines apply to projects when at least 260 linear feet or 35 cubic feet or 160 square feet of AC pipe becomes or will become “regulated asbestos containing material” or RACM. If the threshold limits are exceeded, the Contractor shall be responsible for the TDH administrative fee. The Asbestos Consultant shall also be

responsible for submitting the TDH notification and copying the Owner’s Representative.

During the disjoining operation of AC pipe removal, if the debris caused by the disjoining operation is cleaned up so that it does not contaminate a greater length of pipe, only the portion that has become RACM shall be counted toward the threshold amount. However, if the generated AC pipe debris is not properly cleaned up, then the entire pipe shall be considered contaminated and the whole length shall be treated as asbestos containing waste material (ACWM). If the scope of this project involves a threshold amount, then a Demolition/Renovation Notification Form shall be sent to TDH by the Contractor. This form shall be post-marked no later than 11 working days prior to the start of any asbestos disturbance.

All AC pipe projects require that NESHAP and OSHA guidelines be met and/or exceeded in areas where AC pipe is to be disturbed. Thus, all AC pipe disturbances require a third party TDH licensed Asbestos Consultant and an Asbestos Contractor on-site during AC pipe disturbance. An asbestos abatement work plan shall be provided to the Owner’s Representative by both the licensed Asbestos Consultant and the Asbestos Contractor. Upon completion of the AC pipe project, an air monitoring abatement report shall be prepared by the Contractor’s Asbestos Consultant. Copies of the final abatement report shall be provided to the Owner’s Representative 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.

**1.3 Definitions:**

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

* 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.

* Air Monitoring Technician:

The person licensed by TDH 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.

* Amended Water:

Water to which a surfactant has been added

* Asbestos:

The asbestiform varieties of serpentines and amphiboles. Specifically: chrysotile, crocidolite, grunerite, amosite, anthophyllite, actinolite, and tremolite.

* Asbestos Containing Material (ACM):

Material or products that contain more than 1.0 percent of any kind of asbestos

* Asbestos Containing Waste Material (ACWM):

Asbestos containing material or asbestos contaminated objects requiring disposal

* Authorized Personnel:

Any person authorized by the Contractor and required by work duties to be present in the work area or other regulated areas

* Authorized Visitor:

Owner’s representatives and any representative of a regulatory or other agency having jurisdiction over the project

* Asbestos Consultant:

That person licensed by TDH to perform the following asbestos related functions:

- Project design

- Asbestos surveys and condition assessment of ACM

- Asbestos Management Planning

- The collection of bulk material samples and airborne substance samples, and the planning of sampling strategies

- Owner-representative services for asbestos abatement projects or O&M programs, including air monitoring and project management

- Consultation regarding regulatory compliance, and all aspects of technical specifications and contract documents;

- The selection, fit testing, and appropriate use of personal protective equipment, and the development of asbestos related engineering controls.

* Abatement Contractor:

The company, agency, or entity licensed by TDH that has been retained by the Contractor to perform asbestos abatement and other associated functions.

* Class II Asbestos Work (OSHA Standard):

Activities involving the removal of ACM that is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of AC pipe and appurtenances.

* Competent Person:

One who is capable of identifying existing asbestos hazards in the work-place and selecting the appropriate control strategy for asbestos exposure, and who has the authority to take prompt corrective measures to eliminate them.

* Encapsulant:

A specific adhesive designed to lock down and minimize the fiber release of ACM and asbestos-contaminated materials.

* Friable Asbestos:

ACM, which can be crumbled to dust, when dry, under hand pressure, and includes previously non-friable 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.

* HEPA Filter:

A high efficiency particulate air filter capable of removing particles >0.3 microns in diameter with 99.97 percent efficiency.

* NESHAP:

The National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61)

* NIOSH:

The National Institute for Occupational Safety and Health

* OSHA:

The Occupational Safety and Health Administration

* PEL:

Permissible exposure level

* 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 PEL.

* Regulated Asbestos Containing Material (RACM):
	+ - Friable asbestos material
		- Category I non-friable ACM that has become friable
		- Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading;
		- 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.
* Staging Area:

A pre-selected area where containerized ACWM will be placed prior to removal from the project site.

* Surfactant:

A chemical wetting agent added to water to improve penetration

* TWA:

Time weighted average

**PART 2: QUALITY ASSURANCE**

**2.1 Reference Standards**

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 shall also comply with these and other City of Dallas Specifications related to health and safety.

