SELECTIVE DEMOLITION

PART 1 GENERAL

1.1. SECTION INCLUDES

A. Removal and salvage of existing wood window sashes.

B. Removal and disposal of glazing slopes and glass.

C. Removal and disposal of existing weights, ropes and other hardware.

D. Removal and disposal of sealant or putty at perimeter window frame of copper panels above and below the window.

E. Remove and dispose of weatherstripping

F. Removal of all existing lead containing paint on wood surfaces of frame and sashes.

G. Remove mortar of brick masonry unit along frame perimeter.

H. Abate as necessary asbestos board along copper panel vertical edges.

1.2. SUBMITTALS

A. Shop Drawings - Indicate demolition and removal sequence - location and construction of temporary work.

B. Submit a complete describe of demolition removal procedures and schedule.

C. Describe protection and storage of salvaged items.

1.3. PROJECT RECORD DOCUMENTS

A. Accurately record actual locations of capped utilities, subsurface obstructions, and other conditions not indicated on the contract document drawings.

1.4. REGULATORY REQUIREMENTS

A. Conform to applicable code for demolition work, safety of structure, and dust control.

B. Obtain required permits from authorities having jurisdiction on the project.

C. Notify affected utility companies before starting work and comply with their requirements.

D. Do not close or obstruct egress width to exits with equipment, tools and material removed or used during demolition.

E. Do not disable or disrupt building fire or life safety systems without a 10 day prior written notice to the Architect/Engineer.

F. Conform to CAL-OSHA procedures applicable when discovering hazardous or contaminated materials.

1.5. QUALITY ASSURANCE

A. Contractor shall utilize workers who can demonstrate to the satisfaction of the Architect that they are capable of performing the work to his/her desired standards.

B. Demolition Contractor shall provide a full-time non-working superintendent on site at all times during work under this contract agreement.

1.6. SCHEDULING

A. Schedule Work to coincide, and coordinate with new construction.

PART 2 PRODUCTS

1.1. MATERIALS

A. Plastic sheet: 10 mil, polyethylene sheet.

B. 1/2" plywood for protection of roof areas.

PART 3 EXECUTION

1.1. EXAMINATION

A. Verify that site conditions are acceptable for the execution of work.

B. Inspect site conditions and report any discrepancies, obstructions or unsatisfactory conditions to the Architect/Engineer.

1.2. PREPARATION

A. Erect and maintain proper support and shoring of structural and architectural elements as necessary.

B. Erect and maintain temporary protection at exterior openings to prevent spread of dust to interiors and damage to window glass and frame.

C. Protect existing materials and property which are not to be demolished.

D. Mark location of utilities.

E. Coordinate scheduling of demolition to minimize period between removal and installation of waterproofing systems.

1.3. DEMOLITION REQUIREMENTS

A. Conduct demolition to prevent any damage to surrounding areas, finished surfaces, structures, or properties.

B. Prevent damage to properties and finishes not scheduled for demolition.

C. Contractor is solely responsible for protecting adjacent properties against damage due to demolition operation or any other activity related to the work.

D. Protect the roof surfaces of the building, which are used for access or staging, to prevent any damage to the roofing membrane surface.

E. Thoroughly document in the presence of the Owner's Representative the condition of the surfaces and finishes including roof membrane and flashing.

F. Cease operations immediately if structure appears to be in danger. Notify Architect/Engineer. Do not resume operations until directed.

1.4. DEMOLITION

A. Demolish in an orderly and careful manner. Protect existing supporting structural members.

B. Remove and salvage window sashes.

C. Removal and disposal of glazing stops and glass from window sashes.

D. Cut and dispose of all perimeter caulking and putty between window frame and adjacent surfaces.

E. Remove and dispose of hardware, weatherstripping, glazing stops, and glass.

F. Strip existing lead containing paint on window frame and sashes.

G. Remove asbestos material from joint between vertical edge of copper panel and brick masonry only as needed to establish acceptable bond line for the new sealant.

H. Removal and disposal of grout in mortar joints in masonry surfaces adjacent to window frame as indicated on drawings.

I. Remove disposable demolished materials from site at end of each working day. Upon completion of work, leave areas in a clean condition.

J. Do not pile, store, or place demolished material on unprotected finished surfaces, carpeted areas, exposed roofing surfaces, or parapet walls.

K. Remove temporary work.

MORTAR

PART 1 GENERAL

1.1. SECTION INCLUDES

A. Mortar for brick masonry.

B. Repointing of existing bricks on wall return to openings as indicated on drawings.

1.2. SUBMITTALS

A. Include design mix, indicate proportion or property method used, required environmental conditions, and admixture limitations.

B. Submit test reports on mortar off site mock-up indicating conformance to specifications.

C. Submit test reports on grout indicating conformance to ASTM C476.

D. Preconstruction meeting shall be held prior to commencement of Work under this section. Notify Architect with an advanced notice.

E. Quality Assurance/Control: Maintain one copy of each document related to the Work of this section on site.

1.3. QUALITY ASSURANCE

A. Qualifications:

1. Contractor to use only workmen thoroughly skilled and specifically trained in the techniques of brick laying and masonry restoration, who can demonstrate to the satisfaction of the Architect their ability to properly install Work under this section in accordance with industry standards, these specifications, and the manufacturer's requirements.

2. Installer shall provide certification that the identified Workers assigned to perform the brick masonry crack repairs have undergone training for the use of the specified product with the manufacturer's own training program.

B. Mock-ups:

1. Sample of the mortar shall be assembled off site for testing, result of testing shall be submitted for review.
2. Install three mock-ups for review and approval under provision of this section. One for terra-cotta, one for repointing of brick masonry, and one for brick masonry wall crack repair.
3. The mock-ups for repointing shall be in a 5' x 5' area in locations selected by the Architect.
4. The mock-up for the brick masonry crack repairs shall be ten feet long in location selected by the Architect.
5. The mock-ups shall be examined for color, appearance, adhesion and strength.
6. Approved mock-ups could remain as part of the Work.

C. Preconstruction meeting shall be held prior to commencement of Work under this section. Notify Architect with an advanced notice.

1.4. DELIVERY, STORAGE, AND HANDLING

A. Maintain packaged materials clean, dry and protected against dampness, freezing and foreign matter.

1.5. PROJECT CONDITIONS

A. Project Environmental Conditions: Do not mix or install mortars or grout when temperature is below 40 degrees F, or when there is an immediate danger of freezing of the material.

PART 2 PRODUCTS

1.1. MATERIALS

A. Portland Cement: ASTM C150, Type I, color mix of white and gray as needed to achieve color match.

B. Mortar Aggregate: ASTM C144, Clear quartz to match existing aggregate color and size with 15% fines.

C. Hydrated Lime: ASTM C207, Type S.

D. Grout Aggregate: ASTM C404.

E. Water: Clean and potable.

F. Bonding Agent: Terra-Cotta Restoration.

G. Mortar for brick masonry crack repairs: Cement based material, Jahn Patching Mortar, M100 terra-cotta/Brick Restoration Mortar, as manufactured by Cathedral Stone Products Inc. Color to match existing brick colors.

H. Plastic sheet: For use in covering repaired brick masonry cracks.

1.2. MORTAR FOR NEW BRICKS AND REPOINTING

A. Mix:

1. Mortar for laying and pointing bricks: ASTM C270, Type S using the Property Method; 1800 psi strength at 28 days; 7-8 inches slump; mixed in accordance with ASTM C270.
2. The mortar shall be composed of the following proportions by volume: Cement: 1; hydrated lime: 1/2; aggregate: 4-1/2.
3. Mix shall be proportioned as follows: 1 part portland cement, 1/2 part of hydrated lime, and 4-1/2 parts of damp loose aggregate.

B. Mortar Mixing:

1. Thoroughly mix mortar ingredients in quantities needed for immediate use in accordance with ASTM C270.
2. Material shall be dry at the time of measuring and shall be measured by volume. Measuring sand by shovel is not permitted.
3. Machine Mixing: Machine mix the mortar in the following order: Approximately 3/4 the required water, 1/2 the sand and all of the cement are first mixed, the rest of the sand following. The batch should be allowed to mix briefly and then water added in small quantities until workability satisfactory to the mason is attained. After all the material has been added, the mortar should be mixed a minimum of 3 minutes and a maximum of 5 minutes. The mixer should be completely empty before the next batch is recharged.
4. Add mortar admixtures in accordance with manufacturer's instructions. Provide uniformity of mix and coloration.
5. Do not use antifreeze compounds to lower the freezing point of mortar.
6. If water is lost by evaporation, retemper only within two hours of mixing.
7. Use mortar within two hours after mixing at temperatures of 80 degrees F, or two-and-one-half hours at temperatures under 50 degrees F.

1.3. GROUT MIXES

A. Mix: Engineered Masonry: 3000 psi strength at 28 days; 7-8 inches slump; mixed in accordance with ASTM C476 Course grout.

B. Grout Mixing:

1. Thoroughly mix mortar ingredients in quantities needed for immediate use in accordance with ASTM C476 course grout.
2. Add admixtures in accordance with manufacturer's instructions. Provide uniformity of mix.
3. Do not use antifreeze compounds to lower the freezing point of grout.

1.4. CRACK REPAIR MORTAR MIX

A. The water ratio per Kilogram of the Jahn M100 mortar is 0.20-0.30, or per Kilogram dry material 200-300 cc of water is to be added.

PART 3 EXECUTION

1.5. PREPARATION

A. On existing bricks: Remove existing mortar to a depth of 1-½" from the surface of the brick along perimeter of window frame and coper panels.

B. Do not use power tools.

C. On brick masonry cracks: Rout out the cracks to a depth of 1-1/2" from the surface of the brick and to a width of 1/2". Rout the joint in a manner that provides square edges on either side of the joint.

D. Do not cut or damage surfaces of existing bricks or terra-cotta during joint routing.

E. Vacuum all routed joints to remove dust, debris, and other foreign matter detrimental to the adhesion of the new mortar.

