



**SAN ANTONIO WATER SYSTEM  
BASIN PUMP STATION IMPROVEMENTS PROJECT  
PHASE 1  
SAWS Job No. 12-6001  
Solicitation No. B-13-017-DD**

**ADDENDUM NO. 1**

**April 19, 2013**

**PROPOSAL OPENING DATE: May 6, 2013**

**2:00 p.m. Central Standard Time**

**Consulting Engineer: CP&Y, Inc.**

**TBPE Registration No. F-1741**

**To: All Document Holders of Record**

This addendum, applicable to work referenced above, forms a part of the Contract Documents and modifies the original Contract Documents dated April 2013. Acknowledge receipt of this addendum by entering the addendum number and issue date in the spaces provided on submitted copies of the proposals. Failure to do so may subject Respondent to disqualification.

Addendum No. 1 consists of 22 items outlined in 6 pages. In addition to these 6 pages, Addendum No. 1 includes 2 re-issued specifications, Sections 02503 and 02504 and includes 4 re-issued sheets, Drawings E-4, E-46, E-48 and E-51.



## **ADDENDUM NO. 1**

### **A. GENERAL QUESTIONS/CLARIFICATIONS**

1. Question: I recently received the opportunity to quote the motors on the above listed project. I am writing to determine if the request for TEFC enclosures is correct. In the past US Motors have supplied numerous motors to SAWS and all have been WPII enclosures. WPII are considerably less expensive and will work in this application.

Response: SAWS has requested the use of TEFC Motors for this project.

2. Question: Medium Voltage Motor Control Center Specification 16428 Article 2.07.M Calls for a Bitronics Meter. Can we provide in lieu of the Bitronics a Square D PM820 Meter with a 4-20MA Output?

Response: A Square D PM820 Meter with 4-20mA output is an acceptable substitution for the Bitronics ammeter.

3. Question: Distribution Transformer Specification 16461 Article 2.06.A calls for MANUFACTURER's standard finish, ANSI 61 light gray color. Can we provide these Transformers in ANSI 49 Grey Paint in lieu of ANSI 61?

Response: ANSI 49 Gray paint is acceptable in lieu of ANSI 61 light gray.

4. Question: Drawing E-4 shows Paneboard 'A' with a 300A Tie Breaker, but on Drawing E-46 Power Panel 'A' Schedule does not show this 300A Breaker. Should the 300A Tie Break be increased to 400A to be in line with the other mains?

Response: No change is warranted. Leave as shown.

5. Question: Drawing E-48 POWER PANEL 'C' has a 200A Main Breaker, but shows a Future 250A Feeder which exceeds the Main Breaker Ampacity main breaker should be larger than the feeder breaker?

Response: The feeder breaker has been deleted. Refer to attached Drawing E-48.

### **B. SPECIFICATIONS**

#### **6. TABLE OF CONTENTS**

- a. Page i of the Table of Contents, add the following standard specification to the bottom of the page:

“SAWS CONSTRUCTION SPECIFICATION 902, SAFETY & HEALTH PROGRAM (Latest Edition)”

- b. Page iii, under Division 3 – Concrete, remove the specification section titled “03000 - Special Specifications for Handling Asbestos Containing Electrical Conduit.....1-15” from the table of contents.
7. SECTION 01300: SUBMITTALS
- a. Page 01300-5, Paragraph 1.03, C. 2., revise the words from “twenty (2)” and change to “twenty (20)”.
8. SECTION 01370: SCHEDULE OF VALUES
- a. Page 01370-2, Paragraph 3.01, D., revise the words in the second sentence from “five (5)” and change to “ten (10)”.
9. SECTION 01500: CONSTRUCTION FACILITIES AND TEMPORARY CONTROL
- a. Page 01500-5, Paragraph 1.08, A., revise the words “Corporate Security Solutions (CSS)” to “US Security Associates”.
10. SECTION 02503: LEAD PAINT REMOVAL
- a. Remove Section 02503 in its entirety and replace with the attached Section 02503.
11. SECTION 02504: ASBESTOS CONTAINING MATERIAL REMOVAL
- a. Remove Section 02504 in its entirety and replace with the attached Section 02504.
12. SECTION 03000: SPECIAL SPECIFICATIONS FOR HANDLING ASBESTOS CONTAINING ELECTRICAL CONDUIT
- a. Remove Section 03000 in its entirety. This section has been deleted.
13. SECTION 09900: PAINTING
- a. Page 09900-1, remove Paragraph 1.01, A. in its entirety and replace with the following:
    - “A. This section provides requirements for furnishing labor, materials and equipment to prepare surfaces and to apply protective coatings to new equipment, pumps, piping and valves, structural steel, masonry and concrete, and miscellaneous items. Protective coatings to existing equipment, pumps, piping and valves, structural steel, masonry, concrete, and miscellaneous items are limited to those items identified in the Contract Drawings and/or the following:
      - 1. Exposed pump station piping in the basement ranging from 1/4” to 54”,
        - a. Small diameter sump pump piping,
        - b. Small diameter waterline and Chemical Water Supply Piping,
        - c. Small diameter process water lines (related to instrumentation and metering),
        - d. Small diameter eyewash piping,
        - e. All process water piping and pipe supports,
      - 2. Existing high service pumps, piping, baseplates, proposed steel motor supports (for high service induction motors),
      - 3. Exposed structural steel at the north and south stair cases into the basement,
      - 4. Sump Pit Cover,

- 5. Existing Concrete ceiling and walls in the basement and
  - 6. Above grade 54" steel pipeline located outside in the yard."
- b. Page 09900-1, add Paragraph 1.01, C. with the following:  
"C. Lead and chromate-base coatings containing lead, chromates and/or hazardous waste chemicals shall not be used."
  - c. Page 09900-3, remove Paragraph 1.07, B. in its entirety and replace with the following:  
"B. Where applicable, CONTRACTOR shall provide head and face protection and/or respiratory devices for all persons in the vicinity of work in accordance with the requirements established in OSHA Standards and SAWS Specification 902 Safety and Health Program. Prior to work, CONTRACTOR shall provide a Safety and Health Plan in accordance with SAWS Specification 902."
  - d. Page 09900-4, remove Paragraph 1.07, D. in its entirety and replace with the following:  
"D. Whenever the occupational sound levels exceed the OSHA Standard 29 CFR 1926.52, the CONTRACTOR shall implement exposure control measures that protect employee hearing against the affects from these sound levels. One such control measure can be the use of hearing protective devices."
  - e. Page 09900-4, add Paragraph 1.08, B. with the following:  
"B. Conform to code 29 CFR 1910.1200 for Hazard Communication."
  - f. Page 09900-4, Paragraph 2.01, B., at the end of the first sentence after the words "...shall be shop painted" insert the following words ", unless specified otherwise".
  - g. Page 09900-4, remove Paragraph 2.01, C. in its entirety and replace with the following:  
"C. Moving Parts and Guards.
    - 1. Do not paint moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sensing devices, motor, fan shafts, etc.
    - 2. CONTRACTOR shall coordinate with OWNER on color selection prior to painting guards or shields."
  - h. page 09900-18, Paragraph 3.06, A. 1., replace the word "-approved" with the word "-compliant".

14. SECTION 16406: AC INDUCTION MOTORS – 500 HP TO 900

- a. Page 16406-8, add Paragraph 2.20, B. 1. with the following:  
"1. CONTRACTOR shall coordinate with Motor Manufacturer and/or Pump Company Representative to provide a laser alignment between the motor shaft and pump shaft. The alignment of the motor shaft and pump shaft shall be accurate within 0.001 inch."

15. SECTION 17300: INSTRUMENTATION – GENERAL PROVISIONS

- a. Page 17300-7, Paragraph 1.05, D., revise the words from “The PCSI shall be one of the following:” and change to “Recommended PCSI Providers:”.
- b. Page 17300-7, add Paragraph 1.05, D. 4. with the following:  
“4. Other”
- c. Page 17300-8, Paragraph 1.06, D., revise the words from “The ASP shall be:” and change to “Recommended ASP Providers:”.
- d. Page 17300-9, add Paragraph 1.06, D. 4. with the following:  
“4. Other”

16. SECTION 17400: INSTRUMENTATION – GENERAL PROVISIONS

- a. Page 17400-6, Paragraph 2.05, revise the pump Tag Nos. from “FI010, FI020, FI030, FI040, FI050, & FI060” and change to “HSP-1, HSP-2, HSP-3, HSP-4, HSP-5 & HSP-6”.

**C. DRAWINGS**

17. DRAWING NO. G-4

- a. Add General Note No. 26 with the following:  
“26. THE WORDS DEMOLITION AND DEMOLISH IN THIS CONTRACT REFER TO ITEMS THAT WILL BE REMOVED AND PROPERLY DISPOSED OF FROM THE CONSTRUCTION SITE. NO ITEMS MARKED DEMOLITION OR DEMOLISH SHALL BE GROUND, CRUSHED OR PULVERIZED. ITEMS LABELED TO BE DEMOLISHED SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND LOCAL, STATE AND FEDERAL REGULATIONS AND GUIDELINES.”

18. DRAWING NO. E-1

- a. Add the following note:  
“10. NEW LOW VOLTAGE CABLE SHALL BE ADDED FROM THE PROPOSED LEVEL CONTROL PANEL LOCATED IN THE PUMP BUILDING ELECTRICAL ROOM TO THE GROUND STORAGE TANK USING EXISTING UNDERGROUND CONDUIT AND PROPOSED 1-1/2” CONDUIT INSIDE OF PUMP BUILDING AS FOLLOWS:  
19-1/C #10 THWN  
1-1/C #10 GND”

19. DRAWING NO. E-4

- a. Delete this drawing in its entirety and replace with the attached drawing E-4.

20. DRAWING NO. E-46

a. Delete this drawing in its entirety and replace with the attached drawing E-46.

21. DRAWING NO. E-48

a. Delete this drawing in its entirety and replace with the attached drawing E-48.

22. DRAWING NO. E-51

a. Delete this drawing in its entirety and replace with the attached drawing E-51.

**ACKNOWLEDGEMENT BY RESPONDENT**

Each respondent is requested to acknowledge receipt of this Addendum No. 1 by his/her signature affixed hereto and to file same with and attached to his/her proposal.

The Undersigned acknowledges receipt of this Addendum No. 1 and the proposal submitted herewith is in accordance with the information and stipulation set forth.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Respondent

END OF ADDENDUM



## SECTION 02503

### LEAD PAINT REMOVAL

#### **PART 1 - GENERAL**

##### 1.01 DESCRIPTION OF WORK

- A. Perform all planning, administration, execution, and cleaning necessary to safely remove and dispose of designated materials with lead-containing paint (LCP) listed in Section 1.05.
- B. Perform all planning, administration, execution, and cleaning necessary to safely remove and dispose of designated materials with lead-containing paint (LCP). Paragraph 1.03 lists items and equipment that contain LCP's. Refer to Specification Section 09900 – Painting for the location of surface to be coated and the associated surface preparation methods. Surface preparation and LCP disposal shall be in accordance with SAWS's Construction Specifications, the Society for Protective Coatings (SSPC) Standards and the contract documents."
- C. All work related to removal of LCP materials will be performed during work hours and days to be determined by the San Antonio Water System.

##### 1.02 RELATED WORK

- A. Section 09900 - Painting

##### 1.03 WORK INCLUDED

- A. The CONTRACTOR is responsible to visit the Work Areas and verify the quantity and extent of work related to LCP materials prior to submitting a price bid to perform the work or executing any work.
- B. Coordinate and schedule all work with the appropriate OWNER representative to avoid disruption to other site activities.
- C. All work is required to comply with applicable regulatory requirements even if not specifically stated or identified in the scope of work.
- D. A summary of the components which contained detectable concentrations of LCP are identified in Table 1.03. These components can be marked for CONTRACTOR identification purposes onsite.

Table 1.03 Components with detectable concentrations of LCP

<b>COMPONENT</b>	<b>LOCATION</b>	<b>COATING COLOR</b>	<b>COATING SUBSTRATE</b>
Pump	Pump Level	Dark Green	Metal
Hoist Frame	Pump Level	Green	Metal

COMPONENT	LOCATION	COATING COLOR	COATING SUBSTRATE
Hoist Frame	Pump Level	Beige	Metal
Decorative Railing	Exterior	Brown	Metal
Stair Frame	Pipe Gallery	Light Green	Metal
Stair Handrail	Pipe Gallery	Light Green	Metal
Inlet Pump	Pipe Gallery	Green	Metal
Outlet Pump	Pipe Gallery	Green	Metal
Inlet Line	Pipe Gallery	Green	Metal
Outlet Line	Pipe Gallery	Green	Metal
Motor	Pump Level	Light Green	Metal
Motor Baseplate	Pump Level	Dark Green	Metal
Wall	Pump Level	White	Ceramic
Wall Louver	Pump Level	Green	Metal
A/C Floor Duct	Pump Level	Green	Metal
Crane Frame	Pump Level	Beige	Metal
Ledge	Pump Level	Light Green	Concrete
Wall Louver	Pump Level	Silver	Metal
Down Spout	Exterior	Brown	Metal
Handrail	Exterior	Brown	Metal
Door	Exterior	Brown	Metal
Column	Pipe Gallery	Green	Metal
Door	Office	Green	Metal

#### 1.04 DEFINITIONS

The following definitions pertain to the Work of these Contract Documents.

1. **Abatement** – measures designed to permanently remove LCP.