The most recent edition of any relevant regulation, standard, or code shall be in effect. Where a conflict exists 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:

2.1.1 OSHA including but not limited to:

* Title 29 Code of Federal Regulations Section 1910.1001 - General Industry Standard for Asbestos
* Title 29 Code of Federal Regulations Section 1910.134- General Industry Standard for Respiratory Protection
* Title 29 Code of Federal Regulations Section 1926 - Construction Industry
* Title 29 Code of Federal Regulations Section 1910.2 - Access to Employee Exposure and Medical Records
* Title 29 Code of Federal Regulations Section 1910.1200 - Hazard Communication

2.1.2 EPA including but not limited to:

* Title 40 Code of Federal Regulations Part 61 Subpart M - National Emission Standard for Asbestos

2.1.3 TDH including but not limited to:

* Texas Administrative Code, Title 25, Chapter 295, Subchapter C - Texas Asbestos Health Protection
* Texas Administrative Code, Title 25, Chapter 325 Texas Solid Waste Regulations
* Texas Civil Statutes, Article 4477- A, Section 12, General Provisions 295.31to 295.73

2.1.4 American National Standards Institute (ANSI)

2.1.5 American Society for Testing and Materials (ASTM)

2.1.6 Department of Transportation - HM 181

**2.2 Submittals**

2.2.1 At the Pre-construction Meeting, all training records, certifications, medical records, and laboratory qualifications shall be submitted for review to Owner’s Representative as well as the following:

* The Contractor shall be responsible for developing and implementing an asbestos removal work plan in accordance with NESHAP, OSHA, these specifications, and State requirements. The Contractor must havea TDH licensed Asbestos Consultant to provide detailed asbestos specific safety and work plans for ensuring worker and community protection. Plans submitted by the Asbestos Consultant shall include the person’s or firm’s name, address, phone number and TDH certification. Health and safety plans for working with ACM shall address the requirements in these specifications. However, these specifications are not intended to be and do not constitute asbestos abatement project design as described under TAC 25, Chapter 295.47, TDH asbestos regulations.
* The Contractor shall submit documentation satisfactory to Owner’s Representative that an Initial and/or Negative Exposure Assessment in accordance with OSHA Standard 29 CFR 1911 has or will be performed (as applicable).
* The Contractor shall submit documentation satisfactory to Owner’s representative 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 aspect of asbestos disturbance activities, have received adequate training in compliance with applicable rules and regulations.
* The Contractor shall submit documentation to Owner’s Representative of a respiratory protection program for affected employees as per OSHA Standard 29 CFR 1910.134.
* The Contractor shall submit documentation to Owner’s Representative 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, the Contractor shall submit document that personnel have received medical monitoring as is required in compliance with applicable rules and regulations.

* The Contractor shall submit to Owner’s Representative documentation of respirator fit testing for all Contractor’s 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.
* The Contractor shall submit the name of the OSHA monitoring consultant/lab. The Contractor shall be responsible for air monitoring as required to meet OSHA requirements.
* The Contractor shall submit proof satisfactory to Owner’s Representative that required permits, site location, and arrangements for transport and disposal of ACWM have been made.

2.2.2 During Asbestos Disturbance Activities:

* Submit copies to Owner’s Representative of all transport manifests, trip tickets, and disposal receipts for all ACWM removed from the work area during the project. The Contractor shall sign manifests as the generator of the ACWM and provide copies to Owner’s Representative.
* Upon completion of the AC pipe project, an abatement report shall be prepared by the Contractors’ Asbestos Consultant. Copies of the final abatement report shall be provided to the Owner.