F. Sound existing terra-cotta pieces and remove unsound material.

G. Clean surfaces to remove efflorescence, dust and other deleterious materials which could affect the bonding of the new material.

H. Surfaces shall be inspected and approved in writing by the manufacturer of the parge coat material prior to commencement of work.

1.6. INSTALLATION

A. Install mortar in accordance with ASTM C780.

B. Install grout in accordance with ASTM 476.

C. Joints shall be completely filled with mortar.

D. Properly tool joints after the mortar has become leather hard to produce joints of uniform appearance with clean sharp lines.

E. Repointing: Fill the routed joints in two lifts.

F. Use the driest mix which still achieves workability and adhesion.

G. Tuck the first lift to 3/4" from the surface of the brick eliminating any voids or air pockets.

H. After the first lift has set, follow with the second lift and tool in to produce joints of uniform appearance with clean sharp lines matching existing profile.

I. Rout out cracks to a 1/2" and a minimum of 1-1/2" deep.

J. Brick masonry crack repair: Mix and apply repair mortar in strict accordance with manufacturers printed instructions.

K. Fill the joint with the repair mortar so that the mortar is built several millimeters over the routed joint. The extra mortar should be removed or cut away flush with the surface of the bricks during the hardening of the mortar.

L. Immediately following the installation of the crack repair mortar, the places that have been restored shall be moistened with the use of a hand held sprayer.

M. Cover the repaired cracks immediately following moistening them with plastic sheet, and tape the sheet in place to avoid loss of moisture. Maintain the plastic sheet in place for a period of three to four days.

1.7. SCHEDULES

A. Repointing of existing mortar joint on existing facing brick along window frame and copper panels.

JOINT SEALANTS

PART 1 - GENERAL

1.1. SECTION INCLUDES

A. Labor material, tools, equipment, necessary for execution of caulking and sealant work, complete as shown on the drawings and as specified herein, including but not limited to the following:

1. Sealant of joint between copper panel and masonry walls.
2. Sealant between window frames and copper panels.
3. Sealant at windows frame and to masonry walls.
4. Sealant at window sash and glass.
5. Miscellaneous sealants.

1.2. SUBMITTALS

A. Submit product data indicating sealant chemical characteristics, performance criteria, limitations, color and availability.

B. Submit two samples 12" in size illustrating colors selected.

C. Submit manufacturer's certificate that product meet or exceed specified requirements.

1.3. QUALITY ASSURANCE

A. Maintain one copy of the documents on site with the Foreman directly in charge of work under this section.

B. Conduct a pre-installation conference prior to commencement of work under this section. Notify Architect/Engineer with seven (7) days advanced notice.

1.4. QUALIFICATIONS

A. Applicator shall use only qualified workers thoroughly skilled and specially trained in the techniques of caulking, who can demonstrate to the satisfaction of the Architect/Engineer their ability to fill joints solidly and neatly.

B. Each sealant applicator shall receive and read a copy of this section and related specification sections before performing any work on the project.

C. Conform to Sealant Waterproofing and Restoration Institute requirements for materials and installation.

1.5. MOCK-UP

A. Construct one mock-up for each type of joint, illustrating sealant type, color and tooled surface.

B. Locate where directed by the Architect/Engineer.

C. Samples shall be tested for adhesion before proceeding with work under this section.

D. Accepted sample may remain as part of the Work.

1.6. ENVIRONMENTAL REQUIREMENTS

A. Do not install solvent curing sealants in enclosed building spaces without sufficient ventilation.

B. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.7. WARRANTY

A. Provide five year warranty.

B. Warranty: Include coverage of installed sealants and accessories which fail to achieve air tight and watertight seal, exhibit loss of adhesion or cohesion, do not cure, or exhibit signs of deterioration other than that stated in the manufacturer's published literature.

PART 2 - PRODUCTS

1.1. SEALANTS

A. Silicone Sealant, General: Medium-modulus type, single component, moisture cure, non-sagging, non-staining, non-bleeding:

1. Dow Corning 795 as manufactured by Dow Corning, shall be used in all locations unless specifically stated otherwise.

B. Silicone Sealant, Glazing: Ultra Low-modulus type, Single component, moisture cure:

4. Dow Corning 790 as manufactured by Dow Corning, shall be used in glazing.

1.2. ACCESSORIES

A. Primers: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: ANSI/ASTM D1565; round, open cell polyethylene foam rod; oversized 30 percent larger than joint width. Twisting rod stock together to obtain greater thickness is not permitted. Cutting of rod stock to obtain smaller thickness is not permitted. Approved manufacturer, Denver Foam or approved equal.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

E. Sealant Tape, as recommended by the silicone sealant manufacturer.

PART 3 - EXECUTION

1.8. EXAMINATION

A. Verify that surfaces are ready to receive work.

B. Verify that all existing putty and caulking around windows and copper panels have been removed.

C. Verify that asbestos containing cement board has been abated where it protruded through the joint between the copper panel and the brick masonry wall.

D. Verify that all repairs, and painting have been completed on wood windows and that the work has been accepted by the Architect/Engineer.

E. Verify that repairs and painting have been completed on the wood windows, aluminum windows and doors, and that the work has been accepted by the Architect/Engineer.

F. Inform Architect/Engineer immediately if conditions detrimental to sealant work is found. Do not proceed with preparation work until conditions are corrected.

G. Beginning of installation means installer accepts existing surfaces.

1.9. PREPARATION

A. Remove loose materials and foreign matter which might impair adhesion of sealant.

B. Blow out all joints with oil-free compressed air to remove all dust and debris.

C. Clean glass with a glass cleaner and wash with water. Allow glass to fully dry before sealant application.

D. Lightly grind down brick masonry surface to remove residues of existing caulking and putty.

E. Grind down surface of copper panel to 1/4 inch beyond the width of the specified sealant joint to expose bright copper.

F. Immediately following grinding, prime surface of copper panels along the joints according to manufacturer's instructions.

G. Verify that joint backing and release tapes are compatible with sealant.

H. Protect elements surrounding the work of this Section from damage or disfigurement.

1.10. INSTALLATION

A. Apply thin film of primer with bristle brush on joint surfaces and allow to fully dry. Do not allow primer to spill or migrate onto adjoining surfaces. If sealant material is not installed within 8 hours, then re-prime the surface.

B. Sealant shall be applied under pressure by cartridge-type caulking gun or bulk loading gun. Install sealant in accordance with manufacturer's instructions.

C. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

D. Install sealant free of air pockets, foreign embedded matter, ridges or sags.

E. Tool joints to a flat profile unless otherwise indicated on the drawings. Joint shall be tooled within 20 minutes of sealant application.

1.11. CLEANING AND REPAIRING

A. Clean adjacent soiled surfaces.

B. Repair or replace defaced or disfigured finishes caused by work of this Section.

C. All cleaning methods and acceptable procedures are subject to the approval of the Architect/Engineer.

1.12. PROTECTION OF FINISHED WORK

A. Protect finished installation.

B. Protect sealants until cured.

WOOD WINDOW RESTORATION

PART 1 GENERAL

1.1. WORK INCLUDED

A. Restoration of existing historic double-hung window including but not limited to:

1. Weather stripping.
2. Hardware replacement.
3. Glazing.
4. Wood Restoration.
5. Window Testing.

1.2. REFERENCES

A. All products, as well as materials an installation not otherwise specified herein, shall comply with the reference standards listed below:

1. Preservation Briefs No. 9 "The Repair of Historic Wooden Windows" National Park Services.
2. "The Window Handbook: Successful Strategies for Rehabilitating Windows in Historic Buildings" National Park Services and Georgia Institute of Technology.
3. "The Window Workbook for Historic Buildings" National Park Services and Historic Preservation Education Foundation 1986.

4. "Window Rehabilitation Guide for Historic Building" Historic Preservation Educational Foundation 1997.

1.3. SYSTEM DESCRIPTION

A. Restore existing historic wood double-hung window to improve air and water infiltration, and energy performance.

1.4. LABORATORY TESTING AND PERFORMANCE REQUIREMENTS

A. Test Units

1. Air, water, and structural test unit shall conform to requirements set forth in AAMA/NWWDA 101/I.S.2 – 97 and manufacturer's standard locking/operating hardware and insulated glazing configuration.

B. Test Procedures and Performances

1. Windows shall conform to all AAMA/NWWDA 101/I.S.2 - 97 requirements for the window type referenced in 2.2.A. In addition, the following specific performance requirements shall be met.

2. Water Intrusion Test

a. ASTM E1105-00 (2008) - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors and Curtain Walls by Uniform or Cyclic Static Air Pressure Difference.

b. With ventilators closed and locked, test unit in accordance with ASTM E 331/ASTM E 547 at a static air pressure difference of 12.0 psf (575 Pa).

c. There shall be no uncontrolled water leakage.

1.5. FIELD TESTING AND PERFORMANCE REQUIREMENTS

A. Water penetration field tests shall be conducted at a static test pressure under differential pressure that is increased incrementally to failure.

1.6. QUALITY ASSURANCE

A. Qualifications: Use adequate numbers of skilled workers thoroughly trained and experienced in the necessary crafts and completely familiar with the specified requirements and methods needed for proper performance of the work of this Section.

1.7. SUBMITTALS

A. Product Data:

1. Provide for all stock manufactured items such as glass, sealants, anchors, hardware, panning system, and accessories.

2. Written certification (by the producers of the materials) that all materials supplied comply with all the requirements of the appropriate referenced standards, that all materials are compatible with all adjacent materials, and that all materials are suitable for their intended purpose.

3. Product data for all materials to be used in the work, including cut sheets and MSDS sheets.

B. Samples:

1. Weather stripping: Three (3) samples of each type 12 inches long.

2. Hardware and Accessory Materials: One sample of each hardware component, and all accessory components including fasteners, anchors, etc.

C. Sealant compatibility reports including frame corner seals/adhesives to frame and to paints, sealers and other finishes. Reports shall address both chemical and adhesion compatibility issues. Provide samples of finished and unfinished wood components for sealant testing.