2. **Air monitoring** - the process of measuring the lead content of a specific volume of air during a stated period of time.
3. **Adequately wet** – sufficiently mix or penetrate with liquid to prevent the release of particulates. If visible emissions are observed coming from the work operations, then that material has not been adequately wetted.
4. **Airlock** - system for permitting ingress or egress of personnel without permitting air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways at least 3 feet apart.
5. **Amended water** - water to which a surfactant has been added.
6. **ANSI** - American National Standards Institute.
7. **ENGINEER** – OWNER'S on-site representative for monitoring CONTRACTOR's work for compliance with removal specifications.
8. **ASTM** - American Society for Testing and Materials.
9. **Biological monitoring** - The analysis of a person's blood and/or urine to determine the lead levels in the body
10. **Clean room** - an uncontaminated area or room which is part of the worker decontamination enclosure system, with provisions for storage of workers' street clothes and protective equipment. Also known as the "Change Room".
11. **Cleaning solution** - Solution which contains at least one ounce of 5 percent TSP detergent to each gallon of hot water or according to the manufacturer's recommendations.
12. **Critical barrier** - Seal applied to openings connecting the abatement work area with adjacent spaces that will not be included in the work area(s). Critical barriers shall not be exposed to the gross removal environment. Examples of openings requiring critical barriers include, but are not limited to: HVAC vents and diffusers; doorways; windows; floor, wall, and ceiling penetrations; and air plenums.
13. **Curtained doorway** - a device to allow ingress or egress from one room to another while minimizing air movement between the rooms. Two curtained doorways spaced a minimum of 3 feet apart from an airlock.
14. **Decontamination enclosure system** - a series of connected rooms, with curtained doorways between any two adjacent rooms, for the decontamination of workers or of materials and equipment. A worker decontamination enclosure system always contains at least five airlocks (rooms). An equipment decontamination system always contains at least three airlocks (rooms).
15. **EPA** - United States Environmental Protection Agency.
16. **Fixed object (immoveable object)** - a unit of equipment or furniture in the work area which cannot be removed from the work area.
17. **Grinding** – to reduce to powder or small fragments and includes mechanical chipping or drilling.
18. **HEPA filter** - a High Efficiency Particulate Air (HEPA) filter capable of trapping and retaining 99.97 percent of particulates greater than 0.3 microns in length.
19. **HEPA vacuum equipment** - vacuuming equipment equipped with a HEPA-filtration system.
20. **HVAC** – Heating Ventilation and Air Conditioning (HVAC).
21. **Landfill**- a Texas state approved and licensed facility for disposal of lead-containing materials.
22. **Lead abatement project** - any work performed to permanently eliminate LCP hazards.
23. **Lead-containing paint (LCP)** - any paint, plaster, wood, metal, or other surface coating material containing more 0.00 milligrams per square centimeter (mg/cm<sup>2</sup>), as determined by X-ray fluorescence analysis.

24. **Leak-tight**- solids and liquids cannot escape or spill out. It also means dust-tight.
25. **Moveable object** - a unit of equipment or furniture in the work area which can be removed from the work area.
26. **MSHA** - Mine Safety and Health Administration.
27. **NEC** - National Electrical Code.
28. **NESHAP** - National Emission Standards for Hazardous Air Pollutants.
29. **NIOSH** - National Institute for Occupational Safety and Health.
30. **OSHA** - Occupational Safety and Health Administration.
31. **Plastic sheeting** - plastic sheet material of specified thickness used for protection of walls, floors, etc., and used to seal openings into the work area.
32. **Removal** - the act of removing LCP or lead-contaminated materials from the structure under properly controlled conditions to a suitable disposal site.
33. **Shower room** - a room constituting an airlock, between the clean room and the equipment room in the worker decontamination enclosure system, with hot and cold or warm running water suitably arranged for complete showering during decontamination.
34. **Surfactant** - a chemical wetting agent added to water to improve penetrating ability, thus controlling dust that could become airborne.
35. **TCLP** - EPA Toxic Characteristic Leaching Procedure (TCLP) for determining toxicity characteristics of waste materials.
36. **Wet cleaning** - the process of eliminating lead contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with amended water or TSP, disposing of these cleaning tools as contaminated waste.
37. **Work area** – regulated area or areas of Project that undergo abatement or are contaminated under controlled, limited access.
38. **Worker decontamination enclosure system** - a decontamination enclosure system for workers, typically consisting of a clean room, an airlock, a shower room, an airlock, and an equipment room.
39. **Visible emissions** – any emissions which are visually detectable without the aid of instruments, coming from the work operations.

#### 1.05 QUALIFICATIONS FOR PERFORMANCE OF WORK

- A. CONTRACTOR (or subcontractor) engaged to perform the Work of this Section shall have a record of not less than three years successful experience in LCP removal and related work similar in scope and magnitude to this Project.
- B. Maintain on site a Supervisor from the CONTRACTOR's work force. Supervisor must be approved by OWNER prior to the start of the Work of this Section and shall not be changed without prior approval from OWNER.
- C. Use only trained and experienced LCP removal workers to perform the Work in this Section.

#### 1.06 WORKSITE CONDITIONS

Worker and Visitor Procedures: The CONTRACTOR is hereby advised that the U.S. Government has determined lead (Pb) to be a HIGHLY TOXIC METAL, producing a range of adverse health effects. Provide workers and authorized visitors including representatives of the OWNER, Consultant and Testing Laboratory with respirators,

which, as a minimum, meet the requirements of OSHA 29 CFR 1910.134, and appropriate protective clothing during all phases of the Work and until final observations and/or testing is completed.

1.07 PERSONNEL PROTECTION

- A. Comply with all the regulatory requirements for lead work in accordance with OSHA 29 CFR 1926.62 and all applicable federal, state and local regulations, and/or the Contract Documents, whichever is more stringent.
- B. Monitor personnel exposure to lead.
  - a. Conduct Biological Monitoring. CONTRACTOR must ensure that biological monitoring of lead abatement employees is performed in accordance with the requirements of OSHA 29 CFR 1926.62 prior to commencement and after completion of lead abatement work.
  - b. The CONTRACTOR shall be solely responsible for medical surveillance and record keeping. Remove all workers from a work area if his/her blood lead level exceeds OSHA 29 CFR 1926.62 allowable blood levels.
- C. Prior to commencement of work, instruct all workers in the appropriate procedures for personnel protection and lead removal. Ensure that workers are knowledgeable in these procedures.
- D. Acknowledge and agree to sole responsibility for enforcing worker protection requirements at least equal to those specified in this Section.
- E. Provide workers with personally issued and marked respiratory equipment approved by NIOSH and MSHA for the type of work being performed.
- F. Where respirators with disposable filters are used, provide sufficient filters for replacement as necessary.
- G. Provide respiratory protection and protective clothing that meets the requirements of OSHA 29 CFR 1926.62 and ensure compliance with all OSHA requirements. CONTRACTOR will specify the respiratory protection and protective clothing that will be used for each method of lead abatement, including component removal, waste handling, paint scraping, chemical stripping, and media blasting in his/her site Health and Safety Plan. CONTRACTOR'S Health and Safety Plan will also include lead removal decontamination and work procedures to be followed by workers, which will also be posted in appropriately designated common areas.
- H. Be solely responsible for scheduling necessary air sampling for compliance monitoring of own respiratory protection with OSHA regulations. Pay for all costs associated with such testing. In addition, submit copies of personal air monitoring results to ENGINEER daily.
- I. Permit no visitors, except for governmental inspectors having jurisdiction, or as authorized by ENGINEER or OWNER, in the work areas after commencement of lead disturbance or removal.

## 1.08 REFERENCES

CONTRACTOR acknowledges awareness and familiarity with the contents and requirements of the following regulations, codes, standards, and guidance documents. CONTRACTOR assumes responsibility for the performance of the work in strict compliance with these documents and for every instance of failure to comply with these documents. The current issue of each document shall govern. Where conflict exists between these documents and the Contract Documents, the more stringent requirements shall apply.

1. Environmental Protection Agency (EPA) Regulations: Regulations Identifying Hazardous Waste (40CFR 261); Regulations for Hazardous Waste Generators (40CFR 262); Regulations for Hazardous Waste Transporters (40CFR 263).
2. Occupational Safety and Health Administration (OSHA) Regulations: Respiratory Protection Standard (29CFR 1910.134); General Industry Standards for Lead (29CFR 1910.1025) and Lead Exposure Construction (29 CFR 1926.62); Hazard Communication Program (29CFR 1926.59); Construction Industry Standards for Lead (29CFR 1926.62)
3. U.S. Department of Transportation (DOT) Hazardous Material Regulations (49CFR 171-179).
4. EPA Resource and Recovery Act (RCRA).
5. National Institute for Occupational Safety and Health (NIOSH) Occupational Health Guidelines for Chemical Hazards (NIOSH 81-123).
6. American National Standard Institute (ANSI) Publication on Practices for Respiratory Protection (Z88.2-80).
7. All federal, state, county, and city codes and ordinances as applicable. Make available for review at the site one copy of EPA, OSHA, and applicable state, county and city regulations governing the Work.

## 1.09 SUBMITTALS

- A. Pre-Job Submittals – Provide the following submittals at least one week in advance of anticipated start of work and obtain approval prior to proceeding with any of the work. Provide weekly updated submittal information where prior submittal information has been revised, updated or superseded.
1. Copy of insurance certificate issued and transmitted to OWNER by CONTRACTOR's insurance carrier listing all coverage and listing the requested parties, identified by the OWNER, as additional insured.
  2. Proof of project experience as described in Section 1.05.
  3. Proposed preliminary progress schedule for the Work. Identify proposed manpower loading for the Work.
  4. Component removal work procedures or practices to be utilized on the project. This will include methods for cutting metals and other materials. Torch cutting of metals with lead-containing paint is prohibited without first removing paint from areas to be torch cut; include methods for removing and disposing of such paint wastes. Provide a written description of work practices intended for use on this project for removal of paint from components in place. Include information about the placement of personnel decontamination facilities and procedures and collection and disposal of liquid wastes. Address personal protective equipment requirements and use in the CONTRACTOR'S site Health and Safety Plan.
  5. Personnel submittals.

- a. General certifications from CONTRACTOR.
    - i. Written certification that each and every worker involved with lead removal to be utilized on the project by CONTRACTOR or subcontractor is actively involved in a medical surveillance and respiratory protection plan in accordance with OSHA and other regulatory requirements.
    - ii. Written certification that each and every employee involved with lead removal to be utilized on the project by CONTRACTOR or sub-contractor has had instruction on the hazards of lead exposure, protective dress, and on all aspects of work procedures and protective measures regarding lead removal in an EPA approved course, as required by state and federal laws and regulations.
  - b. Personnel listings
    - i. Provide project directory of CONTRACTOR and sub-contractors key personnel (supervisors, foremen and any additional project managers) including names, work and home phone numbers, and pager numbers.
    - ii. Listing of supervisory personnel (including foremen) and their experience, qualifications and training.
    - iii. Alphabetical listing of workers to be utilized on project.
6. Manufacturer's Data
    - a. CONTRACTOR shall provide data naming the manufacturer of respirator equipment and showing compliance with OSHA, MSHA, EPA, and all other pertinent regulatory agencies. Include the rated capacity of each type of equipment used.
    - b. Listing of all chemicals and materials proposed for use on the project.
    - c. Manufacturer's specifications for vacuum equipment, and respiratory protection equipment, as well as any special tools or safety equipment to be utilized on this project.
    - d. Any special equipment, techniques, etc., proposed for use on this Project, including pressure washing, vacuum systems, and mechanical removal systems.
  7. Written Hazard Communication Program issued to the OWNER, per OSHA Hazardous Communication Standards (29 CFR 1910.1200). Include material safety data sheets (MSDS) for all materials.
  8. Specimen copy of the Uniform Hazardous Waste Manifest (EPA Form 8700 - Rev. 3-5) with the appropriate information completed and a transportation log, including but not limited to, documenting specific manifest number, date, time of day, and amount of waste material transported from the work area to the proposed waste dump site.
  9. Identify arrangements for transport and disposal of lead-containing or contaminated materials. Include name, address, telephone number and copy of DSHS license of transporter and type of container to be used for transport.
  10. Identify the state registered landfill disposal site which is proposed for use in disposing of the lead-containing waste generated by the work. Include name of OWNER/operator, address and telephone number. Submit certification that disposal site to be used meets all EPA and TCEQ regulatory standards.
  11. Site Health and Safety Plan that addresses all phases of lead paint abatement work and personal protective equipment that will be used.
  12. Submit updated or revised Pre-Job Submittals as the work progresses.

## B. Post-Job Submittals

1. An alphabetical listing of each employee used on the Project, and the exact dates on which present in the Work Areas.
2. A copy of employee monitoring test results relative to OSHA on respiratory protection level compliance for employees, subcontractors and visitors.
3. Written report listing all accidents, reportable and/or lost time, which occurred during the Work, identifying personnel and specific details of accident. If no accidents occurred, then submit a letter to that effect. In addition, submit copy of safety meeting minutes.
4. Properly completed copies of the Uniform Hazardous Waste Manifest (EPA Form 8700 - Rev. 3-5) with the appropriate information completed from the landfill, documenting the disposal of the lead-containing/contaminated waste material.
5. Documentation of all completed lead removal activity. This documentation shall include diagrams identifying all areas where lead paint was removed and the approximate quantity, and areas where lead paint was left in place. Include a written justification for not removing materials included in the scope of work. This documentation shall be submitted in hard copy and in portable document format (PDF).

## PART 2 PRODUCTS

### 2.01 MATERIALS

- A. **Chemical Stripping Agents** - Shall be commercially available products specifically intended for LCP removal compatible with the substrate material. Provide incidental products, such as neutralizers, as required by manufacturer's instructions and recommendations. All strippers must have a flash point greater than 140 degrees Fahrenheit. Acceptable products include the following:
  - a. Peel Away Series manufactured by Dumond Chemicals
  - b. Piranha I and II manufactured by Fiberlock Technologies, Inc.
  - c. A substitute approved by the OWNER/ENGINEER.
- B. **Media blasting agents** – shall be approved in advance of use by OWNER.
- C. **Cleaning Solution and Priming** - Provide cleaning and priming products in accordance with the manufacturers' recommendations for the chemical stripping agents and encapsulation materials used. Cleaning solution shall be, at a minimum, a mixture of at least one ounce of 5 percent TSP detergent to each gallon of hot water or per manufacturer's instructions.
- D. **Impermeable Containers** - Shall be suitable to receive and retain lead-containing or contaminated materials resulting from chemical stripping or media blasting until disposal at an approved site and shall be labeled in accordance with U.S. DOT 49CFR 171-179. Containers shall be both air and water tight. As a minimum, utilize one of the following types of impermeable containers:
  - a. All lead-containing waste (LCP debris) generated as a result of chemical stripping or media blasting work activities shall be placed in 6-mil, plastic bags. The bagged waste shall then be placed in sealed DOT 17C open top 55 gallon drums lined with 6-mil plastic bags sized to fit within each drum.
  - b. All lead-contaminated disposable items used in the course of the work (rags, sorbents, protective clothing, plastic sheeting, etc.) shall be placed in 6-mil, plastic

bags. The bagged waste shall then be placed in sealed DOT 17C open top 55 gallon drums lined with 6-mil plastic bags sized to fit within each drum. CONTRACTOR shall not place lead-containing waste in the same drum as the items described in this paragraph.

c. All liquids generated as a result of clean-up activities shall be disposed of in DOT 17E closed top drums.