**PART 3: EXECUTION**

* 1. **Delivery, Storage and Handling**
		1. Construction Requirements:
* 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.
* The Contractor shall remove, seal, transport and dispose of all impacted ACM in compliance with all current Federal, State, and local regulations, laws, ordinances, rules, standards and regulatory agency requirements. Asbestos disturbance and/or removal activities shall be conducted by properly trained, accredited, and licensed personnel using proper personal protective equipment.
* The Contractor shall notify Owner’s Representative at least 72 hours in advance prior to beginning removal and/or disturbance of AC pipe.
* Time is of the essence in removing ACM from the project area. All work must be completed within the time period specified.
* All required notifications to State regulatory agencies shall be made by the Contractor with copies provided to Owner’s Representative, including but not limited to the TDH Demolition/Renovation Notification Form. If 260 linear feet or greater of AC pipe is crushed, crumbled or pulverized, then the project is subject to NESHAP regulations and a Demolition/Renovation Notification Form shall be sent to TDH by the Contractor. This form shall be post-marked no later than 11 working days prior to the start of any asbestos disturbance.
* The Contractor shall have an on-site supervisor, who is an OSHA Competent Person, present on the job site at all times the work is in progress. This supervisor shall be thoroughly familiar and experienced with asbestos disturbance and other related work, and shall be familiar with and shall enforce the use of all safety procedures and equipment. The supervisor shall be knowledgeable of all applicable EPA, OSHA, NIOSH and TDH requirements and guidelines.
* 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 to secure the work area.
* The Contractor has sole and primary responsibility for the “means and/or methods” of the work, for the inspection of the work at all stages, and for the supervision of the performance of the work.
* The Contractor shall be responsible for site safety and for taking all necessary precautions to protect the Contractor’s workers, City of Dallas personnel, and the public from asbestos exposure and/or injury. The Contractor shall be responsible for maintaining the integrity of the work area.
* The Contractor shall confine operations at the site to the area requiring disturbance of AC pipe and the general site area associated with the proximity of

the project. Portions of the site beyond areas, in which the indicated work is required, are not to be disturbed. The Contractor shall not unreasonably encumber the site with materials or equipment. If ACWM is required to be stored overnight, it shall be properly labeled, secured, and containerized to preclude unauthorized disturbance of the waste materials.

* The Contractor shall be responsible for the transport and disposal of ACWM 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 AC pipe from the project site to the final landfill disposal site. The Contractor shall sign manifests as the generator of the AC pipe and shall provide copies to the Owner’s Representative for final payment.
	+ 1. Site Security:
* The Contractor shall demarcate the area of AC pipe disturbance (“regulated area”) with barrier tape and warning signs, as per OSHA regulation 29 CFR 1926.1101. Access to the regulated area shall be limited only to authorized personnel. Authorized personnel shall have asbestos awareness training, respiratory training, etc., including City of Dallas personnel.
* Entry into the work area by unauthorized individuals shall be reported immediately to the Owner’s Representatives by the Contractor.
* A logbook shall be maintained immediately outside the regulated area. Anyone who enters the regulated area must record name, affiliation, time in, and time out for each entry.
	+ 1. Personal Protective Equipment:
			1. *General:*

All work which will or may disturb ACM shall be accomplished utilizing, as a minimum, disposal 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. Disposal 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 shall be provided protective clothing from the time of first disturbance of ACM until final cleanup is completed.

* + - 1. *Respiratory Protection:*

The Contractor shall use removal techniques, methods and equipment that 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 shall be at the Contractor’s expense.

* 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 NIOSH for use in asbestos contaminated atmospheres.
* 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. Employee’s 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 f/cc during an 8-hour time weighted average (TWA) and the excursion limit of 1.0 f/cc. For the purpose of the assessment, the work conditions shall 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 7-hour work shift with employees performing functions normally required for a total project. Removal, for the purposes of the assessment, shall be performed with methods most likely to release fibers and that do not render the ACM 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 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 AC pipe removal. If the 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 adequacy. Any downgrade in personal protective equipment related to asbestos exposure shall be requested in writing to the Owner’s Representative, and approved by a TDH licensed Asbestos Consultant. This request may be granted only when all regulations and pertinent sections of this specification for respiratory protection are met.
* The Contractor shall begin AC pipe removal operations (i.e., breaking, sawing, cutting, or repairing the pipe) in powered air purifying respirators (PAPRs) equipped with dual HEPA filters. PAPRs shall be utilized until such time that air monitoring results indicate half-face respirators may be used. Any changes (downgrade or upgrade) in respiratory protection shall be based upon an 8-hour TWA of fiber concentrations in the regulated area. For personal samples, the 8-hour TWA’s shall be calculated daily by the Contractor’s OSHA monitoring firm. The highest calculated 8-hour TWA shall be used to determine the type of respirator to be worn. The type of respirators worn shall 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 the Owner’s Representative when all regulations and pertinent sections of this specification for respiratory protection are met.

* Workers shall be provided with personally issued, individually identified respirators.
* No one wearing a beard shall be permitted to wear a respirator.

3.1.4 Air Monitoring:

* Personal Air Monitoring: The Contractor shall provide personal air sampling as required by OSHA regulations. The OSHA TWA 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.
* The Contractor shall provide, as a minimum, personal air monitoring on each worker who is cutting, (wet) sawing, breaking, or repairing AC pipe.