1.8. QUALITY CONTROL:

A. Pre-installation Meetings:

Secure attendance by Architect/Engineer, Construction Manager, Contractor, subcontractor/installer, and authorized representatives of the material manufacturer and interfacing trades, where appropriate.

Examine Drawings and Specifications affecting work of this Section, verify all conditions, review installation procedures, and coordinate scheduling with interfacing portions of the Work.

B. Weekly Site Meeting: Conduct field site meeting with attendance by Architect/Engineer and Owner's representative to review work progress. Issue meeting minutes within 48 hours of the meeting.

1.9. WARRANTIES

A. Defective materials and workmanship is hereby defined to include, but not limited to, evidence of the following:

1. Discoloration or fading, excessive non-uniformity, pitting, cracking, peeling, or razing or corrosion of finish.
2. Glass breakage.
3. Secondary glass damage and/or damage due to failing window components.
4. Adhesive or cohesive failure of sealant.
5. Crazing on surface of non-structural sealant.

B. Contractor shall be responsible for damage to the building and furnishings occasioned by defective materials or workmanship or damage as part of repairs to the wall.

C. Terms used in conjunction with finish Guarantee are defined as follows:

1. Discoloration or fading: a change in appearance which is perceptible and objectionable as determined by the Owner's Representative when viewed visually in comparison with the original color range standards.
2. Excessive non-uniformity: non-uniform fading during the period of the guarantee to the extent that adjacent parts have a color difference greater than the original acceptable color range.
3. Pitting, cracking, peeling, crazing or corrosion: there shall be no pitting, surface cracking, blistering, bubbles, or non-uniform surface texture or other type of corrosion discernible from a distance of ten (10) feet, resulting from the natural elements in the atmosphere at the project site.
4. Provide organic finish warranty based on AAMA standard 2605.

D. Glass: Provide written warranty for insulated glass units, that they will be free from obstruction of vision as a result of dust or film formation on the internal glass surfaces caused by failure of the hermetic seal due to defects in material and workmanship.

PART 2 PRODUCTS

1.1. COMPONENT MATERIALS

A. Hardware

1. Handle and lock: Bronze to match existing configuration and finish.

2. An extruded aluminum spring catch shall be provided at the head of the windows to securely hold the top sash in position.

3. An extruded aluminum spring catch shall be provided at the sill of the lower sash.

B. Balances

1. Balances shall be of appropriate size and capacity to hold sash in position in accordance with AAMA 101, Section 2.2.1.3.2, and AAMA 902, Section 8.1.

2. Balances shall be high performance sash balances that are tested in accordance with AAMA 902 "Voluntary Specification for Sash Balances".

3. Balances shall meet all minimum AAMA 902 Class 5 requirements with a minimum .30 Manually Applied Force ratio (MAF).

C. Weather stripping

1. Rip Strip Weather stripping: Bronze, No. 5 Equipment & nickel plated fasteners by Architectural Resources Center, Northwood, NH 03261.

2. J-Type Weather stripping at meeting rails: Bronze, No. 5 Equipment & nickel plated fasteners by Architectural Resources Center, Northwood, NH 03261.

D. Waterproof Glue: Resorcinol-formaldehyde based.

E. Wood putty for nail holes: Commercial grade linseed oil based.

F. Miscellaneous Materials:

1. Paint remover for wood: Organic based paint remover. Alkaline-based removers will not be permitted. Heat may not be used on materials attached (installed) to the building.

2. Fasteners: Provide either non-ferrous fasteners or hot-dip galvanized fasteners of appropriate size and length were required.

3. Tools: Tools required include both soft and stiff bristle brushes, copper or steel bristle brushes, medium and fine wool, medium and fine sandpaper, syringes, spatulas, screwdrivers, pry bards, respiratory protection masks with chemical cartridges meeting NIOSH and MSHA regulations TC23C, cotton rags, alcohol heat lamp with small burn-in knife, chisels, and solvent proof gloves and other tools as deemed necessary by the Contractor.

1.2. ACCESSORIES

A. Fasteners and Anchors: Nonmagnetic 300 series alloy stainless steel.

B. Weather stripping: Conforming to AAMA 701/702 - 04 and shall be FIN-SEAL or equal.

C. Gaskets: Glazing gaskets shall be black, extruded silicone rubber complying with ASTM C1115 - 06.

D. Glazing stops: Clear cedar, to match existing profile.

1.3. FABRICATION

A. Glazing

5. All units shall be glazed with the manufacturer's standard sealant process provided the glass is held in place by wood glazing bead.

PART 3 EXECUTION

1.13. EXAMINATION

A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

B. Installer shall examine the areas and conditions under which the Work of this Section will be performed.

1. Report unsatisfactory conditions in writing to the Architect/Engineer;
2. Do not proceed until unsatisfactory conditions are corrected;
3. Commencement of window restoration constitutes acceptance of the existing openings;
4. Verify that wood frame, sashes, and glazing stops are restored and painted.

1.14. INSTALLATION

A. Use only skilled workers with work done in accordance with specifications.

B. Plumb and align sash faces in a single plane and install square and true.

C. Install balances and ropes to provide smooth operation in compliance with specified requirement.

D. Install weather stripping at perimeter of frame and sashes as required to control air and water infiltration.

E. Adjust windows for proper operation after installation.

F. Latches shall be adjusted for maximum engagement and for proper operation.

G. Furnish and apply sealants to provide a weather tight installation at all joints and intersections and at opening perimeters. Wipe off excess material and leave all exposed surfaces and joints clean and smooth.

H. Tolerances:

1. Maximum Variation from Level or Plumb: 1/16 inch every 3 ft. non-cumulative or 1/8 inch per 10 ft., whichever is less.
2. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch from 10 foot straight edge.

1.15. FIELD QUALITY CONTROL

A. Water Infiltration: Contractor to retain independent firm, chosen by the Architect/Engineer, to conduct field testing of installed windows. Comply with Section 01 40 00 - Quality Requirements.

1. The Architect/Engineer shall select windows as specified above.
2. Cost of testing, including staging, temporary assemblies, access to utilities, etc., shall be at Contractor's sole expense.
3. Contractor's consultant to issue written report in accordance with ASTM E1105 documenting the test results.
4. Any installation which fails the test must be modified and retested. All modifications must be documented in both written form as well as noted as revisions on a set of shop drawings.
5. Owner's Representative shall observe tests. Contractor to pay Owner's cost to have Owner's consultant observe any required retesting.

1.16. WATER TESTING

A. Contractor shall coordinate with Architect/Engineer for testing of all windows scheduled for repair, as follows:

1. Coordinate water testing and scaffolding requirements with test crew requirements, test equipment delivery requirements, and coordination with testing of roof and wall conditions.

2. Tape off stucco surrounding windows to isolate windows. Each window shall be tested before repairs are performed at 0 psf, at 3.0 psf and at 4.0 psf. Remove plastic protection from stucco and repeat testing so that both window and stucco (window flashing) are tested simultaneously. Perform window repairs and repeat testing of window in isolation, followed by testing of window and window flashing concurrently using the same test pressures listed above. Upon completion of window and window flashing testing, described above, an additional 1-hour spray rack test shall be performed above the window to test the overlying wall conditions, overlying window conditions and/or roof-to-wall transitions. If window or window flashing leaks are detected, testing shall be repeated.

3. Contractor shall assist Architect/Engineer to test windows as listed above in accordance with ASTM E1105 Procedure B (cyclic) for four cycles at each test pressure listed (0 psf shall be a continuous 15 minute test).

4. Contractor shall supply and install 10 mil thick clear vinyl to construct pressurized test chambers for all tests.

5. The testing shall be conducted throughout the duration of the project and shall be scheduled as soon as practical after perimeter sealant joints have cured (approximately 7 to 10 days after installation or as recommended by sealant manufacturer).

6. Contractor shall provide electricity, water, etc. as required to complete all testing.

7. Any window and/or window flashing that fails the test shall be retested once remedial repairs are completed. All modifications shall be documented in both written form, as well as noted as revisions on a set of shop drawings.

1.17. CLEANING

A. After installation is completed all soil marks, shipping labels, and visible marks shall be removed with a solvent approved by the window manufacturer.

B. Upon completion of the Work, remove all debris and surplus items from the site. Leave all areas and building components in an acceptable condition for the remaining work.

1.18. PROTECTION

A. Provide all protection necessary to protect the tenants of the building, the public, and the property, including adjacent properties, from damage as a result of the Work in this Section.

GLASS GLAZING

1. PART 1 GENERAL

1.1. SECTION INCLUDES

A. Flat glass materials.

B. Laminated insulated glass units.

C. Glazing accessories.

1.2. SYSTEM DESCRIPTION

A. Design Requirements:

1. Size glass to withstand dead loads and positive and negative live loads acting normal to plane of glass in accordance with the CBC.

B. Performance Requirements:

1. Size glass to withstand dead loads and positive and negative live loads acting normal to plane of glass to a design pressure of 60 pound per square foot in accordance with ASTM E 1300 - 07e1.
2. Limit glass deflection to 3/4 inch or flexure limit of glass with full recovery of glazing materials, whichever is less.
3. Provide Tempered / Laminated Glass where required by CBC.

1.3. SUBMITTALS

A. Product Data: Flat glass materials manufacturer's descriptive literature indicating conformance to specified performance requirements for specified glazing materials.

B. Samples:

1. Glass Units of each type: Two 12 inch by 12 inch samples representative of unit construction.

C. Quality Assurance/Control Submittals:

1. Design Data: Glass size calculations, prepared in accordance with specified method.
2. Certificates: Contractor's certification that:
   a. Products of this section, as provided, meet or exceed specified requirements.
   b. Fabricator of sealed insulating glass units meets specified qualifications.
   c. Installer of products of this section meets specified qualifications.

1.4. QUALITY ASSURANCE

A. Certifications: Provide certificate that glass manufacturer has reviewed and approved window, door and enclosure shop drawings for glass usage, size, composition, thickness, thermal stress analysis (including effects of shading if applicable) and glazing details.