E. **Plastic sheeting** - thickness shall be minimum 6-mil or greater, in sizes to minimize the frequency of joints. Use of "spray-on poly" is not permitted without OWNER'S approval.

F. **TSP** - trisodium phosphate.

G. **Tape** - glass fiber or other tape capable of sealing joints of adjacent sheets of plastic and for attachment of plastic sheet to finished or unfinished surfaces under both dry and wet conditions.

H. **Warning labels and signs** - Shall be as required by OSHA regulation 29CFR 1926.62 and U.S. DOT 49CFR 171-179 (for impermeable containers).

I. **Other materials** - provide all other materials, such as lumber, nails and hardware, which may be required to construct and dismantle the decontamination system and the barriers that isolate the work area(s).

## 2.02 TOOLS AND EQUIPMENT

A. **Half-face respirator** - negative pressure, half-face air purifying respirators approved by NIOSH and MSHA for lead removal work.

B. **Powered air purifying respirator (PAPR)** - powered air purifying respirators (PAPRs) approved by NIOSH and MSHA for lead removal work.

C. **Media blasting hood** – a positive pressure, air supplied respirator used with a protective suit for removal of lead paint by media blasting.

D. **Transportation** - as required for loading, temporary storage, transit, and unloading of contaminated waste without exposure to persons or property. Use only enclosed or covered trucks to haul waste containers to prevent loss or damage of containers in route to the landfill.

E. **Water sprayer** - utilize airless or other low pressure sprayer for cleaning solution application.

F. **Paint rollers, brushes and accessories** for application of cleaning solutions.

## PART 3 EXECUTION

### 3.01 WORK AREA PREPARATION

- A. Contractor to retain the services of a 3<sup>rd</sup> party NACE Level 3 Inspection Certified Inspector. NACE Inspector shall be Certified Inspection Service: 210-291-1291. The NACE Inspector shall collect TCLP samples and issue finding to Owner (maximum of 5 samples). The NACE Inspector shall provide visual spot inspections of painting contractor work and report quality of work to Owner/Engineer.
- B. Coordinate sequence of work area preparation throughout the project site with OWNER and other trades to properly segregate Work Areas and waste accumulation areas from areas in which other construction is being performed.
- C. Work Area Preparation for Removal of Components with LCP. Establish the location of a waste accumulation area away from other construction site work areas. Clear the immediate area of debris, and place a minimum of two layers of 6-mil thick plastic sheeting on the ground. LCP components will be placed here as they are removed to allow access by the 3<sup>rd</sup> party NACE Level 3 Certified Inspector to collect samples for TCLP testing. It may be preferable to use a metal waste container lined with a minimum of two layers of 6-mil plastic sheeting for direct placement of components into waste container (ENGINEER, however, must have ready access to materials to collect samples for TCLP testing). Clearly label the waste accumulation area or roll-off container as containing lead wastes; warning signs shall be at least 20-inches by 14-inches and include the phrase "Caution Lead Waste, Keep Out" in bold lettering at least 2 inches high.
- D. Work Area Preparation for Chemical Stripping or Media Blasting of LCP Removal in Contained Areas.
  - a. Segregate the work area from other areas with adequate barrier tape to restrict access to only project personnel. Install lead abatement warning/caution signs placed a minimum of 25 feet away from each work area. The signs shall be at least 20-inches by 14-inches and include the phrase "Caution Lead Hazard, Keep Out" in bold lettering at least 2 inches high.
  - b. The following warning signs shall be at least 20-inches by 14-inches and shall be posted immediately outside each Work Area. The signs must be illuminated and cleaned as necessary to assure that the words are visible, and no statements shall be present on or near any sign which contradicts or detracts from the meaning of the sign.



**"WARNING  
LEAD WORK AREA  
POISON  
NO SMOKING OR EATING"**

- c. Install critical barriers consisting of 6-mil plastic sheeting to isolate the work area from the adjacent spaces including over all doorways, windows, air supply, and exhaust vents.
  - d. Maintain emergency and fire exits from the work areas, or establish alternative exits satisfactory to fire officials. Provide onsite fire extinguishers inside and outside the work area.
  - e. Remove movable objects from the work area. Maintain a minimum of four feet clear work space each direction from the work item to be abated.
  - f. Cover all furnishings, fixtures and equipment completely with a minimum of one layer of 6-mil plastic sheeting and secure to prevent contamination from abatement operations. Maintain protection throughout the abatement operations.
  - g. Secure two layers of 6-mil plastic sheeting to the floor directly adjacent to and below the painted item to be stripped or removed extending at least five feet beyond the area to be stripped or removed in each direction. Secure plastic sheeting so that the top layer of plastic can be removed during cleaning operations leaving the lower layer secured to the floor.
  - h. Provide temporary power and lighting as necessary to maintain safe work environment.
  - i. Maintain adequate ventilation in the work area continuously throughout the stripping operation.
  - j. Maintain a Sign In/Out Log near the work area to be utilized by every person, each time upon entering and leaving the work area.
  - k. Use decontamination procedures, as described here, for personnel in all work areas:
    - i. Two sets of protective disposable clothing will be worn while performing abatement activities.
    - ii. Remove the outer set of protective clothing in the work area and proceed to a designated decontamination area.
    - iii. Complete the decontamination process inside the decontamination area.
    - iv. Maintain respiratory protection throughout the decontamination process. Dispose of all used protective clothing and disposable filter cartridges as lead-contaminated waste.
  - l. Notify the ENGINEER and 3<sup>rd</sup> party NACE Level 3 Certified Inspector for observation of the completion of work area preparation prior to disturbing the LCP.
- E. Work Area Preparation for Chemical Stripping or Media Blasting of LCP Removal in Outside Areas.
- a. Segregate the work area from other areas with adequate barrier tape to restrict access to only project personnel. Install lead abatement warning/caution signs placed a minimum of 25 feet away from each work area. The signs shall be at least 20-inches by 14-inches and include the phrase "Caution Lead Hazard, Keep Out" in bold lettering at least 2 inches high.
  - b. The following warning signs shall be at least 20-inches by 14-inches and shall be posted near the immediate Work Area. The signs must be illuminated and cleaned as necessary to assure that the words are visible, and no statements

shall be present on or near any sign which contradicts or detracts from the meaning of the sign.

**"WARNING  
LEAD WORK AREA  
POISON  
NO SMOKING OR EATING"**

3. Cover the ground with two layers of 6-mil plastic sheeting in at least 5 feet in each direction under the area to be abated (not necessary for removal of paint from concrete curbing).
4. Use decontamination procedures, as described here, for personnel in all work areas:
  - i. Two sets of protective disposable clothing will be worn while performing abatement activities.
  - ii. Remove the outer set of protective clothing in the work area and proceed to a designated decontamination area.
  - iii. Complete the decontamination process inside the decontamination area.
  - iv. Maintain respiratory protection throughout the decontamination process. Dispose of all used protective clothing and disposable filter cartridges as lead-contaminated waste.

### 3.02 REMOVAL OF LEAD-CONTAINING MATERIALS

- A. Remove LCP materials in a manner to minimize the airborne release of contaminated dust, by either component removal, paint stripping, or media blasting. *Torch cutting of materials having LCP is strictly prohibited.* Removal of the LCP by paint stripping or media blasting at the cutting point prior to torch cutting is acceptable, but the LCP removed in this fashion must be handled as lead-containing waste.
- B. Removal of LCP Materials Intact with Component
  - a. Prepare work area as previously specified.
  - b. Score the paint at edges, corners, etc. to reduce chipping of paint. Carefully remove by wet scraping loose and flaking paint prior to removal of substrate as follows:
    - i. Fine mist surface with wet wash detergent or water using mist sprayer.
    - ii. Carefully scrape loose the flaking material.
    - iii. Clean up paint chips and flakes by vacuum or wet cleaning methods.
  - c. Care should be taken to avoid creating lead dust and creating damage to adjacent areas during the removal of substrates.
  - d. HEPA vacuum and wet wipe to remove all paint chips, debris and dust generated during the work. Do not allow dust or debris to accumulate.
  - e. Substrates that are removed shall be wrapped in 6-mil plastic sheeting, labeled and disposed of in accordance with TCLP waste stream testing results.
  - f. Notify the ENGINEER and 3<sup>rd</sup> party NACE Level 3 Certified Inspector for observation of the completion of the removal.
- C. Removal of LCP by Chemical Stripping.
  - a. Prepare work area as previously specified.

- b. Apply stripping agents and neutralizers in accordance with the recommendations of the manufacturer.
- c. Carefully remove the stripping agents with LCP without damage to the substrate material. Assure that all removed material is collected by the plastic sheeting.
- d. Thoroughly clean the surface from which LCP has been removed in accordance with the cleaning solution manufacturer's recommendations. Remove all lead paint and stripping residue from the substrate. Replace cleaning solutions as they become overly soiled.
- e. Place lead-containing stripper sludge waste in 6-mil, plastic bags. The bagged waste shall then be placed in sealed DOT 17C open top 55-gallon drums lined with 6-mil plastic bags sized to fit within each drum. Liquid cleaning solutions shall be placed in separate drums from the remainder of the waste stream generated.
- f. At the end of each workday, perform daily cleanup of the work area. The daily cleanup will include:
  - i. HEPA vacuum all surfaces in the work area.
  - ii. Wet-Clean all surfaces, with TSP cleaning solution, in the work area. The cleaning solution should be changed regularly according to the manufacturer's recommendations. All wastewater produced must be disposed of as lead-containing (hazardous) waste unless TCLP tests determine the waste as non-hazardous.
- g. After removal of the LCP, wet-clean all surfaces in the work area to remove residual accumulated material. Continue wet cleaning until surfaces are visibly free of material.
- h. Notify the ENGINEER for observation of the completion of cleaning. Surfaces will be considered clean when free from dust, dirt, residue, film, or discoloration resultant from stripping operations.

D. Removal of LCP by Media Blasting.

- a. Prepare work area as previously specified.
- b. Ensure air supply for media blasting hood is placed upwind from the Work Area.
- c. Proceed with media blasting, taking care to minimize the time to complete the task.
- d. Perform a general work area clean-up following procedure, removing dust and collecting it as lead-contaminated waste. Place waste in 6-mil plastic bags and then into sealed DOT 17C open top 55-gallon drums lined with 6-mil plastic bags sized to fit within each drum or place waste directly into drum.
- e. Thoroughly clean the work area.
- f. Notify the ENGINEER for observation of the completion of cleaning. Surfaces will be considered clean when free from dust, dirt, residue, film, or discoloration resultant from stripping operations.

### 3.03 CLEAN UP AND CLEARANCE

- A. After completion of the chemical stripping, CONTRACTOR shall wet clean all surfaces in the work area with a solution containing at least 1 ounce of 5 percent trisodium phosphate to each gallon of hot water.
- B. Standard of Cleaning for Final Clearance - Consider work areas and all other decontaminated and cleaned areas clean when: A visual observation of work area(s) has been performed by the ENGINEER and 3<sup>rd</sup> party NACE Level 3 Certified Inspector and that the ENGINEER and 3<sup>rd</sup> party NACE Level 3 Certified Inspector determines that the CONTRACTOR has adequately removed the LCP from the materials being abated.

- C. The 3<sup>rd</sup> party NACE Level 3 Certified Inspector will collect samples of components, chemical stripping wastes, and media blasting waste for TCLP testing (see Section 3.06 below).

### 3.04 WASTE CONTAINERIZATION AND MARKING

- A. All lead-containing waste (LCP debris) generated as a result of chemical stripping or media blasting shall be placed in 6-mil, plastic bags and then into sealed DOT 17C open top 55 gallon drums lined with 6-mil plastic bags sized to fit within each drum or the waste will be placed directly into the lined drums. These materials shall be stored sealed until disposal requirements have been determined by the ENGINEER.
- B. All lead-contaminated disposable items used in the course of the work (rags, sorbents, protective clothing, plastic sheeting, etc.) shall be placed in 6-mil, plastic bags. The bagged waste shall then be placed in sealed DOT 17C open top 55 gallon drums lined with 6-mil plastic bags sized to fit within each drum. CONTRACTOR shall not place LCP waste in the same drum as the items described in this paragraph.
- C. All liquids generated as a result of clean-up activities shall be disposed of in DOT 17E closed top drums until tested by chemical analysis to determine disposal requirements.
- D. All drums shall be permanently marked as to specific contents and dated. In addition, each drum shall be marked with the standard EPA label, shown below:

**CAUTION  
CONTAINS  
LEAD**

A toxic environmental contaminant requiring special handling and disposal in accordance with US Environmental Protection Agency Regulations 40 CFR 761 - For Disposal Information contact the nearest US EPA Office

In case of accident or spill call toll free the US Coast Guard National Response Center  
**800 424-8802**

Also Contact: Joe Isbell (SAWS)  
Tel. No.: 210-233-3613

- E. All drums containing hazardous waste shall be marked with the label (properly completed) shown below:

GENERATOR INFORMATION

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_ PHONE \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
EPA MANIFEST  
ID NO./DOCUMENT NO. \_\_\_\_\_ / \_\_\_\_\_  
ACCUMULATION \_\_\_\_\_ EPA  
START DATE \_\_\_\_\_ WASTE NO. \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
D.O.T. PROPER SHIPPING NAME AND UN OR NA NO. WITH PREFIX

**HANDLE WITH CARE!**

- F. Notify the ENGINEER and 3<sup>rd</sup> party NACE Level 3 Certified Inspector for observation of the labeling of the drum(s) prior to moving the drum(s) to the storage area.