* Area Air Monitoring: At any time that visible airborne fibers are generated or that wet work procedures are not used, all work shall 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 the Owner’s representative will field-verify the objectivity of the Competent Person in these matters. Once initiated, the sampling and frequency of the area air monitoring shall 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 to include sampling protocols. A copy shall be provided to the Owner’s Representative.

* 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 shall be borne by the Contractor. Copies of all results shall be provided to the Owner’s Representative.
* Area air sampling shall be mandatory in high density areas such as schools, residential areas, and certain other locations as determined by the Owner’s Representative and dictated by the bid documents/plans.

3.1.5 Employee Training:

* Training shall be provided by the Contractor to all employees or agents who may be required to disturb ACM for AC pipe handling and auxiliary purposes, and to all supervisory personnel who may be involved in the planning, execution or inspection of such projects. The training shall be in accordance with OSHA Standard 29 CFR 192.1101 for “Class II asbestos work”.
* At a minimum, Contractor’s 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 AC pipe.
* 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.

3.1.6 AC Pipe Handling:

3.1.6.1 *General:*

 The Contractor shall properly remove, handle, transport and dispose all AC pipe specified in the bid documents/plans for this project. All work involving AC pipe and other ACM products shall be addressed in the Health and Safety Plan documents submitted to the Owner’s Representative. The Contractor shall hire a TDH licensed Asbestos Consultant to provide detailed asbestos specific safety and work plans for ensuring worker and community protection. Health and Safety Plan documents 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 will be considered at the time of the Contractor’s submittals. The Contractor shall take special care to prevent damage to structures and materials not requiring demolition to access the ACM.

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

 The AC pipe work consists of providing GFCI protection, using approved equipment with engineering controls, sufficiently wetting the ACM using a surfactant or lock-down encapsulant, removing the ACM, 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.

* + - 1. *Equipment:*

Equipment used to cut, break, or otherwise disturb AC pipe and associated ACM 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, and pressure and non-pressure tapping devices.

 Equipment used to 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, lock-down encapsulant, HEPA vacuums, brushes, brooms, shovels, disposable rags, polyethylene sheeting of 6-mil thickness,

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 Owner’s Representative.

 *3.1.6.3 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 that disturbs ACM, regardless of asbestos exposure or the results of Initial Exposure Assessments:

* High-speed abrasive disc saws that are not equipped with point of cut ventilator or enclosures with HEPA filtered exhaust air
* Other high-speed abrasive tools, such as disk sanders
* Carbide-tipped cutting blades
* Electrical drills, chisels, and rasps used to make field connections in AC pipe
* Shell cutters used to cut entry holes in AC pipe
* A hammer and chisel used to remove couplings or collars on AC pipe
* Compressed air used to remove asbestos or ACM, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud generated by the compressed air
* Dry sweeping, dry shoveling, or other dry clean-up of dust and debris containing ACM.
* Employee rotation as a means of reducing employee exposure to asbestos
	+ - 1. *General Removal Work Practices:*

AC pipe has been identified as a non-friable 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 when at least 260 linear feet or 35 cubic feet or 160 square feet of AC pipe becomes or will become “regulated asbestos containing material” or RACM. Therefore, if at least 260 linear feet of AC pipe is crushed, crumbled, or pulverized, then the project is subject to NESHAP. During the disjoining operation of AC pipe removal, only the portion that has become RACM shall be counted toward the threshold amount, if the debris caused by the disjoining operation is cleaned up so that it does not contaminate a

greater length of pipe. If the generated AC pipe debris is not properly cleaned up, however, then the AC pipe shall be considered contaminated and the whole length is treated as ACM. If the scope of this project involves the threshold amount (260 linear feet or greater), then a Demolition/Renovation Notification Form shall be sent to TDH by the Contractor. This form shall be post-marked no later than 11 working days prior to the start of any asbestos disturbance.

 All AC pipe projects require that NESHAP and OSHA guidelines be met and/or exceeded in areas where AC pipe is to be disturbed. Therefore, all AC pipe disturbances require a third party TDH licensed Asbestos Consultant and Asbestos Contractor on-site during AC pipe disturbance. An asbestos abatement work plan shall be provided to the Owner’s Representative by both the licensed Asbestos Consultant and the Asbestos Contractor. Upon completion of the AC pipe project, an air monitoring abatement report shall be prepared by the Contractor’s Asbestos Consultant. Copies of the final abatement report shall be submitted to the Owner’s Representative by the Contractor’s consultant. During any ACM disturbance, OSHA requires that, regardless of amount, the asbestos worker(s) be properly protected during potential asbestos exposure, 29 CFR, Subpart *Z,* 1910.1101.