B. Mock-ups: Incorporate glazing into mock-ups required under other Sections.

1.5. DELIVERY, STORAGE, AND HANDLING

A. Packing, Shipping, Handling, and Unloading: Deliver products to site in fabricator's sealed, undamaged containers with identification labels intact. Handle in accordance with fabricator's instructions.

B. Storage and Protection: Store material in dry, secure location in compliance with fabricator's requirements.

1.6. PROJECT CONDITIONS

A. Project Environmental Conditions: Installation of glass products at ambient air temperature below 50°F is prohibited.

B. Existing Conditions: Verify field measurements with drawing dimensions prior to fabrication of glass products.

1.7. WARRANTY

A. Provide ten (10) year warranty to include replacement of sealed glass units exhibiting seal failure, interpane dusting or misting.

B. Provide ten (10) year warranty to include replacement for laminated glass exhibiting delamination.

2. PART 2 PRODUCTS

2.1. MANUFACTURERS

A. Cardinal Corporation, 3125 Neal Creek Mill Road, Hood River, OR 97031. Sales Representative: Clayton Watson, 541-354-1280.

1. Glass for Aluminum Windows, Cardinal 272 Insulated Glass Unit or Approved Equal

a. Thickness: 1" - 1/4" Laminated outer pane (0.030 PVB), w/ Cardinal 272, 1/2" airspace, 1/4" Laminated inner pane (0.030 PVB)

b. Performance Characteristics:

Visible Light Transmittance: 69 Percent.

Visible Light External Reflectance: 11 Percent.

Visible Light Internal Reflectance: 13 Percent.

Total Solar Energy Transmittance: 34 Percent.

Total Solar Energy Reflectance: 29 Percent.

UV Transmittance: 0 Percent.

Maximum U Factor: 0.25

Maximum SHGC: 0.39

STC: 43

1.2. ACCESSORIES

A. Setting Blocks: ASTM C 864, neoprene, 80 to 90 Shore A durometer hardness; length 4 inches, width of glazing rabbet space less 1/16 inch, height required for glazing method, pane weight, and pane area.

B. Spacer Shims: ASTM C 864, neoprene, 50 to 60 Shore A durometer hardness; length 3 inches, one half height of glazing stop, thickness required for application, one face self-adhesive.

C. Glazing Tape: Butyl compound tape with integral resilient tube spacer, 10 to 15 Shore A durometer hardness, black color, coiled on release paper; widths required for specified installation.

D. Glazing Clips: Manufacturer's standard type.

E. Anti-walk Blocks: As supplied by frame manufacturers.

1.3. FABRICATION

A. Laminated Glass:

Cut float glass materials to indicated sizes and provide cut-outs and holes, if indicated, before heat strengthening.

Heat strengthen float glass materials in accordance with ASTM C 1048, Kind HS.

Laminate plastic interlayer between glass panes in accordance with ASTM C 1172.

Laminated glass to conform to GANA (LGDG) and requirements of ANSI Z97.1.

B. Sealed Insulating Glass Units:

Fabricate units in accordance with ASTM E 774, Class CBA, with comply with performance characteristics specified in paragraph 1.5 of this section.

Provide dual-sealed units with edge seals meeting requirements of ASTM E 773, with aluminum spacers having mitered corners, and silicone sealant for glass-to-spacer (secondary) seals.

PART 3 EXECUTION

2.1. EXAMINATION

A. Verify that openings for glazing are correct size and within tolerance.

B. Verify that glazing channels and recesses are clean and free of obstructions, that weeps are clear, and that channels and recesses are ready for glazing.

2.2. PREPARATION

A. Clean contact surfaces to receive sealant with solvent; wipe dry.

B. Seal porous glazing channels and recesses with primer or sealer compatible with substrate.

C. Prime surfaces to receive sealant in accordance with sealant manufacturer's instructions.

2.3. INSTALLATION

A. Install sealants in accordance with sealant manufacturers' written instructions and recommendations.

B. Install glazing according to manufacturer's requirements to achieve the necessary performance ratings.

C. Place setting blocks with edge and intermediate blocks per GANA recommendations.

D. Place anti-walk blocks at jambs where recommended by frame manufacturer.

2.4. CLEANING

A. Remove glazing materials from finish surfaces.

B. Remove labels after glass installation is complete.

C. Clean glass surfaces and adjacent surfaces.

PAINTING AND COATING

PART 1 - GENERAL

12.1. SECTION INCLUDES

A. Labor material, tools and equipment necessary for execution of wood restoration and painting of historic window. Work includes but is not limited to the following:

1. Stripping all paint on sash and frame.
2. Wood restoration of frame and sash.
3. Weatherstripping:
   a. Removal and replacement weatherstripping at window.
   b. Installation of weatherstripping at full perimeter of window sash to frame.

4. Painting of frame and sash.

12.2. SUBMITTALS

A. Product Data: Submit manufacturer's product data sheets for all products and accessories supplied under this Section, including primers, cleaning compounds, patching compounds, and other products necessary for completion of the work of this Section.

1. Manufacturer's approved tinting procedures for differing coats below top coat.

B. Applicator: Submit manufacturer's certificate of approved applicator.

C. MSDS: Maintain MSDS sheet for all materials onsite that apply to this Section; paint, coating, solvents, primers, etc.

D. MSDS: Submit material safety data sheets for products used in this Section, when requested.

E. Certificates: Submit manufacturer's certification that materials supplied under this Section meet or exceed the specified requirements, where applicable.

F. Manufacturer's Instructions: Submit manufacturer's printed instructions for mixing and application for all products supplied under this Section. Include environmental limitations for application.

G. Manufacturer's Field Reports: Submit field reports by the manufacturer's field representative certifying that products supplied are being installed in a manner consistent with the manufacturer's requirements. At minimum, field reports shall be issued at the beginning of material application and at reasonable intervals thereafter to ensure that the workmanship is consistently acceptable to the material manufacturer.

H. Colors: Submit manufacturer's standard color charts for Owner's approval.

I. Submit two samples 12" by 12" size with textures available for each surface finishing product scheduled, for selection. Submit color charts for each product.

J. Material with several premixed textures: Submit samples of all textures available for selection.

K. Closeout Submittals:

1. Closeout submittals to be bound in an indexed binder intended for use by building management.
2. Copies of all current product data sheets for materials supplied under this Section.
3. Copies of all MSDS sheets for materials supplied under this Section.
4. Copies of Manufacturer's standard product warranties, where applicable.
5. Copies of any manufacturer's regular or periodic maintenance requirements for the materials supplied under this Section, where applicable.
6. Copies of any applicator maintenance recommendations for materials supplied under this Section, where applicable.

12.3. QUALITY ASSURANCE

A. Qualifications:

1. Mechanics: Only skilled workers thoroughly trained and experienced with the materials, equipment, and methods required in this Section.

B. Foreman: The contractor shall designate a job foreman who will be onsite during the execution of the work under this Section and who will be the contact person for the Architect/Engineer.

C. Mock-ups:

1. Painting Mock-up:

   d. Provide one field sample on window sill, at window location selected by Owner.

   e. Sample shall include stripping of existing paint, wood consolidation and treatment, and new paint. Each step shall be observed and approved by Architect prior to proceeding to the following step.

   f. Contractor shall ensure that manufacturer's representative visits the site and provides confirmation that substrate is acceptable to receive coating at mock-up locations, as well as at the south and west elevations as a minimum.

   g. Paint field sample shall illustrate color, texture, and finish.

   h. Paint sample shall be tested for adhesion to substrate.

   i. Recoat the area to conceal the adhesion test(s).

   j. Adhesion Tests:

      Perform adhesion tests on each building elevation to be painted.

      Perform adhesion tests on each type of substrate to be painted on each building elevation.

      Minimum size mock-up for adhesion test 12-inch (minimum) to accommodate Adhesion Testing identified in Part 3 - Execution.

      Repeat mock-up tests where mock-ups do not satisfy adhesion requirements.

      Contractor shall not proceed with work under this Section until approval of the mock-up by the Architect/Engineer.

      The approved mock-up may remain as part of the work.

D. Pre-installation Meeting: The contractor shall schedule a pre-installation meeting two weeks prior to commencing the work under this Section and secure the attendance of the Architect/Engineer. The designated job foreman as well as contractor's job superintendent or project manager shall attend the meeting as well. Contractor shall ensure that the manufacturer's representative attends mock-up testing and observes surface preparation before Work commences. The contractor shall provide a detailed work schedule during this meeting.

12.4. PERFORMANCE REQUIREMENTS

A. Paints and/or coatings installed under this Section shall satisfy the following Performance Requirements for the durations established under the Warranty clause:

   1. Paints and/or coatings shall not significantly fade.

   2. Paints and/or coatings shall meet their original adhesion.

   3. Paints and/or coatings shall be free of the following: blisters, running, peeling, scaling, chalking and streaks.

12.5. DELIVERY, STORAGE, AND HANDLING

A. Packing, Shipping, Handling, and Unloading: Deliver materials in sealed manufacturer's original containers. Handle materials according to manufacturer's printed instructions.

B. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation and instructions for mixing and reducing.

C. Acceptance at Site: Do not bring materials damaged during transit to site.

D. Storage and Protection: Store materials in a manner approved by the manufacturer. Materials should be stored in a well ventilated, weather protected area clear of the ground and within the temperature

and relative humidity criteria established by the manufacturer; minimum 45°F and maximum 90°F. Materials shall not be stored in direct sunlight.

E. Take precautionary measures to prevent fire hazards and spontaneous combustion.

F. Employ necessary means to protect the materials before, during, and after installation. Immediately replace damaged materials and repair damaged work.

12.6. REGULATORY REQUIREMENTS

A. Conform to state and local codes for flame/fuel/smoke rating requirements for finishes.

B. Comply with the more stringent Volatile Organic Content (V.O.C.) regulations of the state of California and local regulations.

12.7. PROJECT ENVIRONMENTAL REQUIREMENTS

A. Maintain temperatures above 45°F and below 100°F for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.

B. Do not apply finishes during, 24 hours following, and/or 24 hours preceding inclement weather that will affect the finish (i.e. paint and/or coating), including rain, fog, mist, relative humidity in excess of 90%, or freezing temperatures. Comply with manufacturer's requirements.