3.05 TEMPORARY ON-SITE STORAGE

All drums shall be sealed, secured and labeled before being moved to a temporary on-site storage location designated by the OWNER. Handle drums with care during transportation between removal area and storage area.

3.06 WASTE CHARACTERIZATION AND DISPOSAL

- A. ENGINEER shall be on-site for critical juncture monitoring (i.e. waste sampling) to ensure compliance with project specifications.
- B. Lead waste materials from component removal, chemical stripping, and media blasting removal operations shall be containerized separately by type of material and TCLP tested by the ENGINEER/3<sup>rd</sup> party NACE Level 3 Certified Inspector to determine hazardous or non-hazardous toxicity characteristics prior to disposal. The CONTRACTOR and ENGINEER must agree on the waste characterization prior to disposal of the project waste.
- C. All non-hazardous waste shall be disposed as construction or special waste at a state registered construction waste landfill. Non-hazardous waste containing lead paint is defined as having a TCLP result less than 1.5 mg/l and a total lead content less than or equal to the background lead content of the receiving landfill soil. All lead waste with a TCLP greater than or equal to 1.5 mg/l must be disposed of in a facility appropriately license by the TCEQ for hazardous waste.
- D. All hazardous waste generated on this Project shall be disposed of at a registered hazardous waste disposal facility. Disposal facility to be used shall meet all Environmental Protection Agency and TCEQ regulatory standards for disposal of hazardous waste.

- E. Transportation to disposal facility shall be performed in accordance with all federal, state, and local laws and regulations.
  - a. Place sealed containers in enclosed truck, trailer or dumpster.
  - b. Transport hazardous waste using a transporter registered to transport hazardous materials.
  - c. Provide Uniform Hazardous Waste Manifest (EPA Form 8700 - Rev. 3-5) for transportation of all hazardous waste to disposal facility.
  - d. Submit copies of waste manifests from authorized representative of disposal facility for each delivery of waste material to the ENGINEER after each delivery and a complete set of copies of receipts for all deliveries. Submit on a weekly basis during the project.

END OF SECTION



## SECTION 02504

### ASBESTOS CONTAINING MATERIALS REMOVAL

#### PART 1 - GENERAL

##### 1.1 SECTION INCLUDES:

##### 1.01 DESCRIPTION

- A. Perform all planning, administration, execution, and cleaning necessary to safely remove and dispose of asbestos-containing materials (ACMs) listed in Section 1.03 and the attached drawings.
- B. Consider any other concealed materials suspected to contain asbestos encountered during the project work as ACMs and abate in accordance with this section where disturbance is required to accomplish the project work.
- C. Approval by OWNER of various construction activities or methods proposed by CONTRACTOR does not constitute an assumption of liability either by the Abatement Consultant or OWNER for inadequacy or adverse consequences of said activities or methods.
- D. All work related to disturbance of asbestos materials will be performed **during work hours and days to be determined by the San Antonio Water System (SAWS).**

##### 1.02 RELATED SECTIONS

- A. None.

##### 1.03 WORK INCLUDED

- B. The CONTRACTOR is responsible to visit the Work Areas and verify the quantities and extent of work related to the removal of the asbestos materials prior to submitting a price bid to perform the work or executing any work.
- B. Reference the attached construction plans for extent of Work Areas.
- C. Coordinate and schedule all work with the project general construction CONTRACTOR to avoid disruption to other construction and building operational activities.
- D. All work required to comply with applicable regulatory requirements, even if not specifically stated or identified in the scope of work.

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- E. A summary of the asbestos materials removal and demolition work is identified in Table 1.03.

Table 1.03 ACM Materials to be Removed:

Location	Material	Asbestos Type and Classification	Estimated Quantity
Basement	Vibration Dampener	98% Chrysotile; Friable	One dampener
Basement	White Duct Wrap	50% Chrysotile; Class II	25 linear feet on entire duct
Roof	Flashing System Material (if necessary)	2% Chrysotile; Class I	30 square feet

#### 1.04 DEFINITIONS

- A. The following definitions pertain to the Work of these Contract Documents.
1. **Abatement** – procedures to decrease or eliminate fiber release from precast, spray- or trowel-applied asbestos-containing building materials. Includes encapsulation, enclosure and removal.
  2. **ACM** – Asbestos containing material.
  3. **Adequately wet** – sufficiently mix or penetrate with liquid to prevent the release of particulates. If visible emissions are observed coming from ACM, then that material has not been adequately wetted.
  4. **Airlock** – system for permitting ingress or egress of personnel without permitting air movement between a contaminated area and a uncontaminated area, typically consisting of two curtained doorways at least 3 feet apart.
  5. **Air monitoring** – the process of measuring the fiber content of a specific volume of air during a stated period of time.
  6. **Amended water** – water to which a surfactant has been added.
  7. **ANSI** – American National Standards Institute.
  8. **APM** – OWNER'S DSHS-licensed on-site representative for monitoring abatement CONTRACTOR'S work for compliance with abatement specifications and applicable rules and regulations.
  9. **ASTM** – American Society for Testing and Materials.
  10. **Class II asbestos work** – activities involving the removal of ACM that is not thermal system insulation or surfacing material, including, but not limited to, removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.
  11. **Clean room** – an uncontaminated area or room which is part of the worker decontamination enclosure system, with provisions for storage of workers' street clothes and protective equipment. Also known as the "Change Room".
  12. **Critical barrier** – Seal applied to openings connecting the abatement area with adjacent spaces that will not be included in the containment. Critical barriers will not be exposed to the gross removal environment. Examples of openings

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- requiring critical barriers include, but are not limited to: HVAC vents and diffusers; doorways; windows; floor, wall, and ceiling penetrations; and air plenums.
13. **Curtained doorway** – a device to allow ingress or egress from one room to another while minimizing air movement between the rooms. Two curtained doorways spaced a minimum of 3 feet apart form an airlock.
  14. **Decontamination enclosure system** – a series of connected rooms, with curtained doorways between any two adjacent rooms, for the decontamination of workers or of materials and equipment. A worker decontamination enclosure system always contains at least five airlocks (rooms). An equipment decontamination system always contains at least three airlocks (rooms).
  15. **Demolition** – a means the wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of any facility.
  16. **DSHS** – Texas Department of State Health Services.
  17. **Encapsulation** – the sealing of asbestos surfaces involving application of a material (encapsulant) that will envelop or coat the fiber matrix and eliminate fiber fallout and protect against contact damage.
  18. **Enclosure** – procedures necessary to completely enclose material containing asbestos behind airtight, impermeable, permanent barriers.
  19. **EPA** – United States Environmental Protection Agency.
  20. **Equipment decontamination enclosure system** – a decontamination enclosure system for materials and equipment, typically consisting of an airlock, a washroom, and a holding area.
  21. **Equipment room** – a contaminated area or room which is part of the worker decontamination enclosure system, with provisions for storage of contaminated clothing and equipment.
  22. **Fixed object (immoveable object)** – a unit of equipment or furniture in the Work Area which cannot be removed from the Work Area.
  23. **Glove-bag** – A 6 to 12-mil plastic bag fitted with long-sleeved gloves, a tool pouch and an opening for amended water and sealant application.
  24. **HEPA filter** – a High Efficiency Particulate Absolute (HEPA) filter capable of trapping and retaining 99.97 percent of asbestos fibers greater than 0.3 microns in length.
  25. **HEPA vacuum equipment** – vacuuming equipment equipped with a HEPA-filtration system.
  26. **Holding area** – a chamber between the washroom and uncontaminated area in the equipment decontamination enclosure system. The holding area comprises an airlock.
  27. **HVAC** – Heating Ventilation and Air Conditioning (HVAC).
  28. **Landfill** – a Texas state approved and licensed facility for disposal of asbestos and ACMs.
  29. **Leak-tight** – solids and liquids cannot escape or spill out. It also means dust-tight.
  30. **Moveable object** – a unit of equipment or furniture in the Work Area which can be removed from the Work Area.
  31. **MSHA** – Mine Safety and Health Administration.
  32. **NEC** – National Electrical Code.
  33. **NESHAP** – National Emissions Standard for Hazardous Air Pollutants.

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34. **NIOSH** – National Institute for Occupational Safety and Health.
35. **OSHA** – Occupational Safety and Health Administration.
36. **Plastic sheeting** – plastic sheet material of specified thickness used for protection of walls, floors, etc., and used to seal openings into the Work Area.
37. **Regulated Work Area** – the area of actual asbestos removal with access restricted to DSHS asbestos licensees and DSHS inspectors.
38. **Removal** – the act of removing asbestos-containing or contaminated materials from the structure under properly controlled conditions to a suitable disposal site.
39. **Shower room** – a room constituting an airlock, between the clean room and the equipment room in the worker decontamination enclosure system, with hot and cold or warm running water suitably arranged for complete showering during decontamination.
40. **Surfactant** – a chemical wetting agent added to water to improve penetrating ability, thus reducing the quantity of water required to saturate ACMs.
41. **TAHPR** – Texas Asbestos Health Protection Rules.
42. **Testing Laboratory** – a DSHS licensed laboratory for performing polarized light microscopy (PLM) or transmission electron microscopy (TEM).
43. **Washroom** – a room between the Work Area and the holding area in the equipment decontamination enclosure system. The washroom comprises an air lock.
44. **Wet cleaning** – the process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with amended water, disposing of these cleaning tools as asbestos-contaminated waste.
45. **Work Area** – area or areas of Project which undergo abatement or are contaminated.
46. **Worker decontamination enclosure system** – a decontamination enclosure system for workers, typically consisting of a clean room, an airlock, a shower room, an airlock, and an equipment room.
47. **Visible emissions** – any emissions which are visually detectable without the aid of instruments, coming from asbestos-waste material or construction debris.

#### 1.05 QUALIFICATIONS FOR PERFORMANCE OF WORK

- A. CONTRACTOR (or subcontractor) must be appropriately trained in accordance with EPA, NESHAP, and OSHA requirements.
- B. CONTRACTOR and worker qualifications for work is regulated by NESHAP and enforced by DSHS.
  1. For asbestos abatement work outside the buildings. Project Supervision on-site will be provided by a minimum of one Job Supervisor, to be approved by OWNER prior to the start of work, and will not be changed without prior approval of OWNER. The Job Supervisor will have completed a 40-hr asbestos competent person supervisor course in accordance with Occupational Exposure to Asbestos Final Rule, 29 CFR Parts 1910 (g)(7)(i) and (o)(4)(i) for Class II asbestos work. All removal workers must have completed an 8-hr asbestos abatement work training course for Class II

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work in accordance with Occupational Exposure to Asbestos Final Rule, 29 CFR Parts 1910 (k)(9)(iv). All other workers on site but not involved in asbestos abatement must receive asbestos awareness training.

2. For asbestos abatement work inside the building. Project Supervision on-site will be provided by a minimum of one Job Supervisor, to be approved by OWNER prior to the start of work, and will not be changed without prior approval of OWNER. The Job Supervisor, Job Foremen, Abatement Workers, and Abatement Company will be appropriately licensed by the DSHS for removal work. All other workers on site but not involved in asbestos abatement must receive asbestos awareness training.

- C. Work Area supervision will be provided by a minimum of one experienced Job Foreman for every ten asbestos removal workers or portion thereof utilized on this project. Job Foreman will remain in the Work Area at all times that work is in progress.

#### 1.06 WORKSITE CONDITIONS

- A. Worker and Procedures: CONTRACTOR is hereby advised that asbestos has been determined by the U.S. Government to be a CANCER-CAUSING AGENT. Provide workers with respirators (which, as a minimum, meet the requirements of OSHA 29CFR 1926.1101) and protective clothing during all phases of the work and until Final Air Clearance tests are accepted by APM.
- B. Visible Emissions (NESHAP work) – At no time will visible emissions be allowed during the removal of ACM. If visible emissions are created, work is to stop immediately and all ACM and construction debris is to be thoroughly wetted until emissions are no longer visible.
- C. Airborne Fiber Concentration - inside Regulated Work Area: APM (Testing Laboratory) will conduct daily air monitoring inside the Regulated Work Area to monitor the effectiveness of CONTRACTOR'S work practices during removal activities. The Testing Laboratory will document daily air sample results. The following fiber concentrations will be based on environmental air samples obtained in the Work Area:
  1. Maintain an average airborne fiber concentration inside the isolated Work Area of less than 0.1 fibers per cubic centimeter (f/cc). If the average daily fiber counts obtained from the Work Area rise above this figure, CONTRACTOR will revise work procedures to lower the fiber counts to less than 0.1 (f/cc).
  2. Upon notification by the Testing Laboratory that the average airborne fiber concentrations exceed 0.01 (f/cc) for any period of time in areas outside adjacent to the Work Area containment or Regulated Work Area, CONTRACTOR will cease work and commence cleaning of the Regulated Work Area. Work activities may not resume until Testing Laboratory performs testing to obtain a fiber concentration of 0.01 (f/cc) or less.
- D. Interior Building Spaces – All areas of interior space adjacent to the Work Area will be unoccupied and sealed off from the Work Area, and will remain unoccupied and sealed off until all ACM has been removed and transported off site to a state licensed landfill.

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## 1.07 PERSONNEL PROTECTION

- A. Prior to commencement of work, instruct all workers in the appropriate procedures for personnel protection and asbestos removal. Ensure that workers are knowledgeable in these procedures.
- B. Acknowledge and agree to sole responsibility for enforcing worker protection requirements at least equal to those specified in this Section.
- C. Provide workers with personally issued and marked respiratory equipment approved by NIOSH and MSHA for the type of work being performed. Provide respiratory protection that meets the requirements of OSHA 29 CFR 1910.134 and protective clothing that meets the requirements of 29 CFR 1910.1101. CONTRACTOR will specify the respiratory protection and protective clothing that will be used for each method of asbestos abatement in his site Health and Safety Plan.
- D. Be solely responsible for scheduling necessary air sampling by an independent testing laboratory for compliance monitoring of own respiratory protection with OSHA regulations. Pay for all costs associated with such testing.
- E. Permit no visitors, except for governmental inspectors having jurisdiction, in the Work Areas after commencement of asbestos disturbance or removal.