 The Contractor shall 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 shall 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 shall address the requirements of these specifications.

*3.1.6.5* A sufficient supply of disposable rags for work area decontamination shall be available.

*3.1.6.6* Disposal bags for RACM shall be of true 6-mil polyethylene, 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).

*3.1.6.7* Stick-on labels identifying the Generator’s name 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.

*3.1.6.8 Work Area Preparation:*

The Contractor shall 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 from the work area to permit an employee to read the sign and to take the necessary protective measures to avoid exposure. The

Contractor shall maintain constant security against unauthorized entry past warning signs and barrier tape. Signs shall be post in both English and Spanish at the site.

*3.1.6.9 Personnel Exit Procedures*

* 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.
* Upon completion of the work, contaminated gloves shall be disposed as ACWM. Disposable cloth gloves may be substituted for leather gloves, at the Contractor’s discretion. Rubber boots shall be decontaminated at the completion of the project.

*3.1.6.10* Specific Removal Work Practice Requirements

* The Contractor has sole and primary responsibility for the “means and/or methods” of the work, for inspection of the work at all stages, and for supervision of the performance of the work.
* The Contractor shall isolate the regulated area with barrier tape and asbestos warning signs.
* The Contractor shall lay and secure 6-mil polyethylene sheeting on the ground on both sides of the AC pipe for the length of the work area.
* Working within the regulated area and 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 lock-down 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 to lockdown possible fallout debris from edges and joints during removal. Continuous wetting of the materials throughout the entire removal process shall be provided. The Contractor shall take care to limit the breakage of ACM and to remove these materials as intact as possible.
* Any AC pipe debris on adjacent surfaces shall be removed. The Contractor shall promptly clean up asbestos wastes and debris following AC pipe disturbance. All visible accumulations of ACM and asbestos contaminated debris shall be removed and containerized by hand. Asbestos debris mixed with soil shall be picked up with shovels. The contaminated soil shall be containerized as a regulated ACWM. 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 regulated ACWM.

* After disturbance and clean-up activities but 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.
* The Contractor shall then 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 shall not be made “friable” (crumbled, pulverized, or reduced to a powder). The Contractor shall not drop, break and/or otherwise make the AC pipe susceptible to releasing asbestos fibers. If these procedures are followed and debris is cleaned up properly, then the Category II non-friable AC pipe shall be disposed as non-regulated ACM.
* Pieces of AC pipe debris shall be handled as RACM waste. The debris shall be placed in two 6-mil asbestos bags or double wrapped, with proper labeling.

*3.1.6.11* Abandonment of AC water mains/pipes: The Contractor shall be 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 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 shall be considered subsidiary to the required work and no direct payment shall be made.

*3.1.6.12* 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 8-inches of the street surface. The remaining 8-inches 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 DWU. The abandonment of valves containing ACM shall be considered subsidiary to the required work and no direct payment shall be made.

*3.1.6.13* 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 AC pipe dust and debris.

*3.1.6.14 Disposal Procedures*

* If a dumpster/trailer is used for temporary storage, it shall be secured and closed at all times except when loading. It shall be properly marked and critical barrier tape shall be in place.
* AC pipe debris and asbestos-contaminated items shall be properly double bagged; labeled; loaded in a fully enclosed, lined, locked, placard-identified transport container; transported; and disposed in compliance with all regulatory requirements as RACM.
* After being removed from the regulated area, Category II non-friable AC pipe shall be transferred to a polyethylene-lined container. The Contractor shall remove all containers as soon as practical, but no later than the end of the work shift.
* When a dumpsters/trailer is full, it shall be hauled away to the closest EPA approved landfill for proper disposal. The Contractor may dispose of Category II non-friable AC pipe waste material as non-regulated waste in a municipal solid waste landfill, as defined in the NESHAP and TCEQRule (Type I Landfill). Prior to disposal, written approval to transport and to accept the Category II non-friable material shall be obtained from a pre-approved transporter and landfill, and shall be submitted to the Owner’s Representative.
* The Contractor shall submit copies of all transport manifests, trip tickets, and disposal receipts for all ACWM removed from the work area during the project to the Owner’s Representative. The Contractor shall sign manifests as the generator of the AC pipe and provide copies to Owner’s Representative for final payment.

**Part 5: METHOD OF MEASUREMENT AND PAYMENT**

Method of Measurement and Payment for the work included in this section will be in accordance with the payment schedule in the Bid Proposal.

**\*\*END OF SECTION\*\***