C. Do not apply exterior coatings during rain or snow, or when relative humidity is within 5 degrees of the dew point as determined with a hygrometer (relative humidity gauge), unless required otherwise by manufacturer's instructions.

12.8. STOCK MATERIAL

A. Provide one five-gallon container of each type, each color, and each surface texture of each type of silicone paint to Owner.

B. Provide two one-gallon containers of each type, each color, and each surface texture of all other paints to Owner.

C. Label each container with color, texture, and locations, in addition to the manufacturer's label.

12.9. WARRANTY

A. Contractor warrants that the finish (paints and coatings) systems installed under this Section will satisfy the performance requirements for a period of two years.

B. Contractor warrants for Ameron coating systems installed under this Section will satisfy the performance requirements for a period of two years.

C. Painting:

1. Contractor warrants that the finishes installed under this Section will satisfy the performance requirements for a period of two years.

2. Manufacturers shall finish a material warranty for finishes supplied under this Section.

PART 2 - PRODUCTS

13.1. MATERIALS

A. Paint stripper:

1. For stripping existing paint on wood frame and sashes, by Back To Nature.

B. Wood restoration material:

1. Two parts Clear Penetrating Epoxy Sealer as manufactured by Smith and Company.
2. Two part wood filer, Fill-It as manufactured by Smith and Company.

C. Acceptable system for wood: Dunn Edwards.

1. Primer: 100% acrylic primer E-Z Prime (W 708) .
2. Paint: 100% acrylic paint Permasheen (W901) (10 mil DFT, dry film thickness).
3. Color as selected by the Architect/Engineer.

D. Cleaners:

1. Wood Cleaning Agent: Cabot Problem-Solver Wood Cleaner, #8002, or as recommended by paint manufacturer.

13.2. ACCESSORIES

A. Sealants: silicone sealants.

B. Paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality acceptable to the manufacturer of the coating system.

C. Coatings: Good flow and brushing properties, capable of drying or curing free of streaks or sags.

D. Miscellaneous: Other items not specifically mentioned but required for the proper execution of the work.

13.3. MIXES

A. Mix components mechanically or manually, as recommended by the manufacturer, in clean, rust free containers with the ratios specified by the manufacturer to achieve the intended consistency. Mixes shall be thoroughly mixed and combined to form a homogenous material. Manufacturer's published mixing times shall be considered a minimum requirement.

13.4. FINISHES

A. Color to match existing.

PART 3 EXECUTION

14.1. EXAMINATION

A. Prior to application, verify that surfaces are dry and free of defects that may be detrimental for a proper application of the painting materials. Contractor shall ensure that manufacturer's representative visits the site and provides confirmation that substrate is acceptable to receive coating.

B. Report to the Architect/Engineer conditions that are not in conformance with the manufacturer's requirements for application. Commencement of application indicates acceptance of conditions.

C. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of materials is below the following maximums (or lower maximums if required by manufacturer):

1. Wood: 18 percent

14.2. PROTECTION

A. Protect exterior doors, windows, fixtures and other elements surrounding the Work during material application from damage or disfigurement. Furnish drop cloths, shields and protective methods to prevent spray and/or drippings.

B. Remove, store and protect door shoes prior to painting. Reinstall upon completion of painting, as specified.

C. Provide dust protection as necessary on the inside of the building before the start of work.

D. Repair damage to other surfaces caused by work of this Section using means approved by the Architect/Engineer.

14.3. PREPARATION

A. General

1. Protection: Provide appropriate protection to interior and exterior surfaces prior to commencement of the work of this Section. Mask windows and doors. Remove or mask electrical plates, hardware, light fixture trim, escutcheons and fittings prior to preparing surfaces or finishing. Store and protect from damage and reinstall after completion of the work.

2. Mix and apply stripping material to all paint wood surfaces in accordance with manufacturer's published instruction.

3. All stripping material to dwell the minimum time recommended by the manufacturer prior to removal. Reapply as necessary to remove any remaining paint.

4. Remove fillers, putty or sealant within or between pieces of wood.

5. Correct defects and clean surfaces which affect work of this Section. Clean all exterior surfaces to be coated of all dirt, dust, oil, grease, oxidized, loose and scaling paint, mildew, rust on metal and other foreign matter. Scrape, wire brush and/or spot sand where required to demonstrate the complete removal of partially adhered coatings (i.e. coatings that are not fully adhered shall be fully removed). Water blasting may be used if demonstrated by Contractor during mock-ups that substrates will not be adversely affected. Remove stains caused by weathering of corroded metals with a solution of sodium metasilicate after thoroughly wetting with water.

6. Mildew: Remove mildew on surfaces to be painted by scrubbing with solution of trisodium phosphate and bleach. Rinse with clean water and allow surface to dry.

7. Prepare substrates in accordance with manufacturer's printed instructions.

B. Wood

6. If necessary, scrub repair areas with brushes to remove hard to remove dirt and residues.

7. Remove deteriorated and decayed wood as directed by the Architect/Engineer in the field.

8. Mix and apply epoxy sealer to all wood surfaces in strict accordance with manufacturer's instructions.

9. Apply the sealer in multiple coat allowing each coat to cure. Apply until refusal.

10. Allow solvents from sealer to evaporate prior to applying epoxy filler.

11. Fill all voids, cracks and holes with epoxy filler.

12. Sand surfaces as necessary to smooth out roughness that may effect the smoothness of the painted surface. Use 120 grit or coarser.

13. Mix and apply final coat of epoxy sealer.

14. Allow epoxy sealer to partially cure prior to application of primer.

15. Apply primer to thickness of two mils minimum.

16. Allow primer to dry prior to proceeding with paint.

C. After paint is fully cured, install new weatherstripping.

D. Adjust as necessary, to assure proper operation.

14.4. FIELD QUALITY CONTROL

A. Each worker is to carry a wet film thickness gauge and regularly check film thickness during application. Rates of application are not proof of film thickness.

B. The Contractor is to take a minimum of 1 cut sample for each day of painting for testing DFT (dry film thickness) and adhesion.

C. The Architect/Engineer may take additional samples. Provide Architect/Engineer with access to all areas on a regular basis. Repair all test cuts, such that test locations are not visible.

14.5. CLEANING

B. As Work proceeds, promptly remove coating where spilled, splashed, or spattered.

C. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.

D. Collect cotton waste, cloths and material that may constitute a fire hazard. Place in a closed metal container and remove daily from site.

Information To Build On
Engineering • Consulting • Testing

Health & Safety Procedures for Exterior Repairs that require Cutting Asbestos-Containing Fiberboard

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SECTION 01013 - SUMMARY OF THE WORK

PART 1 - GENERAL

1.1 PROJECT SCOPE OF WORK

General: The procedures outlined in this document support exterior cladding repairs that will be performed at the University of California, Hastings College of Law located at 100 McAllister, San Francisco, CA. Exterior cladding elements scheduled for repair consist of a copper exterior finish applied over a brick wall. Between the brick wall and copper finish is an asbestos fiberboard material. Repairs will include re-caulking gaps around the copper finish panels. Occasionally, the asbestos fiberboard shifts into the gap between the copper finish panels, impairing the ability to properly re-caulk the gap. When this condition occurs, the asbestos fiberboard must be cut back to allow for proper caulking of the gap. The procedures outlined in this document provide for the limited cutting of the asbestos fiberboard to facility proper gap caulking.

1.2 GENERAL REQUIREMENTS FOR THE REMOVAL OF ASBESTOS CONTAINING MATERIALS

In general terms, all work involving the cutting of the asbestos fiberboard shall be performed in accordance with Sections 02083 and 02084 and Division of Occupational Safety and Health (DOSH) Title 8, California Code of Regulation (CCR) Section 1529. The number of times that cuts will be performed or the amount of fiberboard that will be disturbed will not be known until the existing putty material is removed and the gap between the copper plates are exposed, In general terms, when cuts are required, the quantity is anticipated to be a strip measuring less than 1 inch by 24 inches. The following work procedure sections provided in this document should be followed during removal of the asbestos containing fiberboard:

1560 Worker Equipment
1562 Respiratory Protection
02083 Removal of Class II Asbestos-Containing Materials
02084 Disposal of Asbestos-Containing Waste Material

Procedure Summary: Cutting of asbestos fiberboard will be performed as needed at the direction of the project architect. All work will be performed from suspended work platforms secured to the building exterior. The following work procedures should be followed during the cutting activities.

1. Restrict access onto the work platform to only asbestos abatement personnel prior to any cutting of asbestos fiberboard.
2. Seal poly sheeting below cutting areas to ensure debris does not fall from the work platform.
3. Cut the asbestos fiberboard with a razor knife or equivalent tool. Mechanical cutters such as circular saws and sawzall's shall not be used unless the blade is enclosed and the unit is equipped with a connection to vacuum with high efficiency particulate aerosol (HEPA) filters.
4. When razor knives are used, use vacuums equipped with HEPA filters simultaneously with the cutting to maximize capture of fiberboard dust and debris.
5. Place all debris in properly labeled waste bags
6. Use HEPA filtered vacuum to clean the copper finish panel and the gap space.
7. Remove the drop cloth ensuring that no debris escapes and place in a properly labeled waste bag.
8. Wet wipe the copper finish panels around the cutting activities and disposes of cleaning materials in labeled disposal bag.

The contractor shall be responsible for monitoring and assessing worker exposures to asbestos and compliance with the DOSH asbestos excursion limit (EL) of 1.0 fibers/cubic centimeter (f/cc) and 8-hour permissible exposure limit (PEL) of 0.1 f/cc. as defined in Title 8, CCR Section 1529

PART 2 - PRODUCTS (Not Applicable)
PART 3 - EXECUTION (Not Applicable)
END OF SECTION - 01013

SECTION 01560 - WORKER PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to work of this section.

1.2 DESCRIPTION OF WORK

This section describes the equipment and procedures required for protecting workers during asbestos fiberboard cutting activities, except for respiratory protection.