## 1.08 REFERENCES

- A. Acknowledge, by execution of the Contract, awareness and familiarity with the contents and requirements of the following regulations, codes, standards, and guidance documents. Assume responsibility for the performance of the Work in strict compliance with these documents and for every instance of failure to comply with these documents. The current issue of each document will govern. Where conflict exists between these documents and the Contract Documents, the more stringent requirements will apply.
  - 1. EPA Regulations for Asbestos (40CFR 61.140-61.157).
  - 2. OSHA Asbestos Regulations (29CFR 1910, 29CFR 1926).
  - 3. All federal, state, county, and city codes and ordinances as applicable. Make available for review at the site one copy of EPA, OSHA, and applicable state, county and city regulations governing the Work.

## 1.09 SUBMITTALS

- A. Pre-Job Submittals. The following items must be presented to the APM for review a minimum of one week prior to the start of work and an up-to-date copy must be maintained on-site at all times.
  - 1. DSHS CONTRACTOR License.
  - 2. DSHS Transporter License.
  - 3. DSHS license, written physician's medical opinions, worker release forms, asbestos training documentation, respirator training documentation for each employee who works on the Project.

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4. DSHS 10-working day notification (CONTRACTOR will submit original notification and subsequent amendments **at least 15 days in advance** to Owner and Owner will submit to DSHS).
5. Site Health and Safety Plan that addresses all phases of asbestos abatement work and personal protective equipment that will be used.

B. Post-Job Submittals.

1. Certificate of Completion Form issued by CONTRACTOR submitted for the building or facility designated as a portion of the project.
2. A copy of the Sign In/Out Log showing the following: date, name, social security number, entering and leaving time, company or agency represented, and reason for entry for all persons entering the Work Areas.
3. An alphabetical listing of each employee and Social Security Number used on the Project and the exact dates on which present in the Work Areas.
4. DSHS license, written physician's medical opinions, worker release forms, asbestos training documentation, respirator training documentation of all additional employees used on the Project. Requirements to match those presented in paragraph 1.4A of this Section.
5. Written report listing all accidents, reportable and/or lost time, which occurred during the Work, identifying personnel and specific details of accident. If no accidents occurred, then submit a letter to that effect. In addition, submit copy of safety meeting minutes.
6. Copy of all manufacturer's literature, procedures, and submittal information presented during the project and reviewed and returned to the CONTRACTOR by APM, including submittal review results.
7. Properly completed copies of the Uniform Hazardous Waste Manifest (EPA form 8700 (rev. 3-5)) with the appropriate information completed from the landfill, documenting the disposal of the asbestos-containing/contaminated waste material.
8. A copy of employee air monitoring results or negative exposure assessment relative to Occupational Safety and Health Administration respiratory protection level compliance.
9. Documentation of all completed asbestos abatement activity. This documentation will include diagrams identifying all areas where asbestos was removed and the approximate quantity, and areas where asbestos was left in place. Include a written justification for not removing materials included in the scope of work.
10. Copies of all DSHS notifications and amendments, if not previously submitted.

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Asbestos Containing Materials Removal

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. **Glove-bag** - Six-mil or greater thickness, in size sufficient to allow airtight seal around pipe. Separate tool pouch and openings for amended water or sealant and HEPA-vacuum must be present.
- B. **Impermeable containers** - suitable to receive and retain asbestos-containing or contaminated materials until disposal at an approved site and labeled in accordance with OSHA Regulation 29CFR 1926.1101. Containers will be both air and water tight.
- C. **Mastic remover** - Manufactured by a reputable, established manufacturer of mastic (adhesive) remover materials and approved specifically for use in asbestos-contaminated environments. Provide product compatibility for usage in confined areas. Flash Point will be greater than 140 degrees Fahrenheit as determined by ASTM D 92. Product waste will not meet the definition of hazardous waste under the EPA hazardous waste regulations 40CFR 261.
- D. **Plastic sheeting** - thicknesses as specified, in sizes to minimize the frequency of joints. Use of "spray-on poly" is not permitted without OWNER'S approval.
- E. **Sealant** (encapsulant) - manufactured by reputable, established manufacturer of encapsulant/sealant materials and approved specifically for use in asbestos-contaminated environments. Determine compatibility of the sealant with the materials and conditions.
- F. **Surfactant (wetting agent)** - mixture of "Dust-Set Amended Water Base" (Matheson Chemical Corporation) or equivalent and water, mixed to manufacturer's specifications.
- G. **Tape** - glass fiber or other type capable of sealing joints of adjacent sheets of plastic and for attachment of plastic sheet to finished or unfinished surfaces under both dry and wet conditions.
- H. **Warning labels and signs** - as required by OSHA 29CFR 1926.1101.
- I. **Other materials** - provide all other materials, such as lumber, nails and hardware, which may be required to construct and dismantle the decontamination system and the barriers that isolate the Work Area.

### 2.02 TOOLS AND EQUIPMENT

- A. Provide suitable tools for ACM removal.
  - 1. **Air purifying equipment** - HEPA Filtration Systems or Electronic Precipitators. Verify that no internal air movement system or purification equipment exhausts contaminated air from inside the Work Area into uncontaminated areas.
  - 2. **Half-face respirator** - negative pressure, half-face P100 air purifying respirators approved by NIOSH and MSHA for asbestos removal work.

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3. **Powered air purifying respirator (PAPR)** - powered air purifying respirators (PAPRs) with P100 cartridges approved by NIOSH and MSHA for asbestos removal work.
  4. **Scaffolding** - as required to accomplish the specified work and meet all applicable safety regulations.
  5. **Transportation** - as required for loading, temporary storage, transit, and unloading of contaminated waste without exposure to persons or property. Use only enclosed or covered trucks to haul waste containers to prevent loss or damage of containers in route to the landfill.
  6. **Water sprayer** - utilize airless or other low pressure sprayer for amended water application.
  7. **HEPA vacuum** – As defined in Section 1.04 of this abatement plan.
- B. The following tools are not suitable for ACM removal operations and are prohibited from the Work Area.
1. Brooms
  2. Electric powered grinders.
  3. Air Blowers

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## **PART 3 - EXECUTION**

### 3.01 PREPARATION

- A. Coordinate sequence of Work Area preparation throughout the project with SAWS and other trades to properly segregate Work Areas from other construction activities being performed. The following Work Area preparation requirements apply to all Work Areas. The on-site Asbestos Project Manager may modify these minimum Work Area isolation requirements to accommodate specific Work Area conditions.
1. Secure Work Area with adequate barriers to prevent unauthorized entry to abatement Work Areas. If required, construction barriers to be constructed using wood studs and plywood sheeting. Wood studs shall be minimum 2-inch by 4-inch studs, and plywood sheeting shall be minimum 3/8-inch thickness. Position studs no greater than 24 inches on center to provide rigid barrier construction. Barriers to be a minimum of 8 feet high.
  2. All Work Areas within the building shall be segregated from non-Work Areas with a minimum of two layers of 6-mil plastic sheeting to completely isolate the Work Areas from the remaining building areas. Install critical barriers (including over construction barrier walls) and seal all HVAC duct openings, exhaust vents, air intake vents, pipe and conduit penetrations, wall and floor openings, windows, doors and equipment within the Work Area with a minimum of two layers of 6-mil plastic sheeting.
  3. Secure Work Areas outside the building with a minimum of Asbestos Warning Barrier tape to prevent unauthorized entry to abatement Work Areas, as required. Barriers are to surround the entire Work Area. As an alternate approach, abatement operation shall be continuous or security personnel shall be present at entry to Work Area at all times to prevent unauthorized entry to abatement Work Areas.
  4. Install plywood barriers in windows or doorways used for diminished air exhaust, if required for the specific Work Area requirements. Remove upon completion of work.
  5. Flammable materials shall not be stored in the Work Area.
  6. Maintain emergency and fire exits from the Work Areas, or establish alternative exits satisfactory to fire officials. Provide fire extinguishers inside and outside the Work Area.
  7. Provide temporary power and lighting as necessary to maintain safe and comfortable work environment.
- B. Preparation of Work Area Enclosure for Removal of Vibration Dampener and Duct Wrap.
1. Segregate the work areas as described in 3.01A above.
  2. Install viewing windows in temporary construction barriers to allow observation of the work area without entry into the segregated work area.
  3. Install an airlock to allow controlled ingress and egress to the work area.
  4. Maintain a Sign In/Out Log in the immediate area of the entrance to the work area to be utilized by every person, each time upon entering and leaving the work area.
  5. Install critical barriers (including over construction barrier walls) and seal all HVAC duct openings and equipment within the work area with a minimum of two layers of

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- 6-mil plastic sheeting. Seal air handling units with a minimum of two layers of 6-mil plastic sheeting.
6. Notify the Asbestos Project Manager for observation of the critical barriers prior to pre-cleaning work area.
  7. Remove all objects from the work area as necessary to access asbestos-containing materials. Clean and dispose of as construction waste.
  8. Wet clean and HEPA-vacuum all objects remaining in the work area, including moveable objects and immovable objects, and walls and floor.
  9. Notify the Asbestos Project Manager for observation to determine completeness of cleaning prior to erecting scaffolding or applying plastic sheeting.
  10. Seal all objects remaining in the work area with a minimum of two layers of 6-mil plastic sheeting.
  11. Install two layers of 6-mil plastic sheeting over walls, floors, and ceilings. Provide at least 18 inches of overlap for wall sheeting on top of floor sheeting and minimize all seams in poly on the floors. Glue and tape to make an airtight seal. Where walls do not exist for use as a perimeter boundary, construct a framed structure with 2-inch by 4-inch wood or metal stud framing 24 inches on center to support plastic sheeting.
  12. Provide separate worker and equipment decontamination units in compliance with EPA guidelines concerning number, size and placement of airlocks, etc. Shower in worker decontamination unit to open into airlock on both contaminated and uncontaminated sides. Decontamination units are to be constructed of appropriate materials (including plastic sheeting) to provide airtight barriers and allow continuous diminished pressure to be maintained in work areas. Post OSHA decontamination procedures in Change Room for duration of Project.
  13. Trap shower waste water using filters having a maximum pore size of not larger than 1.0 micron, and drain into a sanitary sewer. Replace contaminated filters when they become clogged but not less than every third working day. Dispose of filters as contaminated waste.
  14. Place each work area under diminished air pressure utilizing HEPA filtration systems which comply with ANSI Z9.2-79, local exhaust ventilation. Allow no air movement system or air filtering equipment to discharge unfiltered air outside the work area. Maintain a diminished pressure in the work area continuously (24 hours per day) from the start of removal or disturbance of asbestos-containing material until the area is decontaminated and determined as such by the required air testing. Ensure that the air within the workspace is changed at least once every 15 minutes. Submit the proposed route of exhaust to Asbestos Project Manager prior to initiating its use.
  15. Install a manometer to monitor differential pressure inside the work area. Maintain a minimum differential pressure of 0.02 inches of water inside the work area with respect to outside the work area.
  16. Ensure that all barriers and plastic sheeting enclosures remain effectively sealed and taped for duration of abatement and subsequent cleaning. Repair damaged barriers and remedy defects immediately upon discovery. Visually inspect enclosures at the beginning of each work period. Repair damaged barriers and remedy defects immediately upon discovery. Use smoke methods or other

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approved methods to test effectiveness of barriers when requested by Owner or Asbestos Project Manager.

17. Notify the Asbestos Project Manager for observation of work area preparation prior to removal of asbestos-containing material.

C. Preparation of Work Area for Removal of Roof Flashing System Material.

1. Secure Work Area outside the building with a minimum of Asbestos Warning Barrier tape to prevent unauthorized entry to abatement Work Area, as required. Barriers are to surround the entire Work Area. As an alternate approach, abatement operation shall be continuous or security personnel shall be present at entry to Work Area at all times to prevent unauthorized entry to abatement Work Areas.
2. Install a plastic sheeting drop cloth of minimum of 6-mil thickness on the ground a distance of 10 feet out from the base of the building to capture debris that may be released during roof flashing material removal. Remove upon completion of work and treat it as asbestos-contaminated material for disposal.
3. Provide a covered chute to a waste bin on the ground or a lift for removal of asbestos wastes from the roof in a manner that prevents visible emissions.
4. Flammable materials shall not be stored in the Work Area.
5. Maintain emergency and fire exits from the Work Area, or establish alternative exits satisfactory to fire officials. Provide fire extinguishers inside and outside the Work Area.
6. Provide temporary power and lighting as necessary to maintain safe and comfortable work environment.
7. Decontamination shall be performed outside in a designated area over minimum 6-mil thick plastic sheeting if workers wear a double set of disposable coveralls. Workers will remove the outer set of coveralls while wearing his/her respirator and place the coveralls in a waste container. HEPA vacuum the inner coverall and remove coverall, gloves, and booties and place in waste container. Lastly, damp wipe and remove respirator for further cleaning. Consider waste materials in containers to be contaminated.
8. Notify the APM when preparations are complete to obtain his approval before proceeding with abatement work.

### 3.02 REMOVAL OF ASBESTOS-CONTAINING MATERIAL

- A. Remove and properly dispose of all asbestos-containing materials scheduled for removal in the Contract Documents in accordance with the methods and procedures outlined in the OSHA 29CFR 1926.1101 and as more stringently specified herein.
- B. Removal of Vibration Dampener in a Work Area Enclosure.
  1. Prepare work area as previously specified.
  2. Spray areas of asbestos-containing material with amended water using spray equipment capable of providing a "mist" application to reduce the release of fibers.

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- Spray the asbestos-containing material repeatedly during work process to maintain wet condition but do not use excessive amounts of water.
3. Remove vibration dampener intact and place it in a sealable plastic bag of 6-mil minimum thickness. Place sealed asbestos debris in second 6-mil plastic bag, appropriately labeled, and remove from work area.
  4. After removal of asbestos-containing material, wet clean and HEPA-vacuum all surfaces in the work area to remove residual accumulated material. Continue wet cleaning until surfaces are visibly free of material.
  5. Notify Asbestos Project Manager for observation of the completion of cleaning. Surfaces will be considered clean when free from dust, dirt, residue, film, or discoloration resultant from abatement operations or other activities subordinate to these operations.
- C. Removal of White Duct Wrap in a Work Area Enclosure.
1. Prepare work area as previously specified.
  2. Spray areas of asbestos-containing material with amended water using spray equipment capable of providing a "mist" application to reduce the release of fibers. Spray the asbestos-containing material repeatedly during work process to maintain wet condition but do not use excessive amounts of water.
  3. Remove duct by making clean cuts and place it in a sealable plastic bag of 6-mil minimum thickness. Place sealed asbestos debris in second 6-mil plastic bag, appropriately labeled, and remove from work area. At no time will debris be allowed to accumulate on the floor.
  4. After removal of asbestos-containing material, wet clean and HEPA-vacuum all surfaces in the work area to remove residual accumulated material. Continue wet cleaning until surfaces are visibly free of material.
  5. Notify Asbestos Project Manager for observation of the completion of cleaning. Surfaces will be considered clean when free from dust, dirt, residue, film, or discoloration resultant from abatement operations or other activities subordinate to these operations.
- D. Removal of Roof Flashing System.
1. Prepare Work Area as previously specified.
  2. Remove roofing flashing system if necessary. Use either manual methods or slicing or other methods that do not sand, grind, cut, or abrade the materials. **Power saws are not allowed for cutting roofing materials.**
  3. Spray ACMs as they are removed with amended water using spray equipment capable of providing a "mist" application to reduce the release of fibers. Spray the ACM repeatedly during the work process to maintain wet condition but do not use excessive amounts of water.
  4. Place removed roofing materials in sealable plastic bags of 6-mil minimum thickness. Place sealed asbestos debris in second 6-mil plastic bag, appropriately labeled, and remove from Work Area.
  5. Place bags in covered chute to a waste bin on the ground or onto a lift for removal of waste ACM in a manner to prevent visible emissions.

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6. HEPA-vacuum and wet clean all surfaces in the Work Area to remove residual accumulated material. Continue wet cleaning until surfaces are visibly free of material.
  7. Notify the Asbestos Project Manager for observation of the completion of cleaning. Surfaces shall be considered clean when free from dust and debris resultant from abatement operations.
- D. Removal or disturbance of Asbestos Containing Electrical Conduit
1. CONTRACTOR shall assume all buried electrical conduit on-site contains asbestos. The majority of the conduit is concrete encased, however, the condition of the conduit is unknown. The plans show locations of the existing conduit runs, but are based on as-built drawings only. The conduit shall only be disturbed as necessary to install equipment, piping, etc. as per the plan requirements. The material is classified as non-friable, unless broken at which time its classification changes to friable ACM.”

### 3.03 CLEAN-UP AND CLEARANCE TESTING

- A. Provide general clean-up of Work Area concurrent with the removal of all ACMs. Dispose of debris from removal operation, used cleaning materials, unsalvageable materials and any other materials remaining in the Work Area. Consider the materials to be contaminated and dispose of accordingly.
- B. HEPA-vacuum and wet clean all surfaces in the Work Area. Clean all equipment and materials used in the Work Area and remove from Work Area. Surfaces will be considered clean when free from dust, dirt, residue, film, or discoloration resultant from abatement operations or other activities subordinate to these operations. Consider Work Areas and all other decontaminated, cleaned and ready for air testing when the level of cleanliness is approved by APM.
- C. Final Air Clearance for Work Areas Inside Buildings (other than as stated above) standard for Phase Contrast Microscopy (PCM) analysis. Consider Work Areas and all other decontaminated and cleaned areas clean when:
1. Level of cleanliness is approved by APM.
  2. Upon approval of cleanliness by APM, air samples will be collected using aggressive sampling.
  3. Air will be considered clean and the removal will be considered complete if the air drawn for each of the samples collected within the regulated area is equal to or greater than 1,250 liters of air and the average concentration of asbestos as analyzed by the PCM Method does not exceed 0.01 f/cc.
  4. The APM will determine the number of clearance samples to be collected during the Final Air Clearance Testing.
  5. Once Final Air Clearance Testing has passed, the CONTRACTOR will spray encapsulant prior to removal of the containment.
- D. Final Clearance for Outside Work Areas (Roofing) - Consider Work Areas and all other decontaminated and cleaned areas clean when: level of cleanliness is approved by APM.

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This will be a visual survey of the respective Work Areas for roofing or pipe debris. Additional removal of debris may be required until suitable level of cleanliness is determined by the Project Manager.

### 3.04 DISPOSAL OF CONTAMINATED WASTE

- A. Wet clean bags to remove all contamination as bags are moved out through the decontamination system into an uncontaminated space. Place bagged waste into covered buggies for transport to the lockable, fully enclosed, metal waste disposal container.
- B. Transportation of *all* asbestos waste to landfill will be performed in accordance with all federal, state, and local laws and regulations.
  - 1. Place bags in the enclosed waste disposal container, which has been lined with a minimum of one layer of 6-mil plastic sheeting. Plastic sheeting for the transport will be reinforced type.
  - 2. Transport contaminated waste using a transporter licensed by the DSHS to transport asbestos waste.
  - 3. Provide a properly completed copy of the Uniform Hazardous Waste Manifest (EPA form 8700 (rev. 3-5)) for transportation of all contaminated waste to landfill.
- C. Remove asbestos-containing waste materials, including labeled bags and materials in lined trucks or dumpsters, and transport to an approved landfill for disposal as follows:
  - 1. Notify the APM prior to removing each waste disposal container from the jobsite.
  - 2. Notify APM not less than 48 hours prior to the proposed time of delivery of contaminated waste to the landfill. APM may elect to observe this operation.
  - 3. Dispose of treated, packaged, labeled, asbestos-containing waste material in accordance with EPA 40CFR 61.150.
  - 4. Allow only sealed plastic bags or impermeable containers to be deposited in landfill.
  - 5. Ensure that there are no visible emissions to the outside air from site where materials and waste are deposited.
  - 6. Submit copies of receipts from authorized representative of landfill operator for each delivery of waste material to the APM after each delivery and a complete set of copies of receipts for all deliveries.

### 3.05 FIELD QUALITY CONTROL

- A. The APM will conduct air monitoring prior to, and throughout, removal and cleaning operations.
- B. Visual observations will be performed in general accordance with ASTM E 1368-90 ("Standard Practice for Visual Inspection of Asbestos Abatement Projects").
- C. A final visual observation will be performed in the Work Areas by the APM following notification by CONTRACTOR that said areas have been properly cleaned and are ready for final air testing. Areas will be observed for the presence of visible dust, dirt and debris.

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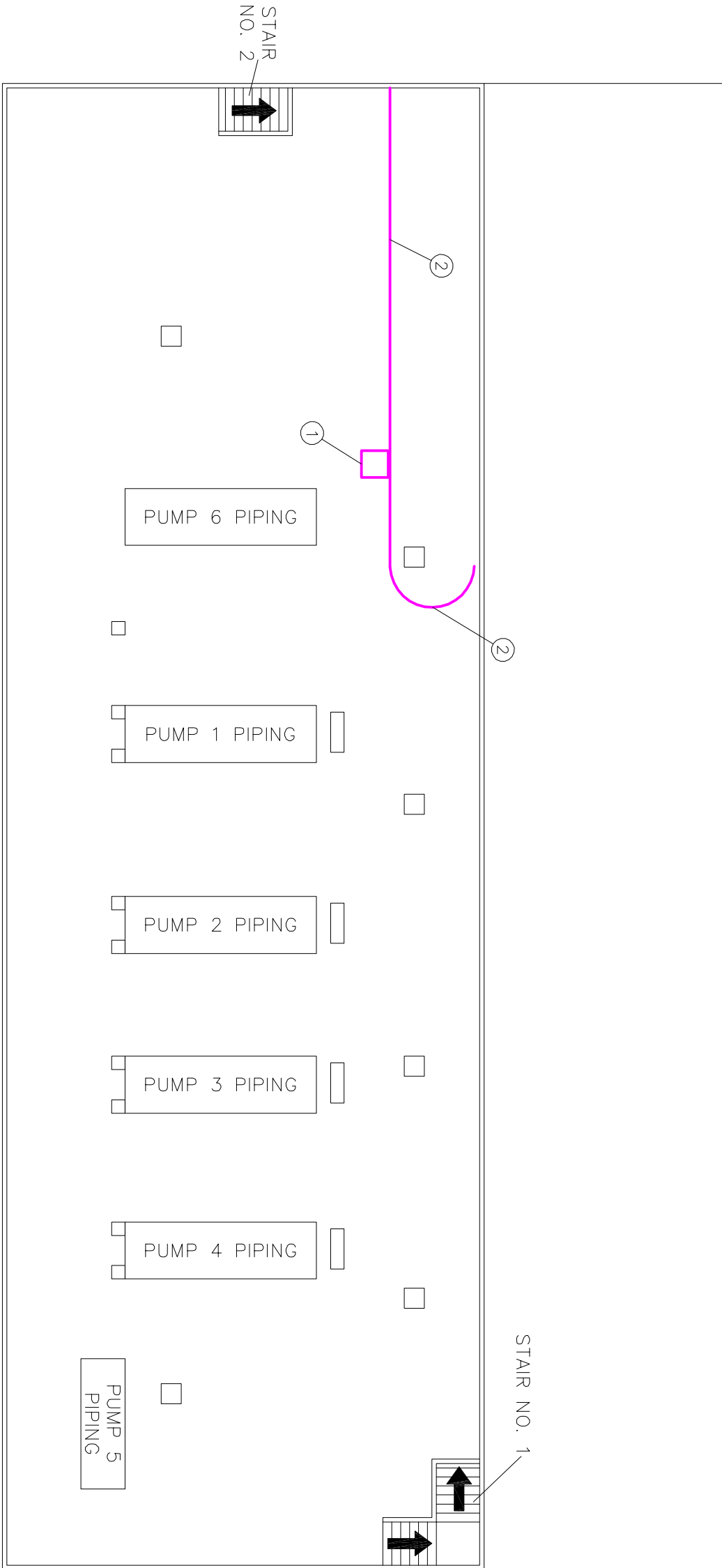
Basin Pump Station Improvements

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- D. Tests will be performed in the Work Area after final clean-up and prior to removal of critical barriers.
- E. Perform additional cleaning at no additional expense to OWNER if, in the opinion of the APM, based upon the final visual observation, previous clean-up operations was determined to be inadequate.
- F. CONTRACTOR to bear cost of all follow-up observations and tests necessitated by failure of the air tests to meet the specified clearance level.

**END OF SECTION 02504**

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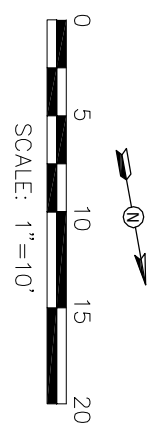


**NOTES**

1. THIS PLAN IDENTIFIES MATERIALS SAMPLED FOR ANALYSIS. MATERIALS THAT SHOULD BE CONTAINED AND ANALYZED IN A FACILITY MAINTAINED IDENTIFIED ASBESTOS IN ASBESTOS-CONTAINING MATERIALS IN CONCRETE CONSTRUCTION HAS NOT BEEN IDENTIFIED DISASSIMILATED FINISHED CONSTRUCTION.

**Legend**

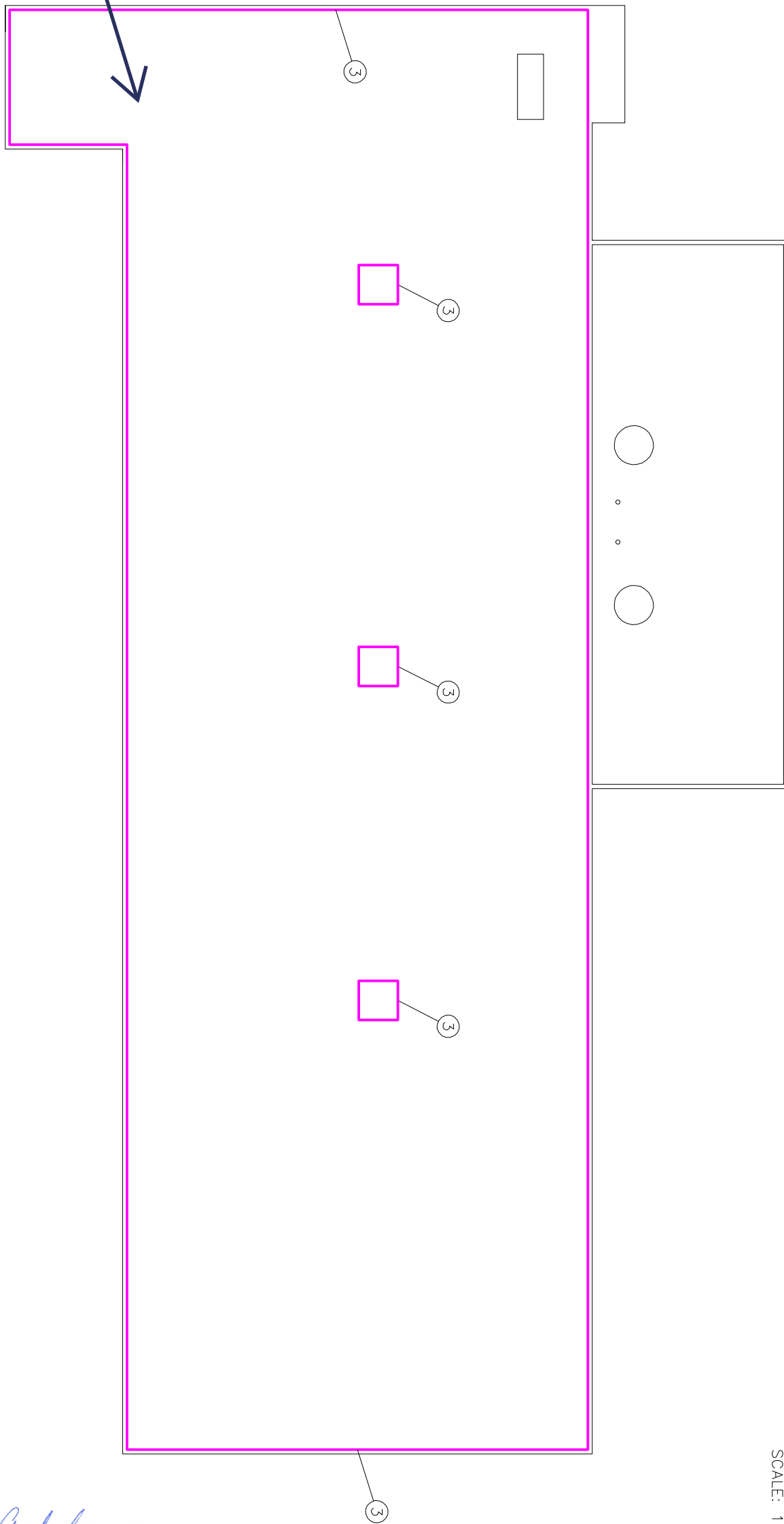
- Asbestos-Containing Material
- Asbestos-Containing Material
- hite Vibration Damper
- hite Duct Rap
- hite Duct Rap



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Note - Hand Rail to be installed may require abatement of the roof flashings in this area. The remainder of the roof flashings should not be disturbed.