1.3 RELATED WORK SPECIFIED ELSEWHERE

1.3.1 Respiratory Protection: Specified in Section 01562.

PART 2 - EQUIPMENT

2.1 PROTECTIVE CLOTHING

2.1.1 Coveralls: Provide disposable full-body coveralls and disposable head covers, and require that they be worn by all workers directly involved in the cutting of asbestos fiberboard. Provide a sufficient number of coveralls for all required changes and for all workers in the Work Area.

2.1.2 Gloves: Provide work gloves to all workers and require that they be worn at all times when cutting or cleaning of cutting areas is performed. Do not remove gloves from Work Area and dispose of as contaminated waste at the end of the work.

2.2 ADDITIONAL PROTECTIVE EQUIPMENT

Respirators, disposable coveralls, head covers, and footwear covers shall be provided by the Contractor for the Environmental Consultant, Project Administrator, and other authorized representatives who may inspect the job site.

PART 3 - EXECUTION

3.1 GENERAL

Provide worker protection as required by the most stringent DOSH and/or EPA standards applicable to the work. Each time Work Area is entered, put on new disposable coverall, and the assigned respirator.

3.2 DECONTAMINATION PROCEDURES

Require all workers remove coveralls, disposable head covers, and disposable footwear covers or boots when exiting the work area. Require that workers NOT eat, drink, smoke, chew tobacco or gum, or apply cosmetics in the Work Area. To eat, chew, drink or smoke, workers shall follow the procedure described above, and then dress in street clothes before entering the non-work areas of the building.

END OF SECTION - 01560

SECTION 01562 - RESPIRATORY PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to work of this section.

1.2 DESCRIPTION OF WORK

Instruct and train each worker involved in the cutting of asbestos fiberboard in proper respiratory use and require that each worker always wear a respirator, properly fitted on the face until the Work Area is completely decontaminated

PART 2 - EQUIPMENT

2.1 AIR PURIFYING RESPIRATORS

2.1.1 Respirator Bodies: Provide full or half face air purifying respirators.

2.1.2 Filter Cartridges: Provide, at a minimum, HEPA type P100 filters labeled in accordance with NIOSH Certification.

PART 3 - EXECUTION

3.1 GENERAL

3.1.1 Respiratory Protection Program: Comply with OSHA 29 CFR 1926 & DOSH Title 8.

3.1.2 Require that respiratory protection be used at all times during asbestos fiberboard cutting and associated clean up.

3.2 FIT TESTING

3.2.1 Initial Fitting: Fit types of respirator to be actually worn by each individual. Allow an individual to use only those respirators for which training and fit testing have been provided.

3.2.2 On an annual basis, check the fit of each worker's respirator by having irritant smoke blown onto the respirator from a smoke tube.

3.2.3 Upon Each Wearing: Require that each time an air-purifying respirator is put on it be checked for fit with a positive and negative pressure fit test in accordance with the manufacturer's instructions and per DOSH Title 8 requirements.

3.3 AIR PURIFYING RESPIRATOR STORAGE

Properly store respirators and filters and protect them from exposure to dust and debris prior to use.

END OF SECTION - 01562

SECTION 02083 - REMOVAL OF CLASS II ASBESTOS-CONTAINING MATERIALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

General provisions of Contract, including General and Supplementary Conditions and other Specification Sections, apply to work of this section.

1.2 APPLICABILITY

This section applies to Class II work as defined by DOSH CCR 1529 and means activities involving the removal of ACM which is not thermal system insulation (TSI) or surfacing material. This includes removal of asbestos-containing fiberboard.

PART 2 - PRODUCTS

2.1 WETTING MATERIALS

Provide water to which a surfactant has been added. Use a mixture of surfactant and water which results in wetting of the Asbestos-Containing Material and retardation of fiber release during disturbance of the material equal to or greater than that provided by the use of one ounce of a surfactant consisting of 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with five gallons of water.

2.2 POLYETHYLENE SHEET

Provide fire retardant polyethylene film in the largest size possible to minimize seams, 4.0 or 6.0 mil thick as indicated, clear, frosted or black as indicated.

2.3 DUCT TAPE

Provide duct tape in 2" or 3" widths as indicated, with an adhesive which is formulated to stick aggressively to sheet polyethylene.

2.4 SPRAY CEMENT

Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.

2.5 DISPOSAL BAGS

Provide 6 mil thick leak-tight polyethylene bags labeled as required by Section 02084 Disposal of Asbestos Containing Waste Material.

PART 3 - EXECUTION

3.1 ALL CLASS II WORK

3.1.1 Competent Person: All Class II work shall be supervised by a competent person as defined in DOSH CCR 1529.

3.1.2 Critical Barriers: Critical barriers shall be placed over all windows adjacent to the cut area to prevent migration of airborne asbestos from the work area to interior areas of the building.

3.1.3 Impermeable Drop cloths: Impermeable drop cloths shall be placed on surfaces beneath all cutting areas. Drop cloths shall be attached to the wall below the cutting area to ensure capture of all cutting debris. .

3.1.4 Controls: Comply with the work practices specified for each type of Class II asbestos work being performed as outlined Title 8 CCR Section 1529.

3.1.5 HEPA Filtration: Vacuums, powered saws and other equipment, which may generate asbestos fibers, shall be equipped with HEPA filtered exhausts.

3.1.6 Wet Methods: Wet methods or wetting agents to control employee exposures shall be employed.

3.1.7 OSHA requires the prompt cleanup of wastes and debris and placement in leak-tight containers and labeled with the following information:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

3.1.8 Establish a decontamination area that is adjacent to the regulated area for decontamination of employees and their equipment. At a minimum the decontamination shall consist of an area covered by an impermeable drop cloth on the floor or horizontal working surface of sufficient size to accommodate cleaning of equipment and removing personal protective equipment without spreading contamination. Work clothes must be cleaned with a HEPA vacuum before it is removed. All equipment and surfaces of containers filled with ACM must be cleaned prior to removing them from the equipment room or area. Entry to and exit from the regulated area shall be through the decontamination area.

END OF SECTION 02083

SECTION 02084 - DISPOSAL OF ASBESTOS-CONTAINING WASTE MATERIAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

General provisions of Contract, including General and Supplementary Conditions and other Specification Sections, apply to work of this section.

1.2 DESCRIPTION OF THE WORK

This section describes the disposal of Asbestos-Containing Materials. Disposal includes packaging of asbestos-containing waste materials. Disposal may be accomplished either by land filling or converting asbestos containing materials to non asbestos waste.

PART 2 - PRODUCTS

2.1 DISPOSAL BAGS

Provide 6 mil thick, leak-tight polyethylene bags labeled with three labels with text as follows:

2.1.1 FIRST LABEL

Provide in accordance with 29 CFR 1910.1200(f) of OSHA's Hazard Communication standard with NESHAP additions:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD
BREATHING AIRBORNE ASBESTOS
FIBERS IS HAZARDOUS TO YOUR HEALTH
OWNER NAME, CONTRACTOR NAME
LOCATION AT WHICH WASTE WAS GENERATED

2.1.2 SECOND LABEL

Provide in accordance with U. S. Department of Transportation regulation on hazardous waste marking. 49 CFR parts 171 and 172. Hazardous Substances: Final Rule. Published November 21, 1986 and revised October 21, 1991:

RQ
ASBESTOS
NA 2212, III

PART 3 - EXECUTION

Comply with the following sections during all phases of this work:

Section 01560 Worker Protection - Asbestos Abatement
Section 01562 Respiratory Protection

3.1 GENERAL

3.1.1 All waste is to be hauled by a waste hauler with all required licenses from all state and local authority with jurisdiction.

3.1.2 Seal asbestos waste in leak-proof impermeable containers labeled in accordance with Title 29, Code of Federal Regulations, Section 1910.1200 (f).

3.1.3 Protect interior of truck or dumpster with Critical and Primary Barriers as described in Section 01526 Temporary Enclosures.

3.1.4 Carefully load containerized waste in fully enclosed dumpsters, trucks or other appropriate vehicles for transport. Exercise care before and during transport, to insure that no unauthorized persons have access to the material. Vehicle must be placarded with DOT label.

3.1.5 Do not store containerized materials outside of the Work Area. Take containers from the Work Area directly to a locked dumpster or transporting vehicle.

3.1.6 Do not transport disposal bagged materials on open trucks. Double bagged material may be transported on open trucks if they are first loaded in sealed drums. Label drums with same warning labels as bags. Uncontaminated drums may be reused. Treat drums that have been contaminated as asbestos-containing waste and dispose of in accordance with this specification.

3.1.7 Advise the landfill operator or processor, in advance of transport, of the quantity of material to be delivered.

3.1.8 At completion of hauling and disposal of each load, submit copy of waste manifest, chain of custody form, and landfill receipt to the Client Representative.

END OF SECTION - 02084

Information To Build On
Engineering • Consulting • Testing

Health & Safety Work Plan for Work Impacting Lead-Based Paint

University of California
Hastings College of Law
100 McAllister
San Francisco, California
PSI Project Number 0582447

PSI Project Number 05821063

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DIVISION 1 - GENERAL REQUIREMENTS

DIVISION 2 - SITE WORK

SECTION 01013 - SUMMARY OF THE WORK

PART 1 - GENERAL

1.1 PROJECT SCOPE OF WORK

General: The work outlined in this document supports the exterior repair project to be performed at the University of California, Hastings College of Law located at 100 McAllister, San Francisco, CA. The building is an historic high rise building and retains the original wood windows, which are known to have been painted with lead-based paint (LBP). Leaks are reported to be associated with the historic windows.

The architectural firm Ferrari Moe, LLP (Ferrari Moe) was retained to develop a scope of repair for the identified leaks. Related to the historic window assemblies, planned repair actions require that the LBP be removed or stabilized from the wood window assemblies in order to facilitate waterproofing repairs. PSI was subsequently requested to support the planned repair actions by providing this guidance document to be used by the contractor during work impacting LBP.

Regarding the LBP coatings, the intent of this work plan is to provide information to minimize the migration of lead in dust that may be created during the window removal and repair actions.