**NOTES**

1. THIS PLAN IDENTIFIES MATERIALS SAMPLED FOR ANALYSIS. MATERIALS THAT WERE SAMPLED AND ANALYZED IN A CONTAIN ASBESTOS, SAMPLED AND ANALYZED IN A CONTAIN ASBESTOS, SAMPLED AND ANALYZED IN A CONTAIN ASBESTOS, IS NOT ASBESTOS. THIS ASBESTOS-CONTAINING MATERIALS ARE IN CONTACT WITH THE HAND RAIL DISASSIMILATION.

**Legend**

- Asbestos-Containing Material
- Asbestos-Containing Material
- hite [bracket]ration Da[bracket]pener
- hite Du[bracket]t rap
- [bracket]ashin

*Stephanie Ashley*  
 Stephanie Ashley  
 DSHS Individual Asbestos Consultant No. 10-5713, expires  
 12/10/2013



**Baer Engineering**  
 and Environmental Consulting, Inc.

DATE: 11/20/13  
 DRAWN: [blank]  
 CHECKED: [blank]  
 SCALE: 1"=10'-0"  
 PROJECT: 112021.10

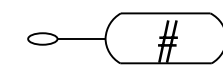
**Asbestos Material Location Plan**  
**Roof**  
**Basin Pumping Station San Antonio, TX**



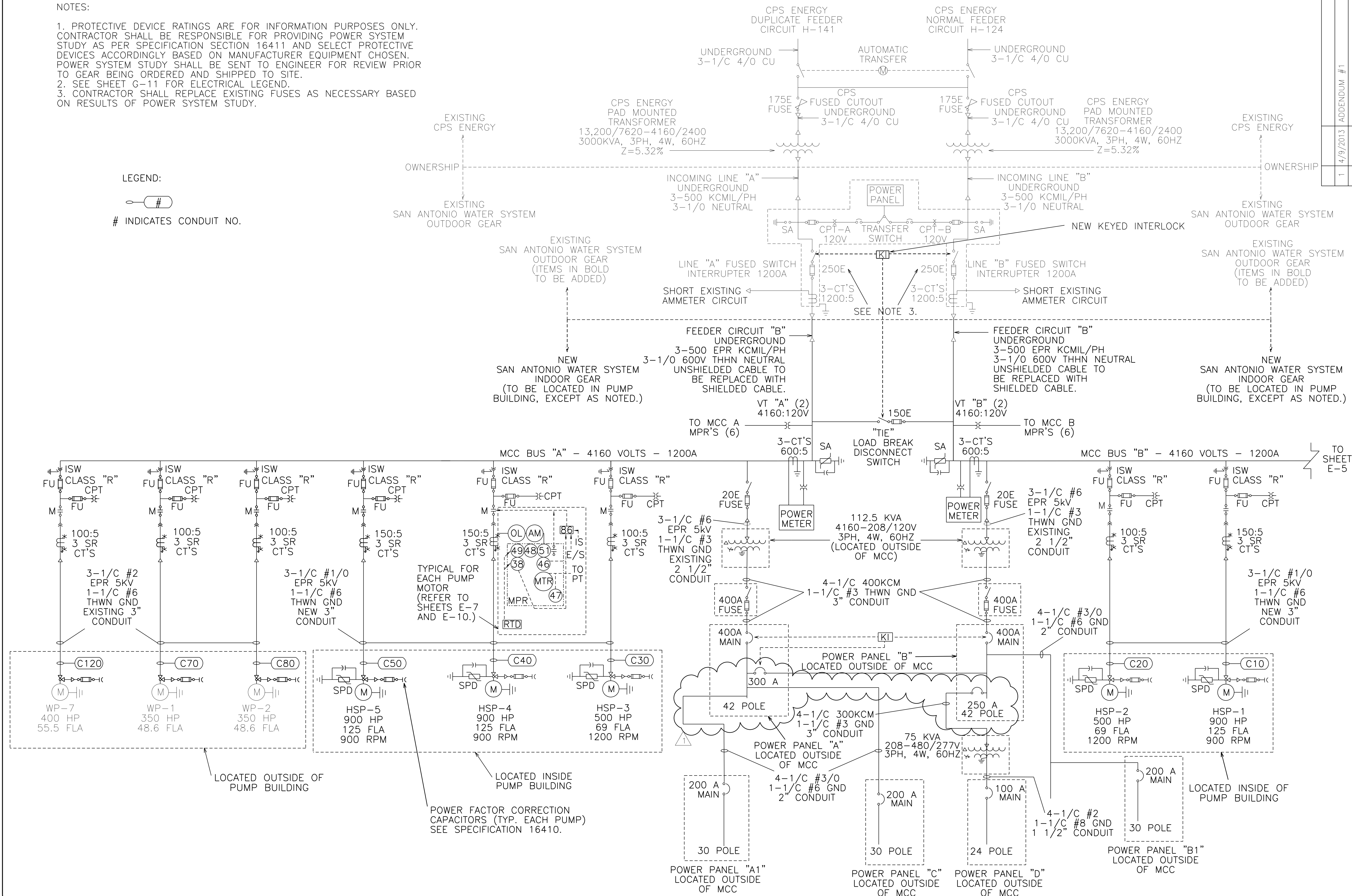
NOTES:

1. PROTECTIVE DEVICE RATINGS ARE FOR INFORMATION PURPOSES ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING POWER SYSTEM STUDY AS PER SPECIFICATION SECTION 16411 AND SELECT PROTECTIVE DEVICES ACCORDINGLY BASED ON MANUFACTURER EQUIPMENT CHOSEN. POWER SYSTEM STUDY SHALL BE SENT TO ENGINEER FOR REVIEW PRIOR TO GEAR BEING ORDERED AND SHIPPED TO SITE.
2. SEE SHEET G-11 FOR ELECTRICAL LEGEND.
3. CONTRACTOR SHALL REPLACE EXISTING FUSES AS NECESSARY BASED ON RESULTS OF POWER SYSTEM STUDY.

LEGEND:



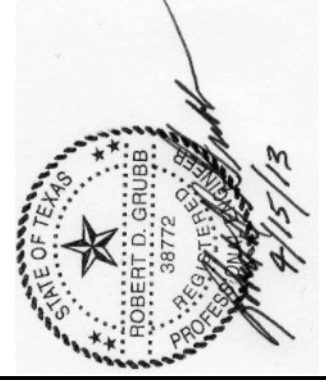
# INDICATES CONDUIT NO.



RDC	App.	SAWS Job No.
ADDENDUM #1	Revisions	12-6001
1	Date	GRUBB ENGINEERING, INC.
4/9/2013	No.	ELECTRICAL POWER SYSTEMS DESIGN & TESTING
		TYPE FIRM REGISTRATION #3904



Date:	APRIL 2013
Design by:	CC
Drawn by:	SG
Checked by:	SM
Scale:	NTS



SAN ANTONIO WATER SYSTEM

BASIN PUMP STATION IMPROVEMENTS PROJECT PHASE I  
PROPOSED ONE-LINE DIAGRAM-1

LABEL: POWER PANEL 'A' LOCATION: ELECTRICAL ROOM RATING: 208 /120V 3-PHASE, 4-WIRE, 400A MAIN BREAKER: 400A FEED THROUGH										
DESCRIPTION	LOAD (kW)	BKR SIZE	POLE	CKT NO.	CKT NO.	POLE	BKR SIZE	LOAD (kW)	DESCRIPTION	
HSP-3 MOTOR SPACE HEATER	0.5	20	1	1	2	1	20	0.5	HSP-4 MOTOR SPACE HEATER	
HSP-5 MOTOR SPACE HEATER	0.5	20	1	3	4	1	20	0.5	WP-1 MOTOR SPACE HEATER	
WP-2 MOTOR SPACE HEATER	0.5	20	1	5	6	1	20	0.5	WP-7 MOTOR SPACE HEATER	
HSP-3 FLOWMETER	0.15	20	1	7	8	1	20	0.15	HSP-4 FLOWMETER	
HSP-5 FLOWMETER	0.15	20	1	9	10	1	20	0.15	WP-1 FLOWMETER	
WP-2 FLOWMETER	0.15	20	1	11	12	1	20	0.15	WP-7 FLOWMETER	
WP-7 VAULT SUMP PUMP	1.92	20	1	13	14	1	20	1.92	PUMP ROOM RECEPTACLES	
PUMP ROOM LIGHTING CKT 1	1.64	20	1	15	16	1	20	1.92	ELECTRICAL ROOM SOUTH RECEPTACLE	
WASH ROOM RECEPTACLES (GFCI)	1.92	20	1	17	18				HVAC CONTROL PANEL (PUMP ROOM)	
OUTDOOR HVAC RECEPTACLES	1.92	20	1	19	20	3	90	23.6		
CL2 INJECTION AREA RECEPT.	1.92	20	1	21	22					
CL2 INJ. AREA HEAT TRACE PANEL	1.92	20	1	23	24	1	20	-	SPARE	
BASEMENT SUMP PUMP #1	1.3	20	3	25	26				FEED THROUGH TO PANEL "A1"	
				27	28	3	-	-		
				29	30					
TIE TO POWER PANEL 'B' WITH INTERLOCK	-	300	3	31	32				FEED THROUGH TO PANEL "C"	
				33	34	3	-	-		
				35	36					
SPARE	-	20	1	37	38	1	20	-	SPARE	
SPARE	-	20	1	39	40	1	20	-	SPARE	
SPARE	-	20	1	41	42	1	20	-	SPARE	
14.49		TOTAL LOAD: 67.20				29.39				

**A** POWER PANEL 'A'  
SCALE: NTS

LABEL: POWER PANEL 'B' LOCATION: ELECTRICAL ROOM RATING: 208 /120V 3-PHASE, 4-WIRE, 400A MAIN BREAKER: 400A FEED THROUGH										
DESCRIPTION	LOAD (kW)	BKR SIZE	POLE	CKT NO.	CKT NO.	POLE	BKR SIZE	LOAD (kW)	DESCRIPTION	
HSP-1 MOTOR SPACE HEATER	0.5	20	1	1	2	1	20	0.5	HSP-2 MOTOR SPACE HEATER	
HSP-6 MOTOR SPACE HEATER	0.5	20	1	3	4	1	20	0.5	WP-3 MOTOR SPACE HEATER	
WP-5 MOTOR SPACE HEATER	0.5	20	1	5	6	1	20	0.5	WP-6 MOTOR SPACE HEATER	
HSP-1 FLOWMETER	0.15	20	1	7	8	1	20	0.15	HSP-2 FLOWMETER	
HSP-6 FLOWMETER	0.15	20	1	9	10	1	20	0.15	WP-3 FLOWMETER	
WP-5 FLOWMETER	0.15	20	1	11	12	1	20	0.15	WP-6 FLOWMETER	
BASEMENT SUMP PUMP #2	1.3	20	3	13	14	1	20	1.18	RF-3 (PUMP ROOM)	
				15	16	1	20	1.18	RF-4 (PUMP ROOM)	
				17	18	1	20	1.92	SCADA ROOM RECEPTACLES	
RF-5 (PUMP ROOM)	1.18	20	1	19	20	1	20	.12	JANITOR CLOSET LIGHT	
RF-6 (PUMP ROOM)	1.18	20	1	21	22	1	20	0.53	EF-5 (WASH ROOM)	
SPARE	-	20	1	23	24	1	20	1.92	HEAT TRACE PANEL	
PANEL "D"	75	250	3	25	26				FEED THROUGH TO PANEL "B1"	
				27	28	3	-	-		
				29	30					
SPARE	-	20	1	31	32	1	20	-	SPARE	
SPARE	-	20	1	33	34	1	20	-	SPARE	
SPARE	-	20	1	35	36	1	20	-	SPARE	
SPARE	-	20	1	37	38	1	20	-	SPARE	
SPARE	-	20	1	39	40	1	20	-	SPARE	
SPARE	-	20	1	41	42	1	20	-	SPARE	
85.61		TOTAL LOAD: 94.41 kW				8.80				

**B** POWER PANEL 'B'  
SCALE: NTS

NOTES:

- ALL CIRCUITS MUST BE RECONNECTED TO NEW POWER PANEL USING NEW CABLES AND CONDUIT.
- CONTRACTOR SHALL BALANCE LOADS ON EACH PHASE.