1.2 GENERAL REQUIREMENTS FOR WORK IMPACTING LEAD BASED PAINT COATINGS

In general terms, work impacting LBP coatings should be performed in accordance with Section 02085, Federal and State Occupational Health and Safety Administration (Fed-OSHA 29 CFR 1910.1025 and Division of Occupational Safety and Health (DOSH) under Title 8 CCR 1532.1). Lead-containing waste materials shall be placed in leak tight containers and properly labeled as indicated in Section 02086.

Federal efforts to regulate LBP began with the enactment of the Lead-Based Paint Poison Prevention Act (LBPPPA) in 1971. In 1973, the Consumer Product Safety Commission (CPSC) defined LBP as paint having lead content equal to or greater than 0.5 percent by weight in a dry film of newly applied paint. In 1978, the CPSC lowered the allowable lead levels in new paint to 0.06% by weight. In 2009, the CPSC lowered the allowable lead levels in new paint film to 0.009% by weight.

Title 17, California Code of Regulations (CCR), Division 1, Chapter 8: Accreditation, Certification and Work Practices for Lead-Based Paint and Lead Hazards, defines LBP as paint or other surfacing coatings that contain an amount of lead equal to, or in excess of one milligram per square centimeter (1.0 mg/cm^2) or more than 0.5% by weight.

Lead content of the window coatings was reported to be greater than 0.5%. There is the possibility that other painted finishes adjacent to the may also contain lead. Caution should be taken during renovation activities to prevent lead levels in generated airborne dust from painted surfaces from exceeding the Action Level (AL) or Permissible Exposure Limit (PEL) as required by DOSH, Title 8, CCR Construction Safety Orders for Lead, Section 1532.1. Furthermore work involving the disturbance of LBP surfaces should be performed by a licensed lead abatement contractor.

Federal and State Occupational Health and Safety Administration (Fed-OSHA 29 CFR 1910.1025 and DOSH under Title 8 CCR 1532.1) do not define the amount of lead in paint to a regulatory requirement; rather the activities or task define when the regulation is in effect. Both Federal and State standards use the term "trigger task" activities. In the work place, employers must make certain assumptions of the exposure levels and comply with the regulations based on the level of disturbance rather than the lead content level. For example, employees who perform trigger tasks (such as manual demolition, sanding or grinding) are required to receive employer provided training, air monitoring, protective clothing, respirators, and hand washing facilities. In addition there are standard work practices required such as the use of wet methods and HEPA vacuums.

This document has been prepared to establish the minimum health and safety requirements for the disturbance of LBP coatings. Window removal and repair actions will be performed from the exterior of the building from swing stages. When LBP coated window assemblies are disturbed, the scope of work for removal of the materials is as follows:

1) Install critical barriers (6-ml fire retardant polyethylene sheeting) over the interior face of the window. The barrier shall isolate the interior of the room but allow access to the window sash, sills, jambs and header from a swing stage work platform.
2) Regulate access on the swing stage by non-authorized personnel and use appropriate lead work signs.
3) Place 6-ml fire retardant polyethylene drop cloths on the floor of the swing stage to capture falling debris.
4) Railings shall also be covered to capture falling debris. Based on possible wind shear conditions, the contractor shall have the option to use polyethylene sheeting or construction debris netting with the smallest mesh size that is appropriate for the anticipated wind conditions.
5) Workers to don protective clothing and use respiratory protection (Section 01560 and 01563).
6) Remove window sash for repair actions. Mist any friction areas with water to minimize dust generation during the work.
7) Window frames will left in place and repaired as directed by Ferrari & Moe.
8) Constantly vacuum and wet wipe drop cloths and surfaces within the work area to minimize the accumulation of paint chips. Vacuums shall be equipped with high efficiency particulate aerosol (HEPA) filters.
9) All window work surfaces shall be cleaned with HEPA vacuums prior to movement of the swing stage.
10) Containerize paint chip waste for appropriate disposal.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION – 01013

SECTION 01410 –TEST LABORATORY SERVICES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division - 1 Specification Sections, apply to work of this section.

1.2 DESCRIPTION OF THE WORK

This section describes final surface sampling to be carried out by the Environmental Consultant to assess the control of lead dust within the work area.

Determination of acceptability of a work area following renovation actions will be based on visual inspections of the work area. Visual inspections will be performed by the Environmental Consultant in areas where removal work is performed. Dust wipe sampling may be performed at areas where lead-based paints or coatings are sanded, abraded or otherwise separated from exterior wall areas to determine effectiveness of the engineering controls in prevention of migration of lead-containing dust and debris.

1.3 DUST WIPE SAMPLING

If directed by the Owner, the Environmental Consultant will collect dust wipe samples from designated interior horizontal surfaces for lead content using standard procedures. The samples would be collected from interior areas adjacent to exterior work areas where LBP is disturbed. The dust wipe samples will be analyzed by PSI Laboratories, located in Pittsburgh, Pennsylvania. Sample preparation involves digesting the dust wipe samples in dilute nitric acid followed by Flame Atomic Absorption analysis (FAA).

1.4 POST REMOVAL ACCEPTANCE CRITERIA

Observations will be performed in all work areas to document the removal of all dust and debris.

Dust wipe sample results, if collected, will be compared to 40 micrograms per square foot on interior floors and 250 micrograms per square foot on interior window sills criteria, as defined in Title 17, California Code of Regulations, Division 1, Chapter 8.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION - 01410

SECTION 01526 – WORK AREA PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division - 1 Specification Sections, apply to work of this section.

PART 2 - PRODUCTS

2.1 SHEET PLASTIC DROP CLOTH

Provide fire retardant polyethylene film in the largest size possible to minimize seams, 6.0 mils thick as indicated, clear, frosted or black as indicated.

2.2 MISCELLANEOUS MATERIALS

2.2.1 Duct Tape: Provide duct tape in 2" or 3" widths as indicated, with an adhesive, which is formulated to stick aggressively to sheet polyethylene.

2.2.2 Spray Cement: Provide spray adhesive in aerosol cans, which is specifically formulated to stick tenaciously to sheet polyethylene.

PART 3 - EXECUTION

3.1 SEQUENCE OF WORK

Carry out work of this section sequentially. Complete each activity before proceeding to the next.

3.2 GENERAL

Seal ventilating systems or any other systems in the work area that are bringing air into the building. Disable fan systems by disconnecting wires, removing circuit breakers, by lockable switch or other positive means that will prevent accidental premature restarting of equipment.

3.4 CRITICAL BARRIERS

Individually seal all ventilation openings, doorways, windows, within the Work Area with duct tape alone or with fire retardant polyethylene sheeting at least 6 mil in thickness, taped securely in place with duct tape. Maintain seal until all work including Project Decontamination is completed.

3.6 DECONTAMINATION FACILITY

Establish a decontamination area that is adjacent to the regulated area for decontamination of employees and their equipment. At a minimum the decontamination shall consist of an area covered by an impermeable drop cloth on the floor or horizontal working surface of sufficient size to accommodate cleaning of equipment and removing personal protective equipment without spreading contamination. All equipment and surfaces of containers filled with lead debris must be cleaned prior to removing them from the area. Entry to and exit from the regulated area shall be through the decontamination area. Decontamination shall also allow for washing of workers hands and face.

END OF SECTION - 01526

SECTION 01560 - WORKER PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to work of this section.

1.2 DESCRIPTION OF WORK

This section describes the equipment and procedures required for protecting workers if lead is encountered, except for respiratory protection.

1.3 RELATED WORK SPECIFIED ELSEWHERE

1.3.1 Respiratory Protection: Specified in Section 01562.

PART 2 - EQUIPMENT

2.1 PROTECTIVE CLOTHING

2.1.1 Coveralls: Provide disposable full-body coveralls and disposable head covers, and require that they be worn by all workers in the Work Area. Provide a sufficient number for all required changes, for all workers in the Work Area. Disposable coveralls should be blue or grey to minimize the visibility profile of the work.

2.1.2 Gloves: Provide work gloves to all workers and require that they be worn at all times in the Work Area. Do not remove gloves from Work Area, and dispose of as contaminated waste at the end of the work.

2.1.3 Safety Glasses: Provide safety glasses to all workers and require that they be worn at all times in the Work Area unless a full face respirator is being used.

PART 3 - EXECUTION

3.1 GENERAL

Provide worker protection as required by the most stringent DOSH and/or U.S. Environmental Protection Agency (EPA) standards applicable to the work. Each time Work Area is entered, put on new disposable coverall, and the assigned respirator.

3.2 DECONTAMINATION PROCEDURES

Require all workers remove coveralls, disposable head covers, and disposable footwear covers or boots when exiting the work area. Require that workers NOT eat, drink, smoke, chew tobacco or gum, or apply cosmetics in the Work Area. To eat, chew, drink or smoke, workers shall follow the procedure described above, thoroughly wash hands and then dress in street clothes before entering the non-work areas of the site.

END OF SECTION - 01560

SECTION 01562 - RESPIRATORY PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to work of this section.

1.2 DESCRIPTION OF WORK

Instruct and train each worker involved in the removal of lead in proper respiratory use and require that each worker always wear a respirator, properly fitted on the face until the Work Area is completely decontaminated

PART 2 - EQUIPMENT

2.1 AIR PURIFYING RESPIRATORS

2.1.1 Respirator Bodies: Provide full or half face air purifying respirators.

2.1.2 Filter Cartridges: Provide, at a minimum, combination HEPA type P100 filters labeled and color-coded in accordance with NIOSH Certification.

PART 3 - EXECUTION

3.1 GENERAL

3.1.1 Respiratory Protection Program: Comply with OSHA 29 CFR 1926 & DOSH Title 8.

3.1.2 Require that respiratory protection be used at all times that there is any possibility of disturbance of contaminated materials whether intentional or accidental.

3.1.3 Require that a respirator be worn by anyone in a Work Area at all times, regardless of activity until the work area has been cleared for re-occupancy.