RDC	App.	SAWS Job No.
ADDENDUM #1	Revisions	12-6001
14/10/2013	Date	
No.		



CP&Y, Inc.  
TYPE REGISTRATION # F-1741

APRIL 2013  
Design by: CC  
Drawn by: SG  
Checked by: SM  
Scale: NTS



SAN ANTONIO WATER SYSTEM  
BASIN PUMP STATION IMPROVEMENTS PROJECT PHASE I  
POWER PANEL SCHEDULES-I



SAWS Job No.  
**12-6001**

GRUBB ENGINEERING, INC.  
ELECTRICAL POWER SYSTEMS  
DESIGN & TESTING  
TYPE FIRM REGISTRATION #3904

Date: APRIL 2013  
Design by: CC  
Drawn by: SG  
Checked by: SM  
Scale: NTS



**SAN ANTONIO WATER SYSTEM**

BASIN PUMP STATION  
IMPROVEMENTS PROJECT  
PHASE I

POWER PANEL SCHEDULES - III

LABEL: POWER PANEL 'C'  
LOCATION: STORAGE ROOM  
RATING: 208 /120V 3-PHASE, 4-WIRE, 400A  
MAIN BREAKER: 200A

DESCRIPTION	LOAD (KW)	BKR SIZE	POLE	CKT NO.	CKT NO.	POLE	BKR SIZE	LOAD (KW)	DESCRIPTION	
DEDICATED SPACE FOR FUTURE SCRUBBER	-	-	3	1	2	1	20	.120	CHLORINE ROOM GAS DETECTOR PANEL	
				3	4	1	20	.5	BASEMENT EMERGENCY LIGHTING	
				5	6	1	20	1.92	CHLORINE ROOMS RECEPTACLES	
LEVEL CONTROL PANEL	.08	20	1	7	8	1	20	.10	CHLORINE CYLINDER STORAGE AREA LIGHTS	
SPARE	-	20	1	9	10	1	20	.002	BASEMENT EXIT SIGNS	
PUMP BUILDING EXTERIOR DOORWAY LIGHTS	.150	20	2	11	12	1	20	1.92	SECURITY GATE	
				13	14	1	30	2.30	POWER PANEL TANK	
PUMP ROOM EMERGENCY LIGHTING	.90	20	1	15	16	1	20	.108	CHLORINE ROOM LIGHTING	
SCADA ROOM EMERGENCY LIGHTING	.10	20	1	17	18	1	20	-	SPARE	
ELECTRICAL ROOM/RESTROOM EMERGENCY LIGHTING	.20	20	1	19	20	1	20	.120	CHLORINE STORAGE AREA GAS DETECTOR PANEL 2	
PUMP ROOM EXIT SIGN	.001	20	1	21	22	1	20	1.92	SECURITY PANEL	
CHLORINE ROOM EXHAUST FAN	.53	20	1	23	24	1	20	1.92	CHLORINE GAS CONTROL PANEL	
CL2 ANALYZER	.150	20	1	25	26				TEMPORARY MCC "B" BUILDING POWER PANEL	
SCADA PANEL	1.92	20	1	27	28	3	200	46.1		
FLUORIDE ANALYZER	.150	20	1	29	30					
								4.181	TOTAL LOAD: 61.21	57.03

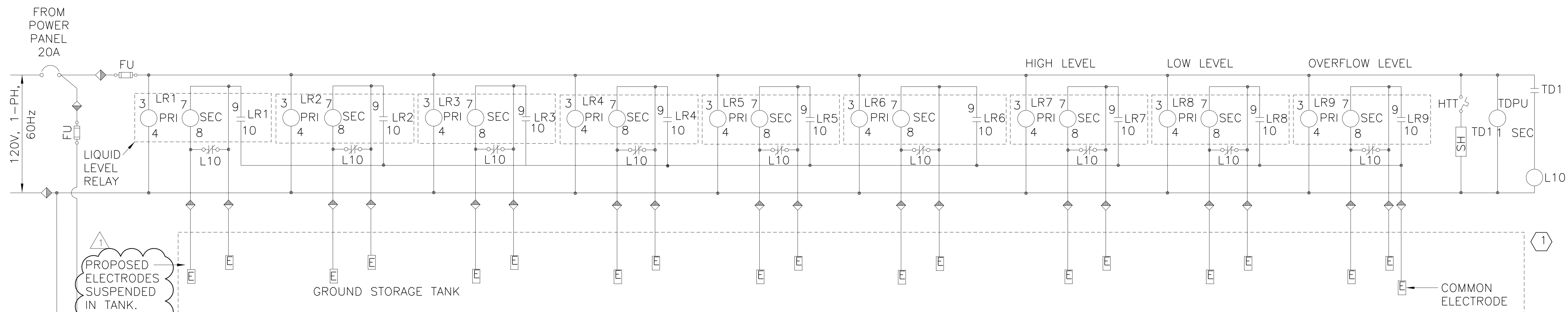
**A** POWER PANEL 'C'  
SCALE: NTS

LABEL: POWER PANEL 'D'  
LOCATION: ELECTRICAL ROOM  
RATING: 480/277V 3-PHASE, 4-WIRE, 100A  
MAIN BREAKER: 100A

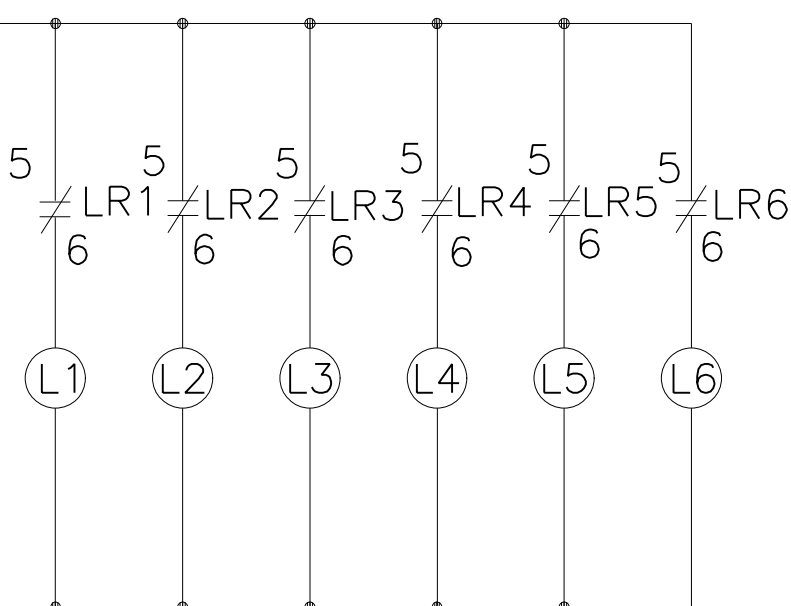
DESCRIPTION	LOAD (KW)	BKR SIZE	POLE	CKT NO.	CKT NO.	POLE	BKR SIZE	LOAD (KW)	DESCRIPTION	
PUMP ROOM BRIDGE CRANE	37.24	70	3	1	2				CHLORINE STORAGE ROOM MONORAIL CRANE	
				3	4	3	20	10.64		
				5	6					
CHLORINE BOOSTER PUMP #1	6.3	20	3	7	8				CHLORINE BOOSTER PUMP #2	
				9	10	3	20	6.3		
				11	12					
CIRCULATING WATER PUMP	0.83	20	3	13	14	2	40	15.0	FLUORIDE POWER PANEL TRANSFORMER	
				15	16					
				17	18	1	20	-	SPARE	
SPARE	-	20	3	19	20				SPARE	
				21	22	3	20	-		
				23	24					
								44.37	TOTAL LOAD: 76.31	31.94

**B** POWER PANEL 'D'  
SCALE: NTS

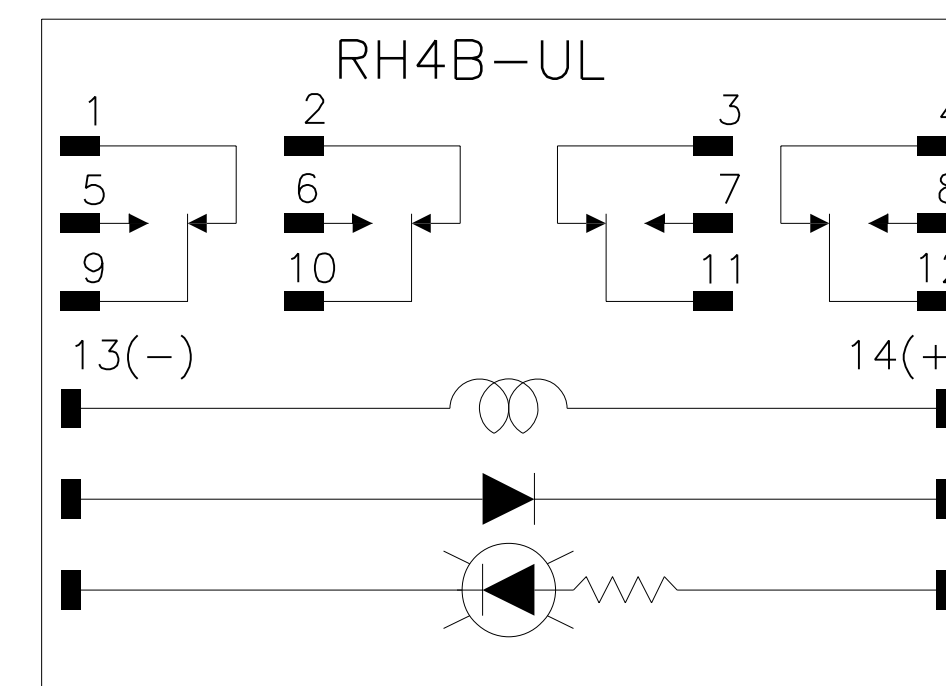
- NOTES:
- ALL CIRCUITS MUST BE RECONNECTED TO NEW POWER PANEL USING NEW CABLES AND CONDUIT.
  - CONTRACTOR SHALL BALANCE LOADS ON EACH PHASE.



1  
PROPOSED ELECTRODES SUSPENDED IN TANK. TO REPLACE EXISTING ELECTRODES.

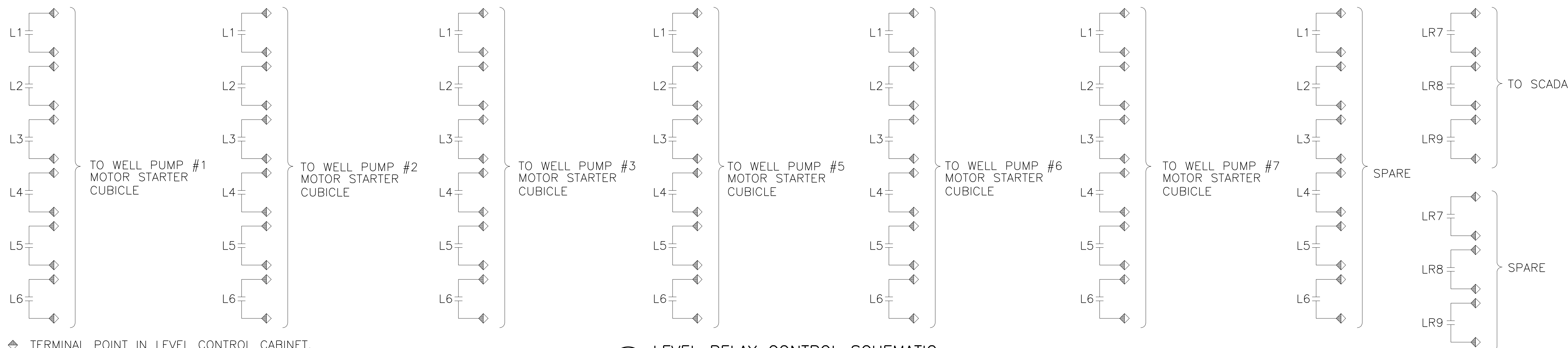


ITEM	DESCRIPTION	PART #	MFG	QTY
L1-L6	4PDT CONTROL RELAY WELL PUMP START LEVEL	RH4B-UL-AC120	IDEC	12
TD1	TIME DELAY FOR POWER LOSS	RTE-P1-AF20	IDEC	1
LR1-LR6	2PDT INDUCTION RELAY LEVEL RELAY FOR PUMP START/STOP	1500-H-L1-S7-OC-X	IDEC	6
LR7	2PDT INDUCTION RELAY LEVEL RELAY FOR TANK HIGH LEVEL	1500-F-L1-S7-OC-X	IDEC	1
LR8	2PDT INDUCTION RELAY LEVEL RELAY FOR TANK LOW LEVEL	1500-H-L1-S7-OC-X	IDEC	1
LR9	2PDT INDUCTION RELAY LEVEL RELAY FOR TANK OVERFLOW LEVEL	1500-F-L1-S7-OC-X	IDEC	1



A LEVEL CONTROLS EQUIPMENT LIST

C RELAY DEVELOPMENTS



◆ TERMINAL POINT IN LEVEL CONTROL CABINET, DARK SIDE INDICATES CONNECTIONS INTERNAL TO PANEL.

B LEVEL RELAY CONTROL SCHEMATIC

1 LEVEL ELECTRODES SHALL BE STAINLESS STEEL. REPLACE TWO(2) EXISTING PROBE HOLDERS WITH B/W 6012-E554-13E. ELECTRODES SHALL BE SUSPENSION TYPE AND EACH ELECTRODE ASSEMBLY SHALL BE COMPRISED OF THE FOLLOWING COMPONENTS: B/W 6012-EP4 PLUG, B/W 6012-PC PLUG COVER, B/W 6013-W2 PROBE, B/W 6013-C-SS WIRE CONNECTOR AND B/W 6013-SW-\* WIRE WHERE TOTAL LENGTH (\*) SHALL BE DETERMINED BY CONTRACTOR BASED ON EXISTING PROBE WIRE LENGTHS AND SAWS REQUIRED LENGTHS FOR NON-EXISTING PROBES.

2 MULTIPLES OF RELAYS ARE REQUIRED DUE TO NUMBER OF CONTACTS REQUIRED.