3.2 FIT TESTING

3.2.1 Initial Fitting: Fit types of respirator to be actually worn by each individual. Allow an individual to use only those respirators for which training and fit testing have been provided.

3.2.2 On an annual basis, check the fit of each worker's respirator by having irritant smoke blown onto the respirator from a smoke tube.

3.2.3 Upon Each Wearing: Require that each time an air-purifying respirator is put on it be checked for fit with a positive and negative pressure fit test in accordance with the manufacturer's instructions and per DOSH Title 8 requirements.

3.3 AIR PURIFYING RESPIRATORS

3.3.1 Negative pressure - Half face mask: Store respirators and filters at the job site in the changing area and protect totally from exposure to lead dust prior to their use.

END OF SECTION - 01562

SECTION 02085 – STABILIZATION OF LEAD-BASED PAINTED COATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

General provisions of Contract, including General and Supplementary Conditions, and other Specification Sections, apply to work of this section. In instances where documents conflict, the more stringent requirement will apply.

1.2 APPLICABILITY

If actions are performed that separate the LBP from the substrate, the contractor shall use drop cloths below the work area and fully comply with CCR 1532.1.

PART 2 - PRODUCTS

2.1 POLYETHYLENE SHEET

2 Layers of impermeable fire retardant polyethylene sheeting drop cloths shall be placed on surfaces beneath all work impacting lead-based paint coatings. Provide polyethylene sheeting in the largest size possible to minimize seams, 6.0 mil thick, clear, frosted or black as indicated.

2.3 DUCT TAPE

Provide duct tape in 2" or 3" widths as indicated, with an adhesive which is formulated to stick aggressively to sheet polyethylene.

2.4 SPRAY CEMENT

Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.

2.5 DISPOSAL BAGS

Provide 6 mil thick leak-tight polyethylene bags.

PART 3 - EXECUTION

3.1 Description of Work: If measured airborne lead levels exceed the Action Limit of 30ug/m^3 at any time during the course of the work or if visible emissions are observed outside the regulated area, the Contractor will be required to take immediate corrective action. If the corrective actions do not reduce concentrations below the Action Limit, the Owner's representative will require the contractor to stop work, review work practices with all employees and construct containment systems.

3.2 Decontamination Unit

3.2.1 Decontamination Area: A remote decontamination area or hygiene facility is required for the project. Require all persons, without exception, to remove lead contamination prior to leaving the job site. Decontamination shall, at a minimum, allow for washing of workers hands and face.

3.3 Work Area Requirements

3.3.1 Demarcate the Work Area and restrict access by providing a taped-off and labeled perimeter around the Work Area where lead-based paint is impacted during work on the building.

3.3.2 Dust generation is to be minimized by misting painted surfaces with water during removal. Use caution to minimize damage to adjacent surfaces.

3.3.3 Minimum respiratory protection is half-face negative pressure respirator with appropriate HEPA filter with a protection factor of 10 for work environments up to 300 $\mu g/m^3$.

3.3.4 Create a poly sheeting containment on the floor of the work area, which should extend at least 10 feet out from the wall. Use 6-mil polyethylene and securely affix to walls or adjacent structures with duct tape or fasteners.

3.3.5 DOSH Compliance:

3.3.5.1 Contractors and their employees who are potentially exposed to lead or asbestos levels in excess of the DOSH Action Limit of (30 $\mu g/m^3$) for lead or the PEL of 0.1 f/cc for asbestos, will require compliance with the DOSH requirements for medical surveillance, exposure monitoring and training and education.

3.3.5.2 The Contractor must conduct all DOSH required abatement monitoring and medical surveillance at no cost to the Owner.

3.4 General Removal/Disturbance Procedures

3.4.1 Setup and management of the Work Area is to be under the supervision of a General Superintendent as described.

3.4.2 Prior to commencing work, comply with requirements for Worker and Respiratory Protection.

3.4.3 Do not allow eating, drinking, smoking and chewing tobacco or gum in the Work Area.

3.4.4 Provide a drop cloth of 6-mil polyethylene sheeting under each work area. Where work is adjacent to walls, extend polyethylene sheeting up the walls and attach securely.

3.4.5 Seal supply and exhaust vents, and convectors within ten (10) feet of the Work Area with 6-mil fire retardant polyethylene sheeting secured and completely sealed with duct tape.

3.4.6 All LBP removal work must be conducted within regulated work areas. Workers must exercise caution to avoid release of lead contaminated dust into the ambient air. Remove lead-based paint debris, which collects on the drop cloth using HEPA vacuums and wet cleaning methods at the completion of each shift.

3.4.7 At the completion of each shift, proceed with equipment and worker decontamination.

3.5 Project Decontamination:

3.5.1 Cleaning procedures include using a HEPA vacuum to clean all surfaces followed by wet wiping and finishing with another HEPA vacuuming.

3.5.2 Daily cleanup consists of removing large debris and HEPA vacuuming the work area.

3.5.3 The final cleanup consists of a preliminary final cleanup (clean and remove plastic drop cloths), followed by cleaning remaining surfaces and the final visual inspection.

3.5.4 Small Debris: Small debris should be collected and disposed of properly. However, before any sweeping occurs, the affected surfaces should be sprayed with a fine mist of water, to keep surface dust from becoming airborne and potentially contaminating other areas of the property and removal workers. Dry sweeping is prohibited. Debris should be placed in 6-mil plastic bags or other hard containers, properly sealed and moved to the designated trash storage area. Care should be taken not to overload trash bags, which otherwise may rupture or puncture during handling and transport.

3.5.5 Dispose of all lead-containing waste material as specified in this Section.

3.6 Waste Evaluation and Disposal: This paragraph describes disposal of LCP coated building materials. Accomplish disposal either by landfill or other acceptable methods. Waste containing greater than 1000 mg/kg when tested by Total Threshold Limit Concentration (TTLC) or failed the California WET test shall be treated as hazardous waste. Additional Federal testing by Toxicity Characteristic Leaching Procedure (TCLP) will be required to see if the waste will have to be stabilized.

3.6.1 The Contractor shall evaluate the waste prior to disposal to determine which types are hazardous.

3.6.2 Disposal of Wastes: Waste must be segregated into solid and hazardous wastes. Wastes should neither be left on the property in an unsecured area, nor dumped in an unauthorized dumpster. Lead-containing wash water should not be flushed into storm drains or sanitary sewers without permission of local authorities.

3.6.3 Solid Waste Disposal: Solid waste that has been evaluated and determined not to be hazardous can be disposed of in a state approved landfill as construction debris. Waste should be transported to the approved disposal landfill in covered vehicles.

3.6.4 Hazardous Waste Disposal: Hazardous waste must be disposed of at a hazardous waste disposal facility, usually defined as a treatment, storage, and disposal facility (TSD).

3.6.5 Disposal Site Procedures: At the disposal site, sealed polyethylene bags shall be carefully unloaded from the truck. If bags are broken or damaged, return to work site for re-bagging. Clean entire truck by HEPA vacuum and wet wipe methods.

3.6.6 Retain all copies of employee blood tests, receipts waste shipment records, manifests, chain of custody, etc.

3.7 CLEARANCE DUST WIPE SAMPLING

The Environmental Consultant may collect dust wipe samples from interior horizontal surfaces for lead content using standard procedures adjacent to areas where exterior LBP is disturbed during the project. The dust wipe samples will be analyzed by PSI Analytical Laboratory, located in Pittsburgh, Pennsylvania. Sample preparation involves digesting the dust wipe samples in dilute nitric acid followed by Flame Atomic Absorption analysis (FAA).

3.8 POST REMOVAL ACCEPTANCE CRITERIA

The recommended clearance levels allow up to 40 micrograms per square foot on interior floors and 250 micrograms per square foot on interior window sills, as defined in Title 17, California Code of Regulations, Division 1, Chapter 8.

3.8.1 Testing will be completed if the work areas are free of dust and debris and the results are below the referenced clearance criteria.

3.8.2 If results are above the clearance criteria, re-cleaning will be performed by the contractor.

END OF SECTION - 02085

SECTION 02086 - DISPOSAL OF LEAD WASTE MATERIALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

General provisions of Contract, including General and Supplementary Conditions, and other Specification Sections, apply to work of this section. In instances where documents conflict, the more stringent requirement will apply.

1.2 DESCRIPTION OF THE WORK

This section describes the disposal of lead waste materials. Disposal includes packaging of waste materials.

PART 2 - PRODUCTS

2.1 DISPOSAL BAGS / CONTAINERS

Provide disposal bags and contains as necessary to properly package lead waste.

PART 3 - EXECUTION

3.1 GENERAL

Waste Evaluation and Disposal: This paragraph describes disposal of lead-based painted building materials (if applicable). Accomplish disposal either by landfill or other acceptable methods. Waste containing greater than 1000 mg/kg when tested by TTLC or failed the California WET test shall be treated as hazardous waste. Additional Federal testing by TCLP will be required to see if the waste will have to be stabilized.

3.1.1 The Contractor will be responsible for representative sampling and analysis of lead waste generated during this project.

3.1.2 The Contractor shall assume that any waste containing lead is hazardous.

3.1.3 To the extent feasible, the Contractor shall segregate dust and small debris, which may contain lead-based paint. Such waste shall be double bagged, secured with tape, and labeled.

3.1.4 Larger hazardous waste items which cannot be bagged shall be wrapped in plastic, secured with tape, labeled and disposed of.

3.1.5 All waste is to be hauled by a waste hauler with all required licenses from all state and local authority with jurisdiction.

3.1.6 Seal lead waste in leak-proof impermeable containers labeled in accordance with EPA requirements

3.1.7 Carefully load containerized waste in fully enclosed dumpsters, trucks or other appropriate vehicles for transport. Exercise care before and during transport, to insure that no unauthorized persons have access to the material. Vehicle must be placarded with DOT label.

3.1.8 Advise the landfill operator or processor, in advance of transport, of the quantity of material to be delivered.

3.1.9 At completion of hauling and disposal of each load, submit copy of waste manifest, chain of custody form, and landfill receipt to client's representative.

END OF SECTION - 02086